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muhammed.ekeen@gmail.com
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abdulkadirpalanci.29@gmail.com
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adeliowska@aps.edu.pl
ORCID: 0000-0002-0952-8931

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Affiliation: Biruni University (Faculty of Education) Istanbul, Turkey
10. Yıl Caddesi, Protokol Yolu No: 45, 34010 Topkapı, İstanbul
Email: biruniuniv@hs01.kep.tr
Phone: 444 8 276 (BRN)
Fax: +90 212 416 46 46

Direct Contact at Biruni University
Prof. Dr. Adnan Ömerustaoğlu
Biruni University, Faculty of Education,Turkey
aomerustaoglu@biruni.edu.tr

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Research Article

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In Maintaining a Marriage, Examination of the Relationship Between Mutual Happiness Levels, and Adult Attachment Styles and Psychological Resilience Levels

Gülhan Dinç, Specialist Psychological Counselor, MONE, gulhan.dinc67@gmail.com
0000-0002-6139-8767

M. Zeki İlgar, PhD, Biruni University, zilgar@biruni.edu.tr
0000-0002-5516-0752

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Abstract

In this study, it was aimed to determine whether the relationship between mutual happiness levels and adult attachment styles and psychological resilience levels in maintaining a marriage differed significantly at the p<.05 level by examining in terms of gender and marital status. Based on the relational survey model, the sample of the study conducted in December 2020 consists of 405 people, 51 of whom are divorced, who participated in the Google Form Research Questionnaire invitation, which was published in order to reach the married and divorced adults in the researcher's communication pool. The data of the inventories filled in the Google form were transferred to the SPSS 26.0 program to be used in the process of finding answers to the problems of the study via Excel database. As a result of the study, fallowing findings were reached. Mutual Happiness Levels of married and divorced adults did not differ significantly by gender. Mutual Happiness Levels of women and men did not differ significantly according to marital status. The sub-dimensions of Adult Attachment Style, Avoidant Attachment and Anxious/Ambivalent Attachment, of married and divorced adults did not differ significantly by gender, while Secure Attachment differed significantly. It was seen that the sub-dimensions of Adult Attachment Style of women and men, Avoidant Attachment, Anxious/Ambivalent Attachment and Secure Attachment, differed significantly according to marital status. Married and divorced adults did not differ significantly by gender in the Self-Perception, Structured Style, Social Competence and Social Resources sub-dimensions of Psychological Resilience for Adults, but significantly differed in the Planned Future and Family Cohesion sub-dimensions. Women and men did not differ significantly according to marital status in the Self-Perception, Planned Future, Structured Style and Social Resources sub-dimensions of Psychological Resilience for Adults, but significantly differed in the Social Competence and Family Cohesion sub-dimensions. The findings were discussed in the light of the literature and interpreted.

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INTRODUCTION

As a person is a bio-psycho-social being, it is not possible to escape from close relationships such as family, marriage and couple relationships as long as it lives. The marital relationship, which represents the primary emotional attachment of the adult, is one of the areas where emotions and emotion transfer are most important in life. In the marital relationship, emotions are more aroused than in any other relationship, and it offers the person the opportunity to be mutually connected, to have their feelings and needs respected, to be the most important person for another person. Marriage, which is like the home of one's emotional life, provides trust, intimacy, openness and intense emotional expression. Marriage is an institution with its own social and psychological boundaries. Therefore, psychological resilience, secure attachment and mutual happiness relations are extremely important for a healthy marriage. Mutual happiness and secure attachment are associated with mental health and psychological resilience (Neria at al., 2001). Numerous studies have been conducted on the fact that psychological resilience is closely related to personal, social and familial characteristics (Siebert, 2005). Considering the familial characteristics of individuals with high psychological resilience; it is seen that they can manage the crisis they face, have high familial functionality and maintain a qualified and healthy relationship together (Mccubbin & Mccubbin, 1996).

Attachment is defined as the ongoing psychological relation between people, and it has been proven that the relation formed in the early period has a very important effect on the development of the individual and the behaviours that form the basis of their later life. The healthy and qualified relationship that individuals establish with their caregivers is the most important factor of psychological resilience (Olsson et al., 2003).

The framework of positive relationships; The family life cycle, which is the environment in which the concepts of living together, sharing experiences, the need to belong, the tendency not to be alone, and love are experienced. Love is a subject at the centre of positive psychology (Hendrick & Hendrick, 2009). People need other people. People have a pervasive motive to develop and maintain lasting, positive, and meaningful interpersonal relationships. People are motivated to form social relations and not to break them. Both cognitive and emotional processes develop around such relations. Positive relations are associated with positive outcomes, and negative relations are associated with negative outcomes (Baumeister & Leary, 1995).

Marriage harmony should not be seen as a labyrinth with hard-to-reach corridors. Marital harmony is a skill that couples can learn and turn into a lifestyle. One of the most important and basic principles of harmony is that individuals can make each other happy.

CONCEPTUAL FRAMEWORK

MARRIAGE AND DIVORCE

Marriage is the one of an important process in the life of individuals. It is a relationship system where two people share their lives, have a desire to live together, have different wishes, needs and interests, and also want to have a child. At the same time, it is a social phenomenon that puts the family on legitimate foundations. It is a universal institution where two people come together for a lasting togetherness and aim to maintain their own kind and interact with each other. Marriage is like the home of many people's emotional lives. Marriage is an institution with its own social and psychological limits. Marriage works well when these limits are well learned. It has been determined that personal characteristics, interaction style of the couple and psychological resilience are important factors besides happiness in the formation of stable and satisfactory marriages (Bradbury & Karney, 2004). Spouses who have the ability to regulate anger and negative emotions in their personal characteristics show a compatible marriage. Reason of fail in marriage not because conflicts increase, but because intimacy and emotional responsiveness decrease. In fact, the biggest factor that determines how stable a marriage will be is emotional insensitivity rather than conflict level (Johnson,

2020). Spouses who are similar in abilities, attitudes, interests, and moral values are more likely to achieve marital satisfaction, stay married, avoid conflict and infidelity, and provide a stable home environment for their children (Buss, 2000). If the difference between our equal and our spouse is minimal, the probability of infidelity is also minimal. If spouses support and appreciate each other, if their interaction style is based on respectful and open communication, satisfaction will be higher and this will lead to more happiness (Harvey & Pauwels, 2009). Couples with strong social support networks and whose expectations do not cause stress have higher marital satisfaction than others. It had been determined that happy people's capital is their spouses and beliefs (Myers, 2000). In a study in which 2000 cases in Germany were examined longitudinally for 19 years by (Lucas & Clark, 2006), it was determined that after the first increase in life satisfaction, married people gradually returned to their premarital levels within a period of about 5 years. (Soons et al., 2009) found that leaving and divorce reduced subjective well-being. People get married, but happiness in marriage is not stable. Demographic factors such as high level of education, high socio-economic status, similarity in interests, intelligence and personalities of spouses were found to be associated with marital satisfaction (Conger et al., 2010; Fincham & Beach, 2010; Gottman & Notarius, 2002; Newman & Newman, 2008).

Divorce has a many aspects, including legal termination of marriage and transactional and emotional ones. Family transformation that is through leaving, divorce, and remarriage can be conceptualized as a process involving a series of stages. Divorce is a normative transition within the family, not a deviation in the family cycle (Amato, 2010; Fine & Harvey, 2006). In the first stage, the decision to divorce appears and it is the basic duty to accept one's own share in the fall of a marriage. Many contextual factors contribute to divorce, such as age, socio-economic and occupational status, education level, marital status of parents, ethnic similarity, marital harmony and disagreement, and fidelity (Amato, 2010). The frequency of divorce is higher for couples with children, previously married, belonging to different ethnic groups and marital discord, and has a story of domestic violence and infidelity. Relationships that support the development of a person as an authentic and free individual become much more binding and satisfying, and develop intimacy and love. Real and satisfying partnerships will only be possible as long as men and women can accept and hear each other as human beings apart from their socially determined sexual roles.

MUTUAL HAPPINESS

One of the basic needs of human beings is happiness. Because when individuals are happy, they feel more successful and more secure. Happiness is the feeling we feel at the end of the work we do and it is our reward (Öztekin, 2016). Happiness is the consciousness of a state of contentment that shows integrity and continuity in a meaningful existence built on truth. Psycho-social research shows that the basic factors of happiness are love, friendship and emotional relations. True happiness is created by the relation of marriage. It is the same feeling of identity and mutuality that unites couples like friends. Identity and mutuality is being the other own with whom we share the same longings, the same likings and areas of interests, the same moral values, and probably the same life projects. We feel the highest level of self-awareness when we are in acts of mutuality that is based on goodness, altruism, and empathy. Therefore, our nature is capable of altruism and mutual happiness. We can heal the wounds of life, not only when we are loved, but also when we discover the treasures of goodness buried in our own hearts. The more you help others, the happier you are. The greater the happiness, the greater the desire to help others (Lenoir, 2016). Factors such as living conditions, education level, personal structure, age and gender affect the level of happiness of people. Happiness is not the ability to get what we want, but the ability to learn to be happy with what we get (Saygılı, 2015). It is known that women and men experience the same level of effect in point of individual happiness. Two approaches scrutinized the relationship between happiness and marriages are the selection and conservation hypothesis. According to choice theory, the reason why happy people have a higher marriage rate is that happy people are more attractive as marriage partners. According to the conservation hypothesis, the benefits and observable aspects of a marriage are mostly discussed. In

studies on married and single people have found that married people are happier than singles. A longitudinal study examining over 15,000 cases over 17 years found that divorced people were unhappy not only during a marriage but also before a marriage.

(Bradbury & Karney, 2004) state that the most important factor in maintaining a marriage is that the couples achieve happiness with each other. It has been determined that incompatible and unhappy marriages are negatively related to subjective well-being, life satisfaction, self-esteem and general health (Hawkins & Booth, 2005). As a result of the researches, it has been determined that happiness in a marriage is conceptualized as marital satisfaction and harmony of spouses, and if marital harmony is to be discussed, the concept of happiness in a marriage should also be scrutinized. Considering that ensuring happiness in marriage is an important part of an adult's private life, it is predicted that it will also contribute to the individual's subjective happiness.

ATTACHMENT

Relationships, especially family relationships, are one of the important topics of positive psychology (Diener & Diener McGavran, 2008). There are many theories about romantic love (Sternberg & Weis, 2006). One of them is the adult attachment theory. Based on John Bowlby's attachment theory, it has been suggested that the underlying process of romantic relationships and parent-child relationships is the same (Shaver & Mikulincer, 2006). According to the findings of the relationships established with the family during childhood, it was revealed that the individuals who stated that they had relationships based on warm love were securely attached, those who stated that they had rejecting or repulsive relationships were avoidant, and those who stated that their relationships were sometimes based on love and sometimes rejection or avoidance were anxious/ambivalent attachments.

It has been found that adults with a strong secure attachment style can establish satisfactory relationships characterized as trust, support, loyalty, closeness, emotional significance, and the ability to solve problems (Feeney, 2008).

1. Secure Attachment Style: It is a form of attachment that reflects a stable and positive emotional relation.

2. Avoidant Attachment Style: It is a form of attachment that reflects independence and a lack of emotional involvement.

3. Anxious/Ambivalent Attachment Style: It is a form of attachment that reflects duality, or both closeness and distance at the same time.

PSYCHOLOGICAL RESILIENCE

It is one of the most emphasized positive psychology concepts, the importance of which has been emphasized in recent studies (Singh & Yu, 2010; Walsh, 2003). When we look at its etymology, it means to resist, not giving up in the face of difficulties, to recover, to develop a method of coping against all kinds of difficulties, to stand up again. It is also an internal dynamic process. It includes psychological, social and physical compatibility (Luthar, Cicchetti & Becker, 2000). When we examine the studies in the literature on resistance, it is seen that it was first used in the field of developmental pathology in the 1960’s and 1970’s and it was discussed with the concepts of invincible sturdy child (Benard, 2004).

Psychological resilience offers people great opportunities for personal and professional development. Psychological resilience includes which is readiness related to success, personal qualifications, and character, to enable change. Healthy established relationships are the major factor that makes the individual resistant and helps to overcome difficult times. One of the strong character traits is psychological resilience, which is also mentioned in the literature as fortitude and indomitable. In the studies conducted in the same period, three factors of psychological resilience were emphasized

and the effects of the factors related to these three factors were discussed (Masten, 2007). These three factors focused on risk, proclivity and protectiveness. When it is said to risk factors, personal, familial and environmental effects should be considered. Because the problem and any means, structure and process that causes negative consequences of the problem is a risk factor (Luthar & Cichetti, 2000).

Personal risk factors are anti-social behaviours, stressful life processes, being a minority, difficult personality, being male and unavoidable medical problems. Familial risk factors are family history of dissociative disorders, pathological conditions (depression, alcohol use, etc.), violence, and divorce, growing up in an extended family, and having a mother who is a child bride. Environmental risk factors are low income level, poverty, negative friend groups, deviant environment, malnutrition, inability to meet the needs of the child (Luthar & Cichetti, 2000). Predisposition the ability that is a born out of habit is a state of being embraced, and the habitual tendency. The factor that reveals the predisposition is the experience of the more exaggerated negative life experiences or risk factors (Masten et al., 2009).

One of the most important factors that positively affect the psychological resilience of the individual is the environmental and social support systems. Psychological resilience has been examined with two approaches: individual-focused and variable-focused. In the individual-focused psychological resilience approach, it has been emphasized on the criteria and conditions that distinguish individuals from other individuals and make them resistant (Masten, 2007). In the variable-focused psychological resilience approach, on the other hand, risk factors, predisposition level and protective factors, compliance processes with statistical data and management processes have been emphasized (Masten et al., 2009). Although there are many factors that have a role in the explanation of psychological resilience, studies suggest that these factors can be grouped under three general categories (Haase, 2004). These categories family cohesion and support, personal structural characteristics and external support systems (social environment, colleagues, etc.) that can be expressed. In line with this point of view, (Friborg et al., 2005) propose a six-factor structure in the explanation of the resilience structure: self-perception, planned future, structured style, social competence, family cohesion, and social resources. Self-perception refers to a person's awareness of itself and its thoughts about who it is basically. Planned future points to the perspective of the person towards the future and the positive perspective has an important role in the process of psychological resilience. Structured style is an individual's personal characteristics such as self-confidence, strengths, and self-discipline. While social competence is a factor related to whether people are socially supported or not, family harmony shows the harmony of the person with their closest relatives. In this context, family cohesion and social support have an important role in the process of psychological resilience. Finally, social resources show the social relations that a person has. Another sub-branch of psychological resilience is social support, and this dimension has an important role in the success of the individual in coping with stressful situations. Those who have received adequate support from their environment during childhood and adolescence face the problems they encounter in adulthood and are more successful in producing solutions.

METHOD

RESEARCH DESIGN

In this study, the relational survey model, which is one of the general survey models of quantitative research methods, was used. Relational survey model aims to determine the existence of co-variance between two or more variables. In this model, it is tried to determine whether the variables change together, and if there is, how this happens (Karasar, 2011). In this study, it was aimed to determine whether the relationship between Mutual Happiness Levels and Adult Attachment Styles and Psychological Resilience Levels in Maintaining a Marriage differed significantly at the $p<.05$ level

by examining in terms of gender and marital status. In this context, the following hypotheses have been developed.

HYPOTHESES OF THE STUDY

1. In maintaining a marriage there is a significant relationship between Mutual Happiness Levels and Adult Attachment Styles.

2. In maintaining a marriage there is a significant relationship between Mutual Happiness Levels and Psychological Resilience Levels.

3. In maintaining a marriage there is a significant relationship between Adult Attachment Styles and Psychological Resilience Levels.

4. Mutual Happiness Levels of married individual is more than divorced.

5. Mutual Happiness Levels of men is more than women.

6. Adult Attachment of married individual is more than divorced.

7. Adult Attachment of men is more than women.

8. Psychological Resilience Levels of married individual is more than divorced.

9. Psychological Resilience Levels of men is more than women.

THE UNIVERSE AND SAMPLE

Based on the relational survey, the sample of the study conducted in December 2020 consists of 405 people, 51 of whom are divorced, who participated in the Google Form Research Questionnaire invitation, which was published in order to reach the married and divorced adults in the researcher's communication pool. Many divorced individuals who were reached and informed to participate in the research they refrained from filling out the research form because of their unwillingness to be visible and known, their mood disorders, their anxiety, and their perception of negative social pressure. The data of the inventories filled in the Google form were transferred to the SPSS 26.0 program to be used in the process of finding answers to the problems of the research via Excel database.

The mean scores of all dimensions of the variables were calculated, normality tests were performed, and it was evaluated that some data negatively affected the results. The average scores were converted to Z scores, and the data of 30 people who were found to have answered without being sensitive enough were found to be at extreme values (outside of the +/- 2.5 standard deviation values), so they were deleted and excluded from the process, and the analyses were continued with the data of 375 people. Before the analyses, the normality tests of all dimensions were repeated and it was seen that there was no missing data.

Descriptive Statistics of Variables and Normality Test Results are given in Table 1.

Table 1. *Descriptive Statistics of Variables and Normality Test Results*

	Mutual Happiness Scale	*Adult Attachment Style Scale*			*Psychological Resilience Scale for Adults*					
	Mutual Happiness	*Avoidant Attachment*	*Anxious/ Ambivalent Attachment*	*Secure Attachment*	*Self Perception*	*Planned Future*	*Structured Style*	*Social Competence*	*Family Cohesion*	*Social Resources*
N	375	375	375	375	375	375	375	375	375	375
X	3.94	.51	.28	.56	3.95	3.84	3.76	3.73	3.89	3.97
Ss	.62	.28	.23	.27	.66	.86	.78	.74	.72	.73
Median	4.00	.50	.17	.50	4.00	4.00	3.75	3.67	4.00	4.14
Minimum	2.22	.00	.00	.00	2.33	1.50	1.75	1.83	2.00	2.14
Maximum	5.00	1.00	.83	1.00	5.00	5.00	5.00	5.00	5.00	5.00
Sum	13295	1148	609	1255	8896	5766	5644	8396	8756	10427
Skewness	-.505	-.080	.646	-.014	-.256	-.567	-.155	-.136	-.366	-.473
Kurtosis	.046	-.940	-.318	-.785	-.792	-.329	-.670	-.700	-.445	-.698
Ss/Mean (%)	15.82	54.30	83.86	47.44	16.77	22.29	20.59	19.94	18.51	18.31
Kolmogorov-Smirnov - p	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

DATA COLLECTION

PERSONAL INFORMATION FORM

The Personal Information Form, consisting of 3 questions in total, was prepared by the researcher in order to obtain age, gender and marital status information from the research participants.

MUTUAL HAPPINESS SCALE

The Mutual Happiness Scale consists of a 5-point Likert-type rating system, one dimension and 9 questions. The total score is obtained from the total score of 9 items. There is no reverse item in the scale. The Turkish adaptation, validity and reliability study of the scale was carried out by (Ekşi, Demirci & Ses, 2017). Cronbach's alpha of The Mutual Happiness Scale used in the research is calculated as 0.765.

ADULT ATTACHMENT STYLE SCALE

The Adult Attachment Style Scale is based on the triple attachment model and consists of two parts. The first part was developed by (Hazan & Shaver, 1987). The second part of the scale was created by (Mikulincer et al., 1990). The original version of this section consists of 15 items and participants are asked to score between 1 and 7 for each item. The Turkish adaptation, validity and reliability study of the scale was first carried out by (Sabuncuoğlu & Berkem, 2006). However, while the internal consistency of the scale is acceptable for anxious/ambivalent and avoidant attachment (Cronbach's alpha= 0.61 and 0.66), it is low (0.42) for secure attachment. For this reason, the Turkish adaptation, validity and reliability study of the scale was re-performed by (Kesebir, Dereboy & Kökçü, 2012). As a result of this study, the items that were thought to be incomprehensible were divided and the number of items increased to 18. The 7-point Likert-type rating system used for scoring in the original version of the scale was removed and the items were evaluated in two categories as true and false. Cronbach's alpha of The Adult Attachment Style Scale used in the research is calculated as 0.692.

PSYCHOLOGICAL RESILIENCE SCALE FOR ADULTS

The Resilience Scale for Adults (YPDÖ), which was originally named Resilience Scale for Adults and was developed by (Friborg et al., 2006), was adapted into Turkish by (Basım & Çetin, 2011). This adaptation study was carried out on two different sample groups, students and employees. As a result of the confirmatory factor analyses performed on the student group to test the construct validity of the scale, a structure consisting of 6 factors and 33 items emerged as in the original scale: Self-Perception (1, 7, 13, 19, 28, 31), Planned Future (2, 8, 14, 20), Structured Style (3, 9, 15, 21), Social Competence (4, 10, 16, 22) , 25, 29), Family Cohesion (5, 11, 17, 23, 26, 32), Social Resources (6, 12, 18, 24, 27, 30, 33).

In order to determine the criterion-dependent validity of the Psychological Resilience Scale for Adults Scale, the Social Comparison Scale (Şahin, Basım & Çetin, 2009), which is used to test people's positive or negative self-perceptions by comparing themselves with others, and the Locus of Control Scale (Dağ, 1991), which is used to test the level of external locus of control, were used. It was determined that there were statistically significant positive relationships between the Social Comparison Scale and all sub-dimensions of the Psychological Resilience Scale for Adults in both student and employee samples. On the other hand, it has been observed that the Locus of Control Scale has statistically significant negative correlations with the Self-Perception, Planned Future and Structured Style sub-dimensions of the Adult Resilience Scale in both student and employee samples.

As a result of the internal consistency analysis performed to test the reliability of Psychological Resilience Scale for Adults, the Cronbach Alpha value was calculated as (α) .86 for both the student and the employee group. The following correlational values (r) were found between the sub-dimensions as a result of the test-retest application performed on the student group with an interval

of 23 days: .72 for Self-Perception, .75 for Planned Future, .68 for Structured Style, .78 for Social Competence, .81 for Family Cohesion, .77 for Social Resources. Cronbach's alpha of The Resilience Scale for Adults used in the research is calculated as 0.857.

DATA ANALYSIS

The data of current study were analysed by using SPSS 26.0 program's Descriptive Statistics, Normality Tests, Pearson Correlation Analysis, Multivariate Linear Regression Analysis and Independent Sample T – Tests.

When Descriptive Statistics on Demographic Variables given in Table 2 are evaluated;

It was determined that married and divorced women have higher scores than men in terms of Avoidant and Anxious/Ambivalent Attachment and Social Competence and Social Resources, and they have lower scores than men in all other dimensions.

It was determined that married and divorced men have higher scores than women in all dimensions except for the Mutual Happiness Levels, Secure Attachment, Social Competence, and Social Resources, and have lower scores than women in terms of Avoidant and Anxious/Ambivalent Attachment styles.

It was determined that married adults have higher scores in terms of Mutual Happiness Levels, Secure Attachment styles, Planned Future, Social Competence, Family Cohesion and Social Resources, compared to divorced adults.

It was determined that the Avoidant and Anxious/Ambivalent Attachment styles, Self-Perception and Structured Style scores of divorced adults were higher than those of married adults.

Table 2. *Descriptive Statistics on Demographic Variables*

Demographic Variables	*Options*	*Participant*	*Mutual Happiness*		*Avoidant Attachment*		*Anxious/ Ambivalent Attachment*		*Secure Attachment*		*Self-Perception*		*Planned Future*		*Structured Style*		*Social Competence*		*Family Cohesion*		*Social Resources*	
	Ranges	N	X	Ss	X	Ss	X	Ss	X	Ss	X	Ss	X	Ss	X	Ss	X	Ss	X	Ss	X	Ss
Gender	Female	290	3.92	.63	.51	.28	.28	.23	.54	.26	3.93	.69	3.80	.88	3.75	.79	3.77	.75	3.86	.75	3.98	.74
	Male	85	4.01	.61	.50	.28	.25	.21	.63	.27	4.02	.57	4.01	.76	3.81	.74	3.61	.71	4.03	.62	3.97	.68
Marital Status	Married	331	3.96	.61	.50	.27	.26	.22	.58	.25	3.94	.66	3.85	.86	3.75	.77	3.76	.73	3.93	.71	3.99	.73
	Divorced	44	3.79	.72	.60	.29	.38	.26	.40	.29	4.05	.70	3.81	.85	3.90	.79	3.50	.83	3.61	.74	3.83	.73

FINDINGS

The mean values of dimensions obtained from the answers given by the research participants to the questions asked on the 5-point Likert scales of Mutual Happiness and Psychological Resilience for Adults; Mutual Happiness (X=3.94), Self-Perception (X=3.95), Planned Future (X=3.84), Structured Style (X=3.76), Social Competence (X=3.73), Family Cohesion (X=3.89) and Social Resources (X=3.97); were determined in the range of 3.41 – 4.20 points, corresponding to a Likert 4 answer, "I largely agree".

Pearson Correlation Analysis was performed to determine the correlation between the variables and the results are given in Table 3.

It has been determined that the correlation between the Mutual Happiness Scale and the 3 sub-dimensions of the Adult Attachment Style Scale is as follows.

- A weak negative and significant correlation was found between Mutual Happiness and Avoidant Attachment (r(373)=–.290, *p<.01*).

- A weak negative and significant correlation was found between Mutual Happiness and Anxious/Ambivalent Attachment (r(373)=–.291, *p<.01*).

- A weak positive and significant correlation was found between Mutual Happiness and Secure Attachment (r(373)=.311, *p<.01*).

As the scores of married and divorced adults from the Mutual Happiness Scale increase, the scores they get from the Secure Attachment sub-dimension of the Adult Attachment Style Scale increase, and the scores they get from the Avoidant Attachment and Anxious/Ambivalent Attachment sub-dimensions decrease. (Hypothesis 1, accepted according to Table 3.)

Table 3. *Pearson Correlation Analysis Results Regarding the Relationship Between Variables*

	Mutual Happiness Scale	*Adult Attachment Style Scale*			*Psychological Resilience Scale for Adults*					
	Mutual Happiness	*Avoidant Attachment*	*Anxious/ Ambivalent Attachment*	*Secure Attachment*	*Self-Perception*	*Planned Future*	*Structured Style*	*Social Competence*	*Family Cohesion*	*Social Resources*
Mutual Happiness	1	-.290**	-.291**	.311**	.391**	.423**	.248**	.331**	.354**	.381**
Avoidant Attachment	-.290**	1	.426**	-.443**	-.180**	-.228**	-.147**	-.329**	-.195**	-.337**
Anxious/ Ambivalent Attachment	-.291**	.426**	1	-.137**	-.261**	-.224**	-.147**	-.128*	-.188**	-.235**
Secure Attachment	.311**	-.443**	-.137**	1	.180**	.238**	.068	.441**	.124*	.308**
Self-Perception	.391**	-.180**	-.261**	.180**	1	.636**	.470**	.401**	.392**	.548**
Planned Future	.423**	-.228**	-.224**	.238**	.636**	1	.487**	.347**	.458**	.472**
Structured Style	.248**	-.147**	-.147**	.068	.470**	.487**	1	.172**	.277**	.292**
Social Competence	.331**	-.329**	-.128*	.441**	.401**	.347**	.172**	1	.242**	.520**
Family Cohesion	.354**	-.195**	-.188**	.124*	.392**	.458**	.277**	.242**	1	.552**
Social Resources	.381**	-.337**	-.235**	.308**	.548**	.472**	.292**	.520**	.552**	1

**. The correlation is significant at the 0.01 level (2-tailed).
*. The correlation is significant at the 0.05 level (2-tailed).

It has been determined that the correlation between the Mutual Happiness Scale and the 6 sub-dimensions of the Psychological Resilience Scale for Adults is as follows.

- A weak positive and significant correlation was found between Mutual Happiness and Self-Perception (r(373)=.391, *p<.01*).
- A weak positive and significant correlation was found between Mutual Happiness and Planned Future (r(373)=.423, p*<.01*).
- A very weak positive and significant correlation was found between Mutual Happiness and Structured Style (r(373)=.248, *p<.01*).
- A weak positive and significant correlation was found between Mutual Happiness and Social Competence (r(373)=.331, *p<.01*).
- A weak positive and significant correlation was found between Mutual Happiness and Family Cohesion (r(373)=.354, *p<.01*).
- A weak positive and significant correlation was found between Mutual Happiness and Social Resources (r(373)=.381, *p<.01*).

As the scores of married and divorced adults from the Mutual Happiness Scale increase, the scores they get from all sub-dimensions of the Psychological Resilience Scale for Adults also increase. (Hypothesis 2, accepted according to Table 3.)

It was determined that the correlation between the 3 sub-dimensions of the Adult Attachment Style Scale and the 6 sub-dimensions of the Adult Psychological Resilience Scale is as follows.

- A very weak negative and significant correlation was found between Avoidant Attachment and Self-Perception (r(373)=–.180, *p<.01*).
- A very weak negative and significant correlation was found between Avoidant Attachment and Planned Future (r(373)=–.228, *p<.01*).
- A very weak negative and significant correlation was found between Avoidant Attachment and Structured Style (r(373)=–.147, *p<.01*).
- A weak negative and significant correlation was found between Avoidant Attachment and Social Competence (r(373)=–.329, *p<.01*).
- A very weak negative and significant correlation was found between Avoidant Attachment and Family Cohesion (r(373)=–.195, *p<.01*).
- A weak negative and significant correlation was found between Avoidant Attachment and Social Resources (r(373)=–.337, *p<.01*).
- A weak negative and significant correlation was found between Anxious/Ambivalent Attachment and Self-Perception (r(373)=–.261, *p<.01*).
- A very weak negative and significant correlation was found between Anxious/Ambivalent Attachment and Planned Future (r(373)=–.224, *p<.01*).
- A very weak negative and significant correlation was found between Anxious/Ambivalent Attachment and Structured Style (r(373)=–.147, *p<.01*).
- A very weak negative and significant correlation was found between Anxious/Ambivalent Attachment and Social Competence (r(373)=–.128, *p<.05*).
- A very weak negative and significant correlation was found between Anxious/Ambivalent Attachment and Family Cohesion (r(373)=–.188, *p<.01*).
- A very weak negative and significant correlation was found between Anxious/Ambivalent Attachment and Social Resources (r(373)=–.235, *p<.01*).
- A very weak positive and significant correlation was found between Secure Attachment and Self-Perception (r(373)=.180, *p<.01*).
- A very weak positive and significant correlation was found between Secure Attachment and Planned Future (r(373)=.238, *p<.01*).
- There is no correlation between Secure Attachment and Structured Style (r(373)=.068).

- A weak positive and significant correlation was found between Secure Attachment and Social Competence (r(373)=.441, *p<.01*).
- A very weak positive and significant correlation was found between Secure Attachment and Family Cohesion (r(373)=.124, *p<.05*).
- A weak positive and significant correlation was found between Secure Attachment and Social Resources (r(373)=.308, *p<.01*).

As the scores of married and divorced adults in the Adult Attachment Style Scale's Avoidant Attachment and Anxious/Ambivalent Attachment sub-dimensions decrease, the scores they get from all sub-dimensions of the Adults Psychological Resilience Scale increase. Points move in the opposite directions.

As the scores of married and divorced adults from the Secure Attachment sub-dimension of the Adult Attachment Style Scale increase, the scores they get from all sub-dimensions of the Adult Psychological Resilience Scale also increase. Points move in the same direction. (Hypothesis 3, accepted according to Table 3.)

Multivariate Linear Regression Analyses were conducted to determine whether the demographic factors of gender and marital status affect the dependent variables, if they do, in which direction and level. It was understood that there was no multicollinearity problem among the variables, and the Summary of Multivariate Linear Regression Analysis is given in Table 4.

Table 4. *Multivariate Linear Regression Analysis Summary Positive and Significant Predictions of Dependent Variables by Demographic Factors*

	Dependent Variables	*Gender*		*Marital Status*	
1	Mutual Happiness	-		-	
2	Avoidant Attachment	-		√	$R^2_{adjusted}$=.067
3	Anxious/Ambivalent Attachment	-		√	$R^2_{adjusted}$=.063
4	Secure Attachment	-		√	$R^2_{adjusted}$=.070
5	Self-Perception	-		-	
6	Planned Future	-		-	
7	Structured Style	-		-	
8	Social Competence	√	$R^2_{adjusted}$=.044	-	
9	Family Cohesion	-		-	
10	Social Resources	-		-	

Note: It was determined that Mutual Happiness, Self-Perception, Planned Future, Structured Style, Family Cohesion and Social Resources dependent variables were not positively or significantly predicted by gender and marital status demographic factors.

Table 5. *Independent Samples T-Test Results Regarding Variables*

	Marital Status	*Gender*	*N*	*X*	*Ss*	*df*	*t*	*p*
Mutual Happiness Levels		Female	290	3.92	.63	373	–1.198	.232
		Male	85	4.01	.61			
	Married		331	3.96	.61	373	1.748	.081
	Divorced		44	3.79	.72			

Significant at the 0.05 level (2-tailed).

It is seen that the Mutual Happiness Levels of women and men (t(373)=1.748 , p>.05) do not differ significantly according to marital status. (Hypothesis 4, rejected according to Table 5.)

It is seen that the Mutual Happiness Levels of married and divorced adults (t(373)=–1.198 , p>.05) do not differ significantly by gender. (Hypothesis 5, rejected according to Table 5.)

Table 6. *Independent Samples T-Test Results Regarding Variables*

	Sub-Dimensions	*Marital Status*	*Gender*	*N*	*X*	*Ss*	*df*	*t*	*p*
Adult Attachment Styles	Avoidant Attachment		Female	290	.51	.28	373	.461	.645
			Male	85	.50	.28			
		Married		331	.50	.27	373	–2.261	.024
		Divorced		44	.60	.29			
	Anxious/ Ambivalent Attachment		Female	290	.28	.23	373	.909	.364
			Male	85	.25	.21			
		Married		331	.26	.22	51.814	–3.039	.004
		Divorced		44	.38	.26			
	Secure Attachment		Female	290	.54	.26	373	–2.785	.006
			Male	85	.63	.27			
		Married		331	.58	.25	373	4.372	.000
		Divorced		44	.40	.29			

Significant at the 0.05 level (2-tailed).

It was found that the sub-dimensions of Adult Attachment Style, Avoidant Attachment (t(373)=–2.261 , *p<.05*), Anxious/Ambivalent Attachment (t(51,814)=–3.039 , *p<.05*) and Secure Attachment (t(373)=4.372 , *p<.05*), differed significantly according to marital status. (Hypothesis 6, accepted according to Table 6.)

It was determined that the sub-dimensions of Adult Attachment Style of married and divorced adults, Avoidant Attachment (t(373)=.461 , *p>.05*) and Anxious/Ambivalent Attachment (t(373)=.909 , *p>.05*), do not differ significantly by gender, while Secure Attachment (t(373)=–2.785 , *p<.05*) differs significantly. (Hypothesis 7, accepted according to Table 6.)

Table 7. *Independent Samples T-Test Results Regarding Variables*

	Sub-Dimensions	*Marital Status*	*Gender*	*N*	*X*	*Ss*	*df*	*t*	*p*
Psychological Resilience for Adults	Self-Perception		Female	290	3.93	.69	164.143	–1.194	.234
			Male	85	4.02	.57			
		Married		331	3.94	.66	373	–1.016	.310
		Divorced		44	4.05	.70			
	Planned Future		Female	290	3.80	.88	155.318	–2.228	.027
			Male	85	4.01	.76			
		Married		331	3.85	.86	373	.259	.796
		Divorced		44	3.81	.85			
	Structured Style		Female	290	3.75	.79	373	–.624	.533
			Male	85	3.81	.74			
		Married		331	3.75	.77	373	–1.232	.219
		Divorced		44	3.90	.79			
	Social Competence		Female	290	3.77	.75	373	1.776	.077
			Male	85	3.61	.71			
		Married		331	3.76	.73	373	2.172	.030
		Divorced		44	3.50	.83			
	Family Cohesion		Female	290	3.85	.75	162.838	–2.202	.029
			Male	85	4.03	.62			
		Married		331	3.93	.71	373	2.824	.005
		Divorced		44	3.61	.74			
	Social Resources		Female	290	3.97	.74	373	.108	.914
			Male	85	3.97	.68			
		Married		331	3.99	.73	373	1.339	.181
		Divorced		44	3.83	.73			

Significant at the 0.05 level (2-tailed).

It was found that men and women did not differ significantly in the sub-dimensions of Self-Perception (t(373)=–1.016 , *p>.05*), Planned Future (t(373)=.259 , *p>.05*), Structured Style (t(373)=–1.232 , *p>.05*) and Social Resources (t(373)=1.339 , *p>.05*) of Psychological Resilience for Adults, while there was a significant difference in the sub-dimensions of Social Competence (t(373)=2.172 , *p<.05*) and Family Cohesion (t(373)=2.824 , *p<.05*). (Hypothesis 8, accepted according to Table 7.)

It was determined that married and divorced adults did not differ significantly in the sub-dimensions of Self-Perception (t(164.143)=–1.194 , *p>.05*), Structured Style (t(373)=–.624 , *p>.05*), Social Competence (t(373)= 1.776 , *p>.05*) and Social Resources (t(373)=.108 , *p>.05*) of Psychological Resilience for Adults, while there was a significant difference in the Planned Future (t(155.318)=–2.228 , *p<.05*) and Family Cohesion (t(162.838)=–2.202 , *p<.05*) sub-dimensions. (Hypothesis 9, accepted according to Table 7.)

DISCUSSION, CONCLUSION AND IMPLICATIONS

It was found that Mutual Happiness Levels were related significantly to the sub-dimensions of Adult Attachment Styles: Avoidant Attachment, Anxious/Ambivalent Attachment and Secure Attachment, in maintaining a marriage, and this relationship were found to be in the same direction with Secure Attachment and in the opposite direction with Avoidant Attachment and Anxious/Ambivalent Attachment. (Hypothesis 1, accepted.)

Relationships can be a source of happiness and anxiety. Focusing and sharing positive events is very important in maintaining and satisfying a marriage. Marriages built with strong and secure relations feel deeper love. This situation is called happiness sharing. Attachment includes consistency in interaction, stability in relationship, and physical contact. The physical closeness established between the infant and the parent is used to describe how adults experience relationships with their romantic partners (Hazan & Shaver, 1987). The distribution of attachment styles may vary culturally. Attachment styles can change over time with new and different relationship experiences (Feeney, Noller & Roberts, 2000). There is a lot of research that shows that the vast majority of people are happier when they are connected than when they are not.

It was found that Mutual Happiness Levels are in the same direction and act together significantly with all sub-dimensions of Psychological Resilience for Adults in maintaining a marriage. (Hypothesis 2, accepted.)

Mutual close relationships are vital in maintaining a marriage. People, who take the time to build, strengthen and maintain relationships are happy. There is a positive relationship between happiness and love. Happiness is riveted with love. Love also develops altruism and empathy. Therefore, the mutual happiness that develops between the spouses expands the interest and builds healthy and psychologically resistant relationships. It is a fact that happiness is contagious. If the people we are in close relationship with are happy, we will be happy too (Fowler & Christakis, 2008). Happiness sharing allows building individual and social resources. Daily social support is a factor that increases happiness. Parameters that strengthen positive relationships such as interrelating, loving and feeling close are very important for social support. Psychological resilience and mutual happiness can be discovered, acquired, studied, developed, and make strengthen, balance, support each other, and also all people can have these characteristics, although it varies from person to person (Wood et al., 2011).

It was found that Adult Attachment Styles are associated with Psychological Resilience for Adults in maintaining a marriage, and this significant relationship is in the same direction with Secure Attachment and opposite with Avoidant Attachment and Anxious/Unstable Attachment. (Hypothesis 3, accepted.)

It is seen that psychological resilience and mutual happiness in maintaining a marriage have a positive effect on the individual in secure attachment, grasping their competences, realizing their goals and happy life.

It was found that Mutual Happiness Levels did not differ significantly according to marital status. (Hypothesis 4, rejected.)

It was found that Mutual Happiness Levels did not differ significantly by gender. (Hypothesis 5, rejected.)

Marriage is the most important of close relationships involving personal involvement, emotional attachment and constant interaction. Therefore, it is understood that the factors are ahead of affecting mutual happiness in maintaining a marriage rather than the demographic variables such as gender and marital status can be given for an example are the individual has issues such as irregular marriage and family relations, approach-avoidance conflicts, disorientation, and oscillation between clinging and

resentment (Carr, 2006). When the literature is scanned, it is seen that there are findings contrary to the research findings. There are researches findings that married people are happier than those who are divorced, separated, or never married (Diener & Diener McGarvan, 2008; Myers, 2000). The relationship between happiness and being married is valid in all countries and cultures (Stack & Eshleman, 1998).

In the national and international literature, it has been seen that the subject of mutual happiness is generally handled together with factors such as self-perception, empathic disposition and life satisfaction, and the studies that deal with demographic variables such as gender and marital status are very limited. There is a need for further research on mutual happiness and demographic variables together.

Although the spouses have similar views on being close and psychological resilience in the marital relationship, it has been determined that the perception of closeness and mutual happiness between men and women are different.

According to (Greeff & Malherbe, 2001), the emotional intimacy experiences of men and women are different from each other. For women, intimacy leads to satisfaction and happiness. On the other hand, men carry the effect of close relationship to other functional areas such as sexuality.

Mixed results are obtained in studies that examine mutual happiness in relationships according to gender differences. According to the surveys by (Cutrona, 1996), it indicates that men benefit from marriage more than women.

(Homans, 1961) pointed out that people who interact positively, as their interactions increase, they will like each other more, and their attraction to each other will increase. People have to be close to each other to be happy. According to this view, people in the same place will interact more often, find each other more attractive, which will increase their mutual happiness.

In a study conducted by (Acitelli, Rogers & Knee, 1999), it was revealed that women are more diligent than men because they think positively about their romantic relationships. However, positive thinking about the relationship, seeing oneself as a part of a couple, and the effects of having a couple identities on relationship satisfaction were found to be similar between men and women.

It was found that all sub-dimensions of Adult Attachment Styles differed significantly according to marital status. (Hypothesis 6, accepted.)

In studies conducted with married individuals, it has been revealed that those with the highest marital adjustment score have a secure attachment style, while those with the lowest adjustment score have an avoidant attachment style. Securely attached people are more resilient to adversity. Studies have shown that there is a negative relationship between insecure attachment styles and relationship satisfaction, and a positive relationship between secure attachment and relationship satisfaction (Feeney, 2002). As a relationship progresses, the attachment dimension also develops. Attachment is the declaration of an individual's intention to maintain the relationship. Observational studies have found that infants and parent interactions have an integrative effect.

It was found that Adult Attachment Styles did not differ significantly in the sub-dimensions of Avoidant Attachment and Anxious/Ambivalent Attachment according to gender, while it differs significantly in the Secure Attachment sub-dimension. (Hypothesis 7, accepted.)

According to the research findings, there was a significant gender difference in the secure attachment of married and divorced adults, since men can develop more stable and positive emotional relations than women. This difference is due to the characteristics of men and women and the difference in the values they give to their relationships (Burger, 2006). Studies show that father's love is as important as mother's love in the development and functionality of infants and children.

It was found that the Self-Perception, Planned Future, Structured Style, and Social Resources sub-dimensions of psychological resilience for adults did not differ significantly according to marital status, while the Social Competence and Family Cohesion sub-dimensions differ significantly. (Hypothesis 8, accepted.)

In divorce anxiety increases and health gets worse. Negative emotions are experienced, the individual is crushed and even risk factors for suicide may develop (Myers, 2000). When the literature is examined, it has been found that divorced people are in a worse situation than married people in many respects (Amato, 2000). It has been found that close relationships and family cohesion are very important parameters in maintaining a marriage. With the divorce, the regular family life deteriorates and the discord in the fragmented family structure emerges.

It was found that the Self-Perception, Structured Style, Social Competence and Social Resources sub-dimensions of psychological Resilience for adults did not differ significantly by gender, while the Planned Future and Family Cohesion sub-dimensions differ significantly. (Hypothesis 9, accepted.)

Divorce has negative economic consequences, especially since it reduces income for women (Barber & Eccles, 1992). It has been determined that the lack of social support causes a negative perception of women's happiness levels. Women seek social support when they are anxious or struggling with something.

It is thought that it would be meaningful to determine the effects of demographic factors such as age, occupation and duration of being married in a new research study. In addition, it is thought that it would be effective to conduct this study in a larger study group and in different cultures. It is predicted that conducting the same studies in focus groups consisting of married and divorced adults will contribute to reaching more inclusive findings with the aim of examining Mutual Happiness Levels, Adult Attachment Styles and Psychological Resilience for Adults in maintaining of a marriage.

In the research findings, it was seen that mutual happiness and attachment styles were significant predictors of the maintaining of marriage. From this point of view, seminars on mutual happiness, secure attachment and psychological resilience should be given by family counselors, information and psycho-education processes should be developed in order to develop and maintain quality relationships between spouses and thus reduce divorce rates.

Although there are valid and reliable scales evaluating the compatibility between spouses in our country, it is considered that scales specific to our culture should be developed in this regard.

AUTHOR CONTRIBUTION

This study was prepared by the first author under the supervision of the second author.

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Research Article

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Investigation the Relationship between Online Homework, Academic Success and Self-Regulation

Recep Kahramanoğlu, Assoc. Prof. Dr., Gaziantep University, kahramanoglu@gantep.edu.tr
0000-0001-6670-8165

Büşra Dursun, ELT Teacher, Ministry of National Education, busra_dursun92@hotmail.com
0000-0002-0266-7488

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Abstract

This research aimed to investigate the relationship between pre-service teachers' online assignments, academic success, and self-regulation skills. In this study, the correlational research design was used. The research was conducted with 124 pre-service teachers studying in different departments of Elementary Mathematics, Turkish, and Social Studies Teaching at Gaziantep University in the 2020-2021 academic year. Three extreme values were determined and the answers of a total of 121 pre-service teachers were used as data. The scale for assignment effort, the scale for reflective thinking ability and the assignment evaluation rubric were used as data collection tools. As the result of the research, it is seen that pre-service teachers' online assignment scores and average academic levels are high. When the assignment qualities of the pre-service teachers, their reflective abilities on teaching, assignment effort and academic success were examined in terms of department variable, the departments with the highest average academic success and reflexivity sub-dimension score were elementary school mathematics teaching, Turkish language teaching and social studies teaching respectively. It was also found that the assignment qualities of the pre-service teachers predict the academic success and assignment effort in a positive direction.

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INTRODUCTION

The ability to maintain and control thoughts, feelings, behaviors, and the social environment is known as self-regulation (Bandura, 1986). Learners can observe their own learning processes since self-regulation is a psychological activity. As a result, for many years, psychologists and social scientists working in the teaching-learning process, as well as educators, have been fascinated by the concept of self. People's concern about modifying their behavior, on the other hand, is new (Bandura, 1986; Zimmerman & Kitsantas, 2014; Zimmerman & Schunk, 2012). When a person observes a change in their behavior, it affects the learning and teaching process. By incorporating Bandura's Social Cognitive Learning theory, the concept of self-regulation (Zimmerman, 1995), which is new to the cognitive and social-cognitive research domains, has taken on a new dimension. According to Bandura (1989), when it comes to guiding their lives, people make use of the connection between mental processes and the environment. Individuals possess a self-control system that allows them to exert some control over their ideas, feelings, motives, and behaviors (Bandura, 1977). To some extent, the environment has an impact on behavioral development and socialization (Bandura, 1989). Individuals can take responsibility for their learning, test and assess their learning, and learn how to learn in this environment (Vermunt, 1995; Baumeister and Vohs, 2007).

Students can methodically arrange their learning through various regulatory processes using the notion of self-regulation and self-regulation tactics, which are widely recognized as one of the most significant determinants for success and performance. The sub-components of self-regulation, which is an umbrella concept, are metacognitive learning, self-observation, self-monitoring, self-evaluation, self-thinking, self-efficacy, sense of responsibility, motivation, motive, will, self-judgment, internal reaction, effort, and reflection (Ramdass, Zimmerman, 2011; Zimmerman & Martinez-Pons, 1990; Zimmerman, 2008; Stoeger and Ziegler, 2006).; Çiltaş, 2011; Ceylan, 2020; Eğmir, 2019). Other significant components of the idea of self-regulation include effort management and control of students' learning processes, self-evaluation of their learning, and learning reflection skills. Therefore, in the process leading to academic success, individuals taking their own learning responsibilities with homework, internalizing knowledge, developing self-efficacy skills, checking for previous achievements and background factors related to self-efficacy achievement (Kotoman, 2013), being willing to learn, learning motivations, time management, which strategies, methods and techniques can be used are closely related with self-regulation skills. To better understand the relationship between the concept of self-regulation and its components, we need to look at the background of related concepts.

SELF-REGULATION-HOMEWORK

Homework is viewed as one of the techniques to strengthen self-regulation skills of individuals (Corno, 2000; Ramdass & Zimmerman, 2011). If homework is properly planned and implemented, it can aid in the retention of knowledge, as well as the strengthening and deepening of knowledge. As a result, homework is critical in helping kids improve their metacognitive self-regulation (Dökmecioğlu, 2017). Students are using self-regulation skills while doing homework. For instance, they employ cognitive and metacognitive strategies to sketch the overall structure of the homework, describe the subject, and fill in the gaps before beginning an assignment (Ramdass & Zimmerman, 2011). In this way, students can control their learning and thus discover their shortcomings and weaknesses. Students with good self-regulation skills have a greater belief in their abilities and self-improvement, thus they have a greater belief in what they can do during the homework process. As a result of the fact that students who are aware of their learning process, aware of their abilities, and actively participate in the learning process can achieve the success they desire in their homework (Bembenutty and White, 2013). Researchers sought to better understand the significance of homework for academic success and to investigate the variables that link the two concepts. While some homework researchers suggest in their studies that homework improves academic performance, others disagree (Dillard-

Eggers et al. 2011, Sundgren, 2012); and others argue that it has a neutral relationship (Cooper et al., 2006), and some researchers even argue that homework negatively affects students in this regard (Bolat, 2016; McReynolds, 2005). It has been put forward that homework takes the students' rest time (Warton, 2019) and causes surfeit in the students (Kohn, 2007).

EFFORT-HOMEWORK

A concerted effort is being made to prevent failures, intervene in failures, and take appropriate action in the event of failure (Chen, 2002).It is a measure that defines how hard students work to achieve learning (McLeod, 1992).It is critical for academic achievement since it not only demonstrates accountability for completing objectives, but it also establishes a habit of using learning tactics on a regular basis (Pintrich et al., 1991).Individuals who can manage their effort should be able to withstand failures and take the necessary precautions in the event of a failure (Chen, 2002).The term "effort toward homework" was used in the study to describe students' focusing on homework while doing homework and regulating their attempts to complete their assignments without being influenced by other stimuli (Chen, 2002). Students with good self-regulated learning skills, according to Zimmerman (2005), can build their knowledge and skills independently and act independently in directing their efforts as necessary, even without the assistance of teachers, families, or peers.

Meyer (2005) defines homework as “research, learning or completing a task”. Achievements of students increase when they focus on assignments because they are naturally motivated and have solid study habits (Meyer, 2005). The key findings include the fact that homework effort has a better success relationship than homework duration. Trautwein (2007) found that homework effort was significantly and positively associated with both test grades and academic achievement of students in their study to evaluate the relationship between the time devoted to homework and the effort spent on homework. According to Trautwein (2007), the impact of homework on accomplishment is most likely attributable to the effort put in rather than the amount of time spent on it. High achievers are just as likely to be inspired to work harder on their homework.

REFLECTION-HOMEWORK

Students can learn from their experiences through reflection, which is a natural process (Dewey, 1963). Reflective thinking is a succession of interconnected and successive thoughts, rather than a simple list of thoughts (Dewey, 1963). It aids pupils in developing their ability to adjust to changing settings and gaining experience so that they can practice in these situations (Dewey, 1963). Reflective thinking and self-regulation are notions that influence and are influenced by each other at this juncture. While reflective thinking improves the depth and frequency with which a person's self-regulation behaviors are controlled, people who have this capacity also reassess their learning. Individuals who are able to assess their cognitive learning are better able to control their performance and conduct (Loizidou & Koutselini, 2007). Individuals with the ability to reflect can assess their actions and thoughts (Pajares, 1995; Bandura, 1991).

In a study of homework scores, Stoeger and Ziegler (2006) found that variables such as self-efficacy beliefs, learning goal orientation, and time management skills were associated with increased math performance in homework performance learning. Individuals who utilize self-regulation skills within the research's scope demonstrate significant improvements in homework effectiveness, time management skills, self-reflection skills, and mathematical performance skills.

SELF-REGULATION-ACADEMIC SUCCESS

According to the study's findings (Zimmerman, 2005), there is a substantial link between self-regulation and academic success (Zimmerman & Schunk, 2012). It has been demonstrated that kids that adopt self-regulated learning strategies in the learning process reach higher academic accomplishment than other students (Zimmerman & Martinez Pons, 1986, 1988, 1990). However, it is not enough for learners to have self-regulated learning skills. Information that is repeated and

reorganized for assignments under the individual's efforts also helps them succeed academically by improving their own motivation (Ghosh, 2011). At this point, self-regulation is a concept related to homework. Homework expectation evaluates "students' beliefs about the successful implementation of target-directed behavior" (Eccles & Wigfield, 2002) and assumes that self-regulation skills also affect homework expectations and output (Wigfield et al., 2015). This premise implies that homework and self-regulation are intertwined notions.

Meyer (2005) examined the use of self-regulation skills in homework to improve academic performance. In his/her research, which he accepted as dependent variables, percentage of homework completed and semester grade point average; he found that the percentage of homework completed was found to be significantly positively correlated with social studies academic performance. Teachers also indicated that once students' self-regulation interfered with assignments, academic achievement in social studies classes increased. Swezey (2004) argues that traditional education is insufficient in facilitating effective learning and that individual learning styles should be examined in the teaching process in his study to compare the effects of academic achievement, traditional assignments and learning style, self-awareness, and homework. While five studies (Dean, 2004; Meyer, 2005; Minotti, 2005; Pool, 2005) conducted in the United States examined students grade levels of homework and organization; some studies have examined how it affects the perceptions of teachers and students. Interventions include web-assisted assignments (Dean, 2004), self-regulated assignments (Meyer 2005), and learning style-based homework (Minotti, 2005). All of the self-regulated behaviors and environmental events in the learning process affect each other, and this can increase the academic achievement of individuals in certain ways (Kader & Eissa, 2015). So, in relation to findings from various research, when a homework assignment or editing is presented using an advanced pedagogical style or strategy, student achievement improves somewhat to moderately. Furthermore, students' motivation and self-esteem levels have been shown to have a considerable and positive impact on self-regulated assignments (Dean, 2004; Minotti, 2005).

ACADEMIC ACHIEVEMENT-HOMEWORK

Academic achievement is defined as a student's level of skill in relation to a specific curriculum or program (Cevizci, 2011). While academic success is defined as a student's ability to achieve a goal within the confines of a plan (Demirel, 2012), homework is one of the most basic activities associated with academic success in the learning-teaching process (Cooper, 2008). To ensure students' academic achievement, homework planned for an effective learning environment can provide a series of self-regulation exercises that can help students achieve academic success. In this regard, Özben (2006) found that homework improves students' academic progress in his/her education. In addition to providing successful learning settings, individuals can take on their learning responsibilities and increase their academic achievement by developing assignment study strategies, boosting their academic success, teaching effectiveness, and goal-achieving levels (Kara & Bay, 2016). From here we can conclude that there is a link between self-regulation skills and academic accomplishment arises. Individuals' taking responsibility for their learning with homework, internalizing knowledge, developing self-efficacy skills, being willing to learn, motivation to learn, time management, which strategies, methods, and techniques can be used, and their self-regulation skills have been the focus of this research in the process leading up to academic success.

CONCEPTUAL FRAMEWORK

Pre-service teachers who can organize their own learning through assignments will be able to understand their cognitive abilities and accept how they can further increase their academic motivation. From this point of view, when the research is analyzed, it is clear that when homework activities are accompanied by self-regulation abilities, students' academic progress and attitudes about homework improve (Aldosary, 1995; Schubert, 2004).While research on the idea of self-regulation is included in the worldwide literature, investigations conducted in domestic literature within the

framework of this concept still have limits (Arsal, 2009; Özmenteş, 2008; Taş, 2014; Üredi & Üredi, 2005). When looking at domestic studies that focus solely on the relationship between homework and academic achievement, it is argued that homework improves academic achievement (Büyüktokatlı, 2009; Genç, 2019; İyiöz, 2019; Şentürk, 2013), whereas in other studies, no significant relationship between academic success (Kapıkıran ve Kıran, 1999; Bora, 2018) has been found.

When the studies examining the relationship between homework and self-regulation skills, it is seen that if self-regulated learning level is increased, it is reflected in these assignments (Arıkan, 2020), students' metacognitive abilities are effective in homework and academic success (Deniz, 2019), it has been found that self-regulated learning increases students' desire to learn (Çokçalışkan, 2019). There are many studies conducted about self-regulation. Considering the findings of these studies, but the relationship between self-regulation and its sub-components, homework, and academic accomplishment has not been well investigated. This study is significant since it is the first of its kind at this time, it gives key data about the sub-dimensions of the self-regulation variable, and it will contribute to future research. This study is significant in terms of uncovering the link between online homework performance, self-regulation skills subcomponents, reflection and effort, and academic success among pre-service teachers.

When studying the relationship between homework performance, self-regulation skills, and academic success, it is clear that there are different variables across these concepts. The variables that fall between homework and self-regulation abilities have been discovered to play an important role in academic progress (Ainley & Patrick, 2006, Barnard, et al., 2009).

Based on this situation, the sub-components of self-regulation abilities (reflection and effort) were initially addressed in this study, and the relationship between homework performance, reflection, effort, and academic achievement was investigated.

In this study, it was aimed to examine the relationship between pre-service teachers' online homework and their academic achievement and self-regulation skills. In line with this purpose, answers to the following questions were sought within the scope of the research.

1. Is there a significant relationship between pre-service teachers' online homework score, reflection skills for learning, effort towards homework, and academic success?
2. Does online homework score of pre-service teachers predict academic success?
3. Does online homework score of pre-service teachers predict homework effort?

METHOD

RESEARCH DESIGN AND PARTICIPANTS

The association between online assignments, self-regulation skills, and academic achievement was examined using a correlational methodology in this study. The reason for using this methodology is to examine the relationship between variables without intervention. It was aimed to examine the co-changes of the variables within the scope of the research. The study included 124 pre-service teachers who studied in the Departments of Elementary Mathematics, Turkish, and Social Studies Teaching at Gaziantep University in the 2020-2021 academic year and took the Teaching Principles and Methods course. Of the pre-service teachers participating in the research, 89 (71.77%) were female and 35 (28.22%) were male. 30(24.19%) of the pre-service teachers are in the Turkish Language Teaching program, 57 (45.96%) are in the Primary Education Mathematics Teaching program, and 37 (29.83%) are in the Social Studies Teaching program. The average age of pre-service teachers is 20.

DATA COLLECTION

DATA COLLECTION TOOLS

In the study, the "Homework Effort Scale" was used to determine pre-service teachers' efforts towards homework, "Reflective Thinking Skills Scale" to measure their reflection skills for learning, "Homework Evaluation Rubric" to determine their homework performance, and year-end exam scores to determine their academic success.

HOMEWORK EFFORT SCALE

The scale was developed by Trautwein, Lüdtke, and Schneyder (2006) and was adapted into Turkish by the researchers of this study. The draft scale was administered to 207 pre-service teachers to examine the construct validity of the Homework Effort Scale, and 20 data were eliminated from the data set due to excessive values. Analysis was carried out with the remaining 187 data sets. With reference to the results of the analysis, the fit index values of the scale (MLR$\chi2$ = 21.248; df = 12; CFI = .96; GFI = .97; TLI= .93; RMSEA= .064; 90% CI [.008-.108]; SRMR = .063) was obtained. RMSEA ≤ .10 as a criterion for fit indices (Browne and Cudeck, 1992; MacCallum, Browne, and Sugawara, 1996; Kenny, Kaniskan, and McCoach, 2014); $\chi2/df < 5$; SRMR < .08; CFI, GFI, and TLI > .90 (Hu and Bentler, 1999; Kline, 2016). The fit indices of the measuring tool, which are used to compare the analytical results to the relevant criteria, are within acceptable ranges, and the scale has construct validity. In addition, item factor loading values ranged from .47 to.97. The internal consistency reliability coefficient of the measurement tool was calculated as 68.

REFLECTIVE THINKING SKILLS SCALE

Reflective Thinking Skill Scale was developed to measure the reflective thinking skills of the pre-service teachers. This scale was developed by the researchers of this study. As a result of the literature review, the "Reflective Thinking Skill Scale", a Likert-type draft scale consisting of 13 items and three sub-dimensions of students' reflective thinking skill levels at the end of a lesson, namely understanding, reflection, and critical reflection, was prepared based on Mezirow's (1977, 1981, 1985, 1991, 1992) view. Confirmatory factor analysis (CFA) was found sufficient to test the construct validity of the draft scale form, which was piloted with 207 individuals. Since 20 data are outliers, they were excluded from the data set. Analysis was carried out with the remaining 187 data sets. In line with the results of the analysis, since the factor load value of an item in the comprehension dimension was below 30, it was removed from the measurement tool and the 13-item scale form was reduced to 12 items. The fit index values of the 12-item scale were calculated as (MLR$\chi2$ = 113.247; df = 62; CFI = .92; GFI =.91; TLI = .93; RMSEA=.66; 90% CI [.047- .086]; SRMR = .069). The criteria used in the construct validity of the homework effort scale were used as criteria for the fit indices. When the findings of the analysis are compared to the relevant criteria, it may be concluded that the 3-dimensional measuring tool's fit indices are within acceptable bounds and that the scale has construct validity. In addition, item factor loading values ranged between.40-.75. The internal consistency reliability coefficient of the measurement tool was calculated using Cronbach's Alpha reliability coefficient. When the reliability coefficients of the sub-dimensions are examined, Cronbach's Alpha value for the whole scale was calculated as .803. Item-total correlation values ranged from .347 to .619.

HOMEWORK ASSESSMENT RUBRIC

This rubric, created by the researcher, was used to assess pre-service teachers' homework processes and content. The developed rubric has five dimensions, with each dimension's ratings divided into nine sub-dimensions. There are competencies determined in line with general teaching principles and the processes of planning teaching circumstances on the scale, which consists of the dimensions of time, completion, content, originality, and integrity (compatible). Some of the evaluation expressions in the rubric are as follows; the homework has been submitted by the deadline, all sections of the homework are relevant to the topic, the homework contains original information

throughout the entire process. Following the development of the rubric, two experienced specialists in the field of educational sciences with the titles of doctor and associate professor were consulted. Following the evaluations, certain illogical expressions were reorganized and rewritten in a more clear and intelligible manner. The purpose of the rubric was to see how well pre-service teachers performed their coursework on general teaching principles and how well they planned their teaching scenarios. In the prepared rubric, there are 1-4 levels for each step. The rubric's maximum and minimum points are 28 and 5 points, respectively. The scores collected from the rubric in this period were transformed to the hundred grade system to indicate the success of the students in relation to these scores.

DATA COLLECTION PROCESS AND ANALYSIS

During the research, data were gathered through scales and assignments applied online. During the data collection process, four homework were given to pre-service teachers at regular intervals. In the process, a total of 484 assignments were included in the homework evaluation and analysis process. Students, researchers, and lecturers used the distant education system to follow homework and homework contents during this study. On this system, interactions were carried out through the course and homework modules. The contents of the homework were read one by one and diligently graded with reference to the criteria at each level during the homework analysis procedure. By calculating the scores obtained from the rubrics, the participants' online homework scores were evaluated and accepted. Pre-service teachers who obtained full marks on all levels were awarded 100 homework points out of hundred-point system, and their grades were recorded. The students were informed about the findings of the analysis, and a rubric was created to help potential teachers with their next task. After the homework process, 124 out of 149 pre-service teachers filled in the 19-question scale applied to the pre-service teachers after the homework process. Three extreme values were determined and the answers of a total of 121 pre-service teachers were analyzed. The rate of participation in the survey was determined as 87.94%. The responses given for the sub-problems whose answers were sought were uploaded to the computer, and the appropriate statistical analyses were performed using the SPSS package program, all within the scope of the research. The Pearson correlation coefficient was used to calculate the extent of the link between online homework score, reflection, effort, and academic accomplishment. Simple linear regression analysis was used to measure the level of accuracy in predicting academic accomplishment of online assignments and homework effort.

Before performing the regression analysis, to determine whether the assumptions of performing the regression analysis are met;

1. Look at the linear relationship-Scatter diagram.
2. Covariance-Scatter diagram is checked.
3. Independent errors-Durbin-Watson value is expected to be around 2.
4. Normality -QQ plot (Zach,2020)

It was determined from both the Scatter diagram and the correlation analysis that there was a linear relationship between the variables. The homogeneity of the residual values can be called homogeneous distribution, and it was observed in this study to be homogeneously distributed as well. For independent errors, residual values are expected to be independent, which is determined by the Durbin-Watson test. In this study, the Durbin-Watson value was calculated as 1.96. Finally, the data are normally distributed since the data are cleaned and outliers are cleaned before regression analysis is performed (Skewness value varies between -.755 and -.240 and Kurtosis values range from -.315 to -.580)

FINDINGS

FINDINGS RELATED TO THE FIRST SUB-PROBLEM

Findings related to the first sub-problem of the study, "Is there a significant relationship between online homework score, reflection skills for learning, effort towards homework, and academic success?" are given in Table 1.

Table 1. *Results of Correlations between Pre-Service Teachers' Online Homework Scores, Learning Reflection Skills, Homework Effort, and Academic Success Levels*

Variables	*Online Assignment*	*Academic Success*	*Reflection*	*Effort*
Online Homework Score	1	0.289**	0.094	0.189*
Academic Success Score		1	-0.001	-0.079
Reflection Skill			1	0.385**
Level of Homework Effort				1

N=121; *p<0.05; **p 0.01(2-Way)

It has been discovered that there is a low-level positive and substantial association between pre-service teachers' online homework and their academic success, learning reflection skills, and homework effort. There is no link between pre-service teachers' academic performance ratings and their ability to reflect on their learning or their degree of homework effort.

FINDINGS RELATED TO THE SECOND SUB-PROBLEM

Regarding the second sub-problem of the study, "Does online homework score predict academic success?", it was tried to determine the predictive power of pre-service teachers' online homework scores on their academic success. Table 2 shows the results of simple linear regression analyses used to see if the independent variable significantly predicted the effect on academic success.

Table 2. *The Effect of Pre-Service Teachers' Online Homework Scores Variable on Academic Performance Scores was Predicted Using Simple Linear Regression Analysis*

Dependent Variable	*Independent Variable*	*B*	*Standard Error*	*β*	*t*	*P*
Academic Success Score	*Online Homework Score*	*62.463*	*4.971*	*0.289*	*12.566*	*0.000**
R= 0.289	R^2= 0.084	Adjusted R^2 = 0.076	F= 10.883	P= 0.001		

N=121; **p< 0.01

When Table 2. is examined, the effect of the online homework score on the academic achievement score is seen. In accordance with the results of the regression analysis, it was determined that the online homework scores of the pre-service teachers participating in the research had a statistically significant effect on their academic achievement scores (F=10.883, p=0.000). It has been discovered that the online homework scores of teacher applicants predict their academic accomplishment scores. On the effect of online homework scores on academic performance scores, it has an 8% variance explanation rate (R^2=0.084). Accordingly, it can be said that about 0.1% of the variance explained for academic achievement scores is due to online homework scores.

FINDINGS RELATED TO THE THIRD SUB-PROBLEM

Regarding the third sub-problem of the study, "Does online homework score predict homework effort?", it was tried to determine the predictive power of the online homework scores of the pre-service teachers for the homework efforts levels. The findings of simple linear regression analyses were used to see if the independent variable significantly predicted homework effort; the results are shown in Table 3.

Table 3. *Simple Linear Regression Analysis Results Regarding the Prediction of the Effect of Pre-Service Teachers' Online Homework Scores Variable on Homework Effort Level*

Dependent Variable	*Independent Variable*	*B*	*Standard Error*	*β*	*t*	*P*
Effort Level	*Online Homework Score*	*3.228*	*0.233*	*0.189*	*13.863*	*0.000***
R = 0.189	R^2= 0.036	Adjusted R^2 = 0.028	F= 4.407	P= 0.038		

N=121; **p< 0.01

With reference to the results of the regression analysis, it was determined that the online homework score of the pre-service teachers participating in the research had a statistically significant effect on their level of effort towards homework (F=4.407, P=0.000). It has been discovered that pre-service teachers' online homework results predict their homework efforts. The effect of the online homework score on the level of effort has a variance explanation rate of 4% (R^2= 0.036). Accordingly, it can be said that approximately 0.04% of the variance explained for the level of effort towards homework is due to the online homework score.

DISCUSSION, CONCLUSION AND IMPLICATIONS

Within the scope of the study, the relationship between online homework score, reflection skills for learning, effort towards homework, and academic success was examined, and it was determined that the academic success score averages of pre-service teachers were higher than online assignment score averages in accordance with the descriptive statistical values obtained from the online homework scores, reflection skills for learning, effort towards homework, and academic achievement data. This could be because pre-service teachers regard the exam, which is intended to assess academic achievement, as a more reliable assessment criterion and devote more time to studying for it. In the literature, studies on the association between homework and academic accomplishment may be found, but studies on the sub-components of self-regulation skills, reflection, and effort are scarce. It has been stated that the attitudes of students with high self-regulation skills towards the course differ positively (Ceylan, 2020). It is thought that one of the ways to develop self-regulation skills is homework (Trautwein & Koller, 2003). Homework is vital for pupils to develop responsibility skills and boost academic success, according to Genç (2019). Dignath and Buttner (2008) think that developing self-regulation in students should be among the primary goals of education.

Regueiro, Núñez, Rodríguez, Piñeiro, and Rosário (2016) stated in their study that there is a positive relationship between completing the homework given and student achievement. It is believed that homework prepares students for class, and homework promotes student success by making the learning more permanent. By understanding the path followed during the homework process and commenting on the process outputs, students can transfer their experiences for their further learning. According to Büyüktokatlı (2009), students who do homework regularly are more successful than those who do not. Homework is regarded to be useful in making knowledge permanent and filling in knowledge gaps, as well as supporting one another. Homework also improves students' ability to do it by reinforcing their weaknesses (Cooper, 2008).

In line with the correlation analysis between online homework performance, reflection skills for learning, effort towards homework, and academic success, it was found that there was a low positive relationship between pre-service teachers' online homework performances and academic success and homework effort, reflection skills for learning, and homework-oriented effort levels. Other variables such as age, class level, working habits, homework duration, amount of homework, and absence of parallel content of assignments and tests may have contributed to the low relationship. When the studies conducted at home and abroad are examined, some studies investigating the effectiveness of homework on the academic performance show that homework increases academic success (Üstünel,

2016; Olpak, 2013; Akbaba & Tüzemen, 2015; Trautwein, Niggli, Schneyder, & Lüdtke, 2009), while others show that it does not increase (Hoover-Dempsey, 2001; Voorhis, 2003). A minimal level of association was established between online homework results and academic performance scores within the scope of the study. There are studies in the literature that support this view. According to Hoover-Dempsey et al. (2001), although assignments are included in the learning process, the link between them and academic success is not clear and strong enough. Voorhis (2003) stated that the relationship between academic achievement and homework cannot be explained by causality. Cooper et al. (2006), there is no evidence that homework activities increase the academic performance of primary school students. Baker and LeTendre (2005), on the other hand, stated that countries with less homework in the education system are more successful academically. While a number of studies suggest that assignments may not improve academic achievement, others suggest that they do. It is noted, however, that homework that is appropriate for the student's level and helps the learning process promotes academic performance (Trautwein, 2007; Üstünel, 2016; İyiöz, 2019; Genç, 2019). Yalçın (2019), according to his study, stated that regardless of traditional or online homework, it positively affects the academic achievement of students. Özer and Öcal (2012) concluded in their study, that students participating in the research had positive opinions about homework and that homework positively affected their academic achievement. One of the reasons why the results of these research differed and a consistent conclusion could not be reached is because it is impossible to control the variables that influence academic accomplishment, and the quality, volume, and purpose of the homework assigned differ from one study to the next.

In the regression analysis that looked at the effect of the variable of pre-service teachers' online homework scores on their academic achievement scores, it was determined that the online homework scores of the pre-service teachers who took part in the study had a statistically significant effect on their academic achievement scores. It was concluded that the online homework score significantly predicted academic achievement with 8% variance explanation rate. When variables such as homework motivation, individual differences, homework quality, and attitude toward homework affect the association between homework and academic achievement, it can be concluded that not only homework but also these homework-related mediating variables have predictive potential.

The online homework score of the pre-service teachers had a statistically significant effect on the degree of homework effort, in accordance with the regression analysis in which the online homework score predicted the effort toward homework. It was concluded that the online homework score significantly predicted the level of effort towards homework with a 4% variance explanation rate. The fact that pre-service teachers are aware of what they can and cannot do to achieve academic goals clearly reveals the statistical effect between these variables. Kaya (2020), on the other hand, found a positive relationship between mathematics achievement and homework completion effort only in the 5th grade. In his/her study, Taş (2013) found that students who do their homework with as much effort as possible have more successful course grades. Willingness and efforts of individuals to reach the goal affect their academic success (Liu & Koirala, 2009). Piñeiro and Rosário (2016) stated in their study that there is a positive relationship between completing homework and students' success. Students need to develop methods and techniques suitable for them so that they can take their learning responsibilities and carry out self-regulated work (Yılmaz, 2013).

AUTHOR CONTRIBUTION

- First author has made a substantial contribution to the conception and design, acquisition of data as well as the analysis and interpretation of the data,
-The second author has made a substantial contribution to the conception and design as well as the analysis and interpretation of the data.

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Necessity, Dissuasive, and Effects of Teachers' Discipline Punishments from Principals' Perspectives*

Davut Elmacı, Assist. Prof. Dr., Amasya University, davut.elmaci@amasya.edu.tr
0000-0001-9712-0727

Bilgen Kıral, Assoc. Prof. Dr., Aydın Adnan Menderes University, bilgen.kiral@adu.edu.tr
0000-0001-5352-8552

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Abstract

This study was aimed to determine the necessity, dissuasive, and effects of disciplinary punishments on teachers according to the views of the school principals. It was conducted based on a qualitative research approach and case study. Participants were 20 school principals from various school types in the 2020-2021 academic year in Amasya city center, Turkey. A semi-structured interview form designed by the researchers was used to collect the data. The data was analyzed based on content analysis. Findings were gathered under four main themes; necessity, dissuasive, effects, and suggestions. Findings show that existing disciplinary regulations are not functional enough. In the study, the type and personality of the offense are seen as important factors in the dissuasion of disciplinary punishments against teachers. Reasons such as the ineffectiveness of the existing disciplinary regulations, the security of the civil service as a profession, and the effects of pressure groups emerge as factors that prevent the dissuasion of disciplinary punishments. It is considered necessary by school principals to make more functional discipline regulations, to focus on discipline regulations specific to the education and teaching profession, and preventive studies. Personality type, type of offense, school type, and dysfunctional disciplinary arrangements are effective in the emergence of situations requiring disciplinary punishment. There is a need for disciplinary arrangements that are suitable for today's developments and include educational-specific rules. existing disciplinary regulations are not functional enough. As a result of the research, suggestions were given in line with the findings.

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INTRODUCTION

Education directly affects the development and advancement of all the countries. It determines the future of the countries and combines people's traditions (Kepenekci, 2011; Vardi & Weitz, 2004) and contemporary values in harmony (Carr, 2006). For this reason, it is a very important process in which both developed and new developing countries are emphasizing with great sensitivity. The success of an education system depends on the quality of the teachers and other personnel who will operate the system (Page, 2013), being open to innovation, self-improvement, making learning a lifestyle (Osborne & Russo, 2011), and the compliance of the employees with the rules determined by the system (Çağlar, 2006). Because, as in any organization, there are some rules (Carr, 2006) that education employees have to follow and these rules are necessary for the organization to work more efficiently and reach the targets more quickly (İlgar, 2005). The rules are necessary for the organization to work more efficiently and achieve the objectives more quickly (Jucius, 1979). When organizational problems arise, some measures can be taken by the administration responsible for managing the organization according to the specified objectives (Bursalıoğlu, 2015). Sanctions against individuals who contradict the objectives of the organization (Eckes & Russo, 2012), deviate from these objectives or slow down the achievement of these objectives are provided through discipline procedures (Anthony et al., 2002). Educational institutions continue to operate in line with the legal texts determined by the state (Kıral, 2019). Teachers and administrators working in schools are also obliged to comply with the disciplinary rules set by the state (Kepenekci, 2011). If they do not comply with these legal texts, they may receive some penalties (Banter, 2003). What these penalties are is also given in these legal texts (Kepenekci & Taşkın, 2019). In this study, the concept of discipline and the legal texts in Turkey for teachers were examined and then the research findings are given.

DISCIPLINE

The discipline is the force that enables employees to behave (Kepenekci, 2011) according to the rules and order of the organization by believing and desiring (Greenberg, 2005). Discipline is used in daily life order (Russo & Gregory, 1999). Discipline is all of the activities aimed at controlling the behavior of individuals or groups in order to achieve the goals of education (Dessler, 1978; Boyd, 1968). Discipline is the power (Eckes & Russo, 2012) that enables employees to behave in accordance with the rules and order of the organization by believing and willingly (Cole, 2002). In a broad sense, the discipline is the rules and measures taken to ensure that people live in harmony (Kepenekci & Taşkın, 2019). Institutions all over the world have established discipline mechanisms that result in punishments when their rules are broken (French, 1978). Every institution has to apply the discipline rules in order to realize its aims (Başaran, 2000). Discipline supervisors have important duties in achieving this goal (Russo & Gregory, 1999). Organizations use the punishments method to adopt the desired and expected behaviors to the employee and to prevent the unwanted behaviors and provide discipline (Greenberg, 2005).

The discipline means creating a suitable environment for teaching today (Alderman, 2001). Discipline is mostly expressed as acting in accordance with legal regulations and controlling it (Cole, 2002). The main purpose of the discipline is to change behavior as in education (Dessler, 1978). If the employee acts undisciplined or commits a discipline infraction, various criminal mechanisms are introduced discipline infraction, non-compliance or incomplete observance of legal texts (Zirkel, 2014). It can be described as acts that prohibit the rules of law and impose punishments sanctions on the execution or non-execution (Dessler, 1978). Discipline offense is the offense that arises as a result of the non-fulfillment, incomplete or timely fulfillment of the duties and responsibilities of the public personnel in order to ensure continuity in the public service and in the public interest (Arıca, 2000). The punishments for discipline offenses (Osborne & Russo, 2011) are necessary to ensure an equal working environment in the organization (Zirkel, 2015). The aim of the discipline is not to infamise or

humiliate the employee (Eckes & Russo, 2012) when he/ she encounters a violation of the rules; behavior is made for all kinds of correction (Boyd, 1968).

There are laws and regulations to ensure that public duties and services are carried out in an orderly, timely and proper manner (Carr, 2006). They impose a number of responsibilities on government officials at home or abroad (Vardi & Weitz, 2004). According to these legal texts, administrative sanctions are applied to those who do not fulfill their responsibilities (Osborne & Russo, 2011) to perform prohibited works, according to the nature and severity of the situation (Kraska & Seçkin, 1995). In short, discipline measures are applied (Sorguç, 1992).

DISCIPLINARY PUNISHMENTS IN TURKEY

Discipline punishments are intended to ensure that officials working in public institutions perform their duties within their authority and responsibilities and to prevent them from taking actions that disrupt the conditions and working environment provided for working order (Boyd, 1968). Discipline rules and punishments concern all civil servants as teachers, principals, etc. who are employed in public in Turkey (Turkish Ministry of National Education, 2000). Discipline punishments have five basic functions These are "providing institutional order, protection, training, cleaning/purification and intimidation/deterrence" (Ünal, 2012). Discipline punishments to realize public interest it ensures the continuity of the institutional order (Greenberg, 2005), clarify the rights and duties of civil servants (Başar, 1993). It provides both individual and professional legal security. If the officer commits the same crime again through the discipline punishment. This behavior is tried to be prevented (Turkish Ministry of National Education, 2000).

Disciplinary punishments against teachers are given to be made in accordance with the Civil Servants Law No. 657, which includes general regulations for all civil servants. The punishments are admonition, condemnation, deduction from monthly salary, stopping the progress of seniority, expulsion from state service (657/ Article 125). These are: (1) Admonition and condemnation: While the admonition (warning) is notified to the training personnel in writing that they should be more careful in their duties and behaviors; condemnation is to declare in writing that it is defective in its duties and behaviors. The teacher makes mistakes, admonition is done in the first time, if continues, condemnation punishment is given. (2) Deduction of monthly salary: The punishment as the deduction of salary shall be deducted from one day to fifteen days according to the degree of the act. It is the reduction of the salary of the officer between 1/30-1/8. No more deductions on salary are made. (3) Stopping the progress of seniority: In Turkish education system the teacher has seniority as years. E. g. if the teacher spends 11 years as a teacher, his/her seniority is 11 years. If this punishment is given, his/her seniority progress stops. (4) Expulsion from state service: It can be defined as dismissal not to be appointed to a state service. He/she is never taken for the state post. S/he behaves bad manner for the rules of the Law 657, s/he disrupts the peace, quiet and works order of the institutions for ideological or political purposes, makes boycott, does not serve for a total of 20 days in a year without excuse; commits a crime against Atatürk and Republic of Turkey, this punishment shall be imposed. In addition of these, the Disciplinary Regulation for State Officers (2021) is also prepared and applied for government officials in Turkey. In this disciplinary regulation, defects, misdemeanors, crimes and penalties is very detailed.

SOME COUNTRIES' APPLICATIONS AND RESEARCHES ABOUT TEACHERS' DISCIPLINARY PUNISHMENTS

Disciplinary punishments given to teachers do not exist only in the Turkish education system. All states impose various disciplinary punishments on teachers who disrupt the order and do not comply with the rules in various legal texts. In the United States, there are disciplinary actions and ethical rules in all states. E. g., in Ohio, if an educator violates the rules, s/he takes suspension (one day to several years), a license suspension, admonishment letter up to revocation/denial of a license, etc. Educators should manner as professionals. They should show on their activities as status and basis of the education profession (Licensure Code of Professional Conduct for Ohio Educators, 2019).

In United Kingdom, a teacher may be disqualified from the teaching profession if he or she does not comply with professional standards, conflicts with the standards of personal and professional behavior expected of a teacher, or jeopardizes the safety of students (Teaching Regulation Agency, 2020). Teachers in Kenya who violate the provisions of the Code of Regulations for Teachers and the Code of Conduct and Ethics face disciplinary action, warning or interdiction, etc. School administrators may firstly issue a verbal warning or caution the teacher in writing on minor breaches. In case of persistent fault, disciplinary action may be increased against him/her. Teachers interdicted on cases of incitement, insubordination, infamous conduct, and negligence of duty are paid half of their salary during the time of interdiction in Kenya (Teachers Service Commission's in Kenya, 2021). The Japan Ministry of Education enforces strict "preventative measures such as banning private interactions between teachers and their students on social media." Loss of job, suspension, and salary cut penalties are given to these teachers (Ministry of Education, Culture, Sports, Science and Technology-Japan, 2021). It is seen that countries take some punitive measures to protect children, families, society and education system. Countries want to secure children and their education system with various rules and penalties for those who do not comply with these rules.

There were some researches about discipline for teachers in Turkey and other countries about this subject. E. g., studies in Turkey, Kraska and Seçkin (1995), the most common disciplinary offense committed by teachers is absenteeism or late arrival; in Beşirli's (1997) research, the most common disciplinary offenses are not making a plan in primary schools, indifference to one's duty in secondary schools, and acting imperfectly and irregularly. It has been concluded that the penalties given are mostly condemnation and deduction from salary, and expulsion from state service. In Karataş' (2000) research, it was found that the most disciplinary offense was committed for not complying with the dress code, and the teachers were most punished with admonition and condemnation; in Çağlar's (2006) study, it was found that teachers committed the crime of union actions the most, deduction from monthly salary; in Gözcü's (2008) study, novice teachers in the early years of their profession had more information about disciplinary punishments and made more efforts to avoid disciplinary punishment; it was concluded that teachers who are approaching retirement commit more disciplinary offenses.

In Turkey, there were 4710 teacher discipline investigations in 2019. There were 1081 admonition, 2041 condemnation, 414 deduction of monthly salary, 209 stopping the progress of seniority, 17 expulsions from occupation teacher discipline punishments in total Turkey (Ministry of National Education Administrative Annual Report in 2019, 2020). Taş and Kıroğlu's (2019) researched the teacher discipline punishments from 2010 to 2016 years in Ordu. There are 32,747 teachers in primary schools and 2.97% of these had discipline offenses. The most discipline offenses were "the duty have not fulfılled the procedures and legal text." It is determined that 66% of them were male, others were female. Gezer (2015) has examined teachers discipline offenses from 2005 to 2012 years in Çanakkale. There are 22,417 teachers. 0.82% of these have had punishment. Gezer's (2015) research showed the male teachers discipline offences more than female just like Taş and Kıroğlu's (2019) and Çağlar's (2006) research. The teachers 16 years and above seniority have much discipline offenses than 5 and below years teachers.

Barrett et al. (2006) study shows that educators' violations are wrong behavior about sexual implication, sharing improper or private information with students and replacing grades for favors. Page (2013) examined 300 disciplinary orders to the teachers issued by the General Teaching Council of England 2009-2011. The results of the study are two central categories as misconduct. The crimes category covered all unlawful behaviors, such as crimes about drugs, kinds of violence, crimes of driving, cheat, and types of abuses. Internal misconducts are such as wrong relations with students, misusage of technology, inappropriately withholding data, fiddling with data, and defeat to sustain student health and safety. In addition, he found that 70% of male teachers have disciplinary penalties.

Zirkel (2014) examined educator penalties by the Kentucky Education Professional Standards Board during the 2005-2006 year. He found 500 instances of licensure sanctions, of which 70% were reprimanded, 15% were suspended, and 15% were revocations. Hartley and Cartwright's (2015) examined counselors. There were 25% of ethics violators received reprimands, 13% received probations, 13% received suspensions, and almost 42% received revocations. Zirkel (2015) examined cases that resulted in the cancellation or suspension of the license of educators between 1985 and 2014. Results included that approximately 45% of the violations were included sexual bad behaviors, child misuse or hazard, robbery, aggression, or alcohol offenses. Finally, violations show 12% of the arbitrated behaviors The offenses covered being fault to assure student protection, wrong reporting of information, and maintaining professional goodness. He directed only on license suspension and cancellation, to the exclusion of condemnation or other less impactful sanctions. Apgar (2018) examined teacher penalties who have in ethical code infractions in the teaching profession in eight US states. The findings showed that the highest number of penalties teachers was young, male, with physical education and health teachers. The most known ethical infractions are sexual harassment of students, physical attack towards students, and endangering student physical health and their safety. As a result of these, it has been determined that disciplinary penalties such as License or Certification Sanctions are given.

When the literature is examined, it can be said that the researches (Seçkin, 1990; Seyhani et al., 2009, etc.) on discipline infraction and discipline punishments are generally aimed at determining the relationships between the awards and punishments received by teachers (Çelebi, 2009). In addition, there are studies where discipline offenses and discipline punishments are handled only on the basis of managers (Çelebi, 2009; Öter 2002; Terzi, 1996) or only on the basis of teachers working in secondary education institutions (Çelik, 1998; Seçkin, 1990). There are also studies based on the literature review of discipline law and civil offenses (Erdogan, 2010; Güneşleyici, 2010; Orman, 2011; Uygun, 2012, etc.). Knowing the discipline infractions committed by teachers (Page, 2013), the most important element of the education system, and the punishments that may result from them, may ensure that discipline offenses are not committed (Osborne & Russo, 2011). For these reason the research is considered to be important.

It is thought that revealing the necessity and deterrence of disciplinary punishments according to the opinions of school administrators will support the policymakers who prepare the punishments. In addition, determining the impact on the teacher will be beneficial for both students, the education system, and the society. Because a happy teacher will be more successful. Because they will be monitors for their students. According to the results of the research, superintendents will take the necessary measures, the approaches to defects and crimes will be more positive. This research was conducted to examine disciplinary punishments, and effects applied to teachers. This is the basis of the basic aim to respond to the following questions.

1. How are the necessity, dissuasive, and effects of disciplinary punishment for teachers according to school principals?

2. What are the suggestions on disciplinary punishments of school principals?

METHOD

RESEARCH DESIGN

This research was conducted based on qualitative research approaches and a case study. The study focuses on determining the effects of disciplinary punishments on teachers concerning the opinions of school principals. The case in the study was determined as disciplinary action against teachers. The effects of disciplinary actions on teachers were tried to be determined according to the

opinions of school principals. According to Merriam (2009), case studies are used to expand readers' experiences, discover new meanings or confirm what is known.

PARTICIPANTS

The research participants are 20 school principals from various school types in the city center of Amasya. Nine of them are vice principals and 11 are principals. Two of all participants are female and 18 are male. Participants were determined according to convenience and criterion sampling methods. It was determined as a criterion for teachers to be experienced in disciplinary procedures. In this context, one of the researchers visited the schools that could be visited daily, informed the participants about the research; some participants did not participate in the research by stating that they did not have enough experience about the situation, and interviews were held with those who were willing to participate in the research. Only one participant from each school was interviewed, but since one participant in one of the schools specifically wanted to take part in the research, two participants were interviewed in this school. The ages of principals range from 30 to 60 years.

DATA COLLECTION

Research data were collected in the 2020-2021 academic year. A semi-structured interview form designed by the researchers was used to collect the data. A draft interview form was created by the researchers through literature review. Opinions of two experts from the field of educational administration were taken about this form and a pilot interview was made with a principal. It was decided that the interview form was working. In the interview form, four questions were asked about (1) what school administrators think about the necessity of disciplinary punishments against teachers, (2) what they think about the deterrence of disciplinary punishments against teachers, (3) what they think about the effects of disciplinary punishments against teachers, and (4) their opinions and suggestions, if any. Before starting the data collection, ethical approval from one of the researcher's university was obtained. During the data collection process, the researchers acted upon the COVID-19 measures declared by the authorized institutions. Face-to-face interviews were conducted with 18 participants, and online interviews were carried out with two participants. Before the interviews, the participants were informed, and their consent for participation was obtained. With the consent of the participants, the interviews were recorded as audio recordings. Interviews with four participants were recorded by taking notes.

DATA ANALYSIS

Analyst variation, participant verification (Merriam, 2009) and direct quotations were used in this study. Content analysis was used in the research, and categories and subcategories were created by the researchers for the purpose (Yıldırım & Şimşek, 2005). Then, coding was done, and for each sub-problem, categories and sub-categories were created according to the opinions of the participants. MS Word and MS Excel programs were used in the coding and analysis of the data. The data was analyzed based on content analysis. The analysis was continued until the agreement between the two researchers in themes and coding was achieved, and full agreement was ensured between the researchers.

TRUSTWORTHINESS, VALIDITY, AND OBJECTIVITY

After the collected data was written down, it was sent to the participants, and their confirmation as obtained. Three randomly selected data from the research data were coded by someone other than the researchers, and the agreement between the coders was calculated as 92% according to the Miles and Huberman (1994) formula. This ratio shows that the research is reliable. Besides, two colleagues, one experienced in qualitative research and the other in school administration and disciplinary

investigations, were asked to examine the research findings, and their opinions were also considered in the data analysis and the presentation of the findings. While presenting the findings, direct statements of the participants were also included in the relevant parts of the research.

RESEARCHERS' ROLE

The researchers acted in accordance with scientific and ethical principles while collecting, analyzing, and reporting the entire study. In short, they completed the research by complying with the principle of confidentiality in an impartial manner and away from prejudices at every stage of the research. The research started with the permission of the ethics committee and the national education directorate. Interviews were held face-to-face or online, voluntarily, at the request of the participants, on the day, time, and place they planned. No coercion was applied to the participants in the study, and no attempt was made to direct their opinions. In the study, each of the participants was given code names such as Umut, Dursun, and Irmak, and the participants' identities were kept confidential. While participant opinions were mentioned in the study, statements that would reveal school and participant information were excluded from the study.

FINDINGS

As a result of the data analysis, the research findings were gathered under four main themes: necessity, dissuasion, effects, and suggestions.

NECESSITY

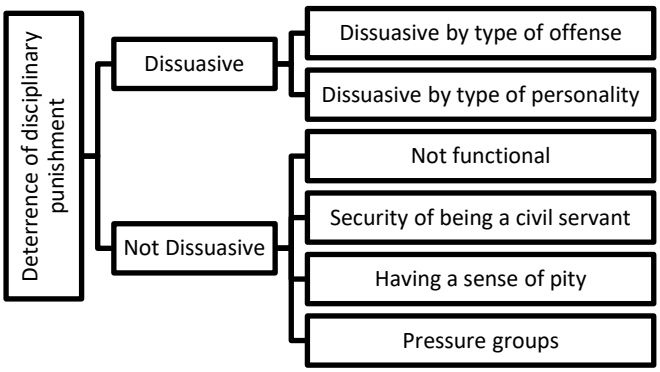
Opinions on the necessity of disciplinary punishments against teachers are discussed in two categories as necessary and not necessary. The necessity of disciplinary punishments is seen primarily as a requirement of human nature. E. g., Umut states this situation as indicating, *"If a crime is going to occur due to the nature of human life, that crime must also be punished."* expressed as Dursun, on the other hand, expressed his opinions saying, *"I wish there was no punishment, even if these things were not implemented, people would follow certain rules and do the things they were going to do properly. But we are human after all; sometimes we need to be bored, sometimes we need to be warned."*

One justification for those who state that disciplinary measures are unnecessary is that they do more harm than good. Yasin expressed this situation as follows: *"So I think it is something that will do more harm than good for me. Another reason why disciplinary punishment is unnecessary is that someone who will commit disciplinary punishment should not be a teacher anyway."*

DISSUASION

Opinions on the deterrence of disciplinary punishments against teachers are grouped in two main groups: dissuasive and not dissuasive, as seen in Figure 1.

Figure 1. *Deterrence of Disciplinary Punishments*



As seen in Figure 1, according to the participants' opinions, the effect of the type of offense and personality type comes to the fore in the deterrence of disciplinary punishments.

> Umut: *People's opinions on punishment cannot be the same for once.* Some officers say, *"I got a warning; what will happen?"* and they don't care. Others think of the warning as a stain on their record, and they are afraid of it. But not everyone thinks the same.

> Mutlu: "*There are actions that we call disgraceful crimes in our society. For instance, God forbid, there is a theft, something related to money or morality, so this is something that people really don't want to encounter in society. Nobody wants to be subject to such an administrative investigation."*

> Yener: "*Since there is not only one type of punishment, it has a dissuasive effect depending on the subject that caused the punishment."*

The main reasons for the deterrence of disciplinary punishments are that it creates an obstacle to being appointed as a school administrator and the concerns that it may happen to candidates of such duties in the future or that they may be punished more severely:

> Kudret: "*The intention of the person, if he is in the deputy director, administration, or similar things, can be a binding of the punishment. Sometimes, when you look at the nature of the punishment or the proposed punishment, the teacher may think that it can happen to him."*

On the other hand, the view that disciplinary punishments are not dissuasive was emphasized more than the view that they are dissuasive. Participants think that disciplinary punishments are not functional and therefore not dissuasive because they cannot be applied correctly in accordance with their purpose. Salih explained this case as follows: "*A teacher knows that this punishment is not put into effect, and he knows that it cannot be applied. Especially teachers who have returned back to teaching from school management duties know this very well, many of them do not apply it, and they do not pay attention because they know this."*

According to the participants' opinions, reasons such as the security of being a civil servant, the feeling of pity, and the effects of pressure groups are also effective factors in the fact that disciplinary punishments are not dissuasive. Therefore, these factors also prevent the correct application of disciplinary actions:

> Burak: "*…being a civil servant is hard, but getting fired from a civil service is much more difficult."*

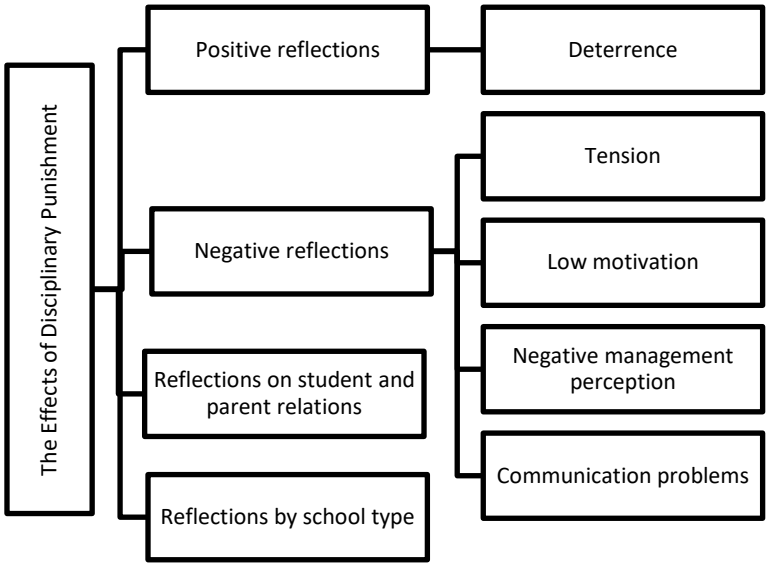
> Yener: "*Some teachers have adopted the law on civil servants no. 657. They create a protective shield for themselves by using factors such as these and move very easily."*

> Irmak: "*The reasons for the penal sanctions are clear, but human feelings come to the fore at the point of evaluation. Or different things, what might be his political view, it might be a union, it might be friendship, it might be a feeling of pity. These are emerging."*

EFFECTS

When the effects of disciplinary punishments are examined, it was determined that there are positive and negative reflections based on student and family relations and school type. The categories are given in Figure 2.

Figure 2. *Effects of Disciplinary Punishments*



As seen in Figure 2, when the effects of disciplinary punishments are examined, it can have positive reflections in terms of providing a dissuasion to committing the offense:

> Ahmet: *"When a friend of ours is punished, it gets a little demoralized, but people think I can get this punishment too. They try to pay more attention."*

Disciplinary punishments can also negatively reflect low motivation, tension, negative management perception, and communication problems. Negative reflections were emphasized more than positive reflections:

> Burak: *"Punishment also has a demotivating side; I have observed this a lot. Apart from the person who was punished, the motivation of the friends around him also decreases."*

> Fikret: *"You don't make a good impression in the upper level because you give punishment. For example, the director of national education does not like it… The inspector's arrival at school is not welcome. Managers don't like it. The best manager is the one who doesn't cause trouble; it's looked upon as such."*

Apart from this, disciplinary punishments against teachers can also have reflections on students and parents:

> Deniz: *"The atmosphere of gossiping, whispered newspapers, such different things, sometimes maybe reasoning, happens among students too… Children have different thoughts in their minds… This is also reflected in their family atmosphere."*

The participants' opinions indicate that the type of school is an important factor in disciplinary punishments. Therefore, disciplinary punishments have different reflections based on the school type. This difference can be caused by school levels such as primary, secondary, and high school, as well as the environment in which the school is located, whether or not students are admitted in order of success. Thus, depending on the type of school they work in, some teachers have a higher risk of being involved in the disciplinary action process, while some teachers do not face such a risk. Here are some opinions about it:

> Kudret: *"I mean from the student perspective, from the student profile perspective. Here the teacher does not even need to do anything. The student is self-sufficient anyway… As I said, what an industrial teacher encounters is not the same as what the teacher experiences here."*

Sezer: *"…schools with a good academic level have fewer teacher and staff problems. This is also an advantage. As the academic level of schools with a good academic level decreases, the problems they encounter increase both as a staff and as a manager. In other words, the administration can also face investigations, just like the teachers."*

PARTICIPANTS' SUGGESTIONS

The main suggestions of the participants regarding disciplinary punishments are as follows: punishments should be dissuasive, unpenalized practices should be developed, teacher rotation should be made, the legislation should be up-to-date, the security of civil service should be flexible, and the managers should be qualified.

DISSUASIVE PUNISHMENTS

Participants defending that punishments should be dissuasive think that disciplinary punishments in their current form do not have a sanction feature. In this context, suggestions such as making a change in institutions, appointment to non-teaching civil servants, and implementing practices with real economic value were presented:

Burak: *"(Disciplinary punishments) does not prevent anything in any way. So, I think some things should be more dissuasive."* Another participant Mert, stated that *"in order for punishments to be dissuasive, they should have economic punishments: The result should be based on material things, the crucial point of teachers is the additional course fee."*

DEVELOPMENT OF UNPENALIZED PRACTICES

Participants stated that punishment should be considered as a last resort, and necessary measures should be taken before criminal offenses arise. In this context, it was stated that the reward system should be improved, the financial (economic) rewards should be used, and the right communication environment should be established:

Sezer: *"We usually try to handle this without making it a punishment. It's a bit like preventative guidance."*

Yasin: *"I think that the issues that can be settled here can be solved with the right communication rather than discipline."*

ENACTING THE TEACHING PROFESSION LAW

One of the suggestions of the participants is the enactment of the teaching profession law. Thus, it is thought that disciplinary procedures will be better by making arrangements specific to education and teaching:

Yasin: *"The law we call the teaching profession law should be enacted, and these things should be unique to us. … This should definitely be approved, and we should be independent of the law, such as 657, where every civil servant is included because the work we do is very different from theirs."*

MAKING CIVIL SERVICE SECURITY FLEXIBLE

According to the participants' opinions, the fact that the Civil Servants Law No. 657 provides excessive protection for civil servants prevents the functionality of disciplinary punishments; therefore, this protection needs to be made flexible:

Irmak: *"It should be determined that being a civil servant is not that easy and that it will not be that easy after being appointed."*

UPDATING THE LEGISLATION

The participants emphasized that the legal regulations that are not suitable for today's conditions are not functional and cannot be applied correctly. Hence, they stated that changes should be made in legal regulations based on contemporary requirements:

> Umut: *"Our day is constantly changing…I think they should be updated in accordance with that new life. For example, there are things related to it, you see, a punishment article was written, but that article has no chance of processing because the conditions at that time also disappeared. Instead, different conditions appeared."*

INCREASING THE AUTHORITY OF SCHOOL PRINCIPALS AND QUALIFIED PRINCIPALS

Participants stated that school principals should have more authority in the disciplinary process. Besides, they emphasized that school principals should be qualified and skilled. It is thought that the effects of factors such as higher authorities, pressure groups can also be reduced by the presence of qualified and skillful school administrators with authority.

> Mutlu: *"Only good administrators can create a school climate with fewer investigations and less disciplinary action."*

> Irmak: *"The school principal, takes a firm stance, rest assured that many such punishments are not needed."*

DISCUSSION, CONCLUSION, AND IMPLICATIONS

The punishments are given to correct the defective behavior and not to repeat the wrong behavior (Zirkel, 2015). The aim is to correct the education system, to ensure that students receive a better education, to minimize wrong teacher practices, to complete the missing practices, in short, a number of punishments are given for the well-being of both the education system and the students (Osborne & Russo, 2011). Every organization must apply discipline rules to achieve its goals (Başaran, 2000). Against individuals who oppose, sling or slow down the organization's purposes the punishments applied are provided by discipline proceedings (Banter, 2003). If discipline rules are not followed, there will be disorder and disorder in the organization and the objectives of the organization are ignored (Taş & Kıroğlu, 2019). This situation may endanger the organization's future and life (Apgar, 2018). Although it has different meanings in daily life, in terms of discipline administrative law, legal framework in public institutions and organizations is a set of precautions taken to ensure compliance with the drawn order (Alikaşifoğlu, 1977). In this sense, discipline is the punishment of a misconduct (Page, 2012). Since it is possible to discipline the values, rules and relationships of the society in which individuals live and to act accordingly, it is also possible to discipline employees to act in accordance with organizational goals system is needed (Kepenekci & Taşkın, 2019).

There are five discipline punishments according to the Law of 657 in Turkey. These are admonition, condemnation, deduction of monthly salary, stopping the progress of seniority and expulsion from the state service. This research was conducted to determine the point of view of 20 school administrators regarding these disciplinary punishments given to teachers. While some of the administrators consider disciplinary punishments necessary, some do not consider it necessary and state that the crimes are committed again. The main reason for those who consider disciplinary punishments necessary is that punishment is a requirement of human nature. Nevertheless, those who state that disciplinary punishments do not necessarily base this on that the punishments do not give the expected results. Assumptions about human nature constitute the essence of organization and management theories (Aydın, 2010). It is emphasized in classical management theories that

punishment is a necessity of human nature. One of the management principles put forward by Taylor, one of the representatives of scientific management, is punishment. In McGregor's Theory X and Theory Y, punishment is among the assumptions of Theory X besides; Theory Y assumes that when the appropriate environment and conditions are provided, people will reveal their potential without the need for punishment. Theory Z, which was developed as an alternative to Theory X and Theory Y, draws attention to the interdependence of the individual and the organization and the participation of the individual in the management.

The view that disciplinary punishments are not deterrent was emphasized more than the view that they are deterrent. Participants think that disciplinary punishments are not functional and therefore not a deterrent because they cannot be applied correctly in accordance with their purpose. Although other studies did not find a direct answer to this question, they obtained similar results (E. g. Apgar, 2018; Karataş, 2000; Kraska & Seçkin, 1995; Zirkel, 2015).

According to the school administrators' opinions, the type and personality of the offense are seen as important factors in the dissuasion of disciplinary punishments against teachers. It is clear that no one wants to be punished, especially for infamous crimes due to the social and cultural structure. On the other hand, the regulations that are not very dependent on the social and cultural context are less dissuasive. On the other hand, personality traits are closely related to organizational behavior (Robbins & Judge, 2017). Uğurlu (2012) also revealed a relationship between teachers' personality traits and their preferred discipline styles.

According to the findings of this study, reasons such as the ineffectiveness of the existing disciplinary regulations, the security of the civil service as a profession, and the effects of pressure groups emerge as factors that prevent the dissuasion of disciplinary punishments. Civil Servants Law No. 657 was adopted in 1965. Significant changes have been made in the provisions of this law on disciplinary proceedings since the 1980s. However, today, there are significant changes in issues such as the meaning of education, the nature of learning, and the structure of the school. On the other hand, discussions on job security based on the Civil Servants Law continue (Yıldız, 2019). In the study conducted by Engür and Kayıkcı (2020), it was concluded that although job security is considered necessary by teachers, excessive and unconditional job security is harmful for the organization and the employee. Pressure groups are also effective elements in school management. In Özcan's (2014) study, it was concluded that the effects of pressure groups on schools differ by the type and level of the school, the region where the school is located, the achievement level of the school, and the profile of students and parents. Consistent with this research, Özcan's (2014) research findings also show that pressure groups impact disciplinary actions.

Additionally, the feeling of pity and compassion for someone who will suffer in return for his offense seems to prevent dissuasion. Studies show a relationship between compassion and the level of punishment applied (Condon & DeStano, 2011). Since the feeling of pity may emerge in different ways according to different cultures and societies, the effects of pity (and compassion) on disciplinary punishments may also differ. Acting by prioritizing the feeling of pity in disciplinary punishments may lead to unfair practices.

School administrators emphasized that the reflections of disciplinary punishments against teachers on the school are mostly negative. In the study of Taş and Kıroğlu (2019), it was underlined that disciplinary punishments lead to undesirable results such as lowering the motivation of teachers, loss of confidence, and lowering the efficiency of educational institutions. These situations can also be considered as a reason why impunity is needed. Richardson and Watt (2010), teachers experience more job satisfaction and less burnout when there is a positive school climate and student behavior

when supported by parents and school administration. This situation necessitates consideration of factors such as the grade, size, region, and quality of the school in disciplinary arrangements.

According to the research findings, it is considered necessary by school principals to make more functional discipline regulations, to focus on discipline regulations specific to education and teaching profession, and preventive studies. To this end, it can be suggested it would be more appropriate to rearrange Law No. 1702 on the Promotion, Appreciation, and Punishment for Primary School Teachers, which was adopted in 1930 and repealed in 2014, which includes disciplinary provisions specific to teachers, rather than abolishing it completely. In this context, there is a need for legal regulations that include disciplinary actions specific to teachers.

It can be said that the discipline system has two main benefits in organizational life. The first is to ensure that employees act according to the organization's efficiency standards and rules. Employees are faced with discipline sanction when they do not fulfill the requirements of the job. When there is a failure to fulfill the requirements in the working life, the process of the discipline process is extremely beneficial for both employees and organizations. Employees are distinguished from those who do not work, and deviations from specified standards can be prevented. The second is the mutual relationship between the upperis to create feelings of trust and respect and continuity.

If the discipline is applied incorrectly, moral lowness, anger, conflict between the workers, and contrasts between the subordinate upper (Beşirli, 1997). Discipline practices are only wrong attitudes and behaviors (Carr, 2006). Not only does it correct, but it also minimizes the problems that may arise in the subordinate relations (Kraska & Seçkin, 1995). The aim of discipline action is to connect the employees to the task (Gezer, 2015), to ensure that the services are carried out in the best way (Page, 2013), to prevent the situations and behaviors that will negatively affect the titles and duties (Zirkel, 2014).

This study shows that the main suggestions of the participants regarding disciplinary punishments are deterrence of penalties, development of impunity practices, rotation, up-to-date legislation, stretching of civil service security, qualified administrators. The fact that the participants gave these suggestions shows that these areas are missing. So, eliminating the areas that the administrators deem lacking can be the future of the education system. Discipline punishments should be clearly defined, and teachers should be provided with the necessary training on discipline offenses, punishments and consequences. In fact, these trainings should be given to students studying at the faculty of education.

This research is limited to the opinions of 20 school administrators. Due to the COVID-19 restrictions, there was a limitation in accessing the teachers who received disciplinary punishment, and such teachers could not be included in the research. The same research can be done by interviewing teachers who receive punishment, and the reasons for the punishments and their effects on teachers can be investigated. The discipline crime and punishment of private school teachers can be compared with the teachers working in the state by determining the punishments received by private school teachers. On the other hand, studies involving groups such as parents and students who are affected by the disciplinary punishments faced by teachers can be conducted. Research findings show that personality type, management style, school type and dysfunctional disciplinary arrangements are effective in the emergence of situations requiring disciplinary punishment. Consequently, existing disciplinary regulations are not functional enough. There is a need for disciplinary arrangements that are suitable for today’s developments and include educational-specific rules.

AUTHOR CONTRIBUTION

The first author has made substantial contributions to data collection and analysis, and discussion and conclusion parts. The second author has been contributions to the literature review, data analysis, discussion, and conclusion parts. Both authors have read and approved the final version of the article.

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The Relationship Between Teachers' Attitudes Towards Multicultural Education and Their Empathic Tendencies*

Sinan Babur, Ministry of National Education, bbr.sinan@gmail.com
0000-0002-8070-9508

Ceyhun Ozan, Assoc. Prof. Dr., Atatürk University, ozanceyhun@atauni.edu.tr
0000-0002-1415-7258

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Abstract

The purpose of this study is to examine the attitudes of the teachers towards multicultural education and their empathic tendencies in terms of various variables; and to determine the relationship between their attitudes towards multicultural education and their empathic tendencies. Correlational research design, one of the quantitative research methods, was conducted in the research. The sample of the study consists of 476 teachers working in the central districts of Van, Turkey. In order to collect data in the research "Teachers' Multicultural Education Attitudes Scale" and "Empathic Tendency Scale" was conducted. According to the results of the research; It has been determined that teachers' attitudes towards multicultural education are at high level, male teachers' attitudes towards multicultural education are higher than female teachers and there is no significant difference according to variables such as marital status, job satisfaction, age, professional seniority and teaching level. In addition, it has been concluded that there is a generally positive, low-level relationship between teachers' attitudes towards multicultural education and their empathic tendencies.

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INTRODUCTION

Nowadays, changes have occurred in the structures of society due to the globalizing world, increasing technological developments and migration events, and individuals with different cultural values have started to share a common life in the same society. The increase in cultural diversity has led to changes and developments in the educational environment as well as in all areas of society; Recognition of different cultural values, the necessity of approaching students with the sensitivity of differences have increased the duties and responsibilities of teachers.

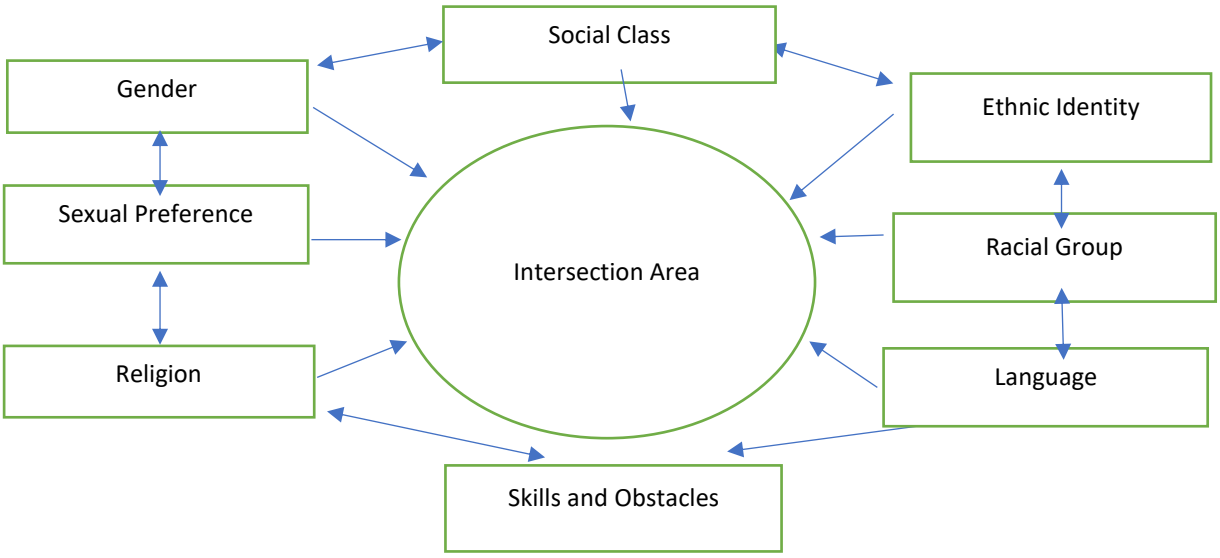
The last four decades of the twentieth century have seen the emergence of a diversity-led group of political and intellectual movements such as national minorities, indigenous peoples, immigrants old and new, ethno-cultural nations, feminists, gays and greens. Although all of these groups are sometimes referred to under the term multiculturalism, only a few of these movements are related to multiculturalism. Multiculturalism is associated with differences arising from culture or fused with culture, as opposed to differences caused by individual choices (Parekh, 2000/2002).

Multiculturalism is a project of cultural recognition of all individuals regardless of their origin, not just a few historical communities that benefit from some special arrangements (Doytcheva, 2005/2016). Although the concept of multiculturalism is a concept that has been used in the last century, the coexistence of different cultures since the periods when people began to live together is an indicator of multiculturalism. Because societies that include two or more different cultural communities can be expressed as multicultural societies (Bulut, 2020). Kymlicka (1995/2015); considered multiculturalism from a different perspective and expressed it as a community with national and ethnic differences, having a separate language and history on a common piece of land, and having ancestry ties. According to this approach, if a state consists of people belonging to different nationalities or coming from different nations, and if this situation has an important meaning on an individual basis and politically, then that state is multicultural. According to Yakışır (2009); it is the aim of multiculturalism to prevent conflicts that may arise between them through the integration of all religions, races and cultures, to ensure that they live together in peace, and to ensure that individuals have equal rights and are at peace. Cultural values are transferred to new generations through education and the main function of an education system should be to transfer cultural values. Since today's society changes so rapidly, schools should lead these changes, ensure the transfer of beliefs and values, and ensure that values reach new generations through the explanation of these concepts as well as the teaching system. As it can be understood from this, the education system and schools play a key role in the development and transformation of a society (Demirel, 2015, p. 37).

Multicultural education is a reform movement designed to bring about some fundamental changes in the education system, advocating the equal enjoyment of educational opportunities for all students regardless of social class, gender, race, ethnicity and culture. Besides, multicultural education assumes that diversity provides rich opportunities for all citizens to experience their own culture and increases the level of perception of problems and solution methods. Individuals get the chance to be a part of different cultures in a multicultural education environment and have the opportunity to benefit from their experiences and realize themselves (Banks, 1994/2013). Multicultural education is the process of creating equal education and learning opportunities within the framework of democratic values in order to ensure cultural pluralism by rejecting all kinds of discrimination and respecting all differences (Kaya & Aydın, 2014). According to Aydın (2013), multicultural education is an approach that values all differences such as student, teacher, content, perspective and culture. According to Gay (1994), multicultural education embodies ethnic diversity, based on common assumptions, emerging from common interests, incorporating common principles for action and integrated into educational processes. Again Gay (1994) defined multicultural education as an idea, education reform movement and process that gives equal opportunities for academic success to all students. In order for teachers to fully understand students, it is not sufficient to know their race and

ethnicity alone. In order to understand the behavior of students better, it is important to know their mother tongue, social class, ethnic identity and the degree of associating themselves with the cultures they belong to. The relationship between these variables and their effects on student behaviors are shown in Figure 1 (Banks, 1994/2013).

Figure 1. *Intersection of Diversity Variables*



According to Garcia (2009), multicultural education is an educational movement based on foundations such as justice, freedom, equality and opportunity. The aims of multicultural education, which is an initial step to change the balance of privilege and power within the education system, can be listed as follows (Garcia, 2009):

- To create a safe and successful learning environment that is accepted by everyone,
- To increase awareness about global issues,
- To strengthen the level of cultural awareness,
- To strengthen intercultural awareness,
- To teach students that historical perspectives are more than one,
- To support critical thinking,
- To carry out works to prevent prejudice and discrimination.

The main purpose of multicultural education is to effect social change through three stages of transformation (Gorski, 2010): the transformation of the self, the transformation of schools and education, and the transformation of society. In multicultural education, it can be said that multicultural education will reach its final goal by making a critical examination of all aspects of the education process and ensuring social justice and equality in schools. According to Başbay and Kağnıcı (2009), teacher characteristics that are expected to have multicultural competencies are; Being aware of their own cultural identity and prejudices, being in a struggle for learning the worldviews of individuals with different cultural values, it covers the dimensions of developing culturally sensitive teaching methods.

Presence of teachers and students with different cultural values in schools has made it very important to have knowledge about different cultural values, to be aware of cultural differences, to approach differences with sensitivity and to understand the feelings, thoughts and behaviors of all students with an empathetic understanding.

Today, when empathy is mentioned, the first name that comes to mind and is identified with empathy is Carl Rogers. According to Rogers (1959), empathy or the state of being empathetic accurately perceives someone else's internal frame of reference through emotional components and

meanings, as if they were it, but without losing its condition. While sharing the pain or happiness of another person, it is to remember to perceive the existing situation as he or she perceives it. If the quality of being "as if" or "as though" is lost while establishing empathy, the situation that emerges is identification. Empathy, which is frequently mentioned especially in psychiatry and psychology and is the subject of important studies, is the ability of an individual to put himself/herself in another person's place and understand his/her feelings and thoughts correctly. Empathic understanding has the feature of bringing individuals closer to each other and increasing effective communication in almost all areas of daily life. With empathic understanding, people feel that they are understood and cared for by other people (Dökmen, 2013). According to Rogers (1980/2012), when people feel that they are understood correctly and approached sensitively, they develop more attentive, accepting, realistic and understanding attitudes towards themselves. These attitudes can be explained as follows:

- The fact that the empathy environment does not include evaluation and is based on acceptance ensures that people's attitudes towards themselves are rewarding and caring.
- Listening to someone who understands them allows individuals to listen to their inner world and complex emotions with greater attention.
- Individuals' understanding and appreciation of themselves opens the door to new experiences, and these new experiences become a part of the personality by integrating with a properly formed self-structure.

Empathy skill, which has neurobiological and psychological foundations, can also be expressed as a skill that can be developed through education. The following practices can guide the development of empathy skills, which are important to be acquired both in the family and in the school environment (Yüksel, 2015):

- Frequent verbal communication should be established with the child.
- Be a correct model for the child.
- Positive emotions should be shared with the child frequently and intensely.
- Reflective language and empathetic communication language should be used towards the child.
- The child should be encouraged to express their feelings and thoughts.
- Imitation games about all living and non-living things should be played with the child.
- The child should be encouraged to talk about the problems he/she has with his/her friends.
- It should be ensured that games for cooperation, cooperation and solidarity are played by getting together with their friends.

According to Aslan and Aybek (2019), empathy skills have an important place in individuals' understanding each other in multicultural societies that combine different ethnic identities, mentalities, beliefs and languages. In order for individuals to be respectful and tolerant towards each other, to accept differences as natural and to establish close relations with each other, they should adopt the skill of empathy. Adopting the skill of empathy contributes to the predominance of peace, happiness and comfort by enabling the problems occurring in the society to be solved more easily and the problems to be minimized. For this reason, one of the most important values that should be gained in multicultural education programs should be the skill of empathy (p. 138). In the school environment, the teacher's character, empathy skills and awareness of emotions affect the process of empathizing. The coexistence of a large group and the fact that all individuals have their own unique mindsets can be expressed as the most important difficulty that a teacher may encounter. The teacher should think by putting himself/herself in the shoes of all students in the classroom and try to understand their feelings (Mozakoğlu, 2015).

RATIONALE AND AIM OF THE STUDY

Schools bring together teachers and students from different cultural values and backgrounds. These differences allow rich experiences to take place in the educational environment and allow teachers and students to benefit from these experiences and richness. Increasing the quality of education depends on having knowledge about cultural differences, reaching awareness that each individual may have different cultural values, accepting these differences as normal, and displaying an empathetic approach to all individuals who are accepted with their differences.

Considering that the schools in Turkey hold different cultures together, it was deemed necessary to investigate the importance of multicultural education and empathic disposition and the relationship between them. In addition, there are studies in which multicultural education and the level of empathic tendency are examined separately and with different sample groups, but there are no studies that examine two variables for teachers together and some demographic variables in this study. For these reasons, the main purpose of the study is to examine the relationship between teachers' attitudes towards multicultural education and their empathic tendencies in terms of various variables. For this purpose, answers to the following questions will be sought:

- Teachers' attitudes towards multicultural education; Does it show a significant difference according to their gender, marital status, job satisfaction, age, professional seniority and teaching level?
- Empathic tendencies of teachers; Does it show a significant difference according to their gender, marital status, job satisfaction, age, professional seniority and teaching level?
- Is there a significant relationship between teachers' attitudes towards multicultural education and their empathic tendencies?

METHOD

RESEARCH DESIGN

The correlational research model was conducted to reveal the relationship between teachers' attitudes towards multicultural education and their empathic tendencies. Correlational research design is a research model that aims to determine the existence or degree of change between two or more variables in order to reach a general conclusion about the universe through the whole universe or a sample group to be taken from the universe for a subject or event. In this type of modeling, the variables whose relationships are examined are symbolized separately in a way that allows a relational analysis (Karasar, 2007). In this study, the correlational research design was preferred since the relationship between the attitude towards multicultural education and empathic tendency was tried to be determined as it exists.

POPULATION AND SAMPLE

The study population consists of 8193 teachers working in the central districts of Van province in the 2020-2021 academic year. The research sample consists of 476 teachers determined by cluster sampling method over the population. It was stated by Çıngı (1994) that the sample group suitable for a group with a universe size of 50000 is 387. The fact that the sample belonging to the universe consisting of 8193 teachers in this study consisted of 476 teachers shows that the sample size is appropriate for the size of the universe. Cluster sampling method is used when sampling from the universe is done on a group basis. What is meant by cluster selection is not to select the individual elements to collect data, but to select the group in which the elements are located. In this way, with the selection of the cluster, the elements to be collected will also be selected. The clusters chosen as sampling units here are schools. The observation unit, about which information is collected and defined as the smallest part of the universe, are the teachers working in the selected schools

(Büyüköztürk et al., 2020). In this study, the schools in the central districts of Van province were determined as a cluster, and it was tried to reach all the teachers working in 9 high schools, 13 secondary schools, 15 primary schools and 3 kindergartens randomly selected from the cluster. The distribution of teachers in the sample according to various variables is given in Table 1.

Table 1. *Characteristics of the Participants*

Gender	n	%	Marital status	n	%
Female	227	47.7	Single	188	39.5
Male	248	52.1	The married	286	60.1
Unknown	1	0.2	Unknown	2	0.4
Total	476	100	Total	476	100
Age	n	%	Professional Seniority	n	%
21-25	48	10.1	0-5	186	39.1
26-30	183	38.4	6-10	168	35.3
31-35	127	26.7	11-15	69	14.5
36-40	71	14.9	16-20	27	5.7
41 and above	37	7.8	21 and above	9	1.9
Unknown	10	0.3	Unknown	17	0.4
Total	476	100	Total	476	100
Job Satisfaction Status	n	%	Teaching Level	n	%
Yes	408	85.7	Pre-school	61	12.8
No	61	12.8	Primary school	125	26.3
Unknown	7	1.5	Middle school	123	25.8
			High school	165	34.7
			Unknown	2	0.4
Total	476	100	Total	476	100

The striking features of the demographic information of the sample obtained from the participants can be summarized as follows: 47.7% of the 475 teachers who took part in the survey process were female and 52% were male. 60.1% of 474 teachers are married. 38.4% of 466 teachers are between the ages of 26-30. 39.1% of 459 teachers have seniority years between 0-5 years. 85.7% of 469 teachers are satisfied with their profession. The fact that 34.7% of the 474 teachers are at the high school level is among the other demographic information obtained as a result of the analysis.

DATA COLLECTION TOOLS

TEACHERS' MULTICULTURAL EDUCATION ATTITUDES SCALE

Teachers' Multicultural Education Attitudes Scale was developed by a group of researchers under the leadership of Ponterotito et al. (1998), and the scale was adapted into Turkish by Yazıcı et al. (2009). The scale was arranged in Likert type as “Strongly Agree”, “Agree”, “Neither Agree, Neither Disagree”, “Disagree”, “Strongly Disagree”. The scale consists of 20 items, and the 3rd and 16th items in the original scale were removed from the scale because they had low values. The current scale consists of 18 items and one dimension. Yazıcı et al. (2009) found the Cronbach’s alpha value of the scale to be .74.

EMPATHIC TENDENCY SCALE

The Empathic Tendency Scale developed by Dökmen (1988) was used to determine the empathic tendency levels of teachers. The scale consists of 20 five-point Likert-type items such as "Totally Appropriate", "Quite Appropriate", "Undecided", "Quite contrary", "Completely Opposite". While scoring the scale items, the 3rd, 6th, 7th, 8th, 11th, 12th, 13th and 15th questions are scored in reverse. The lowest score to be taken from the scale is 20 and the highest score is 100. The total score

refers to the empathic tendency scores of the participants. A high score indicates a high empathic tendency, and a low score indicates a low empathic tendency. The reliability of ETS was obtained by Dökmen (1988) applying the scale to a group of 70 students using the test-retest method at three-week intervals. The Cronbach's alpha value of the scale was found to be .82 by Dökmen (1988). The validity and reliability of the scales used were tested. Reliability analysis results are given in Table 2.

Table 2. *Reliability Analysis Results*

Scales	Cronbach's Alpha	Number of Items
Teachers' Multicultural Education Attitudes Scale	.72	18
Empathic Tendency Scale	.73	20

Based on the fact that the alpha coefficients of the scales are between .72 and .73, it can be said that the results obtained from the measurement tools are reliable. According to the results of the factor analysis applied, the KMO value of the "Teachers' Multicultural Education Attitudes Scale" was 0.852 (p = 0.000), which explains 53.95% of the variance. The KMO value of the "Empathetic Tendency Scale" was 0.784 (p = 0.000), explaining 55.71% of the variance. Based on the factor analysis results determined, it can be said that the sample is sufficient in terms of factor analysis (Gürbüz & Şahin, 2016, p. 319).

DATA ANALYSIS

In the analysis of the data, the normality test was first performed. According to the results of the Kurtosis-Skewness coefficients, Shapiro-Wilk coefficients, Histogram and Q-Q Plots tables, it was determined that the data showed normal distribution. Analysis of data was carried out with the help of frequency distribution, arithmetic mean, standard deviation, independent groups t-test and one-way analysis of variance (ANOVA). In case of difference in ANOVA, Scheffe test, one of the multiple comparisons (Post Hoc) tests, was used. In addition, correlation analysis was performed in order to determine the relationship between the variables. The aforementioned analyzes were made using the SPSS 25.0 package program.

After reverse coding for the negative items in the scale, various analyzes were applied to the data. Missing data was assigned for the missing data in the question statements within the scope of the research. In addition, due to missing data in demographic variables, the relevant forms were not completely removed from the analysis, only missing data in demographic variables were included in the analysis. The arithmetic averages of the data obtained from the scales were taken. Levels were determined according to the averages. In this context, the order of levels was evaluated as follows: 1.00 < mean <= 1.80: very low; 1.80< mean <= 2.60: low; 2.60< mean <=3.40: moderate; 3.40< mean <= 4.20: high; 4.20< average <= 5.00: very high. The data were first tested for normality. Normality test results are given in Table 3.

Table 3. *Normality Test Results*

Scales	Kurtosis	Skewness
Multicultural Education Scale	-.045	.021
Empathic Tendency Scale	.211	-.074

The normality of the scales used were evaluated according to kurtosis-skewness coefficients, Shapiro-Wilk coefficients, histogram and Q-Q Plots table results. Since the Kurtosis-Skewness coefficients are between -1 and +1, the Shapiro-Wilk coefficients are greater than 0.05, the Histogram distribution and the data are on the regression curve in the Q-Q plots table, it is predicted that the data show a normal distribution. Based on the normal distribution of the data, it was concluded that parametric tests should be used.

FINDINGS

FINDINGS RELATED TO MULTICULTURAL EDUCATION ATTITUDES

The comparison of the means of multicultural education attitudes according to gender is presented in Table 4.

Table 4. *Multicultural Education Attitudes by Gender Variable*

Variable	Groups	n	x̄	Sd	df	t	p
Gender	Female	227	3.53	0.28	473	-2.035	.042
	Male	248	3.58	0.28			

As seen in Table 4, multicultural education attitudes of male teachers are higher than female teachers (x̄(F) = 3.53; x̄(M) = 3.58). In addition, the difference obtained was statistically significant ($p < 0.05$). The comparison of the means of multicultural education attitudes according to marital status is presented in Table 5.

Table 5. *Multicultural Education Attitudes by Marital Status Variable*

Variable	Groups	n	x̄	Sd	df	t	p
Marital status	Single	188	3.56	0.27	472	-0.183	.855
	Married	286	3.55	0.28			

A correlation was found between the multicultural education attitudes of single teachers and married teachers (x̄(S) = 3.56; x̄(M) = 3.55). Accordingly, multicultural education attitudes of single teachers are higher. However, the level of difference between the groups was not statistically significant ($p > 0.05$). Comparison of multicultural education attitude means according to job satisfaction is presented in Table 6.

Table 6. *Multicultural Education Attitude by Job Satisfaction Variable*

Variable	Groups	n	x̄	Sd	df	t	p
Job Satisfaction Status	Yes	408	3.55	0.27	467	-0.772	.441
	No	61	3.58	0.32			

When the multicultural education attitudes of the teachers were examined according to the variable of job satisfaction, it was determined that the teachers who were not satisfied with the profession had higher multicultural education attitudes than the satisfied teachers (x̄(Y) = 3.55; x̄(N) = 3.58). However, the result reached is not statistically significant ($p > 0.05$).

In order to determine whether there is a significant difference between the multicultural education attitudes of teachers according to the age variable, one-way analysis of variance was performed and the results are shown in Table 7.

Table 7. ANOVA Results on *Multicultural Education Attitudes by Age Variable*

Groups	n	x̄	SS	Source of Variance	Sum of Squares	df	Mean Square	F	p
21-25	48	3.55	.28	Between Groups	.204	4	.051		
26-30	183	3.57	.28	Within Groups	36.731	461	.080	.639	.635
31-35	127	3.55	.27	Total	36.935	465			
36-40	71	3.58	.28						
41 and above	37	3.50	.30						

According to the results of the analysis, it was determined that there was no significant difference between the groups (F(4-461) = .639, p > 0.05).

In order to determine whether there is a significant difference between the multicultural education attitudes of teachers according to the variable of professional seniority, one-way analysis of variance was performed and the results are shown in Table 8.

Table 8. ANOVA Results on *Multicultural Education Attitudes by Professional Seniority Variable*

Groups	n	x̄	SS	Source of Variance	Sum of Squares	df	Mean Square	F	p
0-5	186	3.55	.28	Between Groups	.466	3	.155		
6-10	168	3.55	.27	Within Groups	36.101	455	.079	1.958	.120
11-15	69	3.63	.30	Total	36.567	458			
16 and above	36	3.51	.27						

According to the results of the analysis, it was determined that there was no significant difference between the groups (F(4-455) = 1.958, p > 0.05). The comparison of the means of multicultural education attitudes by teaching level is presented in Table 9.

Table 9. ANOVA Results on *Multicultural Education Attitudes by Teaching Level Variable*

Groups	n	x̄	SS	Source of Variance	Sum of Squares	df	Mean Square	F	p
Pre-school	61	3.56	.31	Between Groups	.353	3	.118		
Primary school	125	3.52	.27	Within Groups	37.103	470	.079	1.490	.216
Secondary school	123	3.59	.28	Total	37.456	473			
High school	165	3.55	.27						

According to the results of the analysis, it was determined that there was no significant difference between the groups (F(3-470) = 1.490, p > 0.05).

FINDINGS RELATED TO EMPATHIC TENDENCIES

The comparison of the means of empathic tendency according to gender is presented in Table 10.

Table 10. *Empathic Tendencies by Gender Variable*

Variable	Groups	n	x̄	Sd	df	t	p
Gender	Female	227	3.70	0.40	473	4.108	.000
	Male	248	3.54	0.43			

As seen in Table 10, female teachers' empathic tendency levels are higher than male teachers (x̄(F) = 3.70; x̄(M) = 3.54). The difference between the groups was statistically significant (p < 0.05).

Table 11. *Empathic Tendencies by Marital Status Variable*

Variable	Groups	n	x̄	Sd	df	t	p
Marital status	Single	188	3.56	0.44	472	2.276	.023
	Married	286	3.65	0.41			

When the empathic tendency was examined in terms of the marital status variable, it was determined that the empathic tendency levels of married teachers were higher than those of single teachers (x̄(S) = 3.56; x̄(M) = 3.65). In addition, the said difference was statistically significant (p < 0.05). The comparison of empathic tendency means according to the variable of job satisfaction is as in Table 12.

Table 12. *Empathic Tendencies by Job Satisfaction Status Variable*

Variable	Groups	n	x̄	Sd	df	t	p
Job Satisfaction Status	Yes	408	3.65	0.41	467	4.025	.000
	No	61	3.42	0.47			

When the empathic tendency levels of the teachers were examined according to the variable of job satisfaction, it was determined that the teachers who were satisfied with the job had higher empathic disposition levels compared to the teachers who were not satisfied (x̄(Y) = 3.65; x̄(N) = 3.42). In addition, the result reached is statistically significant ($p < 0.05$).

In order to determine whether there is a significant difference between the empathic tendency levels of the teachers according to the age variable, one-way analysis of variance was performed and the results are shown in Table 13.

Table 13. *ANOVA Results on Empathic Tendencies by Age Variable*

Grup	n	x̄	SS	Source of Variance	Sum of Squares	df	Mean Square	F	p
21-25	48	3.66	.45	Between Groups	.675	4	.169		
26-30	183	3.64	.45	Within Groups	83.757	461	.182	.929	.447
31-35	127	3.62	.37	Total	84.443	465			
36-40	71	3.58	.43						
41 and above	37	3.51	.35						

According to the results of the analysis, it was determined that there was no significant difference between the groups ($F(4\text{-}461) = 0.929$, $p > 0.05$).

One-way analysis of variance was performed to determine whether there was a significant difference between the empathic tendency levels of teachers according to the variable of professional seniority, and the results are shown in Table 14.

Table 14. *ANOVA Results on Empathic Tendencies by Professional Seniority Variable*

Grup	n	x̄	SS	Source of Variance	Sum of Squares	df	Mean Square	F	p
0-5	186	3.66	.46	Between Groups	.783	3	.261		
6-10	168	3.63	.37	Within Groups	79.673	455	.175	1.491	.216
11-15	69	3.56	.38	Total	80.457	458			
16 and above	36	3.55	.43						

According to the results of the analysis, it was determined that there was no significant difference between the groups ($F(3\text{-}455) = 1.491$, $p > 0.05$).

One-way analysis of variance was performed in order to determine whether there was a significant difference between the empathic tendency levels of the teachers according to the teaching level variable, and the results are shown in Table 15.

Table 15. *ANOVA Results on Empathic Tendencies by Teaching Level Variable*

Groups	n	x̄	SS	Source of Variance	Sum of Squares	df	Mean Square	F	p
Pre-school	61	3.75	.40	Between Groups	1.548	3	.516		
Primary school	125	3.62	.43	Within Groups	83.553	470	.178	2.902	.035
Secondary school	123	3.61	.42	Total	85.100	473			
High school	165	3.56	.41						

The result obtained according to the analysis results is statistically significant (F(3-470) = 2.902, $p < 0.05$). On the other hand, Tukey test was performed in order to determine between which groups the significant difference was detected. According to the Tukey test results, the significant difference is between the "pre-school" and "high school" groups.

FINDINGS RELATED TO RELATIONSHIP BETWEEN MULTICULTURAL EDUCATION ATTITUDES AND EMPATHIC TENDENCIES

Table 16 presents the results of the Pearson correlation analysis for the relationships between multicultural education attitudes and teachers' empathic tendencies.

Table 16. *Correlation Analysis Results*

		Empathic Tendency
Multicultural Education Attitudes	Pearson Correlation	0.095*
	R^2	0.009
	The Power of Relationship	Weak
	Meaningfulness	0.037

*0.01 significant

As seen in Table 16, a positive and significant relationship was found between teachers' multicultural education attitudes and their empathic tendencies ($p < 0.01$). Relationship strength is statistically low.

DISCUSSION, CONCLUSION AND IMPLICATIONS

Firstly, according to the results of the analysis, it was determined that the multicultural education levels of the teachers were high. Studies conducted by Ponterotito et al. (1998), Kervan (2017), Özdemir and Dil (2013), Ar Toprak (2008), and Demircioğlu and Özdemir (2014) reached similar results with the result of this research. According to the findings obtained; It can be said that teachers are interested in multicultural education, they see multicultural education as advantageous and they care about the existence of students with different cultural values. When the attitude towards multicultural education was examined in terms of gender variable, it was determined that the average scores obtained differed significantly and the multicultural education attitudes of male teachers were higher than female teachers. While the result of the research conducted by Aslan and Kozikoğlu (2017) is in parallel with the result of this research, the results of the research conducted by Başar (2019), Gorham (2001), Peköz (2018), Arslan and Çalmaşur (2017) and Özdemir (2014) are not in parallel with the result of this research. When the attitudes towards multicultural education were evaluated in terms of the marital status variable, it was determined that the attitudes of single teachers were higher than those of married teachers, but the difference between the groups was not statistically significant. Similarly, in the study conducted by Özdemir and Dil (2013), it was determined that there was no significant difference in attitudes towards multicultural education in terms of marital status variable. According to the result, it was determined that the multicultural education attitude did not change in terms of the marital status variable. It is thought that the result obtained is due to the fact that married and single teachers work with student groups with different cultural values and schools keep cultural differences together under a single roof. When the attitude towards multicultural education is examined in terms of the variable of job satisfaction, it has been determined that the teachers who are not satisfied with the profession have a higher level of multicultural education attitudes than those who are satisfied with the profession, but the result is not statistically significant.

According to the results of the research, it was determined that there was no difference in the attitude towards multicultural education in terms of the variable of job satisfaction. It is thought that the fact that the teachers who are satisfied and dissatisfied with the profession have adopted cultural

differences affect the results obtained. When the attitude towards multicultural education was evaluated in terms of age variable, it was concluded that the multicultural education attitudes of the teachers in the 36-40 age group were at the highest level, but the result was not statistically significant. While the studies conducted by Polat (2013) and Başar (2019) do not show parallelism, they show parallelism with the studies conducted by Demircioğlu and Özdemir (2014), Güngör et al. (2018), Arslan and Çalmaşur and Peköz (2018). According to the result, it has been determined that there is no difference in the attitude towards multicultural education according to the age variable. The fact that schools contain different cultural values and provide teachers with a rich experience environment may also have affected this result. When multicultural education was examined in terms of professional seniority variable, it was concluded that the multicultural education attitudes of teachers with seniority between 11-15 years were at the highest level, but there was no significant difference between the groups. While the studies conducted by Peköz (2018), Yıldırım (2016) and Özdemir and Dil (2013) support the result of this research, Ar Toprak (2008), Arslan and Çalmaşur (2017), Bulut (2014) and Polat (2012) do not support the results of this research. It is thought that the result obtained is due to the fact that our country has a multicultural structure and that teachers with different seniorities have developed awareness of cultural values in the school environment. When multicultural education is evaluated in terms of education level variable, it was determined that the teachers working in the secondary school group had higher multicultural education attitudes compared to the teachers working in other education levels, but the result was not statistically significant. As a result of this research; While it is in parallel with the results of the research conducted by Aslan and Kozikoğlu (2017), it is not in parallel with the studies conducted by Yıldırım (2016), Arslan and Çalmaşur (2017) and Ar Toprak (2008). According to the results of the research, it was determined that the multicultural education attitude did not differ in terms of education level and the attitudes of the teachers working at all education levels towards multicultural education were positive. The fact that student profiles at all education levels are similar and that teachers also develop similar attitudes towards cultural differences may be the reason for the result obtained.

Secondly, according to the results of the research, it was determined that the empathic tendency levels of the teachers were high. It is seen that different results have been reached in the studies conducted by Yiğit (2020), Yılmaz and Akyel (2008), Pala (2008), Demir (2012) and Karaman (2018). The result obtained in this research is thought to be because of the fact that the teaching profession is a profession that requires empathy skills and that the teachers are in an effort to understand the feelings and thoughts of all students. When the empathic tendency was evaluated in terms of gender variable, it was determined that the empathic tendency of female teachers was higher than that of male teachers and the result obtained was statistically significant. As a result of this research; While it shows parallelism with the results of the research conducted by Temizyürek (2019), Akbulut (2010), Gürsel (2016), Şenkaya (2018), Çetin (2019) and Hoffman (1977); It does not show parallelism with the results of research conducted by Bulut and Düşmez (2014), Demir (2012), Saygılı et al. (2015), Polat (2016), Onay et al. (2015), Yılmaz and Akyel (2008) and Genç and Kalafat (2010). It is thought that the result obtained is due to the differences in the physiological and brain structures of men and women, and the fact that women are more sensitive than men, have broad compassion and have an emotional structure.

When the empathic tendency was examined in terms of the marital status variable, it was determined that the empathetic tendency levels of married teachers were higher than those of single teachers and the result obtained was statistically significant. While the result of this research supports the result of the research done by Bulut and Yaprakmez (2014); It does not support the results of research conducted by Gürsel (2016), Çelik and Çağdaş (2010), Polat (2016), Saygılı et al. (2015), Akbulut (2010), Çetin (2019) and Şenkaya (2018). It is thought that the result obtained is due to the fact that the emotional arousal is higher in married individuals, the problems faced by married individuals are more, and therefore their neural networks are constantly functional. In addition, it is

considered that the parenting responsibilities of teachers who have children also affect the result achieved. When the empathic tendency was examined in terms of the variable of job satisfaction, it was determined that the teachers who were satisfied with their profession had a higher level of empathic tendencies than those who were not satisfied with their profession, the result was statistically significant. While the result of this research coincides with the results of the research conducted by Çelik and Çağdaş (2010), it does not coincide with the results of the researches conducted by Bulut and Yavaşmez (2014), Akbulut (2010) and Cihan (2020). It is thought that the result obtained in this research is because of teachers who are satisfied with the profession approach life with more accurate frequencies, get more satisfaction from the profession, make more effort to understand the feelings and thoughts of the students, and are more aware of the importance of communicating effectively with the students.

When the empathic tendency was examined in terms of the age variable, it was determined that the empathic tendencies of the teachers between the ages of 21-25 were at a higher level than the teachers in the other groups, but the result was not statistically significant. When the research results are examined; While the results of the studies conducted by Şenkaya (2018), Onay et al. (2015), Çelik and Çağdaş (2010) and Yılmaz and Akyel (2008) overlap with the results of this research, the results of the research conducted by Canıdemir (2019) and Polat (2016) found to be inconsistent with the results of this study. It was determined that the empathic tendency levels of the teachers did not differ according to their age. The main reason for this situation may be that teachers from different age groups try to understand the feelings and thoughts of students as a requirement of the teaching profession. When the empathic tendency was evaluated in terms of professional seniority variable, it was determined that the empathic tendency levels of the teachers with 0-5 years of seniority were higher than the teachers in the other groups, but the result was not statistically significant. While the result of this research is in parallel with the results of the research conducted by Saygılı et al. (2015), Akbulut (2010), Çelik and Çağdaş (2010), Çetin (2019) and Cihan (2020), it does not show parallelism with the results of the research conducted by Polat (2016). The fact that teachers with low seniority are idealistic and teachers with high seniority are more experienced in approaching students can be considered as the reason for the result achieved. When the empathic tendency was examined in terms of the variable of teaching level, it was concluded that the empathic tendency levels of the pre-school teachers were higher than the other groups. It is thought that the result obtained is due to the fact that preschool teachers take on more parenting roles, preschool students need more love and compassion, high school students have more differences, and therefore it is difficult to understand student psychology.

Finally, the relationship between the variables constituting the main subject of the study was examined with the help of correlation analysis. According to the results of the analysis, it was concluded that there is a low level of positive correlation between teachers' attitudes towards multicultural education and their empathic tendencies.

Based on the results of the research, some other researches can be conducted on the reasons why female teachers' attitudes towards multicultural education are lower than male teachers. Efforts can be made to recognize, accept and increase awareness of cultural differences through in-service training. Considering that job satisfaction affects empathic tendency, the reasons that lead teachers to be dissatisfied with their profession can be investigated and studies can be carried out to make teachers love the profession. In order to increase the empathic tendency levels of high school teachers, trainings like drama can be organized. The fact that the research population is carried out only with teachers working in the central districts of Van is accepted as a limit of the research. Accordingly, it is thought that more effective results can be obtained by expanding the universe. In addition, comparative analyzes can be made between provinces and regions. Demographic characteristics (education level, place of residence, income, etc.) can be expanded according to the characteristics of the sample for which the study will be designed.

AUTHOR CONTRIBUTION

- First author have made substantial contributions to conception and design, or acquisition of data, or analysis and interpretation of data
-The second author have been involved in drafting the manuscript or revising it critically for important intellectual content; have given final approval of the version to be published.

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Investigation of Classroom Practices of Middle School Mathematics Teachers in the Context of Geometric Reasoning Processes

Ali Bozkurt, Prof. Dr., Gaziantep University, alibozkurt@gantep.edu.tr
0000-0002-0176-4497

Tuğba Han Şimşekler Dizman, Assoc. Prof. Dr., Gaziantep University, tsimsekler@hotmail.com
0000-0002-1779-0630

Sibel Tutan, PhD Candidate, Gaziantep University, sibell27@outlook.com
0000-0002-9182-5029

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Abstract

Cognitive processes and cognitive apprehensions known as geometric reasoning processes play a significant role in enabling students to make geometrical deductions and develop their spatial skills, geometrical skills, imaginations, and geometrical intuitions through geometrical properties, to discover the transformations between geometrical models and to establish a bond between the concepts. This study examined classroom practices of middle school mathematics teachers in the context of cognitive processes and cognitive apprehensions in geometry teaching. In this context, using the descriptive survey model, three classroom practices of middle school mathematics teachers with three different levels were examined. The descriptive analysis method was used to analyze these data. According to the findings obtained from the data, it was observed that geometric reasoning processes differed in each teacher's classroom practices. It has been observed that the most common dimensions of geometric reasoning in courses with geometry content are visualization and reasoning. It was further observed that cognitive apprehensions were involved simultaneously with the cognitive processes. In this respect, it was concluded that the processes are interactive with each other.

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INTRODUCTION

The reasoning is the process of conducting to query using the questions “Why?” and “How?” to concern a problem or an issue that one seeks a solution for and to give meaning to it (Dyer and Sherin, 2016; Lu and Richardson, 2018). If the question, which a solution is sought for, is of mathematical content, it can be named “mathematical reasoning”; yet when made even more specific, it can be named “geometrical reasoning” if it has contents regarding geometry. Geometrical reasoning can also be defined as making a logical deduction by contemplating any given geometrical problem, considering all probable factors (Duval, 1998). The structure of the geometrical reasoning is characterized by the quality of the correlation between the concept and shape.

The effectiveness of reasoning in learning geometry was outlined in many studies in the relevant literature (Clements & Battista, 1992; Duval, 1998; Fuys, Geddes & Tischler, 1988; Jones, 1998; Mabotja, Chuene, Maoto & Kibirige, 2018). In addition, it is possible to come across some studies showing that reasoning skill improves problem-solving skills as well (Barker, 2003; Briscoe & Stout, 2001; Kramarski & Mizrachi, 2004; Lithner, 2000; Schoenfeld, 1985; NCTM, 1989; 2000; Santos-Trigo, 2014). These studies stated that academic achievement and problem-solving success are highly correlated with reasoning, and students with better reasoning skills are more successful in learning mathematics than others. It has been stipulated that reasoning skill is among the fundamental skills concerning the learning and use of mathematics, which is why the requirement of preparing learning environments aimed to improve reasoning was put forward (NCTM, 2014). In this context, the teachers' intra-classroom practices gain significance in improving the students' reasoning skills (NCTM, 2000). This study aims to determine the cognitive processes and cognitive apprehensions of the geometric reasoning process and the interaction in geometry-based mathematics courses. The study aims to explore cognitive processes and cognitive apprehensions and the relationship between these processes while being taught figurative and conceptual information in classroom practices of middle school mathematics teachers’ mathematics courses. In this context, answers were sought for the following questions:

- What are the aspects of cognitive processes and cognitive apprehensions among the geometric reasoning processes that highlight in classroom practices of middle school mathematics teachers?
- What is the relationship between aspects of cognitive processes and cognitive apprehensions in classroom practices of middle school mathematics teachers?

THEORETICAL FRAMEWORK

Mathematics is attempting to understand everyday situations from a quantitative standpoint by filtering them through reasoning (Lithner, 2008). Fischbein and Schnarch (1997) state that developing the students’ reasoning skills facilitates learning mathematical subjects. Therefore, it has become necessary that studies be carried out to improve the reasoning skills in every field of mathematics. It is likely to come across many approaches in the literature concerning the nature of and how to improve the process of reasoning in geometry, which is one of these sub-fields of learning (Duval, 1995; Fishbein, 1993; Piaget & Inhelder, 1967; Van Hiele,1957)**.** Although the van Hiele model is the most well-known among these approaches, the Figural Concept theory of Fischbein and the Cognitive model of Duval are other approaches held in the literature to analyze the process of reasoning in geometry (Jones, 1998).

In a study they carried out in 1957, the van Hiele couple drew attention to the quality of teaching levels of geometrical thinking and the transition from one level to another (Fuys, Geddes & Tischler, 1988). As seen in Piaget’s approach, van Hiele analyzed the thinking processes through the developmental approach (Battista & Clement, 1995). This model approaches geometrical thinking at five levels: visualization, analysis, informal deductive, formal deductive, and rigor. When the studies in the field of geometrical reasoning (thinking) are analyzed, it is possible to come across quite a many

studies made on Van Hiele's geometrical thinking levels (Burger & Shaughnessy, 1986; Fuys, Geddes & Tischler, 1988; Mason, 1998; Solaiman, Magno & Aman, 2017; Usiskin, 1982).

Fishbein's figural concept model is another prominent theory within the context of geometrical education. According to Fishbein (1993), geometrical reasoning correlates the geometrical concept and geometric shape. As per this opinion, while concepts provide a mathematical foundation for our results, geometric shapes help make estimates and use intuition in reasoning. Thus, an exemplary reasoning process depends on the interaction of the knowledge of shapes and concepts.

In his study, Duval (1995) further elaborated on the figural concept model of Fishbein (1993). Duval explained the reasoning through cognitive processes and cognitive apprehensions experienced when one looks at geometric shapes. He claimed that effective geometry teaching could occur through interacting these processes with one another (1995, 1998). The cognitive processes in the model put forward by Duval consist of visualization, reasoning, and construction. Cognitive apprehensions, however, consist of perceptual apprehension, discursive apprehension, sequential perception, and operative apprehension. Visual demonstration of a situation in geometry helps carry out functions, such as a general overview of the current situation, instantaneous perceptions, and personal verification. This demonstration covers the construction of the shape via tools-instruments like concrete materials and dynamic geometry software or the features regarding the sorting of the construction process to let the change and expansion happen in the current knowledge and for the construction of a geometric shape (Torregrosa & Quesada, 2008). Duval's geometric reasoning processes have been examined in two categories: cognitive processes and cognitive apprehensions. In order to determine the emphasis on the categories determined during the in-class practices of teachers, dimensions are explained in Table 1-2, and examples suitable for these dimensions are given.

Table 1. *Cognitive Processes*

Aspects	Definition/Explanation	Examples
Visualization	This is the process by which a place is visually represented to perform functions such as a visual representation of a situation, an overview of the current situation, instantaneous perceptions, and subjective verification. These representations are themselves geometric shapes that contain mathematical properties.	*The teacher shows 3 o'clock on the wall clock and asks the students what angle between hour and minute hands is.*
Construction	This includes creating a model of any geometric shape or sequencing the construction process using tools such as a compass, ruler, and dynamic geometry software to create shapes.	*The teacher asks whether it is possible to draw a triangle, the side lengths of which are 3-4-5 units, using a ruler and a compass, and tries to create a model of this triangle in company with the students.*
Reasoning	This is the occurrence of a change and expansion in knowledge. Reasoning processes, which appear based on the features of the demonstration forms used, were divided into two: - Natural discursive process (5/A: inference from the shape) - Theoretical discursive process (5/B: definition, theorem, axiom, deduction)	*"What is called the shape formed by the two rays with common starting points ?" By asking the question, the teacher enables the students to reason using their theoretical knowledge (5/B).* *Finding the relevant angle from the figure by looking at the figure through the angle model formed by two parallel and one intersecting line shows a natural discursive process (5/A).*

As seen in Table 1, Cognitive processes were classified by Güven and Karpuz (2016) under three aspects: visualization, reasoning and construction based on Duval's model (Duval, 1998).

Table 2. *Cognitive Apprehensions*

Aspects	Definition/Explanation	Examples
Perceptual	- The initial look at the shape - Name, size, basic geometrical elements of the shape (point, straight line, triangle) - Determining the sub-shapes of the shape (determining the triangle within the rectangle)	*The teacher asks the student to determine what geometric element it is by showing a pencil with an open tip. Students say it is a ray.*
Discursive	It is the process of establishing a relationship between shape and mathematical principles (definition, theorem, axiom, etc.) in order to infer what is desired based on what is given.	*The teacher asks the students to give an example of the line segment that can be seen in their daily lives and, based on these visuals, the definition of the line segment.*
Sequential	- Creating a shape, using tools (compass, rulers) - Describing the process of construction without any tools (the aspect of construction in the cognitive processes and this aspect support one another)	*The teacher asks the students to draw a square and describes the process needed while creating the square model.*
Operative	- The endeavor to get a clue, intuition, solution, perspective - Making changes to the first shape - Drawing, erasing, adding, and displacing auxiliary straight lines - Thinking more over some parts of the shape compared to others	*The teacher writes a problem on the board; nevertheless, the students fail to solve the problem as they see an unusual shape. When the teacher turns the shape sideways and adds auxiliary straight lines, the students solve it.*

As seen in Table 2, cognitive apprehensions are classified by Guven and Karpuz (2016) as four aspects: perceptual, discursive, sequential, and operative (Duval, 1995).

Many recent studies have related to Duval's cognitive model (Kose, 2014; Ocal & Simşek, 2017; Ramatlapana & Berger, 2018; Trigueros & Martínez-Planell, 2010). These studies have been conducted at a single level over specific theory categories. For instance, in a study, Kose (2014) discussed the construction aspect of the cognitive process category. Discussing the sequential aspect of the cognitive apprehensions, Ocal and Simsek (2017) focused on the phases of generating solutions used by secondary school mathematics teachers to find a solution for geometrical construction problems, as well as their opinions on this matter. While the theoretical frameworks Fishbein and van Hiele put forward in their work provide a view from the student's point of view, the theoretical framework that Duval put forward enables us to analyze the teaching process.

The cognitive model of Duval (1995), which constitutes the theoretical framework in this study, is important because it consists of cognitive processes and cognitive apprehensions and the interaction between sub-dimensions that make up these two categories, in contrast to a hierarchy. It provides a more holistic view of the geometric reasoning process. In addition, this study is about revealing the geometry teaching process in classroom settings. It is thought that mathematics courses with the geometry content study will contribute to mathematics education in terms of developing the literature by providing the opportunity to examine cognitive and cognitive apprehensions together in the context of geometric reasoning.

METHOD

RESEARCH DESIGN

This research is a descriptive study based on a survey model. According to Karasar (2005), survey models are research approaches that aim to describe a past or present situation. This method tried to determine the teachers' reasoning processes in their classrooms' geometry applications. To make

Duval's model visible, video analysis was used in this study due to the chance it offers to discuss different teachers' geometry-oriented classes and derives rich data from them.

PARTICIPANTS

The study group consists of 5 secondary school teachers working as mathematics teachers in public schools in a province in southeast Turkey. While choosing the study group, the criterion sampling approach, one of the purposive sampling methods, was used. Criterion sampling studies situations that meet predetermined criteria (Yin, 1984). Different professional experiences of teachers, different grade levels, and gender were considered criteria. The demographic information of the teachers in the study group is given in Table 3.

Table 3. *Demographic Information of Teachers is Held in the Study Group*

Teachers	Gender	Professional seniority	Classroom level recorded on video
T1	Male	16 years	8th- grade
T2	Female	4 years	7th- grade
T3	Male	6 years	7th- grade
T4	Female	5 years	6th- grade
T5	Female	7 years	6th- grade

As seen in Table 3, three female and two male teachers are held in the study group. The service years of the participants range from 4 to 16 years. The recorded classes are chosen as two at the 6th-grade level, two at the 7th-grade level, and one at the 8th-grade level.

DATA COLLECTION

This study includes using an image-based observation technique since it allows the researcher to observe teachers' classroom practices and interpret observed practices. Fraivillig, Murphy, and Fuson (1999) define the observation technique as a data collection technique that should be preferred to investigate the behaviors in a particular environment or institution more detail. In this study, the footage was recorded by two professional cameramen working in a state university's television and cinema department. During the recording phase, while the first cameraman focused on the teacher's practices in the classroom, the second cameraman recorded the students and their breakthroughs, and interactions with each other and their teachers. The classroom observation program was planned according to the preferences of the participating teachers, and 40 minutes, a course hour with only geometry content, was recorded.

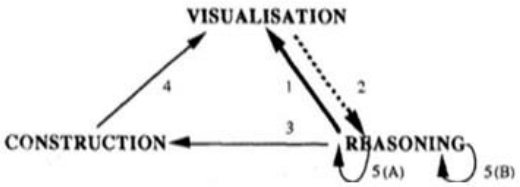
DATA ANALYSIS

A researcher first transcribed the data obtained from the images, and another checked each transcription data set for the accuracy and validity of the observed actions. After the transcription level, the data set was analyzed using the descriptive analysis method. Data are summarized and interpreted in the descriptive analysis according to predetermined codes (Patton, 2014). Dimensions of the cognitive processes and cognitive apprehensions in the geometric reasoning processes were used in the mathematics course-classroom applications with geometry content (Table 1 and Table 2).

DIALOG MAPS

The dialog maps of the classroom practices of middle school mathematics teachers were created to determine the interaction between the geometrical reasoning processes. The interaction between the cognitive processes is given in Figure 1.

Figure 1. Interaction between Kinds of Cognitive Processes (Duvall, 1998)



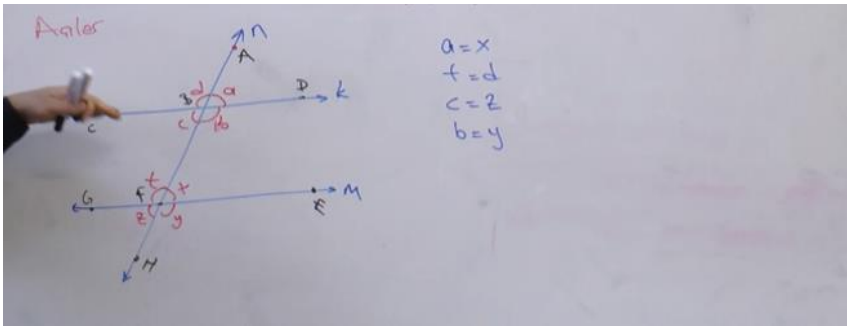
While creating the maps of the cognitive processes and cognitive apprehensions, the processes were divided into significant sections according to the beginning and end of the dialogues of each sample question, solution process, or practice.

Geometric activity chains were obtained due to the interaction between the aspects defined within the analysis framework in those sections. A sample dialog is provided to clarify further how these chains were obtained.

SAMPLE DIALOG

The sample dialogue is taken from an in-classroom activity where T3 draws a shape that consists of two lines on the board and one straight that cuts them and ends the process by determining interior angles.

Figure 2. *The Angle Model was Drawn by the Teacher.*



T: Now, when you look at it, which angles remain in between these two parallel lines (showing with his hand)? Tell me, Alperen.
S2 (Alperen): An acute angle, teacher.
T: Hmm, which angles? I want the names.
S (Alperen): x, x and b.
T: x, b. anything else? Yes, Ibrahim.
S (İbrahim): t, c
T: t and c. These four, right?
S: Yes.
T: Now, these are the interior angles. The name of the rule is interior alternate angles. If these angles are inside, which of these angles are alternates for another? (Hands risen by the class). Ahmet.
S (Ahmet): y and z are alternates, teacher.
T: These are exteriors, but they should be interiors and alternates.
T: All right, let me say it, its x and c.
S: Some students say t and b.
T: Also t and b. These should be equal. (Moving towards under the heading) which ones again?
S: x and c.
T: x and c (writes it on the board).
S: t and b.

(08.05) section 3 *T: t and b are true.*

In this course, T3 visualizes the angle formed by two parallel and one transverse line with a cutting line. Using this visualization, T3 asks the students to make an inference from the shape through reasoning. While the students are talking about the question, we see that they consider the shape and answer by interpreting the shape. This statement is a natural *discursive process* represented by 5 (A) and occurs independently. This reasoning process tries to get the person to find alternative angles within the given and through the image itself.

The direction of perception is evaluated in the construction (3) direction context. This is indicated by arrow number 3 on the dialogue map. Asking students to give the figure the basic geometric elements (angle) at first glance is evaluated simultaneously with the visualization aspect in the context of perceptual comprehension. In addition, the teacher, which allows students to make inferences by reasoning on what is given in Table 4, performs activities that stimulate discursive comprehension.

Table 4. *Dialogue Map in the Context of the Reasoning Processes of a Sample Dialog*

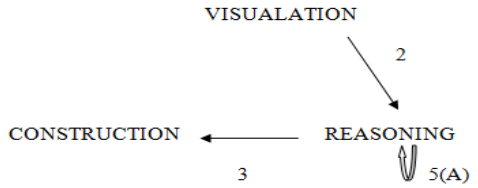
Cognitive process	Cognitive apprehensions
	perceptual - discursive – sequential

Table 4 shows that the cognitive processes were coded as 2-5(A)-3 in the sample dialog. The arrow numbered 2 in Figure 2, given for the sample dialog, expresses the unidirectional interaction between the visualization and reasoning aspects in the cognitive process category. The sample dialog coded the cognitive apprehensions as perceptual - discursive – sequential.

VALIDITY AND RELIABILITY

More than one teacher's lecture videos were examined in order to increase the validity and generalizability of the findings of the study. Within the context of the reliability of the data analysis, two separate researchers carried out coding processes through the cognitive processes and perceptual apprehension aspects over the transcribed version of the footage of a participant independently. The questions with “Consensus” and “Dissidence” were determined by comparing the responses the researchers gave based on the aspects available in the framework used within the scope of the descriptive analyses. If the researchers expressed the same aspect in the relevant section, this was considered a consensus; yet if they marked different options, this was deemed a dissidence. The “interrater reliability” was found as 83% (35/42) for the cognitive processes and 81% (22/27) for the cognitive apprehensions in the study, and this rate is deemed to be reliable in the sense of Miles and Huberman (1994). Although the rate obtained was considered reliable, the researchers gathered and discussed until they reached a consensus over the points of disagreement. Thus, the reliability of the data analysis was improved through deviant cases.

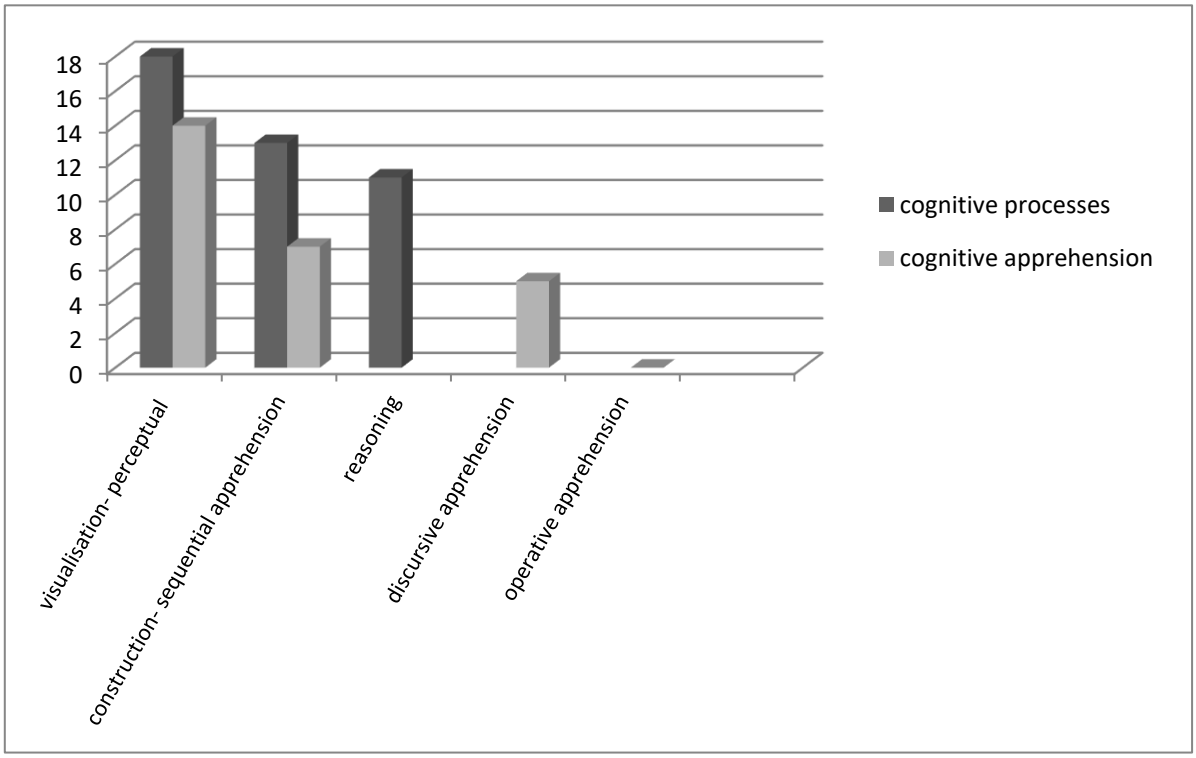
FINDINGS

The results obtained from this study are presented as the frequency of using the geometrical reasoning processes and the dialog maps in each section of the courses for each participant.

CLASSROOM PRACTICES OF T1 IN THE CONTEXT OF GEOMETRIC REASONING PROCESSES

The aspects obtained from the analysis of the geometrical reasoning process of classroom practices of T1 are given in Diagram 1.

Diagram 1. *Geometric Reasoning Processes and Frequencies in T1's Classroom Practices*



When Diagram 1 is examined, the geometry-based class of T1's classroom applications shows that these two aspects are simultaneous and support each other in the cognitive process category by evaluating them with the visualization aspect (18) and the perceptual comprehension aspect (14). These two categories are similar in numbers. These numbers point out the relations between the processes, as stated in the work of Guven and Karpuz (2016). Furthermore, the fact that evaluations at similar numbers were made within the scope of the construction aspect (13) in the cognitive process category and the sequential perception aspect (7) in the perceptual category shows that there may be a correlation between these two aspects. It is seen that there are no aspects that can be evaluated in the cognitive apprehension category at similar numbers to the reasoning aspect in the cognitive perception category. The diagram shows that the discursive apprehension aspect, which has the least representation throughout the course observed, is independent of the others. Thus, no findings encountered in C1's class can be evaluated in the operative apprehension aspect.

Table 5. *Dialogue Map in the Context of the Reasoning Processes of T1's Classroom Practices*

Section	Time interval	Cognitive processes	Cognitive apprehensions
Section1	0.50-4.15	4-1-5(A)	Perceptual
Section2	4.15-12.45	5(A)-3-4-5(B)	sequential–perceptual –discursive
Section3	12.48-16.19	2-5(A)-5(B)-3	perceptual–discursive
Section4	16.50-23.57	4	sequential-perceptual
Section5	24.24-40.20	2-5(B)	perceptual-discursive

Table 5 shows that T1's classroom practice was divided into five significant sections and that the cognitive process and cognitive apprehension categories constitute the dialog map through the data obtained from these sections. Looking closely at the table, various dialog maps exist in each section. When Table 3 is analyzed, it is seen that behaviors can be evaluated within the scope of the perceptual apprehension in the cognitive apprehension category in each section, simultaneously with the cognitive process aspects. When the geometrical activity of the teacher in sections 1, 2, 3 and 5 is considered, it is possible to see a rich interaction between the aspects in the cognitive process category. In contrast, a unidirectional interaction is observed in section 4.

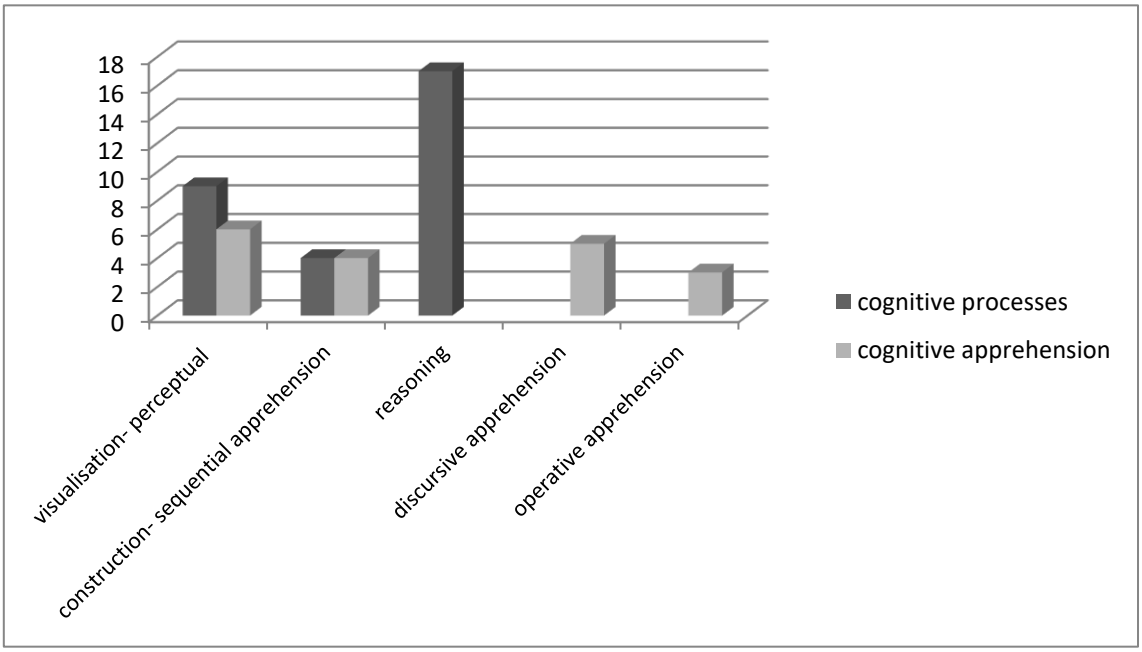
The teacher asks questions to the students to gather their attention, test their preliminary knowledge, and start the new subject through visuals before starting the course in section 1. For instance, it was observed that the teacher asked the students what a triangle was or why it was called a triangle before starting the subject of triangle inequality. The students attempted to create a triangle by describing the construction of a triangle. Then, it was observed that the teacher brought meaning to the features of the triangle visual shown on the smartboard. In section 2, the teacher told the students to draw a triangle having side lengths of 1-3-5 cm using a ruler.

Nevertheless, the students initially attempted to draw this triangle without following any sequences or directions and stated that they failed. When the teacher asked the students why they were having this much difficulty, one student expressed that they needed specific rules for this drawing. The teacher tried to make the students find the rule at this point. In sections 3 and 5, however, the teacher included the students in the process and asked questions to get them to make inferences to bring meaning to the subject. Besides, it was observed that the teacher guided the students at specific points that could have been needed to solve the problems during the practices implemented to get the students to solve exercises on the smartboard. Nonetheless, the teacher acted as a lecturer, while the students were listeners in section 4. Moreover, the results included the behaviors that could be evaluated in the reasoning aspect of the cognitive process category in every section, excluding section 4.

CLASSROOM PRACTICES OF T2 IN THE CONTEXT OF GEOMETRIC REASONING PROCESSES

The aspects obtained from the analysis of the geometrical reasoning process of T2's class are given in Diagram 2.

Diagram 2. *Geometric Reasoning Processes and Frequencies in T2's Classroom Practices*



Based on Diagram 2, when T2's classroom practices are evaluated within the context of the geometrical reasoning processes, it was observed that the visualization aspect in the cognitive process category was emphasized nine times. The perceptual apprehension aspect in the cognitive apprehension category was emphasized six times. Furthermore, evaluations at the same numbers were made within the scope of the construction aspect (4) in the cognitive process category, and the sequential perception aspect (4) in the perceptual category shows a strong connection between these two aspects. The reasoning aspect was emphasized the most in the cognitive perception category.

Table 6. *Dialogue Map in the Context of the Reasoning Processes of T2's Classroom Practices*

Section	Time interval	Cognitive processes	Cognitive apprehensions
Section1	00.00-03.25	5(B), 5(A)-3-4	discursive – Perceptual – sequential
Section2	3.23-7.26	2-5(B)-3	sequential – Perceptual – discursive
Section3	7.56-11.30	2-5(B), 5(A)	Perceptual – discursive
Section4	11.30-18.50	2- 5(B)	Perceptual –operative
Section5	18.50-25.20	2-5(A)-3	sequential – Perceptual – discursive
Section 6	25.20-27.30	2-5(B), 5(A)-3	sequential – Perceptual-discursive
Section7	32.40-42.00	5(B)-1	discursive –operative

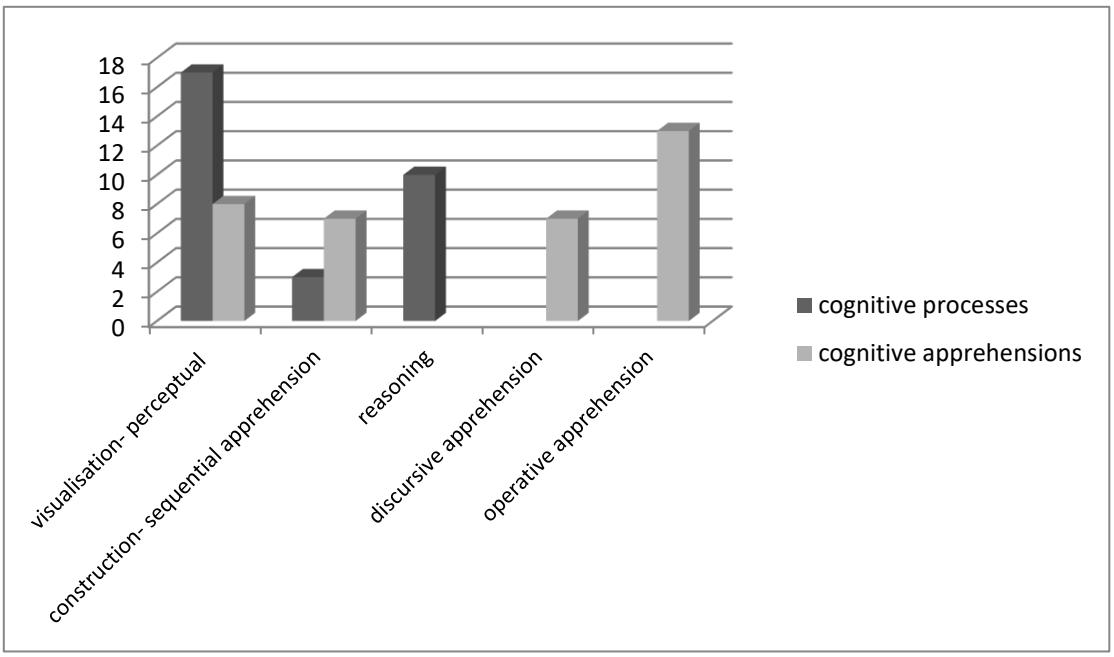
Table 6 illustrates that T2's classroom practice was divided into seven significant sections. The cognitive process and cognitive apprehension categories constitute the dialog map through the data obtained from these sections. Some features can be evaluated within each section's scope of the discursive apprehension in the cognitive apprehension category, simultaneously with the cognitive process aspects. Furthermore, it is also observed that interactions can be evaluated within the scope of the perceptual apprehension in the cognitive apprehension category in each section, excluding section 7, simultaneously with the cognitive process aspects.

In the T2 classroom practices, rich interactions are observed between the aspects in the cognitive process category, between the aspects in the cognitive apprehension category, and between the cognitive process category and cognitive apprehension category. Furthermore, T2 followed the direction from visualization to reasoning in the cognitive process category in each section, excluding sections 1 and 7. T2 kept students' attention alive by asking questions aimed at change and expansion in the students' knowledge at every stage of the course. For instance, it was observed that the teacher invited one student to the board to draw a square and asked other students questions, such as "Is this a square? Why not? What does it need to be a square?" as this student kept drawing, to make them following a specific sequence and give correct answers.

CLASSROOM PRACTICES OF T3 IN THE CONTEXT OF GEOMETRIC REASONING PROCESSES

The aspects obtained from the analysis of the geometrical reasoning process of T3's classroom are given in Diagram 3.

Diagram 3. *Geometric Reasoning Processes and Frequencies in T3's Classroom Practices*



Based on Diagram 3, T3 mostly used the visualization aspect (17) and the construction aspect the least (3) concerning the cognitive perception process. Moreover, it is seen that the operative apprehension aspect (15) was used the most concerning the perceptual apprehension process.

Table 7. *Dialogue Map in the Context of the Reasoning Processes of T3's Classroom Practices*

Section	Time interval	Cognitive processes	Cognitive apprehensions
Section1	00.00-06.30	2 - 5(A) - 5(B) - 3	Perceptual - discursive – sequential
Section2	07.13-08.05	2 - 5(A) - 3	Perceptual - discursive – sequential
Section3	08.05-08.55	2 - 5(A) - 3	Perceptual – discursive – sequential
Section4	9.50-11.00	2 - 5(A)	Discursive - Perceptual
Section5	11.00-16.50	2 - 5(B)	Perceptual – discursive
Section 6	16.50-20.52	2-5(B)	Perceptual – operative
Section7	20.52-24.40	2-5(A),5(B)-3	Perceptual - discursive - sequential –operative
Section8	24.40-30.00	2-5(A)	Perceptual - discursive – operative
Section9	30.00-33.50	2-5(A),5(B)	Perceptual - operative – discursive
Section10	33.50-35.25	2-5(A)	Perceptual - operative –discursive
Section11	35.30-40.00	2-5(A)	Perceptual - operative –discursive

When Table 7 is analyzed, T3's classroom practice was divided into 11 significant sections, and the cognitive process and cognitive apprehension categories constitute the dialog map through the data obtained from these sections.

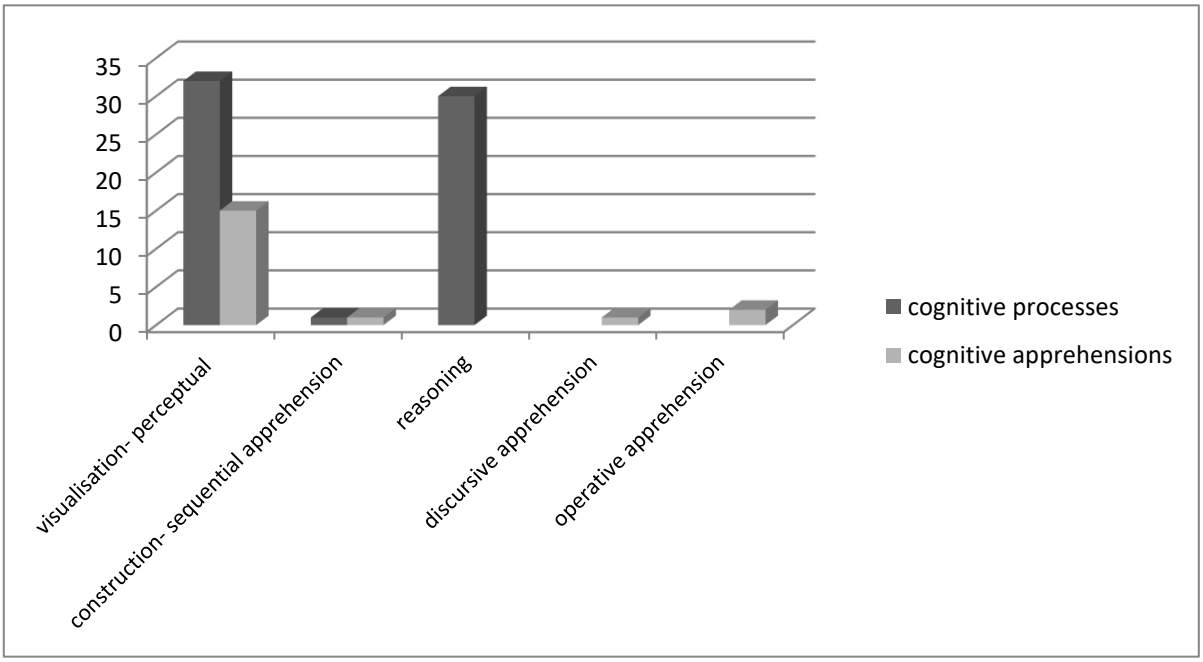
There are similar cognitive processes and cognitive apprehensions between sections 1, 2 and 3, 4 and 5, and 8, 9, 10, and 11. In section 7, however, it can be seen that a chain is created with a rich interaction in the form of 2-5(A), 5(B) -3, within the context of the cognitive process. A geometrical activity was obtained by experiencing a perceptual apprehension process intertwined with the natural discursive process and the discursive apprehension and operative apprehension processes intertwined with the theoretical process. Besides, it was determined that there were behaviors that could be evaluated within the scope of the perceptual apprehension in the cognitive apprehension category in each section, simultaneously with the cognitive process aspects. Furthermore, behaviors can be evaluated within the scope of the discursive apprehension in the cognitive apprehension category in each section, excluding section 6, simultaneously with the cognitive process aspects. As of section 6, behaviors that could be evaluated in the operative apprehension aspect in the cognitive apprehension category were observed.

In each section of T3's classroom practice, particularly in section 7, rich interactions are observed between the cognitive process category, the aspects in the cognitive apprehension category, and the cognitive process category and cognitive apprehension category. Furthermore, the teacher followed the direction from visualization to reasoning in the cognitive process category in each section. During the class observation, T3 directed the students to solve exercises to let them see the different aspects of the shapes. For instance, the teacher attempted to make it easier for the students to see the corresponding angles, alternate interior angles, and alternate exterior angles between two parallel lines by drawing auxiliary straight lines for both lines or extending them.

CLASSROOM PRACTICES OF T4 IN THE CONTEXT OF GEOMETRIC REASONING PROCESSES

The aspects obtained from the analysis of the geometrical reasoning process of T4 are given in Diagram 4.

Diagram 4. *Geometric Reasoning Processes and Frequencies in T4's Classroom Practices*



In diagram 4, T4 used the visualization (32) and reasoning (28) aspects within the cognitive processes context while using the construction aspect only once. However, in the cognitive apprehension context, the perceptual apprehension aspect (15) became prominent, while only a little emphasis was put on other aspects.

Table 8. *Dialogue Map in the Context of the Reasoning Processes of T4's Classroom Practices*

Section	Time interval	Cognitive processes	Cognitive apprehensions
Section1	00.00-06.00	2-5(A),5(B)-3	Perceptual - discursive – sequential
Section2	06.00-10.00	2-5(A),5(B)-3	Perceptual - discursive – sequential
Section3	10.00-14.15	2-5(B), 5(A)-3	Perceptual–operative- sequential
Section4	18.50-23.53	2- 5(A),5(B)	Perceptual – discursive
Section5	23.53-26.50	2-5(A)	Perceptual
Section 6	34.50-40.00	2-5(A)	Perceptual

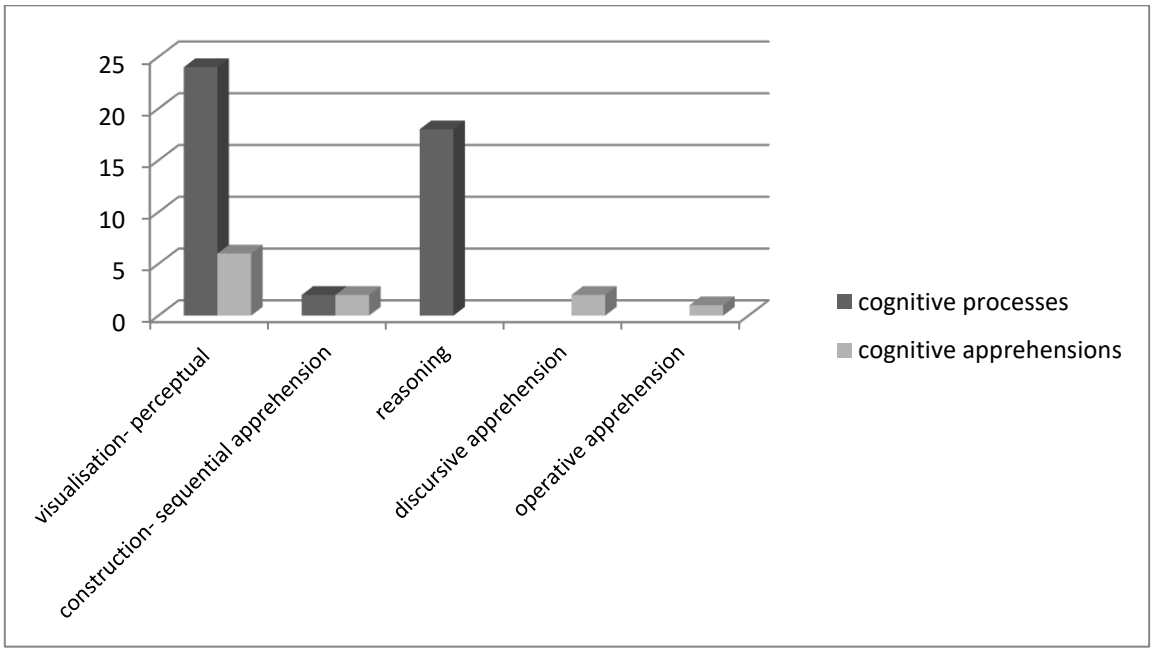
Table 8 shows that T4's classroom practice was divided into six significant sections based on the analysis. It can be seen that the perceptual apprehension aspect in the cognitive apprehension category became prominent in each section, simultaneously with the cognitive process aspects. The operative apprehension aspect in the cognitive apprehension category became prominent only in section 3, simultaneously with the cognitive process aspects.

T4 followed the direction from visualization to reasoning in the cognitive process category in each section. The teacher aimed to ensure that the students acquired new information about concrete objects during the class. For instance, the teacher showed the concepts of an acute, right, obtuse angle, using the hour and minute hands of a wall clock in the classroom and the visuals on the smartboard.

CLASSROOM PRACTICES OF T5 IN THE CONTEXT OF GEOMETRIC REASONING PROCESSES

The aspects obtained from the analysis of the geometrical reasoning process of T5 are given in Diagram 5.

Diagram 5. *Geometric Reasoning Processes and Frequencies in T5's Classroom Practices*



When Diagram 5 was analyzed, T5 used the visualization aspect (23) the most. Furthermore, it can also be seen that, out of the geometrical reasoning aspects, T5 used the operative apprehension aspect the least.

T5 used the visualization (24) and reasoning (18) aspects within the cognitive processes context while using the construction aspect only twice in diagram 5. However, in the cognitive apprehension context, the perceptual apprehension aspect (6) became prominent, while only a little emphasis was put on other aspects.

Table 9. *Dialogue Map in the Context of the Reasoning Processes of T5's Classroom Practices*

Section	Time interval	Cognitive processes	Cognitive apprehensions
Section1	00.00-02.38	2-5(A)-3	Perceptual - discursive – sequential
Section2	02.38-05.05	2-5(A)	Perceptual
Section3	05.05-07.07	2-5(A)	Perceptual
Section4	09.30-12.01	2-5(A)	Perceptual
Section5	12.01-14.40	2-5(A),5(B)	Perceptual
Section 6	14.40-16.20	2-5(A)	Perceptual
Section7	16.20-17.10	2-5(A)	Perceptual- operative
Section8	35.35-36.40	2-5(A)	Perceptual

When looking at Table 9, it is clear that T5's classroom practice was divided into eight significant sections. Out of these sections, sections 2, 3, 4, 5, 6, and 8 consisted of similar dialog maps. A chain was created in the form of 2-5(A)-3 in the cognitive process category of section 1. It can be seen that the perceptual apprehension behavior in the cognitive apprehension category was present in each section, simultaneously with the cognitive process aspects. Moreover, in-class activities can be evaluated within the scope of the operative apprehension in the cognitive apprehension category only in section 7, simultaneously with the cognitive process aspects. For instance, the teacher asked the students to think of the pencil's point as infinite or the straight line's ends as infinite. This example can be considered within the scope of the operative apprehension as the teacher followed the direction from visualization to reasoning in the cognitive process category in each section, excluding sections 1 and 7.

DISCUSSION, CONCLUSION, AND IMPLICATIONS

This study was examined within the scope of geometric reasoning processes of geometry-based mathematics courses. First, the findings on the frequency of use of geometric reasoning processes are discussed. Then, the findings on the interaction of cognitive and perceptual processes among themselves were discussed.

DISCUSSION ABOUT THE FREQUENCIES OF USE OF THE GEOMETRICAL REASONING PROCESSES

As per the results obtained from the study, the most prominent cognitive process aspect was the visualization in other classes, except for that of T2. Arcavi (2003) deems perceptual and conceptual reasoning the key element of visualization. The fact that the teachers emphasized the visualization aspect the most out of all geometrical reasoning processes during their classes shows that they emphasize the necessity that space should be visually represented for them to carry out functions, such as the visual demonstration of a situation, a general overview of the current situation, instantaneous perceptions, and subjective verification, for their students (Duval, 1995). Visualization is a method used by teachers since it functions as a strong tool for bringing meaning to mathematical concepts and associating them as it enables the abstract space to become concrete, as well as for structuring the knowledge, for decreasing the complexity when dealing with multiple information, for facilitating the solution of mathematical problems, thus for constituting a basis for abstract thinking, for applying mathematics on daily life, and for making the students love mathematics. Therefore, Duval (1999) claims that symbolic expressions and visualization are essential for understanding mathematics.

Based on the study's findings, the teachers' strong emphasis on the reasoning process can be evaluated as a positive issue. Geometrical thinking also stands for reasoning. Some researchers (Diezmann & English, 2001; English, 1998; Kramarski & Mizrachi, 2004; Kramarski et al., 2001; Curtis, 2004; Schoenfeld, 1992; Sparkes, 1999; Toole, 2001; White, Alexander & Daugherty, 1998) also support the fact that reasoning is significant for the teaching of mathematics (geometry) effectively.

Based on the results obtained from the study, it was seen that the visualization aspect in the cognitive process category and the perceptual apprehension aspect in the cognitive apprehension category support one another. Then again, it was also seen that the construction aspect in the cognitive process category and the sequential perception aspect in the cognitive apprehension category support one another in all teachers. Nevertheless, it was observed that the construction code did not become quite prominent, except for T1's class. Geometrical constructions are important in teaching geometry meaningfully (Martin, 2012).

DISCUSSION OF THE RESULTS REGARDING THE INTERACTION OF COGNITIVE PROCESSES AND COGNITIVE APPREHENSIONS

As a result of the analysis of the teacher-student roles as well as the dialogue maps in the departments with rich interactions in the context of both cognitive processes and cognitive apprehensions, as well as the observational results obtained from the research, students are active. The teacher plays a guiding role while the student takes active responsibility in learning. In the sections where limited interactions were observed, it was determined that the teachers conveyed information and the students played the role of passive listeners. Accordingly, various studies have stated that in learning environments with rich and superior interaction, active participation of students in the learning process will provide opportunities for them to make sense of information rather than memorize it (Eriksson, Helenius & Ryve, 2019; King, 1993; Mierson & Parikh, 2000).

It was observed that cognitive processes were emphasized naturally in three of the classes examined (T3, T4, and T5). In one (T2) the theoretical discursive process was emphasized, and in one (T1), these processes were mixed. In the context of cognitive apprehensions only the visual dimension is used more. In two classes (T1 and T4), visual perception and sequential perception aspects are

frequently used simultaneously, and in two classes (T2 and T3), more than two dimensions are mainly used. This shows that geometric reasoning processes differ from class to class. When analyzed in this respect, there may be some differences regarding the development of students taking courses from different teachers in geometric reasoning processes. However, this may lead to advantageous or disadvantageous factors for the relevant geometric reasoning styles of students going through the same educational processes. From this point of view, it appears that the teaching processes of teachers should be examined more meticulously.

The emphasis on other aspects was less than the visualization and reasoning aspects in the cognitive process, and cognitive apprehension categories may be stemming from the van Hiele effect over the curricula. According to the studies in the literature, secondary school students are at the first and second levels per the van Hiele geometrical Thinking levels (Nisawa, 2018). Based on these levels, students cannot make upper-level inferences, such as theorems and axioms, as they are visual and descriptive. These skills initially surface when the visual and reasoning levels are improved as it is believed that it is not possible to reach superior skills, such as operative apprehension and discursive apprehension, in Duval's cognitive model.

The results obtained from the dialog maps put forward that there was no hierarchical structure between the aspects in the geometrical reasoning process, but rather an interactive, simultaneous, and sometimes independent one was present. The fact that these aspects were interactive will ensure effective learning while being independent enables each aspect to be improved individually. Nevertheless, it can be stated that the evaluation of these actual results, which are limited to the preferences of the participating teachers, by focusing on different intra-class practices from a higher number of teachers can be a significant endeavor to achieve generalizable results. Then again, it is also considered that the studies, which would cover different geometrical subjects and unit-based evaluations to set forth the effectiveness of Duval's model in particular, would enable a wider spectrum for the discussions that constitute the theoretical foundation of this study (Duval, 1999; Fischbein, 1993; Herbst, 2006; Hoffer, 1981; Piaget & Inhelder, 1967; van Hiele, 1957).

Also, it is prominent that the participants' teaching processes differed in geometrical reasoning processes. The results obtained at the end of the study showed that the teachers emphasized the visualization aspect in the cognitive process category in their classes. However, the second emphasis was put on the reasoning aspect in the same category.

Geometry teaching depends on how well the teachers know geometry and how effective they can teach it (Jones, 2000; Sunzuma & Maharaj, 2019). Except for the methodical and theoretical recommendations, there may also be several practice-oriented perspective recommendations in light of the results obtained from this study. Accordingly, it may be possible to offer occupational development opportunities aimed at a student-oriented mathematics education by preparing examples that would take Duval's (1999) model as a basis, and that would take the interaction of the cognitive and perceptual aspects of the teacher-student roles in the intra-class practices of the teachers to a higher level as much as possible.

AUTHOR CONTRIBUTION

-First author have been involved in drafting the manuscript or revising it critically for important intellectual content.

-The second author have been involved revising it critically for important intellectual content.

-The third author have made substantial contributions to design, or acquisition of data, or analysis and interpretation of data.

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Research Article

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Foreign Language Teachers' Conceptions of Improvisation*

Görsev Sönmez, Assist. Prof. Dr., Istanbul Gelişim University, gorsevi@gmail.com
0000-0001-6726-3452

Onur Köksal, Prof. Dr., Selçuk University, onurkoksal@selcuk.edu.tr
0000-0003-0798-3620

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Abstract

As teachers gather experience and knowledge, a shift towards a degree of flexibility in teaching and the development of the ability to improvise occur. With specific relation to knowledge base, teacher autonomy, and responsibility, the teachers experience severe challenges throughout their improvisational practices. Therefore, improvisation is suggested to be a part of teacher education. This article is based on a qualitative case study of teachers' conceptions of improvisation in teaching and specific characteristics of how improvisation in teaching is conceived. Empirical data were gathered from 10 in-service English as a Foreign Language (EFL) teachers' interviews. The transcripts were analyzed according to open-coding procedure. Results of the study revealed that foreign language teachers have a wide range of conceptions regarding this specific topic. Their conceptions are mostly positive; however, they also highlight some negative conceptions which can cause problems in teaching and teaching quality.

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INTRODUCTION

In the last quarter of the 21st Century1970s and 1980s, the qualities of a good teacher received attention in the field of educational research. For this specific purpose, teachers with experience were compared with the recently graduated ones, ant the findings revealed that experienced teachers have their routines and whereas novice ones tended to act through standard sequences of tasks and activities. Another finding was about the skill of experienced teachers regarding how to improvise to respond to the needs in a specific classroom, which leads to spending less time to planning in comparison to new teachers (Berliner & Tikunoff, 1976; Borko & Livingston, 1989; Yinger, 1987). With this skill that blooms when teachers need to learn to work under uncertainty because this type of instruction involves some improvisation (Knight et al., 2015), teaching quality rather than teacher quality has gained more significance.

However, there is not still any agreement regarding the definition of improvisation as a teaching skill. A variety of descriptions ranging from the ability to reflect on action to performance of instruction has been noted. From this wide range of descriptions, it can be elicited that teachers' conceptions and improvisational skills have to be related to what to-do in class and teaching quality.

IMPROVISATION AS A CONCEPT AND A TEACHING SKILL

Improvisation as a word comes from the Latin root "improvisus", meaning "the unforeseen" (Montuori, 2003, p. 24) or "to provide the unexpected" (Dehlin, 2008, p. 25). It is applicable when daily routines or schedules do not work as they are planned, or when something unforeseen occurs in an intuitive and spontaneous manner. This concept is valid for many professions (e.g. drama, art, music, education) (Holdhus et al., 2016); however, in education, not much focus has been attributed to different features of it.

To improvise, in education, has frequently been accepted as an applied teaching skill that can be developed or learned throughout career. As commonly argued, the fact that improvisation is an integral part of daily life has to be considered as well (Dehlin, 2008).

On the other hand, there has still been no consensus regarding the definition of teaching skill. As Karlsen (2006) put forth, being skilled at improvisation, the teacher is expected to have the ability to make on-site decisions to solve any encountered problems. In other words, teachers' conceptions and improvisational practice have to be in line with the discussions regarding value-based instructions, curriculum content and teaching skills.

Being a recent topic in the field of education, the theory behind improvisation actually dates back to early traditions. The major reason underlying this situation is the separation between theory about teaching as a pedagogical skill and the teaching of pedagogical content knowledge (Shulman, 1986; van Driel & Berry, 2010). To exemplify, there is a vast amount of literature on the teaching of improvisation as a skill, however, this literature does not necessarily provide improvisational teaching skills (Whitcomb, 2013, p. 44).

As a result of this theoretical foundation, teaching has been recognized to be improvisational (Dezutter, 2011). However, teachers have to be trained about the methods, techniques and strategies to identify, experience and apply improvisation for pedagogical purposes (Dezutter, 2011). In a sense, Pedagogical Improvisation (PI) involves simultaneous decision making and on-site action within a pedagogical setting. Pedagogical improvisation can activate during instruction while choosing a teaching method, giving examples or making use of body language.

As argued by Sawyer (2011, p.1) "Great teaching" mostly governed by rules, principles, standards and structure that have been developed with experience, including improvisational practices. Therefore, it wouldn't be incorrect to say that teachers with more experience are better at

improvising since they spend less time planning their lessons and are more likely to use improvisational techniques.

IMPROVISATION IN A FOREIGN LANGUAGE CLASSROOM

Improvisation is claimed to encourage foreign language learners to be active in the learning process. Since it is practical to conduct the activities through improvisation, Wilson (2008) states that it requires very little time for both teachers and the learners. Moreover, the activities, which are implemented with improvisation in language classrooms, are not so demanding for the learners as "the language required to carry out these improvisation tasks is not difficult, and the students will not be frustrated by trying to say something that is beyond their ability" (Wilson, 2008, p. 31). Improvisation is used as "intuition guiding action in a spontaneous way" in foreign language classrooms (Crossan & Sorrenti, 1997, p. 155). Thus, foreign language learners apply their own language skills and competence to be involved in a meaningful communication in a classroom. This is also evident in the definition provided by Berk and Trieber (2009, p.30). They define improvisation as "a conversational skill that, like other social and interactive skills, can be taught."

Using improvisation as a teaching tool in a classroom is also suggested since it offers an opportunity to come up with a variety of answers during the classroom activities. Additionally, "the instructor does not evaluate any given response but instead facilitates the improvisation process among the students, with the goal of guiding them toward discovery of their own knowledge (Berk & Trieber, 2009, p. 30). "The atmosphere, in which improvisational teaching is dominant, is invaluable because of the fact that "all students get to express themselves creatively, to play together, to have their ideas honored, and to have their mistakes forgiven." (Berk & Trieber, 2009, p. 30).

Moreover, improvisation is accepted as an instrument to enhance students' problem-solving skills by developing their intellectual development (Sawyer, 2004). As Kostrhonová (2011) stated, using improvisation in language classroom activities, especially in speaking activities can help students be more creative and provide an alternative way for students to present their ideas by connecting the role which is given them to improvise with their own experience by improving the way of thinking and using their attitudes.

The current study was concerned with the improvisational conceptions of foreign language teachers in Turkey where improvisation received not much attention. In order to introduce the concept to national literature and add to international literature from a glocal perspective, present study is significant with a qualitative research design aiming at receiving in depth data regarding the Turkish teachers', who are teaching English as a foreign language, conceptions of this naïve concept.

METHOD

RESEARCH DESIGN

Current study was designed as a collective case study in a qualitative manner. Collective case study design was most appropriate for our research because we gathered data from several practitioners who were not collocated to examine our phenomena (Stake 2000).

PARTICIPANTS

The participants were ten teachers of English working in a university's language preparation program. They were selected by purposeful sampling or strategic sampling since they were assumed to provide useful insights about the topic (Johannessen, Tufte, & Kristoffersen, 2010, p. 160; Merriam, 2009, p. 77-78; Patton, 2002). All participants were female and teaching English as a Foreign Language for more than 5 years. They all held an MA degree in the field of English language teaching.

DATA COLLECTION

Data were gathered through nine open-ended questions. The questions were prepared, and assigned to participants after an intensive preparation process. At first, a pool of questions with approximately twenty questions was prepared, and these questions were sent to external scrutiny for content, and construct validity. After they provided feedback, some questions were eliminated, some others combined and some new ones were added. In order to check the reliability of the questions, the prepared list of questions was assigned to five EFL teachers. After an informal negotiation on the meaning and intelligibility of questions with the piloting participants, nine questions were decided to be used as data gathering instrument (see Appendix).

These questions were sent to participants through e-mail as a word document and they were asked to respond each question in detail. All participants sent back their responses the other day. Information received through written responses of the participants were analyzed with pattern coding strategy and content analysis. Trustworthiness of the data was checked through the implementation of the criteria suggested by Guba and Lincoln (1994).

DATA ANALYSIS

The aim of this study was to investigate the conceptions of Turkish EFL teachers regarding improvisation. With this purpose in mind, the answers given to nine open-ended questions were analyzed through content analysis and pattern coding strategies.

RESEARCHERS' ROLES AND ETHICS

First author has made substantial contributions to conception and design, or acquisition of data, or analysis and interpretation of data. The second author has been involved in drafting the manuscript or revising it critically for important intellectual content.

In order to ensure the ethical considerations, informed consent was obtained from all individual participants included in the study.

FINDINGS

CONCEPTIONS ABOUT PEDAGOGICAL IMPROVISATION

Responses about what pedagogical improvisation (PI) is, revealed a variety of concepts. Flexibility in the classroom, ability to adapt whatever is known, instant production and performance depending on the situation, ability of gathering existing pieces together in teaching, being able to collect and assemble existing things in a new combination, new ways to do something, changing the routine and finding and adapting new methods in the classroom, and on-spot-process to encourage students. Following quotations demonstrating the participating EFL teachers' responses may help better understanding their conceptions.

> "Pedagogical improvisation is all about being free from strict plan and curriculum. This leads to being flexible in the classroom. And if a teacher feels flexible, this helps him try new ways, new methods to change the routine."

> "Adapting what is known, and putting all the pieces together for better teaching can be called as PI."

CONCEPTIONS ABOUT TEACHING SKILLS CHARACTERIZED AS IMPROVISATIONAL

The participating EFL teachers' conceptions about improvisational teaching skills showed that teacher's being a dramatizer, ability to make spontaneous decisions (N=2), ability to solve problems (N=4), giving concrete instruction, providing spontaneous responses, creativity (N=3), time management, class management, self-confidence (N=2), critical thinking, ability to cope with

unexpected situations (N=2) and being practical are the skills a teacher who is improvisational should have. The quotations directly taken from the written responses explains these conceptions better.

> "If you are skillful in terms of improvisation, this means that you are able to make spontaneous decisions to solve problems that might occur while teaching."

> "For a teacher to be called as skilled enough to use improvisation as an instrument, that teacher should be good at time and classroom management, should be self-confident as well."

CONCEPTIONS ABOUT THE POTENTIAL / LIMITATIONS OF IMPROVISATIONAL KNOWLEDGE

Another question aimed at eliciting participants' conceptions regarding the potential and limitations of implementing improvisational knowledge while teaching. Potentials that were commonly noted are; gives chance to create a new world, creates a classroom beyond its walls, leads to broad imagination and creativity, adapting the lesson according to student needs instead of following standard lesson plans. On the contrary, overuse of improvisation demonstrates a low level of professionalism, can lead to being unplanned and missing the routine, leads to responsive teaching are the agreed limitations. The potentials and the limitations of improvisational knowledge are explained amenably in the below vignettes.

> "It provides a classroom which encourages broad imagination and creativity."

> "The teacher is autonomous to meet the needs of the students being independent of the strict curriculum."

> "If improvisation is overused while teaching, it can lead the teacher to miss the routine, get used to being unplanned."

CONCEPTIONS ABOUT IMPROVISATION IN LANGUAGE TEACHING

In addition to the participants' conceptions of improvisation in teaching, how they perceive improvisation in language teaching was also investigated. The conceptions elicited are as follows; creates a pathway and guides students for real life language use (N=2), may boost students' speaking skills (N=2), leads to spontaneous language performance, gives opportunity to use language in a context, promotes communication, leads students overcome their low self-esteem and fear of making mistake.

> All of these concepts are stated in the following quotations taken from informants' responses.

> "By being away from unreal language use, improvisation leads to authentic language use which in turn helps them overcome their low self-esteem and fear of making mistake."

> "Using improvisation in language classroom boost students' speaking skills because of the integration of communicative language teaching, and using language in context."

STRENGTHS/WEAKNESSES OF IMPROVISATION IN TEACHING

Another area that was explored was about the informants' conceptions of improvisational teaching's strengths and weaknesses. Strengths were listed as; causes accumulation of experience for improvisation (N=2), leads to an authentic teaching environment, enables teacher to use her potential, increases creativity and confidence (N=2), beneficial for the learners, helps students overcome speaking anxiety. On the other hand, improvisational teaching was believed to require some skills and knowledge which also appeared in participants' responses as negative conceptions; teacher has to be skillful, requires high content and pedagogical content knowledge, depends on teachers' improvisational skill.

> "I cannot think of any weakness actually since it is the way of authentic teaching which increases the creativity of both learners and the teacher. This also helps learners overcome their speaking anxiety."

> "I am not sure whether it can be accepted as a weakness or not, however, the teacher should be skillful enough and have the necessary pedagogical content knowledge to be able to apply improvisation."

CONCEPTIONS ABOUT THE IMPACT OF PROFESSIONAL DEVELOPMENT ON IMPROVISATION IN TEACHING

How professional development, an integral part of teaching career, affects improvisational teaching was also investigated. All participants agreed on three common impacts; namely, PD adds to improvisational techniques and strategies (N=4), PD increases self-efficacy and confidence in teaching thus improvisational skills (N=6), PD increases teacher autonomy which leads to better improvisation in teaching (N=4).

Every concept regarding the impact of PD can be seen in the following vignettes.

> "A teacher involved in professional development learns improvisational techniques and strategies that can improve their self-efficacy and self-confidence while implementing improvisation in their teaching."

> "As a result of the strategies gained through professional development, teachers' autonomy increases and they can become better implementers of improvisational teaching skills."

CONCEPTIONS ABOUT THE FACTORS AFFECTING TEACHERS' IMPROVISATION SKILLS

Finally, the participants were asked to note the factors that may have the potential to affect teachers' improvisational skills. The list including the results of this question is kind of longer compared to the previous areas. Time, lack of knowledge, position of the teacher in the classroom, motivation of both parties, the adequacy/inadequacy of physical conditions, stress level of the teacher, PD of the teacher, desire of the teacher to try new things, size and level of the class, extracurricular responsibilities of the teacher, years and quality of experience, strict curriculum, creativity and problem solving skill of the teacher, pedagogical content knowledge, classroom management skill, autonomy, and self-confidence of the teacher are the stated factors that potentially effective on teachers' improvisation skills.

> "There are many in fact, however, teachers' skill regarding, time management, applying communicative tasks, his being willing to take part in PD, and not having extra-curricular responsibilities can have positive impact."

> "If the teacher lacks pedagogical content knowledge, does not know how to solve problems, lacks self-confidence and autonomy, then it can be difficult to talk about improvisation."

As it is clear in the results of the study, participating foreign language teachers have a wide range of conceptions about many areas regarding improvisation in teaching.

DISCUSSION AND CONCLUSION

Current study investigated the conceptions of foreign language teachers with specific relation to improvisational teaching. With this aim, conceptions were grouped under some specific subtitles such as, improvisational teaching skills, factors affecting improvisational teaching, improvisation in language teaching, effect of PD on improvisation as a teaching skill, strengths and weaknesses of improvisational teaching.

Results of the qualitative study provided in-depth insights into foreign language teachers conceptions regarding this specific topic. They stated that improvisational teaching is all about flexibility in the classroom, ability to adapt whatever is known, instant production and performance depending on the situation, ability of gathering existing pieces together in teaching, being able to collect and assemble existing things in a new combination, new ways to do something, changing the routine and finding and adapting new methods in the classroom, and on-spot-process to encourage students. This result shows that language teachers are aware of the required capabilities and ways to apply improvisation in the classroom. These concepts are also listed in Crossan and Sorrenti (1997, p. 155).

Secondly, their responses to necessary teaching skills to make use of improvisation in the class involve skills such as being a dramatizer, ability to make spontaneous decisions, ability to solve

problems, giving concrete instruction, providing spontaneous responses, creativity, time management, class management, self-confidence, critical thinking, ability to cope with unexpected situations and being practical. These conceptions are all skills that a high quality and experienced teachers should have. By being parallel to what is stated in previous studies (Berliner & Tikunoff, 1976; Borko & Livingston, 1989; Yinger, 1987) it can be inferred that in order to implement improvisation in a language classroom, the teacher should be skillful both in terms of pedagogy and content. Moreover, teachers' problem-solving skills also reflect in students' problem-solving capabilities since they take their teachers as role models and learn how to find ways to overcome problems in a creative way. This is also evident in the study of Sawyer, 2004.

Another striking finding is about the potentials and limitations of the improvisational teaching. Even though, it was conceived as a positive, and effective teaching strategy by the teachers, they also underlined a very important point that can be a danger for teachers and their teaching qualities. It is overusing improvisation. Since it may cause getting used to teaching without getting ready, unplanned and spontaneous, teachers may get out of the track and continue teaching as they improvise.

Conceptions of participants regarding the strengths of implementing improvisation revealed that it is beneficial especially in language classrooms. Due to the fact that improvisational language teaching provides authentic language use and a more natural atmosphere, students can overcome their speaking anxiety, and become better at language use. Speaking skill which is accepted as the most difficult skill to develop mostly because of the affective filter the students have can be easier for the learners who are in a learning process where improvisational language teaching is implemented. This finding is parallel to what has been stated in Kostrhonová (2011).

Another finding showed the significance of professional development on better improvisational teaching. Despite not being surprising, PD is not a very commonly applied strategy in in-service teacher education. However, participants' awareness regarding this issue should be considered as important.

As a final result, participants listed a lot of factors that might impact improvisational teaching. Among the listed factors, there appeared some factors that might have positive and negative impact. Lack of knowledge, authoritative position of the teacher in the classroom, lack of motivation of both parties, the inadequacy of physical conditions, high stress level of the teacher, big size and low level of the class, extracurricular responsibilities of the teacher, and strict curriculum can have negative impact. On the other hand, involving in PD, desire of the teacher to try new things, years and quality of experience, creativity and problem-solving skill of the teacher, pedagogical content knowledge, classroom management skill, autonomy, and self-confidence can be listed as factors that can have positive impact.

To conclude, present study added to the literature of improvisational language/teaching with all these qualitative and in-depth findings. It would not be wrong to claim that foreign language teachers have a wide range of conceptions regarding this specific topic. Their conceptions are mostly positive; however, they also highlight some negative conceptions which can cause problems in teaching and teaching quality.

IMPLICATIONS

The findings of the current study are valuable in the sense that they provide various implications and suggestions for many fields in education. First of all, even though improvisation is not accepted as a teaching method and believed to develop with teaching skills and experience, the value of it as a teacher quality and ways to improve it as a teaching skill have to be explained in teacher education faculties as a course component by the teacher trainers. This can be done either with demonstration, or during practicum with observation.

Second important implication is for the professional development units of the state and private education institutions. In line with the significance of professional development in teachers career

journey, these units should take the responsibility to provide language/teachers with necessary training that may lead them learn strategies to implement improvisation in their teaching.

Another group that should consider the impact of teachers' improvisational skills in their language/teaching is educational policy makers. By putting loads of burden on the shoulders of Language/teachers such as heavy curriculum, crowded classrooms, extracurricular activities, unrealistic daily and weekly teaching hours, it would be utopic to expect teachers implement improvisation as a teaching skill. Actually, these stated burdens can also cause teachers overuse improvisation which leads to being unplanned at all.

Finally, improvisation should be accepted as a significant teaching strategy especially in language classrooms to lower students' anxiety in language production, and increase their self-confidence while performing in the foreign language.

LIMITATIONS AND SUGGESTIONS FOR FURTHER RESEARCH

As it is the case in every research, current study also has some limitations. To begin with, it only aimed at investigating foreign language teachers' conceptions of improvisations. However, teachers of other majors could also provide distinctive conceptions depending on their content areas. Another limitation is about the research design. Data were gathered with only one data source. Strengthening the data with some class observations could triangulate the data and add to its strength and significance by checking to what extent the participants apply their conceptions in their teaching.

Therefore, further research is required to overcome all these limitations in a variety of contexts with the participation of teachers from different majors and with the application of other data collection instruments.

ATUHOR CONTRIBUTIONS

First author has made substantial contributions to conception and design, or acquisition of data, or analysis and interpretation of data. The second author has been involved in drafting the manuscript or revising it critically for important intellectual content.

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APPENDIX (Interview Questions)

Dear Participant,

We kindly ask you to respond to the following open-ended questions as detailed as possible. Your personal information will not be used and your responses will be used only for the purpose of a research study, which aims to investigate the language teachers' conceptions of improvisation.

Thank you for your participation.

Dr. Görsev Sönmez & Prof. Dr. Onur Köksal

Open-ended Questions

1. What is improvisation in pedagogical practice?
2. What teaching skills can be characterized as improvisational?
3. What is the potential and/or limitations of improvisational knowledge and skills in teaching?
4. How do you define improvisation in language teaching?
5. What are the improvisational teaching skills?
6. What are the strengths and weaknesses of improvisational knowledge in teaching?
7. What are the strengths and weaknesses of improvisational skills in teaching?
8. How does professional development contribute to improvisation in teaching?
9. What are the factors affecting teachers' improvisation skills in a positive and negative way?

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The Mediating Role of Metacognitive Strategies in the Relationship between Gender and Mathematical Reasoning Performance

Eyüp Yurt, Assist. Prof. Dr., Bursa Uludağ University, eyupyurt@gmail.com
0000-0003-4732-6879

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Abstract

The purpose of this study was to investigate the mediating effect of metacognitive strategies in the relationship between gender and mathematical reasoning skills. 350 eighth-grade students participated in the research. Data were obtained using the mathematical power scale and the metacognitive strategies scale. Reasoning and metacognitive strategies were compared based on gender by applying independent groups t-test. The mediating effect of metacognitive strategies was investigated using SPSS Process Macro model 4. The results showed that the mathematical reasoning skills of female students were higher than male students. In addition, female students used more metacognitive strategies in mathematics lessons. Metacognitive strategies partially mediated the gender difference in mathematical reasoning skills. By enabling male students to learn and use metacognitive strategies effectively, gender differences in mathematical reasoning skills can be reduced.

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INTRODUCTION

The importance of individual differences in education has been known for a long time. Today, education systems are considered successful to the extent that they are sensitive to differences between individuals. Individual differences have a significant impact on students' academic performance (Farsides & Woodfield, 2003; Humphreys & Revelle, 1984; Şanlı, 2020). Individual differences come to the fore, especially in acquiring mathematical skills (Adams, 2007; Agrillo et al., 2013; Dulaney et al., 2015). Gender is one of the individual differences that affect mathematical skills (Gallagher & Kaufman, 2005; Lindberg et al., 2008). Mathematical reasoning skills, spatial skills, and mathematical problem-solving skills of females and males may differ (Mills et al., 1993; Tzuriel & Egozi, 2010; Zhu, 2007). According to the results of a meta-analysis study, it was stated that the mathematics achievement of females in the eighth grade is higher than that of males (Li et al., 2018). It is crucial to determine the factors that may mediate the gender difference to reduce gender-based differences in mathematics achievement. This study examined the mediating role of metacognitive strategies in the relationship between gender and mathematical reasoning skills. The results may advance helpful information for suggestions to reduce gender differences in mathematical skills.

GENDER DIFFERENCES IN MATHEMATICAL REASONING

Mathematics is a branch of science that requires reasoning. Mathematical reasoning is the process of acquiring new knowledge with mathematical tools (symbols, definitions, relations, etc.) and ways of thinking (inductive, deductive, comparison, generalizing, etc.). According to the National Council of Teachers of Mathematics (2000), reasoning is a fundamental part of mathematics and is among the basic standards. Reasoning is a mathematical force that should be developed for all students. Indicators of mathematical reasoning ability are a) preparing arguments, b) predicting results, c) explaining models by relating them to facts, d) using mathematical induction, e) developing assumptions, f) inferring and checking assumptions, g) using patterns and relationships h) making logical conclusions (Sumarmo, 2006). The secondary school mathematics curriculum aims to equip students with these indicators (MoNE, 2013). There are individual differences in mathematical reasoning. It is essential to consider individual differences for effective teaching of reasoning skills.

There are studies in the literature indicating that mathematical reasoning differs by gender. In a study of grades 2-6, males performed better on a mathematical reasoning test than females. It has been stated that males outperform females in tasks that require the application of algebraic rules or algorithms and in tasks that require understanding mathematical concepts and number relations (Mills et al., 1993). Sumpter (2016) aimed to determine which types of mathematical reasoning are used more by male and female students. It has been found that male students tend to use algorithmic reasoning, and female students have a higher tendency to use familiar algorithmic reasoning methods. Triyadi (2013), on the other hand, revealed that females outperform males in mathematical communication, mathematical connection, mathematical reasoning, and mathematical solving. Rosdiana et al. (2019) examined the reasoning styles used by male and female students in understanding mathematical problems and checking the accuracy of results. It was found that the answers given by the male students at the stage of understanding the problem were more detailed than the answers of the female students. In checking the results' accuracy, male and female students used similar reasoning techniques. Subekti et al. (2021) noted that female students had a higher rate of making correct assumptions about the patterns. Male students' explanations of the patterns are more superficial. It has been observed that male students have a higher tendency to misunderstand the patterns and accordingly draw wrong conclusions. Studies indicated that reasoning skills, which are very important for success in mathematics, differ according to gender.

Some research conducted in Turkey compares general mathematical reasoning skills by gender (Erdem & Soylu, 2017; Kocaman, 2017; Pay, 2018), while some research compares mathematical reasoning skills related to probability, fraction, and ratio-proportion by gender (Karaduman, 2018;

Kayhan, 2005; Sarıbaş, 2019). Sarıbaş (2019) examined the probabilistic reasoning skill levels of the sixth, seventh, and eighth-grade mathematics students. In the "sample space" dimension of the reasoning, a result in favor of the girls emerged. It has been stated that female students have a higher level of probabilistic reasoning skills on "sample space." Kocaman (2017) concluded that the logical thinking scores of eleventh-grade female students are better than male students. Kayhan (2005) emphasized that sixth and seventh-grade female students are more successful in choosing and using the right strategies in the reasoning process. Erdem and Soylu (2017) emphasized that mathematical reasoning improved as age increased in secondary and high school students (8th, 9th and 10th grade). In addition, male students performed better than female students in mathematical reasoning. Karaduman (2018) stated that female sixth, seventh, and eighth-grade students had higher proportional reasoning performances. Pay (2018), who worked with preschool students, reported that mathematical reasoning skills did not differ according to gender. Studies have shown that mathematical reasoning skills differ according to gender during middle and high school years. There is a need to investigate the reasons behind the observed gender difference in mathematical reasoning.

METACOGNITION AND ITS MEDIATING ROLE

Metacognition is the core of cognitive activities. Metacognition is thinking to think (Blakey & Spence, 1990) and means that the individual is aware of his cognitive processes and controls these processes (Jager et al., 2005). The concepts of cognition, self-control, and self-control are the most used concepts to explain metacognition (Flavell, 1979). Students with high self-control can control their minds and learning processes by effectively using cognitive strategies.

Knowledge and regulation are the two essential components of metacognition. Metacognitive knowledge includes information about the learner's learning style, information about the factors that will affect their performance, learning strategies, and which strategies should be used and when (Kuhn & Dean, 2004). A student with high metacognitive knowledge knows what skills and level of knowledge they have in mathematics and what methods and techniques they should use in the problem-solving process. Metacognitive regulation consists of planning, monitoring, and evaluation activities (Schraw et al., 2006). Metacognitive regulation includes focusing on a task, making predictions, planning, reviewing the whole process, evaluating, and making corrections. Thanks to metacognitive regulation, individuals provide active control over their cognitive processes (Eilam & Aharon, 2003).

According to some researchers, metacognitive skills are general skills, not specific to a particular field. Due to this feature, it has been stated that metacognition can be used in different fields and transferred from one field to another (Frost et al., 2015; Mccurdy et al., 2013). It was found that the planning, monitoring, and evaluation components of metacognition can be successfully adapted to different tasks (Schraw et al., 1995). For example, metacognitive strategies are used effectively in the problem-solving process orientation, organization, execution, and verification stages. (Pugalee, 2010). Metacognition supports mathematical performance (Garofalo & Lester, 1985), and metacognitive strategies strengthen mathematical reasoning skills (Lestari, 2018). In this respect, it can be argued that students with low metacognitive strategies will have difficulties in mathematical reasoning.

Studies have shown that there is a relationship between metacognition and academic achievement. It has been stated that students with high metacognitive skills have high academic achievement, too. A low level of metacognitive skills weakens the possibility of having high academic achievement (Holton & Clarke, 2015; Kleitman & Gibson, 2011). Students with low metacognitive skills cannot correctly operate cognitive processes such as planning, evaluation, and monitoring learning processes. In this regard, even if these students have high intelligence and motivation, they are less likely to have high academic achievement (Kazuhiro & Tetsuya, 2018; Hong et al., 2020). Mathematical metacognition is a particular form of metacognition based on metacognition knowledge. Students with a high level of mathematical metacognition can evaluate, control and regulate cognitive processes in mathematics (Shen & Chen, 2014). Studies have shown that students' mathematical metacognition

levels positively affect their mathematics achievement (Fernie et al., 2018; Kahramanoğlu & Deniz, 2017; Xue et al., 2021). Having mathematical metacognitive skills can increase the likelihood of success in mathematics.

THE PRESENT STUDY

Many studies have been conducted in the literature examining gender differences in mathematical reasoning skills (Erdem & Soylu, 2017; Karaduman, 2018; Kayhan, 2005; Kocaman, 2017; Mills et al., 1993; Rosdiana et al., 2019; Sarıbaş, 2019; Sumpter, 2016; Triyadi, 2013). However, limited studies examine the variables that moderate the relationship between gender and mathematical reasoning skills (Kadarisma et al., 2019). There is no study in the literature concerning the mediating effect of metacognitive strategies on the relationship between gender and mathematical reasoning skills. The present research fills a gap in the literature by examining the mediating role of metacognition in the relationship between gender and mathematical reasoning. The research results are believed to help better understand the mechanisms behind the link between gender and mathematical reasoning. Secondary school years are critical for developing mathematical skills (Reynolds, 1991). Thanks to the suggestions provided, mathematics teaching can be more efficient for secondary school students. In Turkey, students take the exam held within the scope of the High School Entrance System (LGS) in the eighth grade to attend some high schools (MoNE, 2022). In the eighth grade, students study more intensively for lessons and exams. Students are more familiar with tests such as mathematical reasoning and problem-solving during this period, and eighth-grade students were included in the current study. In line with the purpose of the research, answers to the following research questions were sought;

1- Do mathematical reasoning skills and metacognitive strategies differ significantly by gender?

2- Do metacognitive strategies have a mediating role in the relationship between gender and mathematical reasoning skills?

METHOD

RESEARCH DESIGN

This research was carried out according to the correlational research design. A correlational study examines the relationships between two or more variables without intervention (Karasar, 2000). The obtained correlation coefficients provide evidence to predict some outcomes. For this purpose, the predictive relationships between gender, mathematical reasoning, and metacognition were investigated in the present study.

SAMPLING AND PARTICIPANTS

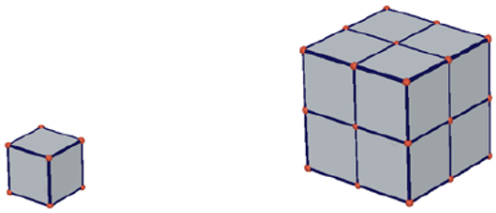
350 eighth-grade students selected by convenient sampling method participated in the study. 40.7% (n = 142) of the students were females, and 59.3% (n = 208) were males. The ages of the students were between 13 to 15. The participants were randomly selected from different state schools located in a city center with different socioeconomic backgrounds. Before data collection, approval from the research ethics committee was received, and all participants gave informed consent.

MEASURING TOOLS

Mathematical Power Scale: It was developed by Yeşildere (2006) for eighth-grade students. In the development of the scale, the basic structure for the mathematical power determined by the NAEP (National Assessment of Educational Progress) was taken into account. There are ten open-ended questions on the scale (Appendix 1). A question in the scale is shown in Figure 1.

Figure 1. *Open-Ended Mathematical Reasoning Question*

Zeynep is trying to get bigger cubes by combining the small cubes in her hand. First, she puts one small cube (a). She then places two small cubes side by side and places the other small cubes so that the object is a larger cube (b).



(a) (b)

Zeynep wants to calculate how many cubes are needed for the whole larger cube that she started by putting five small cubes side by side, without adding the cubes one by one. How can Zeynep do this? Please explain with details.

The application time of the test is approximately 40 minutes. The responses given to the questions in the test are scored in values varying between 0 and 4 using a rubric developed by Yeşildere (2006). Two mathematics teachers performed the scoring. There was almost perfect agreement (kappa = 0.85) between the scorer. The consensus was fully achieved by reviewing the results where there was no agreement between the scorer. The lowest 0 and the highest 40 points can be obtained from the test (Table 1). High scores indicate high mathematical reasoning skills. The test paper of a student who gets 29 points from the test is shown in Appendix 2. The Cronbach's alpha coefficient calculated for the test in the present study was 0.78.

Table 1. *The Scoring Rubric*

Criterion	Score
There are answers that express the way of solving the problem and its explanation correctly, express their thoughts with correct mathematical notation and symbols, express their reasoning clearly, and indicate that they are in a complete understanding.	4
There are answers that are correct except for a few minor errors or ambiguities in the way of solving the problem and the explanation, expressing their thoughts with proper mathematical notation and symbols, expressing the way of reasoning, and stating that they are in full understanding.	3
Although the way of solving the problem and its explanation shows that the problem is understood a little, there are answers that indicate that he has insufficient knowledge in some aspects of the explanations for the solution.	2
There are answers that show that he has limited knowledge about the way and explanation of solving the problem.	1
There are answers that solve the problem incorrectly or that are left unanswered.	0

Motivated Strategies for Learning Questionnaire (MSLQ): The questionnaire developed by Pintrich et al. (1993) and adapted into Turkish by Karadeniz et al. (2008) was used to determine the level of metacognitive strategies used by students in mathematics lessons. The measuring tool has a multidimensional structure. The scale is a 7-point Likert type (1=Absolutely wrong for me, 7=Absolutely true for me). In this study, the metacognitive strategies sub-dimension of the scale consisting of 11 items was used. One of the expressions on the scale is as follows; "When reading resources related to mathematics, I ask myself questions to help me focus on the subject." The lowest score that can be

obtained from the metacognitive strategies scale is 11, and the highest score is 77. Higher scores indicate greater use of metacognitive strategies in mathematics. The Cronbach's alpha coefficient calculated for the metacognitive strategies scale in the present study was 0.85.

DATA ANALYSIS

The distribution of mathematical reasoning skills and metacognitive strategies scores was analyzed based on skewness and kurtosis coefficients. The skewness and kurtosis coefficients in the range of ±1 indicate that the scores have a normal distribution (Tabachnick & Fidell, 2013). The skewness and kurtosis coefficients were within the specified range (Table 2). This result indicated that the scores showed univariate normal distributions.

Relationships between gender, mathematical reasoning skills, and metacognitive strategies scores were examined using Pearson Correlation coefficients. The correlation coefficient takes values in the range of ±1. Coefficients between 0 and ±0.30 indicate low, coefficients between ±0.30 and ±0.70 indicate moderate, and coefficients between ±0.70 and ±1 indicate high-level relationships (Ratner, 2009).

Table 2. *The Skewness and Kurtosis Coefficients*

Variables	Skewness		Kurtosis	
	z	SE	z	SE
Mathematical reasoning	0.71	0.15	-0.15	0.31
Metacognitive strategies	-0.19	0.15	0.01	0.31

SPSS Process Macro Model 4 (Version 4.0) was used to test the mediating role of metacognitive strategies in the effect of gender on mathematical reasoning skills (Hayes, 2017). Hayes Macro performs the basic analysis of the bootstrap method. This method determines whether the direct and indirect effects are significantly based on the confidence interval (Shrout & Bolger, 2002). Cook distance values (<1) showed no multivariate outliers in the data set. VIF>10 values indicate multicollinearity between the variables (Menard, 2002). The calculated VIF value was calculated as 1.15. The value showed that there was no multicollinearity between the variables. SPSS 25.0 statistical package program was used for the analysis.

RESULTS

The mathematical reasoning skills and metacognitive strategies mean scores of male and female students are shown in Table 3. Female students' reasoning skills (M=14.84, SD=7.50) score was significantly higher than the mean (M=9.40, SD=6.23) score of male students (t(249)=6.26, p <0.001). Female students' metacognitive strategies mean (M=54.98, SD=11.34) score was significantly higher than male students' mean (M=45.87, SD=11.72) score (t(249)=6.13, p<0.001).

Table 3. *Means and Standard Deviations of the Variables by Gender*

Variables	Female (n=142)		Male (n=208)		All (n=350)			
	M	SD	M	SD	M	SD	Min.	Max.
Mathematical reasoning	14.84	7.50	9.40	6.23	11.61	7.27	1.00	30.00
Metacognitive strategies	54.98	11.34	45.87	11.72	49.57	12.38	16.00	77.00

Relationships between gender, mathematical reasoning skills, and metacognitive strategies scores were examined by calculating Pearson Correlation coefficients. Calculated correlation coefficients are given in Table 4.

Table 4. *Pearson correlation with Gender, Mathematical Reasoning, and Metacognitive Strategies*

	Variables	1.	2.	3.
1.	Gender [a]	1		
2.	Mathematical reasoning	-0.37**	1	
3.	Metacognitive strategies	-0.36**	0.39**	1

**p<0.01, N=350, [a]0 = Female, 1 = Male.

Table 4 shows that gender was negatively correlated with mathematical reasoning skills (r=-0.37, p<0.01) and metacognitive strategies (r=-0.36, p<0.01). Mathematical reasoning skill was positively correlated with metacognitive strategies (r=0.39, p<0.01).

SPSS Process Hayes (2017) Macro Model 4 (Version 4.0) was used to test the mediating role of metacognitive strategies in the effect of gender on mathematical reasoning skills. In the model, gender was the independent variable, mathematical reasoning was the dependent variable, and metacognitive strategies were included as the moderator variable (Figure 2). Path coefficients for direct and indirect effects are displayed in Table 5.

Figure 2. *Direct And Indirect Effect of Gender on Mathematical Reasoning, ***p<0.001, c^1= Indirect Effect*

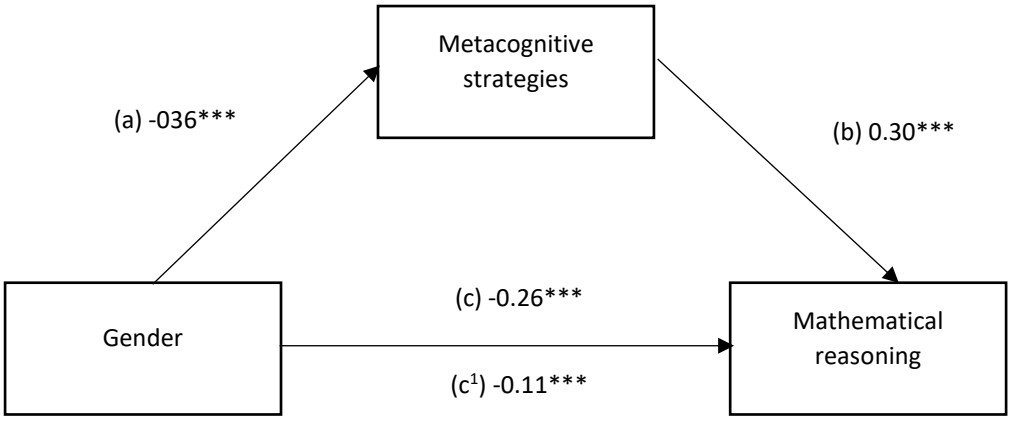


Table 5. *Direct And Indirect Effect of Gender on Mathematical Reasoning*

	Model		B	β	SE	t	p	LLCI	ULCI
	Model 1								
Gender	---->	MR	-3.71	-0.37	0.87	-6.27	0.00***	-0.47	-0.26
	Model 2								
Gender	---->	MS	-9.12	-0.36	0.06	-6.14	0.00***	-0.47	-0.25
	Model 3								
Gender	---->	MR	-3.87	-0.26	0.06	-4.34	0.00***	-0.39	-0.14
MS	---->	MR	0.17	0.30	0.06	4.90	0.00***	0.17	0.42
	Model 4								
Gender ---->	MS ---->	MR	-1.58	-0.11	0.03		0.00***	-0.17	-0.06

***p<0.001, MR= Mathematical Reasoning, MS= Metacognitive Strategies, LLCI= Lower limit of the Confidence interval, ULCI= Upper limit of the Confidence interval

When Table 5 is examined, the effect of gender on mathematical reasoning was examined in model 1 ($F(1,249)=39.16$, $R=0.37$, $p<0.01$). The fact that the confidence interval (95% CI= -0.47, -0.26) did not contain a zero-value showed that the observed effect was significant (Shrout & Bolger, 2002). Gender had a negative and significant effect on mathematical reasoning skills ($\beta=-0.37$, $p<0.001$). Thus, the negative coefficient of the direct effect of gender on mathematical reasoning indicated that female students, on average, scored -0.37 standard deviations higher mathematical reasoning scores than male students.

In Model 2, the effect of gender on metacognitive strategies was examined ($F(1,249)=37.60$, $R=0.36$, $p<0.010$). The fact that the confidence interval (95% CI= 0.47, -0.25) did not contain a zero-value showed that the observed effect was significant (Shrout & Bolger, 2002). Gender had a negative and significant effect on metacognitive strategies ($\beta=-0.36$, $p<0.001$). Thus, the negative coefficient of the direct effect of gender on metacognitive strategies indicated that female students, on average, scored -0.36 standard deviations higher mathematical reasoning scores than male students.

In Model 3, the effects of gender and metacognitive strategies on mathematical reasoning skills were examined ($F(2,248)=33.31$, $R=0.46$, $p<0.01$). Confidence intervals calculated for gender (95% CI= -0.39, -0.14) and metacognitive strategies (95% CI= 0.17, 0.42) did not contain zero values, indicating that the observed effects were statistically significant (Shrout and Bolger, 2002). Gender ($\beta=-0.26$, $p<0.001$) and metacognitive strategies ($\beta=0.30$, $p<0.001$) had a significant effect on mathematical reasoning.

In Model 4, the indirect effect of gender on mathematical reasoning skills was examined. The indirect effect ($\beta = -0.11$, $p<0.001$) was statistically significant as the confidence interval (95% CI= -0.17, -0.06) did not contain a zero value (Shrout & Bolger, 2002). The significant indirect effect showed that cognitive strategies had a mediating role in the relationship between gender and mathematical reasoning skills. The fact that only a part of the total effect was realized through the mediating variable indicates that metacognitive strategies were partial mediators.

DISCUSSION, CONCLUSION, AND IMPLICATIONS

This study compared the mathematical reasoning and metacognitive strategies of eighth-grade secondary school students by gender. Additionally, the relationships between gender, metacognitive strategies, and mathematical reasoning were examined. It was investigated whether metacognitive strategies mediated the gender difference in mathematical reasoning.

The present research showed that female students had higher mathematical reasoning performance than male students. Gender plays a crucial role in mathematics learning and may lead to differences in the mathematics achievement of male and female students (Xue et al., 2021). There are studies indicating that men (Erdem & Soylu, 2017; Mills, Ablard & Stumpf, 1993; Rosdiana et al., 2019) or women (Gherasim et al., 2012; Robinson & Lubinski, 2011) are more successful in mathematics. However, some researchers suggested that there is no gender-related difference in math (Sarouphim & Chartouny, 2017). There are studies that attribute the cause of gender difference in mathematics to cultural factors (Devine et al., 2012; Else-Quest, Hyde & Linn, 2010; Sarouphim & Chartouny, 2017). For example, Tsui (2007) noted that the perception that males are better at mathematics is transmitted to students by parents and teachers, and this is reflected in students' mathematics achievement. These observations may be valid in countries where gender-related cultural factors predominate. It may not be enough to explain the gender difference with cultural factors alone. Mathematics is a discipline that requires cognitive ability. There are also studies showing that cognitive abilities are the basis of individual differences in mathematics (Efklides et al., 1997; Erdem & Soylu, 2017; Karaduman, 2018; Kayhan, 2005; Kocaman, 2017; Rohde & Thompson, 2007; Rosdiana et al., 2019; Sarıbaş, 2019; Subekti et al., 2021). For example, Kayhan (2005) emphasized that female students are more successful in choosing and using the right strategies in the mathematical reasoning process. Subekti et al. (2021)

stated that female students had a higher rate of making correct assumptions about mathematical patterns. Male students' explanations of the patterns are more superficial and tend to misunderstand the patterns and accordingly draw wrong conclusions. Sumpter (2016) found that female students tend to use familiar algorithmic reasoning methods. Rosdiana et al. (2019) examined the reasoning styles used by male and female students in understanding mathematical problems and checking the accuracy of results. It was noted that the answers given by the male students at the stage of understanding the problem were more detailed than the answers of the female students. Previous research has revealed that the cognitive approaches of females and males to mathematical reasoning differ. Unlike the literature studies, the present research argues that this difference may be of metacognitive origin.

One of the findings obtained in the research is that female students use metacognitive strategies more than male students. These results are consistent with the researchers whom that indicated females had better knowledge of metacognitive strategies (Liliana & Lavinia, 2011; Kolic´-Vehovec & Bajšanski, 2006; Sheorey & Mokhtari, 2001; Topçu & Yılmaz-Tüzün, 2009; Wu, 2014; Zimmerman & Martinez-Pons, 1990). Topçu and Yılmaz-Tüzün (2009) emphasized that in 4th to 8th grades, being a girl was positively correlated with knowledge of cognition and regulation of cognition. Liliana and Lavinia (2011) stated that 8th-grade male students use prior knowledge in problem-solving, planning, various learning strategies, and monitoring the learning process. Also, female students have more knowledge about their intellectual strengths and weaknesses. Zimmerman & Martinez-Pons (1990) noted that among self-regulation skills, females mostly used record keeping and monitoring, environmental structuring, goal setting, and planning than males. While planning the mathematics teaching process, it should be considered that female students may be superior in using metacognitive strategies.

Another significant result of the present research is that metacognitive strategies partially mediate the gender difference in mathematical reasoning. Cornoldi (1997) stated that metacognition is one of the most critical cognitive skills required for learning. A low level of metacognitive skills weakens the possibility of having high academic achievement (Holton & Clarke, 2015; Kleitman & Gibson, 2011). Students with low metacognitive skills cannot correctly operate cognitive processes such as planning, evaluation, and monitoring learning processes. In this regard, even if these students have high intelligence and motivation, they are less likely to have high academic achievement (Kazuhiro & Tetsuya, 2018; Hong et al., 2020). Shen and Chen (2014) emphasized that mathematical metacognition is a particular form of metacognition based on metacognition knowledge. Students with a high level of mathematical metacognition can evaluate, control and regulate cognitive processes in mathematics. Pugalee (2010) stated that metacognition is effectively used in the orientation, organization, execution, and verification stages of problem-solving. Lestari (2018) noted that using metacognitive strategies strengthens mathematical reasoning skills. In this respect, students who use metacognitive strategies effectively are more likely to solve mathematical problems. The present research supports studies that emphasize metacognition's importance in mathematics skills. It was observed that females who used mathematical strategies more effectively had higher mathematical reasoning performance than males. The present research has provided quantitative evidence that the observed gender differences in mathematical skills are of metacognitive origin.

In conclusion, the present research showed that metacognitive strategies mediated gender differences in mathematical reasoning ability. To reduce the gender difference in mathematical reasoning, male students can be taught to learn metacognitive strategies and use these strategies effectively. Teachers' inclusion of applications that support metacognitive strategies while teaching mathematics may prevent the emergence of gender differences in mathematical reasoning. Conducting this research with only eighth-grade students limits the results' generalizability. The mediating role of metacognitive strategies in different cultures and age groups can be studied with further research. These studies may help clarify and generalize the relationships between gender,

reasoning, and metacognition. In addition, it can be investigated whether metacognitive strategies mediate gender differences observed in other mathematical skills.

AUTHOR CONTRIBUTION

I, the author of the article titled "The Mediating Role of Metacognitive Strategies in The Relationship Between Gender and Mathematical Reasoning Performance," participated in every step of the conception, design, analysis, and discussion of the data as well as the writing of the manuscript and I take public responsibility for its publication.

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Appendix 1

Mathematical Power Scale

1. You have to fill the inside of a sphere with colored liquid. Since you cannot move the sphere, you must fill it with one of the cylinder, cone, square pyramid or square prism shaped glasses you have.

   - ✓ All glasses and globes are of equal height.
   - ✓ Radius lengths of the cylinder, cone, sphere, the length of one side of the square pyramid and the length of one side of the square prism are equal to each other.

   Choose such a glass that it can fill the sphere with the least number of moves. Explain in detail how you made this choice.

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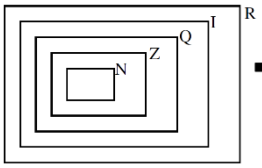
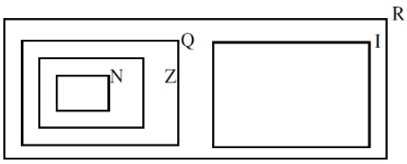
2. 2. The teacher asked Sema and Yasemin to show the numbers they have learned so far as diagrams. These number sets are Natural Numbers (N), Integers (Z), Rational Numbers (Q), Irrational numbers (I) and Real numbers (R).

   - Sema and Yasemin's answers are given below.



Semas's answer



Yasemin's answer

   - Which student's drawing is correct? Explain with reason.

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3. Below are the views of a pair of dice from two different angles. These dice are exactly “cube” shaped and the numbers are placed on the dice in the same order.

According to this information,

- Which number is on the reverse side of the face with 3 on it?
- What is the probability that the face that comes after the face with 4 is the number 6?

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4. The following dialogue takes place between Sertap, Sibel and Orhan:

Sertap: The object formed by rotating any triangle about one side 360° is called a right cone.
Sibel: But when it rotates around its different sides, other objects form, some of which are bent, some of which are not. Then why is it called a "vertical" cone?
Orhan: No, all cones are upright anyway. A cone that is not perpendicular cannot be drawn.
Is there any information given incorrectly or incompletely by the students here?
Write a statement for each student highlighting where they are wrong or right.

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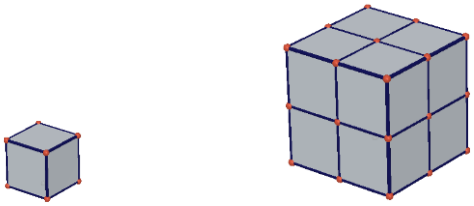
5. Zeynep is trying to get biggest cubes by combining the small cubes in her hand. First, she puts one small cube (a). She then places two small cubes side by side and places the other small cubes so that the object is a larger cube (b).



(a) (b)

Zeynep wants to calculate how many cubes are needed for the whole larger cubes that she started by putting five small cubes side by side, without adding the cubes one by one. How can Zeynep do this? Please explain with details.

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6. Fatma's teacher asked her to put her hand in a bag that she could not see, and to understand what the regular geometric object was in it without seeing -just by touching-. Fatma took the following notes in her notebook about the geometric object she could feel by touching:
    - It has a total of 5 corners.
    - Its lateral faces are triangular and its base is not triangular.
    - The opposite sides of the base are equal in length.

    According to this information;

    a) Predict what this geometric object might be. Explain in detail why you made this prediction.
    b) What is the probability that it is a cylinder? Explain with reasons.
    c) What is the probability that it is a prism? Explain with reasons.
    d) What is the probability that it is a square pyramid? Explain with reasons.

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7. The following dialogue takes place between the teacher and Canan and Ayşe:
    Teacher: What is the intersection of a sphere with a rectangular plane?
    Canan: I think it's rectangular. A portion of the plane's size intersects the sphere.
    Ayşe: I think it is a flat. Since the plane is an infinitely expanding region, its intersection will be a circle.

    Is there any incorrect or incomplete information given by the students here? Write a letter to each student highlighting where they were wrong or right.

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8. Salesman, Mehmet Bey, frequently travels between cities due to his job and markets 1000 liters of goods per week in a nearby city. Mehmet Bey wants to buy the vehicle that consumes the most fuel, which will make the least trips. Evaluate the suitability of each car in terms of these criteria. According to the information given below, which car would meet Mehmet Bey's wishes? Why? Express your way of thinking clearly.

RENAULT		PEUGEOT	
Motor Hacmi (cc)	1598	Motor Hacmi (cc)	1587
Son Hız (km/s)	181	Son Hız (km/s)	190
0-100 km/s Hızlanma (sn)	12.4	0-100 km/s Hızlanma (sn)	10.7
Şehir İçinde (litre)	8.6	Şehir içi (litre)	9.5
Şehir dışı (litre)	5.8	Şehir dışı (litre)	5
Bagaj Hacmi (litre)	485	Bagaj Hacmi (litre)	420

OPEL		VOLKSWAGEN	
Motor Hacmi (cc)	1199	Motor Hacmi (cc)	1896
Son Hız (km/s)	180	Son Hız (km/s)	180
0-100 km/s Hızlanma (sn)	14.0	0-100 km/s Hızlanma (sn)	12.6
Şehir İçinde (litre)	7.3	Şehir içi (litre)	6.5
Şehir dışı (litre)	4.8	Şehir dışı (litre)	4.1
Bagaj Hacmi (litre)	260	Bagaj Hacmi (litre)	330

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9. How many triangles are there in the figure below? List the triangles you find by lettering.

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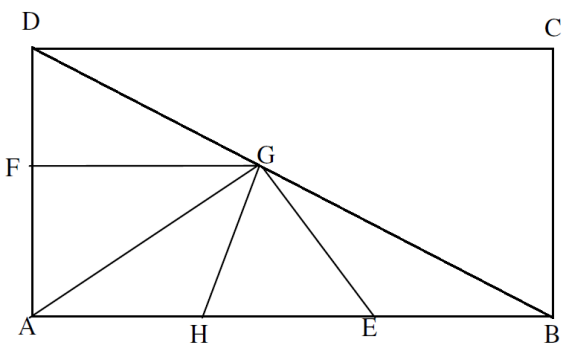
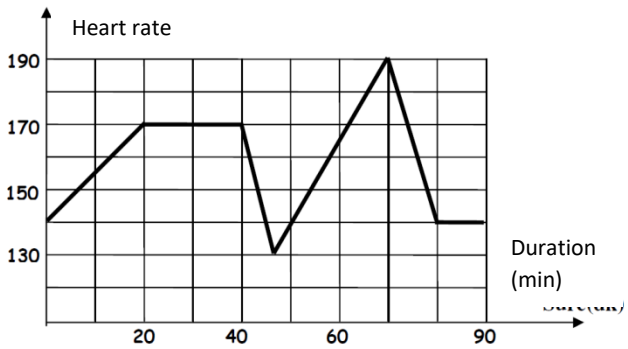


10. The rate of our heartbeat is the basic function of our life. For the continuation of our life in a healthy way, our heart rate should beat in the ranges given below:



If our heart beats within the ranges found by this formula, our heart health is in place.

On the side, the heart rate graph of 25-year-old football player Serhat during a match is given. Using the safe heart rate calculation given above, interpret whether the player's heart beats regularly during the match by associating with the graph.

Safe heart rate = 220-human age)
Minimum safe heart rate = safe heart rate x 60%
Maximum safe heart rate = safe heart rate x 90%

- Serhat's heart during the first 20 minutes,

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- Between 20 minutes and 40 minutes, Serhat's heart,

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- Between 45 and 70 minutes, Serhat's heart,

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Appendix 2 (Turkish Version, Sample)

Matematiksel Muhakeme Testi (Mathematical Power Scale)

1. Bir kürenin içinin renkli sıvı ile doldurmanız gerekiyor. Küreyi yerinden oynatamadığınız için, elinizde olan silindir, koni, kare piramit veya kare prizma şeklindeki bardaklardan biriyle doldurmalısınız.

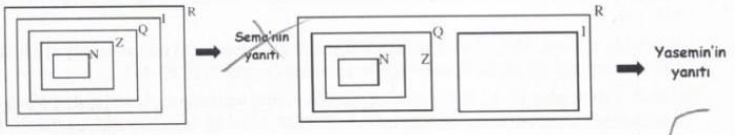
   - ✓ Tüm bardakların ve kürenin yükseklikleri eşittir.
   - ✓ Silindirin, koninin, kürenin yarıçap uzunlukları, kare piramidin bir kenarının uzunluğu ve kare prizmanın bir kenarının uzunluğu birbirine eşittir.

   Öyle bir bardağı seçiniz ki, en az sayıda hamle ile küreyi doldurabilsin. Bu seçimi neye göre yaptığınızı ayrıntıları ile açıklayınız. Silindiri secerim cunkü digerlerinin hacmunden daha buyuk hacmi var

$\frac{4}{3}\pi r^3$ $\pi r^2 h$ $\frac{r^2 \cdot h}{3}$ $r^2 \cdot h$ $\frac{r^2 \cdot h}{3}$

2. Öğretmenleri Sema ve Yasemin'den şimdiye kadar öğrendikleri sayıları şema olarak göstermelerini istemiştir. Bu sayı kümeleri Doğal Sayılar(N), Tam sayılar (Z), Rasyonel Sayılar (Q), İrrasyonel sayılar (I) ve Reel sayılar (R)' dır.

   - Sema ve Yasemin'in yanıtları aşağıda verilmektedir



   - Hangi öğrencinin çizimi doğrudur? Nedeni ile açıklayınız.

- her dogal sayı tam sayıdır
- her tam sayı rasyonal sayı olarak yazıla
rasyonel sekilde yazılamayan sayıdır
irrasyonel sayı olarak tanımlama (kok 2)
- Tum sayıların kesirsayan sayıların reel sayılardır
Dolayısıyla yasemin cizimi dogrudur

3. Aşağıda bir çift zarın farklı iki açıdan görünüşleri verilmektedir. Bu zarlar tam "küp" şeklindedir ve rakamlar zarların üzerlerine aynı sırayla yerleştirilmiştir.

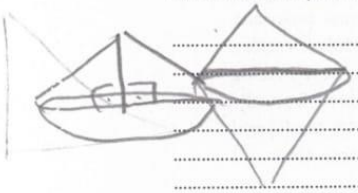
Buna göre,

- Üzerinde 3 yazan yüzün tam arka yüzünde hangi rakam vardır?
- Dört yazan yüzün arkasına gelen yüzün 6 olma olasılığı nedir?

Birinci zarı sağa doğru çevirdiğimizde ikinci şekilde kare elde edilir. Sağa çevirdiğimizde üç noktalı yüz karşımızda ve bir noktalı yüz bilinmektedir 3 noktalı yüzün karşısında bir noktalı yüz bulunur.

4. Aşağıdaki diyalog Sertap, Sibel ve Orhan arasında geçmektedir:

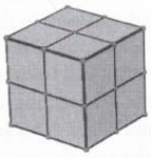
Sertap: Herhangi bir üçgenin, bir kenarı etrafında 360° döndürülmesiyle oluşan cisme dik koni denir.
Sibel: Ama farklı kenarları etrafında döndüğünde başka cisimler oluşuyor bazıları eğik duruyor, bazıları eğik durmuyor. Madem o zaman neden "dik" koni denilsin ki?
Orhan: Hayır, zaten bütün koniler diktir. Dik olmayan koni çizilemez.
Buradaki öğrenciler tarafından hatalı veya eksik olarak verilen bilgi var mıdır? Her bir öğrenciye, nerede hatalı veya nerede haklı olduklarını vurgulayan bir mektup yazınız.



herhangi bir üçgen değilde dik üçgenin dik kenarı etrafında döndürülürse dik oluşur. Yani şekilden sağa doğru eğiliyor

5. Zeynep elindeki küçük küpleri bir araya getirerek daha büyük küpler elde etmeye çalışıyor. İlk önce bir tane küçük küp koyuyor (Şekil 1). Daha sonra iki tane küçük küpü yan yana koyuyor ve diğer küçük küpleri de cisim daha büyük bir küp olacak şekilde yerleştiriyor (Şekil 2).

Şekil 1



Şekil 2

Zeynep beş tane küçük küp yan yana koyarak başladığı daha büyük küpün tamamı için kaç küp gerektiğini tek tek küpleri koymadan hesaplamak istiyor. Zeynep bunu nasıl yapabilir? Ayrıntıları ile açıklayınız.

Şekil 1. 1 küp $=1^3=1$ her bir adımda şekil numarasının küpü kadar küp kullanılmaktadır

Şekil 2. 8 küp $=2^3=8$

Şekil 3. 27 küp $=3^3=27$

6. Fatma'dan öğretmeni, içini göremediği bir torbaya elini sokmasını ve içinde olan düzgün geometrik cismin ne olduğunu görmeden -sadece dokunarak- anlamasını istemiştir. Fatma dokunarak hissedebildiği geometrik cisme ilişkin, defterine aşağıdaki notları almıştır:
   - Toplam 5 tane köşesi var.
   - Yan yüzleri üçgensel bölge, tabanı üçgensel bölge değil.
   - Tabanın karşılıklı olan kenar uzunlukları eşit.

   Bu bilgilere göre;

   a) Bu geometrik cismin ne olabileceğini tahmin ediniz. Neden bu tahmini yaptığınızı ayrıntılarıyla açıklayınız.
   b) Silindir olma olasılığı nedir? Nedenleri ile açıklayınız.
   c) Prizma olma olasılığı nedir? Nedenleri ile açıklayınız.
   d) Kare piramit olma olasılığı nedir? Nedenleri ile açıklayınız.

b) Silindirin kenarı yok

a) → üçgensel bölge
→ tabanın kenar yanı yok
→ kenar uzunlukları eşit
→ 5 tane köşesi var

c) Prizma olmaz prizmanın yan kenar yanı dikdörtgensel olmak

d) piramit olabilir

7. Aşağıdaki diyalog öğretmen ile Canan ve Ayşe arasında geçmektedir:

   Öğretmen: Bir kürenin bir dikdörtgensel düzlem ile arakesiti nedir?
   Canan: Bence dikdörtgendir. Düzlemin büyüklüğü kadarlık bölümü küre ile kesişir.
   Ayşe: Bence dairedir. Düzlem sınırsız genişleyen bir bölge olduğundan kesişimi daire olacaktır.

   Buradaki öğrenciler tarafından verilen hatalı veya eksik bilgi var mıdır? Her bir öğrenciye, nerede hatalı veya nerede haklı olduklarını vurgulayan bir mektup yazınız.

Ayşeye haklıyım Canan hepsi küreyi ortalı olan kesiyor bu arada olan da daire olmaktadır

8. Pazarlamacı Mehmet Bey, işi gereği sıklıkla şehirlerarası yolculuk yapmakta ve haftada 1000 litrelik malları yakın bir şehirde pazarlamaktadır. Mehmet Bey en az seferi yapacağı en ekonomik yakıt tüketen aracı satın almak istiyor. Bu kriterler açısından her bir arabanın uygunluğunu değerlendirin. Aşağıda verilen bilgilere göre hangi arabayı alması Mehmet Bey'in isteklerini karşılar? Neden? Düşünce biçiminizi açıkça ifade ediniz.

RENAULT	
Motor Hacmi (cc)	1598
Son Hız (km/s)	181
0-100 km/s Hızlanma (sn)	12.4
Şehir İçinde (litre)	8.6
Şehir dışı (litre)	5.8
Bagaj Hacmi (litre)	485

PEUGEOT	
Motor Hacmi (cc)	1587
Son Hız (km/s)	190
0-100 km/s Hızlanma (sn)	10.7
Şehir içi (litre)	9.5
Şehir dışı (litre)	5
Bagaj Hacmi (litre)	420

OPEL	
Motor Hacmi (cc)	1199
Son Hız (km/s)	180
0-100 km/s Hızlanma (sn)	14.0
Şehir İçinde (litre)	7.3
Şehir dışı (litre)	4.8
Bagaj Hacmi (litre)	260

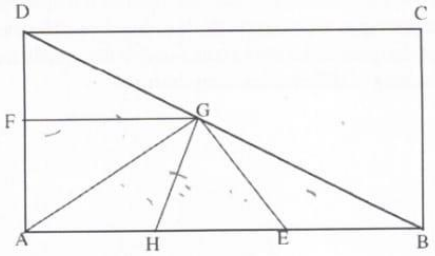
VOLKSWAGEN	
Motor Hacmi (cc)	1896
Son Hız (km/s)	180
0-100 km/s Hızlanma (sn)	12.6
Şehir içi (litre)	6.5
Şehir dışı (litre)	4.1
Bagaj Hacmi (litre)	330

Renault 1000/485 = 3 sefer 5x17
Peugeot 1000/420 = 3 sefer 9,8/7
Opel 1000/260 = 4 sefer 5,8/4
Volkswagen 1000/330 = 3 sefer 5,9/7

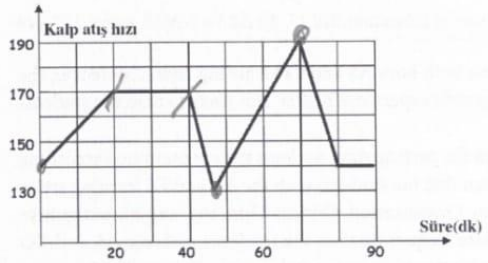
Peşa markanı tercih etsin daha az sefer yapar az yakıt tüketir
Vol sah. wagen wagenagen tercih etmeli

9. Aşağıdaki şekilde kaç tane üçgen bulunmaktadır? Bulduğunuz üçgenleri harflendirerek listeleyiniz.

DGF, FGA, DGH, DGH, HEG, AGE
GEB, AGB, GCB, DAB



10. Kalp atışlarımızın hızı, yaşamımızın temel fonksiyonudur. Yaşamımızın sağlıklı olarak devamı için, kalp atış hızımız aşağıda formülü verilen aralıklarda atmalıdır:



Kalbimiz, bu formülle bulunan aralıklarda atarsa, kalp sağlığımız yerindedir.
Yan tarafta 25 yaşındaki Fenerbahçeli futbolcu Serhat'ın bir maç boyunca kalp atış hızı grafiği verilmiştir. Yukarıda verilen güvenli kalp atış hızı hesabından yararlanarak, maç boyunca futbolcunun kalbinin düzenli atıp atmadığını grafikle ilişkilendirerek yorumlayınız.

Güvenli kalp atışı hızı= 220-insanın yaşı)
Asgari (en az) güvenli kalp atış hızı = güvenli kalp atışı x %60
Azami (en çok) güvenli kalp atış hızı = güvenli kalp atışı x %90

$220 - 25 = 195$

$195 \cdot \frac{60}{100} = 117$

$195 \cdot \frac{90}{100} = 175,5$

- İlk 20 dakika boyunca Serhat'ın kalbi

220 - 25 eşittir 195 güvenli kalp atış hızı bu aralıktadır Serhat'ın kalbi 190 ile 180 arasında yani güvenli aralıkta

- 20 dakika ile 40 dakika arasında Serhat'ın kalbi,

Bu aralıkta kalp atış hızı 170 te sabit güvenli kalp atış hızının ve sınırı olan güvenli kalp atış hızının üzerindedir

- 45 ile 70 dakika arasında Serhat'ın kalbi

Bu aralıkta kalp atış hızı 130 ile 190 arasında değişmektedir Bu aralık asgari güvenli kalp atış hızının altındadır aramı (175,5) güvenli kalp atış hızının ise üzerindedir Serhat'ın hayati tehlikesi bulunmaktadır

Research Article

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General Adaptation Scale for International Students: Development and Validation

Mustafa Polat, Asst. Prof. Dr., Karabuk University, mustafapolat@karabuk.edu.tr
0000-0002-6905-0087

Kürşat Arslan, Lecturer, Karabuk University, kursatarslan@karabuk.edu.tr
0000-0002-8576-459X

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Abstract

Embracing a holistic and eclectic perspective, this study aims to develop and empirically test an instrument to assess international students' general adaptation to a host country. The data were obtained from a sample of international undergraduate students (n=843) studying at a Turkish state university using purposive sampling methods of maximum variation. The analyses were conducted in two consecutive phases with two different groups of international students. Upon a meticulous data clean-up and preliminary analyses for the assumptions of normality and reliability, exploratory factor analysis (EFA) to discover factor structure was utilized. In the second phase, confirmatory factor analysis (CFA) was performed through Lisrel to validate the scale structure revealed by EFA. After a rigorous and iterative scale development process, the results confirm the reliability of factors, model fit and construct validity of the General Adaptation Scale for International Students (GASIS). GASIS as a multi-dimensional instrument consists of 28 items using a five-point Likert scale with four factors labelled as academic adaptation, sociocultural adaptation, psychological adaptation, and daily life adaptation to assess international students'general adaptation levels. The final form of 28-item GASIS with psychometric features, as well as implications and limitations for future research are included in the study.

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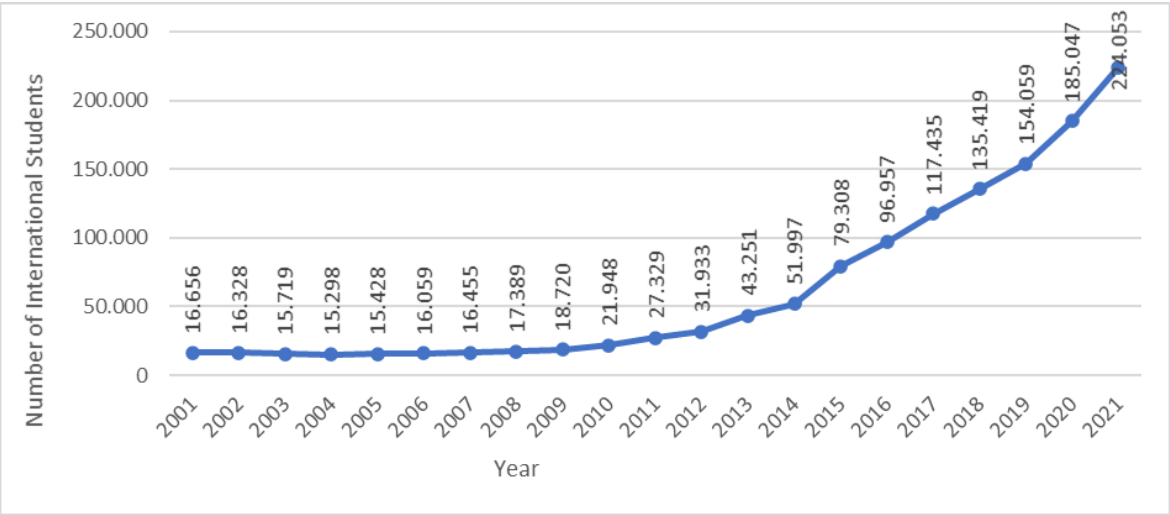
INTRODUCTION

The increasing importance of higher education (HE) has channeled national efforts for internationalization in higher education across the globe. De Wit and Altbach (2021) argue that a combination of political, economic, sociocultural, academic rationales and stakeholders is behind this global endeavor. Besides, internationalization has become a principal catalyst for change in higher education (de Wit, 2020) as it has fueled international student mobility across borders. Terry (2011) claims international students offer social, cultural, and economic benefits to host nations pursuing internationalization in higher education. Similarly, Shafaei and Razak (2016) posit that student mobility significantly impacts the host nation's economic, social, cultural, and academic growth. Thus, during the past fifty years, student mobility has doubled every other decade, and the projection for the next decade is 8 million globally mobile students (de Wit & Altbach, 2021). Undoubtedly, these developments could not be considered independently of facts such as globalization, international cooperations, and international treaties (Erişti, Polat, & Erdem, 2018).

Since the demand for a qualified workforce together with financial, academic and sociocultural benefits has whetted the appetite of many countries, student mobility has become the core component of internationalization in higher education. Considering the scale and volume of student mobility in the future, the global competition to attract more international students has escalated. Higher education institutions (HEIs), on the other hand, are torn between keeping their unique institutional practices in their national systems and moving toward a more homogeneous direction to compete globally (Kirloskar & Inamdar, 2021). Yet, nations have devised their own HE policies incorporating multiple strategic improvements into their HEIs to urge benefits from the process. Likewise, European Union (EU) has set a core goal for the European Higher Education Area to improve student mobility becoming a major policy priority of the EU's agenda for modernization in tertiary education (Barrioluengo & Flisi, 2017). Furthermore, China, Singapore, and Malaysia have emerged as new destinations for international students (Altbach & Engberg, 2014). Thus, de Wit and Altbach (2021) note that the global competition for international students has become more intense by pointing out the shift in the typical divide between sending and receiving countries. With this shift in recent years, Turkey stands out as a developing country, improving HE policies to become a favorable destination for international students (Erdem & Polat, 2019). The recent policies established to comply with the international educational standards have resulted in hosting an increasing number of international students (Seggie & Ergin, 2018). Given the number of international students in the last two decades released by the Turkish higher education council (CoHE) is noteworthy considering a constant increase.

Figure 1. *The number of international students in Turkish HEIs*



As evident in Figure 1, international students have been steadily increasing for decades. Seggie and Ergin (2018), therefore, point out "Erasmus+, Mevlana Exchange Program, Project-Based International Exchange Program and Job Guaranteed Scholarship Programs for International Students" are effective at witnessing the figures. Similarly, as of 2010, international agreements, partnerships and collaborations have played an essential role in this numerical increase, but policies for internationalization and legal regulations targeting the removal of bureaucratic obstacles have had a significant impact (Arslan, 2020). Besides all, with the outbreak of a raging war in Syria, millions of people had to flee to Turkey as the closest safe zone (Arslan & Kılınç, 2021). Since then, Turkey has been hosting more than 3.675,485 (Directorate General of Migration Management, [DCMM], 2021) Syrian asylum seekers, among whom there are 27034 active students enrolled in Turkish HEIs (Ministry of National Education [MoNE], 2020). Thus, every other year a growing number of Syrian students are expected to actively join the system (Özenç & Kara, 2021). Regarding the facts above, it's evident that a dynamic combination of factors has resulted in a steady rise in the number of international students in Turkey.

Since the number of international students in the Turkish HE system has grown in decades, the issue of adaptation of these students to the host country's culture and language and their new social environment and academic life has arisen. Accordingly, previous research has proven that although the study abroad experiences provide international students with opportunities to improve intercultural skills and broaden their horizons as well as bring out career options (Rienties, Luchoomun, & Tempelaar, 2013), adapting to a host cultural surrounding is a stressful and difficult process (Berry, 2005). Calling attention to this adaptation process, Li and Gasser (2005) posit that international students often encounter various adaptation problems. Zhou et al. (2008) underline that international students at HEIs experience many difficulties with the host country's culture and struggle with issues in their new educational setting and sociocultural environment. Likewise, Knight (2011) states those who participate in mobility programs generally feel marginalized, isolated, and lonely and confront racial tensions. They also suffer from stressful experiences, including homesickness, seeking accommodation, language barrier and struggling with their new educational setting (Sigalas, 2010). Spencer-Oatey and Xiong (2006) also reveal that sojourning students are more likely to have depression symptoms because of challenges and difficulties integrating with the host culture and adjusting to new routines in their daily life. Furthermore, Kılınç, Arslan and Polat (2020) report that common challenges international students often face can fit in a wide range of sociocultural, psychological, financial and academic issues. According to Molinsky (2007), however, assuming international students overcome various challenges they experience, they could successfully adapt to their new surroundings and avoid the negative impacts of norms and stereotypes. Additionally, international students' adaptation to the cultural milieu of the host country could lead to a number of outcomes facilitating both individuals, and the host society thrives and profit from internationalization in education (Shafaei & Razak, 2016). In this regard, devising new strategies to smoothen the cross-cultural transition by being aware of the general adaptation phase for international students has attained a primary status.

The notion of general adaptation of international students in higher education is multifaceted and includes various subsets based on the factors focusing on specific domains in the literature. Although there is no consensus on any structural model consisting of several components, studies have addressed similar aspects to conceptualize adaptation. Regarding the versatile conceptualization, acculturation, for example, which includes the problems, reactions and changes experienced by a person facing a new sociocultural environment, is an extensively studied topic in the HE literature on sojourning students (Bektaş et al., 2009). Acculturation, a broad concept, was initially defined by Redfield, Linton and Herskovits (1936) as a phenomenon referring to the ongoing changes in the cultural patterns belonging to the original culture of people from different cultural backgrounds. Later, Berry (1997), in his seminal work (Immigration, Acculturation, and Adaptation), redefines the term as

a two-dimensional process characterized by the tension between cultural maintenance of the native culture and contact and participation with the host culture. Based on these dimensions, Berry (2005) also explains that people choose between four main acculturation strategies: integration, assimilation, separation, and marginalization. Linking acculturation research with adaptation outcomes, Berry (2005) argues that the integration strategy is the most adaptive, whereas the marginalization strategy is the least adaptive. Therefore, in the case of international (sojourning) students, a distinct group from immigrants or refugees in character, integration strategy is proven the most adaptive one (Zheng, Sang & Wang, 2004). In line with the mentioned above, acculturation serves as an umbrella term as it is a very broad construct, including assimilation, separation and marginalization strategies and directly links with our conceptualization as international students often choose integration strategy in their adaptation process. Therefore, several studies report that international students face acculturative stressors in their new educational settings, including discrimination, language barriers, loneliness, homesickness, financial issues, daily life, and academic challenges (Nayir & Saridas, 2021; Smith & Khawaja, 2011; Wang & Mallinckrodt, 2006).

As for the general adaptation studies on international students, another significant and broad concept mainly derived from acculturation studies is cross-cultural adaptation. According to Searle and Ward (1990), cross-cultural adaptation consists of two separate but connected concepts: sociocultural adaptation and psychological adaptation. In the early studies, cross-cultural adaptation was thought of as a notion that includes two sub-dimensions labelled as "psychological" comprised of emotional and affective subset and "sociocultural", representing the behavioral aspect. Still, later Ward (1996) proposed that psychological and sociocultural factors are distinct domains and refer to particular characteristics. Similarly, some researchers also posit that psychological adaptation represents a number of psychological features consisting of various key factors such as individuals' traits related to their internal sense of identity composed of cultural and personal aspects, personality variables, healthy mental and physical well-being, or feeling of motivation and satisfaction in a new social environment (Schmitz, 1992; Searle & Ward, 1990). Yet, sociocultural adaptation is more directly tied to the social skill capacity of individuals (Ward & Kennedy, 1993) to manage daily challenges especially related to family, work or academic life and connect themselves to their new sociocultural environment (Berry, 1997). In short, even if psychological adaptation and sociocultural adaptation have been proven to be linked in empirical studies, there are still both conceptual and empirical reasons to distinguish them (Berry, 1997). Hence, the former is more likely associated with a person's state of well-being, motivation, anxiety, stress and so on, whereas the latter one is about the cognitive and behavioral aspect of individuals affected by the host country's culture and the acquisition level of social skills of a person to survive daily life in a new environment.

Given the importance of cross-cultural adaptation for international students, extensive efforts have been made to shed light on the factors effective in this process (Ward et al., 2001; Zhou et al., 2008). The first attempts to examine social and psychological problems of international students started in USA and Britain in the 1950s (Ward et al., 2001). Along the way, a number of models, originated first in the studies on culture and culture shock (e.g., Gullahorn & Gullahorn, 1963; Lysgaard, 1955; Oberg, 1960), yet later incorporated into acculturation and cross-cultural adaptation studies (e.g., Searle & Ward, 1990; Berry, 1997; Kim, 2001), have been proposed to reveal the mechanism and factors behind the complex adaptation process in a framework. While traditional viewpoint towards this process was based on clinical and medical studies, most of which was dominated by psychologists (e.g., Bowlby, 1969; Holmes & Rahe, 1967) until the 1980s, contemporary literature investigates and discusses the subject from multiple perspectives. Therefore, researchers have investigated this adaptation process in various contexts. Li and Gasser (2005), for instance, focus mainly on the connections between international students' contact with host society, their ethnic identification, cross-cultural self-efficacy, and their sociocultural adaptation. While Sumer et al. (2008), and Lee and Çiftci (2014) look into the role of social support, Swami (2009), puts emphasis on the discrimination

and cultural distance. However, Vedder and Virta (2005) explore the effects of native and host language proficiency and ethnic identity on sociocultural and psychological adaptation.

In line with the above mentioned, various factors have been proven to be antecedents in the adaptation process for international students. Language proficiency, for example, is regarded as another key predictor of the psychological and socio-cultural adaptation of international students (Kwon, 2013; Wang & Hannes, 2013; Zhang & Goodson, 2011). The positive effects of social support from family members and local or non-local friends on the adaptation process have also been documented (Hendrickson et al., 2011; Kashima & Loh, 2006). From a broader perspective, Hirai, Frazier, and Syed (2015), in their study on psychological and sociocultural adjustment of first-year international students, demonstrate that language-related factors, academic stress, personality and social relationships are significant factors. Besides, cultural awareness and intercultural communication are regarded as necessary components of social adaptation in a new environment (Dai & Zhao, 2021). Therefore, a combination of factors underlying the adaptation level of individuals is deemed related to international students undergoing a rigorous adaptation process and vulnerable to unexpected changes.

Consequently, as evident above, considerable effort has been devoted to understanding international students' general adaptation, and the literature is extensive and theoretically diverse. According to Hammer (1992), the literature on international students commonly covers four areas: problems they face, psychological reactions to a new cultural environment, the influence of social interaction and communication on their adaptation, and the cross-cultural culture learning process. Kagan and Cohen (1990) have also noted that the majority of research on sojourning students has focused on the emotional, behavioral, and cognitive effects of cross-cultural transition, intending to determine whether individual, interpersonal, social, structural, and economic elements consistently predict adaptation. Ward, Bochner and Furnham (2001, p.161) adopt a broad perspective and suggest that “salient themes in research specific to sojourning students include interpersonal and intergroup interactions; the difficulties faced by international students; academic issues in the intercultural classroom; temporal variations in psychological, sociocultural and academic adaptation”.

Consistent with the theories and models in the literature, various instruments have been developed to provide empirical proof. Sociocultural Adaptation Scale (SCAS), for instance, was developed by Searle & Ward (1990) based on the previous studies by Trower, Bryant and Argyle (1978) on social skills and the research by Furnham and Bochner (1982) on social situations. Originally, SCAS composed of 16 items is regarded as an instrument focusing only on intercultural competence, but a revised version of the scale (SCAS-R) developed by Wilson (2013) composed of 21 items and has also explored the cognitive domain, including five factors: interpersonal communication, academic/work performance, personal interests and community involvement, ecological adaptation, and language proficiency. Another tool designed to assess adjustment problems of international students is the Acculturative Stress Scale for International Students [ASSIS] by Sandhu and Asrabadi (1998). The scale consists of 36 items scored on a five-point Likert-type scale with a six-factor structure, ranging from perceived discrimination, homesickness, perceived hate, fear, stress due to change/culture shock and guilt. However, the researchers included a “miscellaneous” part that contributed to unexplained variance but could not be categorized under any one specific factor. They have stated that they believe the items are important enough to be included in this scale to measure international students' acculturative stress as a whole. The Intercultural Adjustment Self-Efficacy [IASE] (Brenner, 2001) is another instrument to measure international students’ beliefs in their abilities to do certain things effectively while on a study abroad program in a foreign country. The IASE consists of 27 items using a ten-point Likert scale with eight factors labelled as acculturate, personal care, logistics of the country, emergency management, interpersonal abilities, psychological strengths, cultural justification and educational adaptation. In addition to all scales mentioned, the Mental Health Inventory [MHI-5] (Davies, Sherbourne, Peterson, & Ware, 1988) is another tool to measure sojourners’ level of

psychological adjustment. This instrument is a five-item scale using a six-point Likert form that assesses psychological adjustment by addressing areas such as behavioral dysfunction, psychological distress, and general positive affect. Academic Adjustment Scale [AAS] developed by Anderson, Guan and Koc (2016) is another instrument to measure one of the dimensions of international students' adaptation. Nine items are grouped under three factors named "academic lifestyle", "academic achievement", and "academic motivation" in this scale. Karakuş and Akay (2020) developed Scale of International Students to Higher Education [SISHE]. The instrument consisting of 21 items is based on four factors called "the process of academic courses", "academic principles", "academic life (experiences)" and "socio-cultural life at university". As can be seen in that scale, while 16 of the items under three of the factors directly related to academic adaptation, only five items represent the socio-cultural aspect of the adaptation process. Another instrument for sociocultural adaptation developed by Bikos, Forman and Patton (2020), was originally designed to be used in evaluating and enhancing programs such as international education, yet it may also be useful for use with international students after further evaluation. Unlike the previous instruments The Self-Efficacy for Sociocultural Adaptation Scale [SESCAS] was developed for self-efficacy for three types of tasks (affective, behavioral, cognitive) in two cultural contexts (environmental, interpersonal).

Employing a holistic and eclectic perspective, this research aims to develop an original, reliable, and valid instrument to determine the general adaptation levels of international students in higher education. In this context, the following research questions are addressed:

1- Is GASIS a valid measurement instrument to assess the general adaptation level of international HE students?
2- Is GASIS a reliable measurement instrument to assess the general adaptation level of international HE students?

METHOD

After a comprehensive literature review on the scale development and construct clarification procedures explained and suggested by different researchers in the literature (e.g., Cohen, Swerdlik, 2018; DeVellis, 2017; Erişti & Erdem, 2017; Sağlam & Arslan, 2018), the researchers developed a comprehensive and sequential approach in the development of the draft scale based on the set of specific guidelines clearly defined in the literature. The validity and reliability levels of the draft were tested through two consecutive phases conducted on two different groups of international students. The steps grouped under five stages and described thoroughly in the next section are as follows:

A) Conceptualization
- A.1 Answering some preliminary questions before the scale development
- A.2 Doing an extensive literature review

B) Construction
- B.1 Creating a sizable pool of items
- B.2 Revision of the items
- B.3 Formatting the items and the response anchors
- B.4 Operationalizing the draft scale
- B.5 Consulting expert opinion

C) Tryout
- C.1 Pilot study
- C.2 Revision

D) Implementation (Two phases)
- D.1 Administration of the draft scale on the first sample group
- D.2 Item analysis
  - D.2.1. Preliminary analysis for exploratory factor analysis (EFA)

D.2.2. EFA
D.2.3. Reliability analysis
D.4 Administration of the draft scale on the second sample group
D.5. Item Analysis
D.5.1. Preliminary analysis for confirmatory factor analysis (CFA)
D.5.2. CFA
D.5.3. Reliability analysis

E) Finalizing the draft scale

THE DEVELOPMENT PROCESS OF GASIS

First of all, the researchers organized an online meeting to find answers to some preliminary questions they encountered in the conceptualization stage of the scale. Although these questions look simple at first glance, they are practically valuable to clarify the next steps. By answering these questions, closely associated with the purpose and the theoretical framework of the scale, the plan and the procedures were defined clearly. Some of the preliminary questions in this stage are as follows:

1- What's the purpose of this measurement tool?
2- Is this measurement tool required in the literature?
3- Are there any similar measurement tools in the literature?
4- Is the scope of this measurement tool different from the previous ones?
5- Who does this measurement tool address?
6- What is the ideal response format for this measurement tool?

In the second step, a comprehensive literature review was conducted to shed light on the notion of the general adaptation of international students. Theoretical studies, research findings and similar scale development studies were the primary sources used extensively in this process. As a result of the literature review, the variables related to the adaptation process of international students are listed in groups. The results of this study helped draw the borders of the theoretical background, which form the conceptual framework distinctly and reveal the potential dimensions in accordance with the purpose of the instrument.

After that, an item pool composed of 64 items grouped under five dimensions defined based on the theoretical frame reached through the extensive literature review (e.g., Berry, 1997; Gullahorn & Gullahorn, 1963; Kim, 2001; Lysgaard, 1955; Oberg, 1960; Searle & Ward, 1990) was generated. The researchers then had an online meeting to revise the clarity and comprehensibility of the items. This step was also required to eliminate or merge overlapping the items that focused on the same or very comparable points under the same factor. At the end of the revision, the number of items decreased to 47.

In the following step, a five-point likert scale ranging from 1 (strongly disagree) to 5 (strongly agree), was chosen. The items and response anchors were formatted accordingly. The instrument was then operationalized before sending to a group of experts for review. In this step, the draft scale was formed consisting of three sections: a) instruction part, b) demographic information form, and c) draft form of GASIS. The instruction section informs participants about the purpose of the research and provides a response guideline with descriptive information, including the number of items, average response time, and the researchers' identities. The demographic information form consisted of four questions aiming to determine the participants' gender, nationality, duration of stay in the host country and the level of the host language. Finally, the GASIS draft form composed of 47 items to determine the general adaptation levels of international students was attached in the third part.

In the last part of the second stage, called construction, two field expert groups were identified. For the content and face validity of the scale, the first group consisted of field experts specializing in internationalization of higher education, international student adaptation, psychology, and

assessment and evaluation studies in education. Eight of the 15 experts we were invited to examine the scale sent their opinions on the items by e-mail. According to their suggestions, nine items were omitted from the draft scale, and the number of items was reduced to 38. Complying with the feedback and corrections from the experts, researchers utilized the Miles and Huberman formula *(Reliability = consensus /consensus + disagreement)* to assure the reliability of the consensus and disagreement ratio among experts and 87.5% consensus has been reached (Miles & Huberman, 1994). Also, thirteen of the items were revised and rewritten by the feedback from the field experts. After the first groups' feedback, ten scholars in the second group from English language teaching department and three native English speakers were invited to consult on the clarity and comprehension check for the items. Six experts and two native speakers sent their feedback on the spelling, punctuation, and wording. Finally, problematic, ambiguous, and unclear items were corrected according to the suggestions, and the final form of the draft scale was generated. Agreement rate among the experts in the second group was 99%, only one of the experts insisted on to delete one ambiguous phrase.

The third stage, called tryout, includes two steps: pilot study and revision. Researchers randomly selected 50 international students to take the scale in its draft form in order to assess the clarity and intelligibility of the instructions, items, and response anchors. The pilot study was conducted at classrooms under the supervision of the researchers, and students were instructed to highlight or circle the words and phrases that were ambiguous. They were also encouraged to ask any questions about the scale in this process. After the papers were collected, each of them was analyzed carefully to find out the problematic parts. Only 11 students indicated nine different words as incomprehensible. Based on the feedback no items were omitted, but nine of them were revised, and the ambiguous words were replaced with basic synonyms.

The implementation stage, one of the critical milestones in the development process, included the administration of the draft scale, item analyses and revision studies. This stage involved two phases conducted on two different groups of participants.

THE FIRST PHASE

PARTICIPANTS

Data of the first phase for the EFA were collected from the first group of international students studying at a state university in Turkey that welcomes over 11,000 international students from 90 countries (Karabuk University [KBU], 2022). At first, utilizing purposive sampling methods of maximum variation (Patton, 2015), the sample size (N=410) was determined based on the number of items in the draft scale and the criteria highlighted in the literature (Field, 2009). Then, researchers briefed the participants about the research in the classes and invited them to participate in the study. Of 410 international students, 340 equals a response rate of almost 83% accepted to participate. As a result of the preliminary check on the dataset, 24 forms were removed from the dataset because they were incomplete or not responded appropriately, and researchers determined to perform the analysis with the dataset obtained from a total of 316 students, which is fairly acceptable for EFA analysis in the literature (Comrey & Lee, 2013; Field, 2013; Tabachnick & Fidell, 2018). All demographic information of the volunteer participants is presented in Table 1.

Table 1. *Demographics of the participants in the first phase.*

		N	*%*
Gender	Male	250	79,1
	Female	66	20,9
	Total	316	100,0
Country	Somalia	56	17,7
	Syria	53	16,8
	Chad	47	15
	Sudan	23	7,3
	Pakistan	20	6,3
	Yemen	19	6,0
	Palestine	*18*	*5,7*
	Rep. of the Congo	15	4,7
	D. Rep. of the Congo	10	3,2
	Senegal	10	3,2
	Afghanistan	9	2,8
	Jordan	9	2,8
	Azerbaijan	8	2,5
	Morocco	7	2,2
	Kazakhstan	6	1,9
	Mauritania	6	1,9
	Total (16 countries)	316	100
Duration of stay in the host country	24 or more months	165	13,6
	13-24 months	61	14,6
	7-12 Months	46	19,6
	0-6 months	44	52,2
	Total	316	100,0
Level of the host language	C1	130	8
	B1	48	9,2
	C2	45	15,5
	B2	39	12,3
	A2	29	40,8
	A1	25	14,2
	Total	*316*	*100*

PROCEDURES

Researchers applied for The Ethical Review Committee of the institution and received the approval before data collection. After that, the data collection process was completed in one week. The researchers collected data in person. At the beginning of the administration, researchers informed the students about the purpose of the study, and only volunteers completed the scale. At the end of the administration on the first group, the sheets were collected and checked before the initial analysis. When the papers were checked researchers eliminated 24 incomplete papers from the analysis as mentioned above.

DATA ANALYSIS

After entering the data into SPSS, preliminary analysis for EFA was conducted. The normality of the data was checked by visual methods using stem and leaf plot, histogram and Q-Q plot (e.g. McKillup, 2011); descriptive statistics such as mean, mode, median, skewness and kurtosis values (e.g. Kirk, 2008) and mathematical methods by Kolmogorov-Smirnov and Shapiro Wilks tests (e.g. Abbott, 2011). When the results obtained in the context of normality were evaluated holistically, it was clearly seen that the data were normally distributed. Then, the differences between mean scores of upper 27% and lower 27% was explored, item-total correlation values, Kaiser-Meyer-Olkin Measure of Sample

Adequacy (KMO) and Bartlett's Test of Sphericity were checked prior to the EFA, and it was determined that the dataset was acceptable for the analysis. The following section delves into the findings in further depth.

THE SECOND PHASE

PARTICIPANTS

Data for the second phase, including confirmed factors pattern after the EFA in the first phase, were obtained from another group of international students at the same institution. A very similar approach to the initial phase was followed in this phase, and a total of 600 students who did not participate in the previous phase were selected through the same sampling methods. At this time, a total of 527 international students from 47 countries representing a response rate of almost 87,83% responded the scale. Participant demographics are summarized in Table 2.

Table 2. *Demographics of the participants in the second phase.*

		N	*%*
Gender	Female	122	23,1
	Male	405	76,9
	Total	*527*	*100,0*
Country	Syria	60	11,4
	Somalia	56	10,6
	Chad	52	9,9
	Kazakhstan	34	6,5
	Sudan	28	5,3
	Turkmenistan	26	4,9
	Pakistan	24	4,6
	Yemen	24	4,6
	Morocco	22	4,2
	Palestine	22	4,2
	Senegal	22	4,2
	Afghanistan	15	2,8
	Rep. of the Congo	15	2,8
	Jordan	11	2,1
	D. Rep. of the Congo	10	1,9
	Egypt	9	1,7
	Mauritania	9	1,7
	Myanmar	9	1,7
	Uzbekistan	9	1,7
	Gabon	7	1,3
	Others (27 Countries)	63	11,9
	Total (47 Countries)	*527*	*100*
Duration of stay in the host country	0-6 months	107	20,3
	7-12 months	128	24,3
	13-24 months	81	15,4
	More than 25 months	211	40,0
	Total	*527*	*100,0*
Level of the host language	A1	29	5,5
	A2	34	6,5
	B1	55	10,4
	B2	150	28,5
	C1	192	36,4
	C2	67	12,7
	Total	*527*	*100*

PROCEDURES

A total of 527 international students volunteered in the second phase. A very similar procedure was followed in the administration of the draft form in the second phase. The data collection process, which was carried out in the classrooms by the researchers, was completed in ten days. As a result of the preliminary investigation of the dataset, none of the forms was eliminated from the dataset due to the inappropriate responses. Researchers decided to conduct the analysis with the data gathered from a total of 527 students.

DATA ANALYSIS

Just like before the EFA in the first phase, some preliminary analyses were performed. At first, visual, descriptive and mathematical methods were used to check the normality of the data. As the second step, the differences between mean scores of upper 27% and lower 27%, item-total correlation values were calculated. Finally, Kaiser-Meyer-Olkin and Bartlett sphericity test were conducted and reported that the dataset was appropriate for the CFA. After that, discriminant validity, convergent validity, and reliability analyses were completed. The results of the analyses are explained in detail in the following section. At the end of the second phase, the scale development process was finalized, and the findings were reported.

FINDINGS

This section involves the validity and reliability analysis results conducted in two phases on two different groups of participants.

THE FIRST PHASE

As mentioned above, researchers checked a number of statistics and plots before EFA. According to the descriptive statistics (see Table 3), mean, median and mode are fairly close to each other, and similar skewness and kurtosis values are between the acceptable thresholds (Bryne, 2010; George & Mallery, 2010; Hair et al., 2010).

Table 3. *Statistics for normality before EFA*

N	Valid	316
	Missing	0
Mean		3,62
Median		3,63
Mode		3,53
Std. Deviation		,501
Skewness		-,300
Std. Error of Skewness		,137
Kurtosis		,384
Std. Error of Kurtosis		,273

Next, both tests of normality, provide significance values that confirm the assumption of normality for the data (given in Table 4).

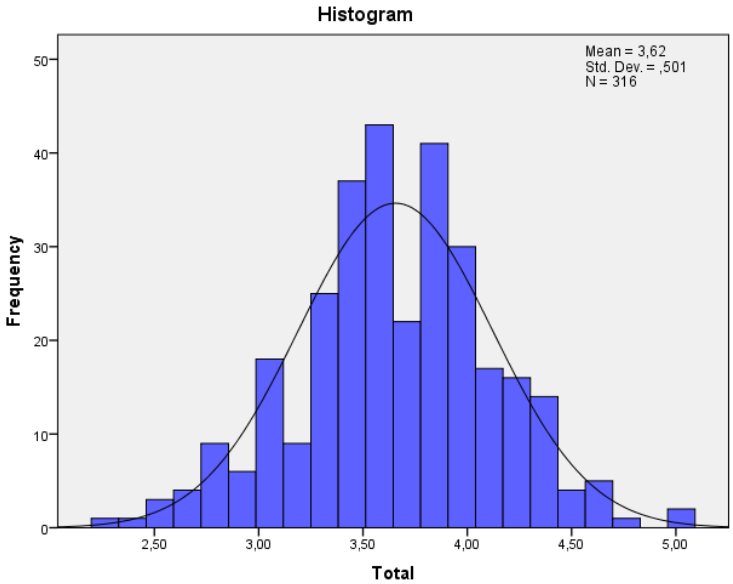
Table 4. *Tests of normality before EFA*

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Total	,046	316	,200*	,995	316	,418

*. This is a lower bound of the true significance.
a. Lilliefors Significance Correction

Finally, the histogram (given in Figure 2) clearly validates the data's normality (Field, 2013; McKillup, 2011; Thode, 2002).

Figure 2. *Histogram before EFA*



In the next step, researchers conducted an independent t-test to see the differences between mean scores of upper 27% (n=85) and lower 27% (n=85). In this regard, the items were sorted descending and 27% upper and lower groups of participants were identified through a basic percentage calculation. Then these participants were coded as 1 and 2, representing their group, and an independent t-test was performed. The findings revealed a significant difference between the means of the upper (M= 4,17 SD=0,25) and lower group (M= 3,01 SD=0,33). Thus, the results showed that the items were adequately distinctive [t (168) =25.475, p<.01].

After that, item discrimination was calculated through reliability analysis and item-total correlation values were investigated. The literature (Field, 2013) highlights that none of the items should be below 0.30 value. According to the results (see Table 5), all of the reported values in the draft scale form were over the threshold.

As a final step before the EFA, KMO test which measures sampling adequacy of the data for factor analysis and Barlett sphericity test that verifies whether a correlation matrix is significantly different from an identity matrix (Bartlett, 1951) were conducted. KMO values ≥.70 are desirable (e.g., Lloret et al., 2017), and the values less than .50 are considered problematic (e.g., Child, 2006). As a result of the analysis, the calculated KMO value is .867. This value is at a level that is considered meritorious (Kaiser, 1974) and means that the correlation structures are integrated, and factor analysis will present reliable factors (Pallant, 2001). Besides, the results of the Barlett sphericity test also reveal that the obtained chi-square value is significant (X2(703) =4691,710; p<.001). Based on the results obtained from the initial analyses before EFA, it was concluded that the research data were suitable for the factor analysis and showed a multivariate normal distribution.

In order to reveal the factor pattern of the scale, “principal component analysis” was chosen as the extraction method and "varimax”, which is a statistical method for clarifying the relations among the factors by maximizing the variance shared among items and simplifying item loadings (Allen, 2017), was selected as the rotation technique, and the EFA was conducted using IBM SPSS Statistics 24.

As a result of the first analysis, it was observed that there were four components with eigenvalues above 1 for a total of 28 items in the draft scale form. However, at this first stage, the presence of items with low factor loadings and overlapping items were remarkable. In removing problematic items from the scale structure, many criteria were considered simultaneously. When the overlapping status of the scale items and their ability to meet the acceptable level of factor load values

were evaluated, it was found that four items were below the .40 acceptance value (2, 18, 21, 31); and five items were overlapping (1, 3, 9, 19, 29, 30). After the items in question were excluded from the analysis one by one, EFA was repeated each time, and the factor structure was checked continuously. After removing 9 items, it was observed that all of the items in the scale were grouped under four dimensions (see Fig. 3 & Table 5), in a structure that diverged from each other, and the correlation values varied between at least .318 and .545, which is considered ideal (Pallant, 2001). The four factors were named as academic adaptation (ACA), socio-cultural adaptation (SCA), psychological adaptation (PSA) and daily life adaptation (DLA) (see Table 5).

The total variance explained by the four-factor structure obtained after removing the items from the scale is 50.16%. The first factor consisting of 8 items (27, 26, 22, 20, 28, 24, 23, 25) was 24.15%; the second factor consisting of seven items (33, 34, 38, 36, 35, 32, 37) contributed 12.05%; the third factor consisting of six items (6, 5, 4, 7, 8, 10) contributed 7.76%; and the fourth factor consisting of seven items (16, 11, 15, 12, 17, 13, 14) contributed 6.19% to the total variance. In multifactorial designs, factors explaining 30% to 40% of total variance are considered problematic (Tinsley & Tinsley, 1987) and 50% is considered sufficient explained variance in the literature (etc. Mooi & Sarstedt, 2010; Shrestha, 2021; Streiner, 1994).

Comrey and Lee (1992) offered a guideline for the quality of factor loadings of the items in factor analysis. According to this reference point, .71 and above is excellent, .63 is very good, .55 is good, .45 is fair, and .32 is poor. Likewise, Tabachnick and Fidell (2018) highlighted that the minimum factor load of an item should not be less than .32. In this context, six items are "excellent"; seventeen items are “very good”, and five items are “good”. In addition, the highest item load in the scale was calculated as .77; the lowest item load is .56. The structure of the factors after EFA, means and standard deviations of the items, item-total correlation statistics, component and rotation loadings are presented in Table 5.

After the EFA, the reliability level of the scale, which consists of a total of 28 items, was examined by analyzing the internal consistency coefficient. In the context of the scale total, the Cronbach Alpha coefficient is .881. When the factors were analyzed in terms of reliability, the values were reported as .858 for the 1st factor, .833 for the 2nd factor, .663 for the 3rd factor and .726 for the 4th factor (see Table 4).

Figure 3. *Scree plot of the exploratory factor analysis*

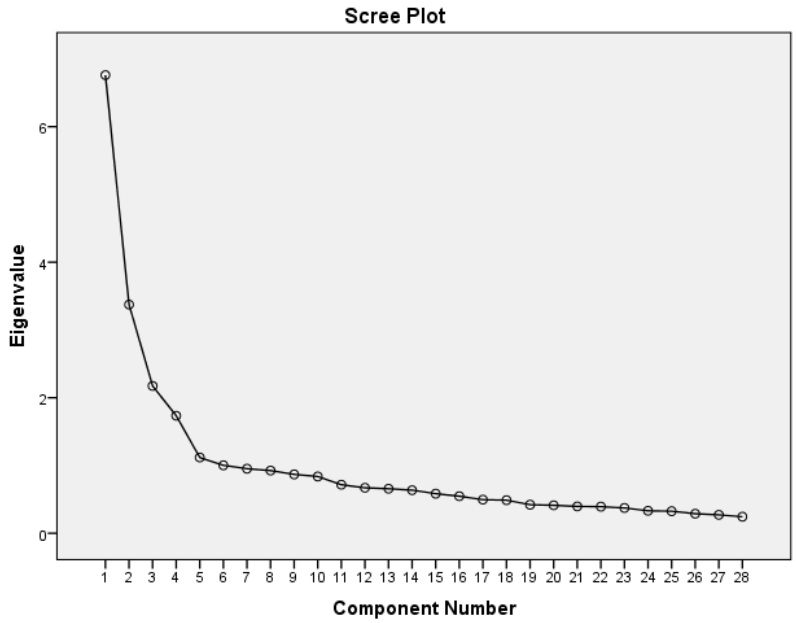
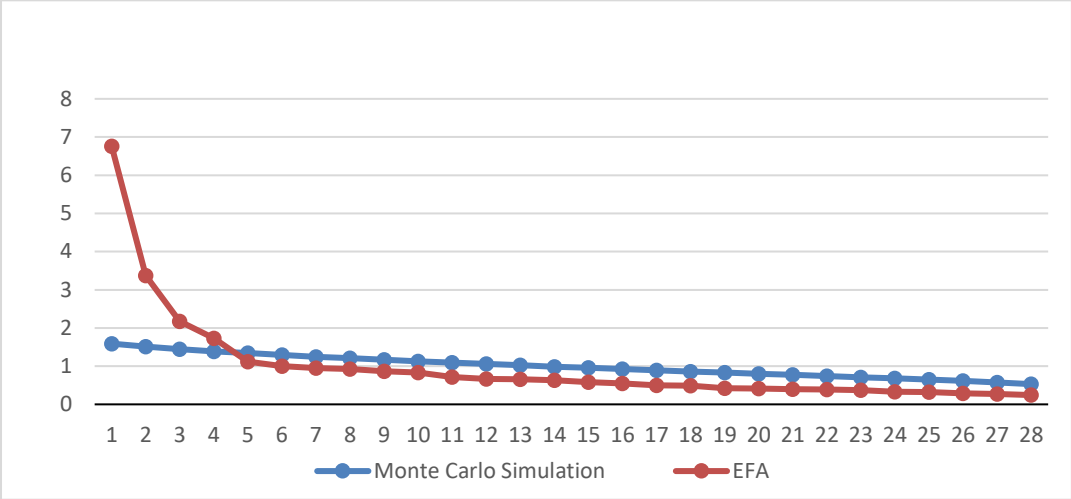


Table 5. *Statistics after EFA*

	Factors & items	Mean	SD	Item total r	Component factor load	Varimax factor load
1st Factor: Psychological Adaptation (α = 0.858)						
27	I want to give up everything because I feel lost here.	3,66	1,266	.493	,607	,749
26	I don't know how to cope with my anxieties.	3,42	1,131	.444	,570	,741
22	I feel lonely in a social environment.	3,20	1,276	.401	,571	,687
20	I feel like I don't fit in this country.	3,15	1,240	.367	,530	,679
28	I feel burned out here.	3,39	1,215	.545	,557	,679
24	Talking with locals makes me anxious.	3,32	1,212	.349	,479	,676
23	I feel powerless in this country.	3,13	1,298	.474	,504	,675
25	When I wake up, I don't feel motivated for a new day.	3,26	1,291	.464	,541	,659
2nd Factor: Daily life Adaptation (α = 0.833)						
33	I know how to travel here.	3,97	,856	.454	,546	,770
34	I know where to buy basic supplies.	4,02	,891	.428	,528	,745
38	I can deal with everyday problems.	3,87	,895	.461	,548	,695
36	I'm getting used to my new lifestyle in this country.	3,96	,779	.521	,609	,679
35	I know what to do in a state of emergency.	3,70	1,054	.421	,521	,670
32	I know the basic legal regulations of this country.	3,60	,988	.378	,472	,584
37	I know how to survive on my budget in this country.	3,78	,957	.435	,531	,571
3rd Factor: Academic Adaptation (α = 0.663)						
6	My teachers provide the necessary support when I need.	3,74	1,091	.505	,577	,725
5	I am satisfied with my academic progress.	3,66	,990	.474	,533	,720
4	I feel supported by my university.	3,29	1,148	.435	,505	,695
7	When I need help, my classmates are there for me.	3,71	1,010	.504	,578	,647
8	I am comfortable with the teaching styles of my new teachers.	3,73	1,036	.417	,468	,635
10	I collaborate with my classmates on school projects.	3,63	,959	.391	,454	,602
4th Factor: Socio-Cultural Adaptation (α = 0.726)						
16	I am aware of culturally accepted manners in the host country.	3,93	,899	.346	,421	,701
11	I am aware of national days and religious festivals of the host country.	3,63	1,072	.402	,476	,641
15	I respect the values and cultural norms of the host country.	4,33	,796	.348	,420	,626
12	I enjoy the local food of the host country.	3,79	,954	.402	,470	,620
17	I believe that I have integrated myself into the host culture.	3,73	,926	.512	,597	,616
13	I love the local music of the host country.	3,71	1,029	.400	,465	,570
14	I understand and tolerate jokes and humor.	3,74	,981	.318	,389	,565

After EFA, researchers performed Monte Carlo PCA for Parallel Analysis (MCPA) to analyze the construction of factors and to determine the number of factors to retain. As shown in Figure 4, the MCPA confirms the accuracy of the scree plot revealed in EFA. The intercepted section in the figure 4 proves that the scale consists of 4-factor structure.

Figure 4. Monte Carlo PCA for Parallel Analysis



THE SECOND PHASE

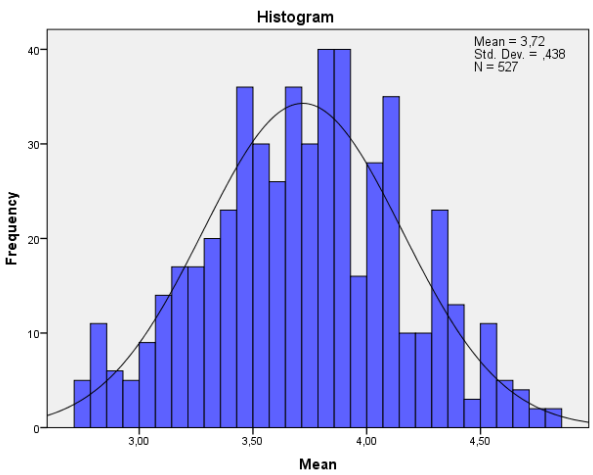
Before the Confirmatory Factor Analysis (CFA), the data set was checked for outliers and missing values. For normality parameters, the mode, median, and mean of the data were close to each other, the skewness and kurtosis were in the range of +1, -1 (See Table 6), z-standard scores were between +3, -3 (Bryne, 2010; George & Mallery, 2010; Hair et al., 2010).

Table 6. *Statistics for normality before EFA*

N	Valid	527
	Missing	0
Mean		3,72
Median		3,71
Mode		3,93
Std. Deviation		,438
Skewness		,003
Std. Error of Skewness		,106
Kurtosis		-,452
Std. Error of Kurtosis		,212

Next, the histogram (given in Figure 5) clearly shows the normality of the data (Field, 2013; McKillup, 2011; Thode, 2002).

Figure 5. *Histogram before CFA*



Finally, both normality tests (given in Table 7), which are often employed in the literature to determine how much the data deviate from the normal distribution, provide significance values that validate the normality for the data.

Table 7. *Tests of normality before CFA*

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Mean	,039	527	,054	,993	527	,018

a. Lilliefors Significance Correction

In the next step, researchers conducted an independent t-test to see the differences between mean scores of upper 27% (n=142) and lower 27% (n=142). The findings revealed a significant difference between the means of the upper (M= 4,26 SD=0,20) and lower group (M= 3,18 SD=0,19). Thus, the results showed that the items were adequately distinctive [t (281) =44.886, p<.01].

After that, item discrimination was calculated through reliability analysis and investigated item-total correlation values. After that, item discrimination was calculated through reliability analysis and investigated item-total correlation values. The literature (Field, 2013) highlights that none of the items should be below 0.30. According to the results (see Table 9), all of the reported values regarding the items in the draft scale were over the threshold.

Finally, before performing CFA, the Kaiser-Meyer-Olkin (KMO=.83) coefficient was examined and the Barlett sphericity test (3877.624, p <.001) was calculated to determine the suitability of the data. According to the preliminary analysis and calculations, the data were found to be suitable for performing CFA. CFA was performed for the 28-item scale in order to evaluate the factor construct validity. The values for the model data fit obtained are given in Table 8. According to the CFA, it was found that the t-values were above 2.56 and significant (p<.01), which is regarded as acceptable in the literature.

In terms of fit indices, the model demonstrates excellent fit according to model chi-square and degrees of freedom ratio; good fit according to RMSEA, SRMR, GFI and NNFI values; acceptable fit according to AGFI, CFI, NFI values. Also, when the modification index values of the model were examined in detail, it was observed that there was a remarkable relationship between the error covariances of especially two items (I25-I26) under the same latent variable. The analysis program (Lisrel 8.51) suggested a modification that there would be a significant decrease in chi-square value and increase in fit indices if two of the items (I25 & I26) were co-varied (given in Figure 6). Therefore, two observed items within the same latent factor (Psychological adaptation factor) were covaried as suggested by the program. When the fit indices after modification are examined, it can be said that besides an improvement in the degree of χ^2/df and fit indices (given in Table 8).

Table 8. *CFA Results*

	CFA Results (n=527)			
	Before Modification χ^2 = 858,77; df = 344 (p <0.0001)		After Modification χ^2 = 815,36; df = 343 (p <0.0001)	
Fit Indices	Observed Values	Acceptable Values	Observed Values	Acceptable Values
χ^2/sd	2.49	Excellent Fit χ^2/sd ≤ 2.5	2.37	Excellent Fit χ^2/sd ≤ 2.5
RMSEA	0.053	Good Fit RMSEA ≤ 0.08	0.051	Good Fit RMSEA ≤ 0.08
S RMR	0.053	Good Fit S RMR ≤ 0.08	0.053	Good Fit S RMR ≤ 0.08
GFI	0.90	Good Fit GFI ≥ 0.90	0.90	Good Fit GFI ≥ 0.90
AGFI	0.88	Acceptable Fit 0.85≤ AGFI < 0.90	0.88	Acceptable Fit 0.85≤ AGFI < 0.90
CFI	0.93	Acceptable Fit CFI ≥ 0.90	0.93	Acceptable Fit CFI ≥ 0.90
NFI	0.89	Acceptable Fit NFI ≥ 0.85	0.89	Acceptable Fit NFI ≥ 0.85
NNFI	0.92	Good Fit NNFI ≥ 0.90	0.93	Good Fit NNFI ≥ 0.90
IFI	0.93	Good Fit NNFI ≥ 0.90	0.93	Good Fit NNFI ≥ 0.90

Sources: Schumacher & Lomax (2004); Jöreskog & Sörbon (1993); Kline (2011); Schermelleh-Engel, Moosbrugger & Müller (2003)

After CFA, the factor loads of the items were examined. The factor loads varied between the lowest 0.42 and the highest 0.71 for the ACA dimension; between the lowest 0.42 and the highest 0.58 for the SCA dimension; between the lowest 0.55 and the highest 0.66 for the PSA dimension; between the lowest 0.44 and the highest 0.69 for the DLA dimension (see Table 9). They are moderate and statistically significant, indicating convergent validity.

Table 9. *Statistics after CFA*

	Factors & Items	Mean	SD	Item total r	Factor loads	Error Variances	t values
1st Factor: Academic Adaptation (α = 0.751)							
4	I feel supported by my university.	3,42	1,086	,483	0.54	0.71	11.84
5	I am satisfied with my academic progress.	3,76	,903	,505	0.57	0.68	12.51
6	My teachers provide the necessary support when I need.	3,93	1,015	,566	0.71	0.49	16.52
7	When I need help, my classmates are there for me.	3,81	,968	,545	0.69	0.53	15.72
8	I am comfortable with the teaching styles of my new teachers.	3,91	,933	,477	0.54	0.71	11.80
10	I collaborate with my classmates on school projects.	3,74	,922	,370	0.42	0.82	8.91
2nd Factor: Socio-Cultural Adaptation (α = 0.717)							
11	I am aware of national days and religious festivals of the host country.	3,76	1,009	,444	0.55	0.70	11.88
12	I enjoy the local food of the host country.	3,80	,949	,452	0.53	0.72	11.24
13	I love the local music of the host country.	3,80	,985	,413	0.49	0.76	10.40
14	I understand and tolerate jokes and humor.	3,79	,934	,360	0.42	0.82	8.72
15	I respect the values and cultural norms of the host country.	4,32	,768	,425	0.51	0.74	10.76
16	I am aware of culturally accepted manners in the host country.	3,95	,828	,475	0.58	0.67	12.52
17	I believe that I have integrated myself into the host culture.	3,75	,870	,437	0.56	0.69	11.98
3rd Factor: Psychological Adaptation (α = 0.817)							
20	I feel like I don't fit in this country.	3,24	1,215	,517	0.58	0.67	13.04
22	I feel lonely in a social environment.	3,34	1,208	,542	0.60	0.64	13.76
23	I feel powerless in this country.	3,34	1,221	,499	0.56	0.69	12.63
24	Talking with locals makes me anxious.	3,37	1,172	,486	0.55	0.70	12.23
25	When I wake up, I don't feel motivated for a new day.	3,34	1,243	,536	0.57	0.68	12.73
26	I don't know how to cope with my anxieties.	3,48	1,096	,568	0.59	0.65	13.47
27	I want to give up everything because I feel lost here.	3,80	1,193	,575	0.66	0.57	15.40
28	I feel burned out here.	3,50	1,157	,554	0.64	0.59	14.81
4th Factor: Daily Life Adaptation (α = 0.788)							
32	I know the basic legal regulations of this country.	3,57	,993	,378	0.44	0.81	9.51
33	I know how to travel here.	3,99	,828	,554	0.62	0.62	14.28
34	I know where to buy basic supplies.	4,02	,899	,593	0.69	0.53	16.21
35	I know what to do in a state of emergency.	3,72	1,006	,529	0.61	0.63	14.05
36	I'm getting used to my new lifestyle in this country.	3,93	,830	,512	0.59	0.65	13.43
37	I know how to survive on my budget in this country.	3,87	,953	,516	0.60	0.64	13.74
38	I can deal with everyday problems that I face.	3,86	,902	,549	0.62	0.61	14.40

The internal consistency test was used to determine the scale's reliability. Internal consistency means that items in the scale measure the same construct in relation to one another, and reliability is usually determined by the Cronbach alpha value (Field, 2013). The scale's Cronbach Alpha value is (α=.839), according to internal consistency calculations. Table 10 shows the alpha values for the whole scale and the factors.

Table 10. *Reliability test results and correlations between factors*

Factors	Alpha Value	Correlations between the factors			
		ACA	SCA	PSA	DLA
ACA	.751	1	,313	,229	,207
SCA	.717		1	,194	,407
PSA	.817			1	,220
DLA	.788				1
Total	.839				

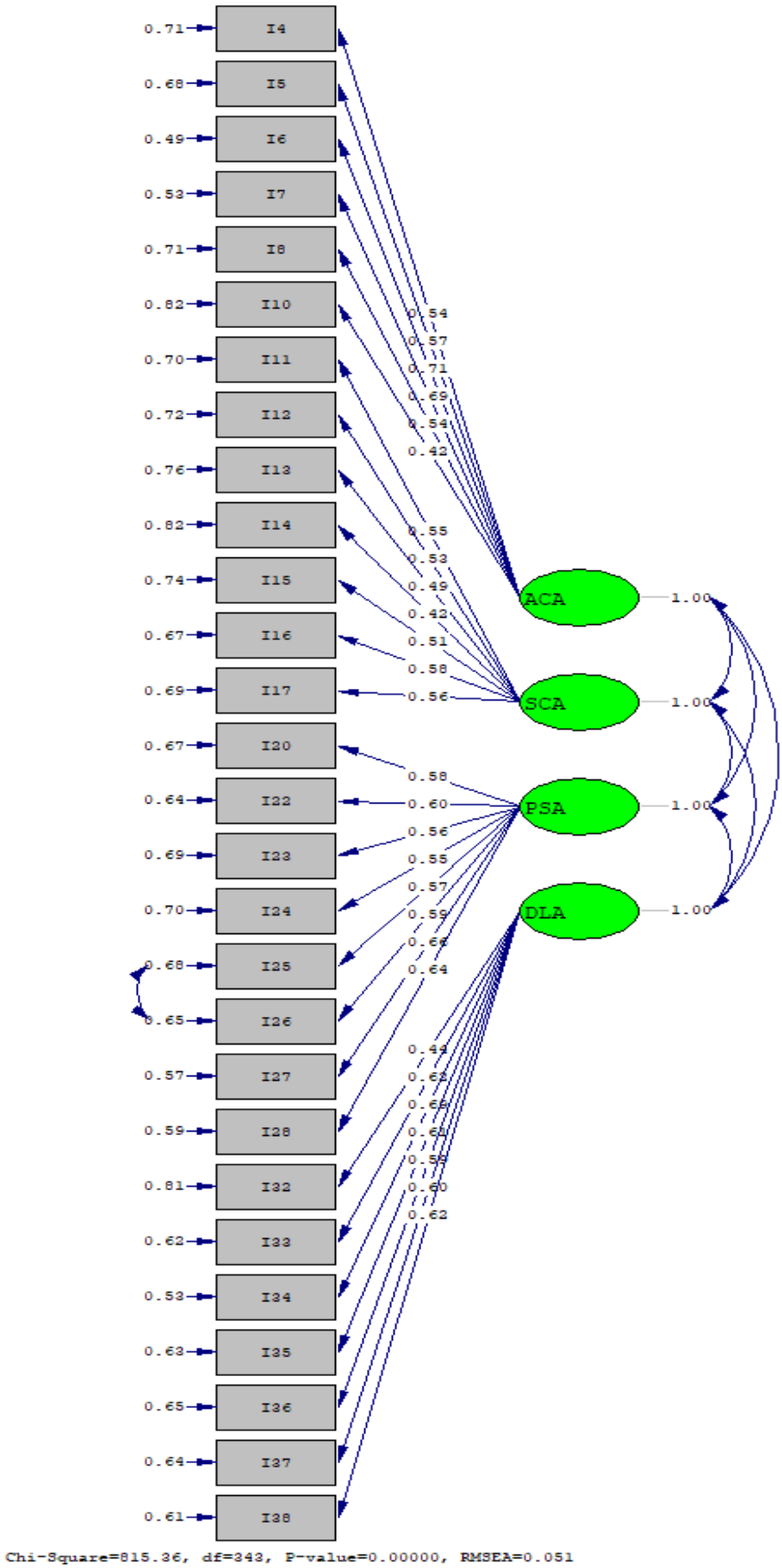
Values between.70 and.90 indicate a high level of reliability, according to the criteria for alpha coefficient appropriateness (Ozdamar, 2011). Similarly, Field (2013) considers alpha values of.70 and.80 to be reliable. These criteria suggest that the scale developed in this study is a highly reliable instrument. Correlations between factors should not be overly high for divergent validity (Kline, 2011). Table 10 shows the correlations between factors, and the values are low, indicating divergent validity.

The scale is designed to yield scores reflecting academic, socio-cultural, psychological, and daily life adaptation, defined as dimensions revealing the sum score for the general adaptation level embedded within the instrument. Thus, the full scale yields four dimensions scores consisting of the sum score for international students' general adaptation level. Elaborating on the mean scores, we developed a score interval to ease the interpretation of the total scale (See Table 11.).

Table 11. *Score intervals for the interpretation of the scale*

Mean score	Classification
1.00 - 1.80	Not adapted
1.81 - 2.60	Partly adapted
2.61 - 3.40	Moderately adapted
3.41 - 4.20	Fairly adapted
4.21 - 5.00	Totally adapted

Figure 6. *CFA Diagram of GASIS*



DISCUSSION, CONCLUSION AND IMPLICATIONS

In recent years, nations have undergone massive economic, social, technological, and educational transformations. Thus, they have started to adopt strategies to go thorough into this global flow of change. In this regard as a significant agent of change (de Wit, 2020) internationalization in higher education has come to fore by becoming a policy priority. Many have employed various practices for internationalization in HE, including the exchange of scholars; developing common curriculum; creating strategic collaborations (Knight & De Wit, 1995); mutual diploma equivalence; implementing course-credit transfer systems (Kehm & Teichler, 2007); opening new branch campuses and international summer programs in different countries (Teichler, 2010); establishing international research centers and providing consultancy services (Van Damme, 2001). Among all, international student mobility has become the core component of this process (Arslan, 2020).

The presence of international students in a host country could bring benefits yet pose some challenges as well. Hence, the cross-cultural adaptation of international students stands out significant in eliminating obstacles or challenges throughout this process. Over the last few decades, the adaptation of international students has drawn scholarly attention with a considerable amount of research. Studies conducted in this setting demonstrate that many distinct variables influence international students' adaptation, and that the adaptation process has a multifaceted structure, as detailed in the literature review. Although there is no complete agreement in the literature on the theoretical discussions on the adaptation of international students and the dimensions of the previously developed scales, academic adaptation, socio-cultural adaptation, psychological adaptation and adaptation to daily life factors come to the fore as the dominant ones.

This research aims to develop a valid and reliable measurement tool that aims to determine the general adaptation level of international students. As the details presented in the methodology, the scale development process was carried out in consecutive steps gathered under five stages. At the beginning of the process, the researchers created an item pool of 64 items based on a comprehensive literature review. At the end of the repetitive review and revise sessions, it was decided to remove the obscure/ambiguous and overlapping items, and the new draft form consisting of 47 items was sent to an expert group for feedback. The number of items in the new draft form was reduced to 38 in line with the feedback from the experts. Fifty international students participated in the pilot study and by their feedback some item expressions were revised.

The implementation step, the critical stage for the scale development process, includes two studies conducted with two separate participant groups. In the first study, which was carried out with 316 international students from 16 different countries, the items in the draft form were gathered under four factors in EFA. These factors, called academic adaptation, socio-cultural adaptation, psychological adaptation, and adaptation to daily life, are in full compliance with the theoretical framework in the literature, and the total variance explained by the four-factor structure is 50.16%. The reliability level for the 28-item scale of four factors was calculated as .88 Cronbach Alpha internal consistency coefficient. Accordingly, both the total scale and the context of the factors have been reported to have a high level of reliability.

In the second study with 527 international students from 47 countries who did not participate in the first study, CFA was conducted to confirm the four-factor structure. In this stage, the $\chi 2/df$ ratio, RMSEA, SRMR, GFI, NNFI, CFI and IFI fit indices were used, and it was found that all values reflect excellent, good and acceptable levels of fit. Thus, the scale can be considered reliable with an internal consistency coefficient of .84. In addition, after CFA, the factor loadings of the items were moderate and significant, indicating convergent validity. Besides, the fact that the correlation levels of the factors validated in CFA were not high indicates divergent validity. Based on the results obtained from the EFA and CFA studies and observed the internal consistency coefficient values, GASIS is an original, valid and reliable measurement tool that could be utilized to determine the general adaptation levels of international students in higher education.

Despite a substantial volume of research in the vast literature on "adaptation" studies for international students, there is still limited unanimity on what exactly constitutes the notion of adaptation. As apparent above, the concept has been defined, interpreted, and measured in a multitude of ways and from a variety of perspectives. In this regard, numerous measurement instruments have been operationalized to assess the adaptation of international students (e.g., Anderson et al., 2016; Bikos et. al., 2020; Brenner, 2001; Davies et al., 1988; Karakuş & Akay, 2020; Sandhu & Asrabadi, 1998; Searle & Ward, 1990). GASIS flexible and modifiable in character, stands out different among all other instruments above. SESCAS, for instance, focuses on self-efficacy for the sociocultural adaptation in two different cultural contexts (Bikos et al.,2020) and the factors of SISHE were mainly about the academic adaptation and partly sociocultural life at university. Similarly, AAS (Anderson et al., 2016) was developed to determine the academic adaptation of international students, whereas MHI-5 (Davies et al., 1988) is an instrument to measure the psychological adjustment of sojourners. In addition, IASE (Brenner, 2001) has eight factors related to intercultural adjustment, ASSIS (Sandhu & Asrabadi, 1988) has six factors to assess acculturative stress of international students. Last but not least, SCAS (Searle & Ward) which is the most cited scale in the adaptation literature based on sociocultural adaptation of international students and focuses only on intercultural competence. Therefore, in an attempt to bring conceptual integration to a scattered field of scales, GASIS with multiple dimensions of the adaptation concept could meaningfully be utilized as a valid and reliable tool. Although, the study offers a new empirically tested instrument to assess international students' adaptation, there are also some issues to be addressed in future research. The sample for this study includes international undergraduate students from a single Turkish state university that poses a limitation. Yet, future studies can amplify their samples by including international graduate/postgraduate students from state and private universities across borders for having a broad basis and greater implications. Besides all, additional predictors for international students' adaptation could be identified and explored further by incorporating various theoretical frameworks into the vast amount of adaptation research on international students.

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AUTHOR CONTRIBUTION

Both authors have made substantial contributions to the conceptual framework of the research. They both developed the GASIS scale together. The first author wrote the methodology, collected the data and conducted the EFA on SPSS. The second author wrote the introduction, performed the CFA on Lisrel and was responsible for drafting the manuscript and revising it critically for important intellectual content. Both authors have contributed the discussion, conclusion, and implications. They read and agreed to the published version of the manuscript together.

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The Relationship between Prosocial Behaviours of Children, Perspective Taking Skills and Emotional Regulation

Aysel Esen Çoban, Assoc. Prof. Dr., Hacettepe University, yslcbn@yahoo.com
0000-0002-0631-0064

Nevra Atış-Akyol, Assist. Prof. Dr., Sivas Cumhuriyet University, nevrarven@gmail.com
0000-0003-4697-847X

Sabiha Eren, Phd., Uşak University, sabihakaymakeren@gmail.com
0000-0002-2599-3913

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Abstract
The purpose of this study is to examine the relationship of perspective-taking and emotional regulation with prosocial behaviours of children in the preschool age group, emphasizing the predictor aspect of perspective taking and emotional regulation skills, which are critically important for the development of children in early childhood. The "Perspective Taking Test for Children", the “Emotion Regulation Scale” and the “Prosocial Behavior Scale” were used in this study, which involved a total of 213 children aged between 48 and 72 months attending pre-school education. In the study, it was found that there were statistically significant correlations between prosocial behaviour and perspective taking and emotional regulation. In addition, it was found that emotional regulation had a greater effect on the total score of prosocial behaviours and the "helping" sub-scale score of prosocial behaviors than the perspective taking score.

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INTRODUCTION

The skills and experiences of early childhood are extremely influential in a person's life. The preschool period, which covers the early years of life, is a period of unique experiences and learning regarding the social and emotional development of children. The quantity and quality of social and emotional experiences of children, especially those who benefit from kindergarten, increase with their expanding environment. By having many experiences in kindergartens, it is possible for children who encounter social learning examples to observe and learn prosocial behaviors. So children are likely to encounter and/or perform various prosocial behaviors. According to its most basic definition, prosocial behaviours are voluntary behaviours done to be beneficial to another person or group without expecting any reward or praise in return (Eisenberg & Mussen, 1989; Eisenberg, 2003a; Knafo & Plomin, 2006). According to another definition, prosocial behaviours are expressed as behaviours that will benefit others, such as taking care of another person and helping or encouraging someone (Choi, 2005).

Prosocial behaviours are expressed as positive social behaviours in some sources and are discussed as sharing, helping, cooperating and relaxing (Iannotti, 1985; Yagmurlu et al., 2005). Therefore, it requires a self-sacrificing process of spending personal resources for the benefit of others. According to Kuhlmeier et al. (2014), prosocial behaviours of children, such as helping and sharing, are often selective; in the later stages of their development, children interpret different prosocial behaviours as good, they become less selective in their behaviours, and prosociality becomes a consistent personality trait for them. Pro-social behaviours predict well-adjusted social relationships for children not only for the present but also for the future. The central importance of pro-social behaviours for the social development of children has led researchers to examine this variable in terms of different factors such as emotional regulation, socialization, temperament, and empathy (Astington and Jenkins, 1995; Carlo et al., 2010; Denham, 1986; Underwood and Moore, 1982). The positive correlation between prosocial behaviours and emotional regulation suggests that emotional regulation skills may be a predictor of prosocial behaviours.

All internal and external reactions used by individuals to manage their emotional state, change and evaluate their reactions are expressed as emotional regulation (Thompson, 1994). Emotional regulation is defined as the ability to evaluate emotional reactions to the events and situations encountered and to develop appropriate strategies when necessary (Gross & Thompson, 2007). Children with high emotional regulation skills experience the better social and emotional development and perform better in social-emotional relationships. For example, in a study conducted with preschool children, it was stated that there was a positive correlation between the emotional regulation skills of children and their social competencies of children (Denham et al., 2003). It was found that the ability to understand, recognize and express emotions greatly contributes to the individual's ability to establish positive social relationships both in childhood and in the future (Izard et al., 2001). In another study, it was found that individuals with good emotional regulation skills were more comfortable with and empathetic towards the emotions of people with distress (Peck, 2003). It is thought that prosocial behaviours may also be related to perspective taking skills, apart from emotional regulation. Because perspective taking is important for the development of empathy (Cigala et al., 2014), the regulation of emotions (Arel, 2016) and for socialization of the child (Genal, 2018).

According to Selman (1971), perspective taking skills were expressed as the ability of individuals to put aside their perspective and to understand what other people think, how they perceive, and what they feel. It is known that children's perspective taking skills begin to develop from an early age. Studies have shown that by the age of one and a half, children recognize basic emotions such as anger, happiness, rage, and sadness. From the age of three, children can understand both the situations related to emotions and the characteristics of emotions (Ensor, et al., 2011).

Depending on the cognitive development level of children, their egocentric thinking structures change, it becomes more and more possible for them to predict or understand what someone else is thinking or feeling in a particular situation; as a result, perspective taking skills begin to develop around the age of five or six (Scarpelli-Dwyer, 2011). Therefore, the preschool period is a critical period for the development of perspective taking skills as well (Spence, 2003; Wellman et al., 2001). The components of perspective taking skills are defined as cognitive perspective taking, perceptual perspective taking and emotional perspective taking. Emotional perspective taking skills refer to the ability to understand the emotional states of another person, which form the basis of empathy (Cigala et al., 2014). It is argued that perspective taking is important in social interactions because it makes it easier to perceive other people's thoughts. When people can sense the thoughts of others, social interactions become more predictable, and thus the parties can plan their actions with the information they infer from the other person (Dixon & Moore, 1990). The ability of the parties to change their behaviour and develop appropriate strategies is defined as emotional regulation (Gross & Thompson, 2007). Therefore, examining the predictor role of perspective taking and emotional regulation skills for the early childhood period on prosocial behaviours is important in terms of its contribution to the literature. This study aims to examine the relationship between pre-school children's prosocial behaviours and perspective taking as well as emotional regulation. For this purpose, the following hypotheses were tested;

H1: Preschool children's perspective taking skills and emotion regulation independent variables explain prosocial behaviors at a significant level.

H2: Preschool children's perspective taking skills and emotion regulation independent variables explain helping at a significant level.

H3: Preschool children's perspective taking skills and emotion regulation independent variables explain cooperating at a significant level.

H4: Preschool children's perspective taking skills and emotion regulation independent variables explain relaxing at a significant level.

H5: Preschool children's perspective taking skills and emotion regulation independent variables explain sharing at a significant level.

METHOD

SAMPLE

The sample of this study consists of a total of 213 children aged between 48 and 72 months attending pre-school education. The research was explained to the school administrators and teachers, and 4-5 children from the class of each of the teachers who agreed to participate in the research were determined by a random selection method. A voluntary participation form containing explanations about the research was sent to the families of the children, and the children of the parents who voluntarily agreed to participate in the study were included in the sample. Of the children, 124 (58.2%) are girls and 89 (41.8%) are boys. The children who participated in the study were in the 4-6 age group (48-72 months) at the time. It was stated that the majority of the mothers of the children were housewives (72.3%), and the majority of the fathers were self-employed (31%) at the time. Of the children 62.4% had only one sibling, 16.9% had 2 or more siblings, and 20.7% had no siblings at the time. In terms of education level, it was stated that the majority of the mothers were high school graduates (37.1%) and the majority of the fathers (47.9%) were undergraduate graduates.

DATA COLLECTION TOOLS

Perspective Taking Test for Children: This scale, which was developed by Aslan and Köksal- Akyol (2016), has 3 sub-scales “perspective taking”, “cognitive perspective taking” and “affective perspective

taking" consists of 24 items. The validity and reliability of Perspective Taking Test for Children were tested with 236 children aged 3-5 years with normal development. Test-retest reliability was measured as .91. Scale questions were answered by the researcher with the child, accompanied by a picture booklet prepared for the children. The answers given by the children to the questions asked about the pictures in the booklet were coded as 1 if they are correct, and as 2 if they are incorrect. In the study, the interrater consistency was measured as .84 for 30% of the total sample for this measurement tool.

Emotion Regulation Scale: This scale, which was developed by Shields and Cicchetti (1997) and adapted by Batum and Yagmurlu (2007), has 2 sub-scales, namely negative-high regulation problem and emotional regulation, and consists of 24 items. It is a 4-point Likert-type scale (1: Never/rarely, 4: Almost always) and can be filled in by a teacher or parent. The scale for this research was filled by preschool teachers. In the study of Batum and Yagmurlu (2007), Cronbach's coefficient alpha of the scale was calculated as .73, regarding the internal consistency. High scores indicate that the child is highly skilled in terms of emotional regulation.

Prosocial Behavior Scale: The scale developed by Iannotti (1985) for preschool children was adapted by Yagmurlu, Sanson, and Köymen (2005). The scale consists of 6 items for sharing, 4 items for helping, 4 items for cooperating and 5 items for relaxing sub-scales. The 7-point Likert-type scale (1: never, 7: always) is a measurement tool consisting of 19 items. The scale can be filled by both parents and teachers, and it can be filled by teachers in two ways. It can be used to determine the prosocial behaviours that children spontaneously perform or to determine the prosocial behaviours they perform when the teacher wants. In this study, teachers were asked to fill in the scale by considering the spontaneous behaviours of the children. Cronbach's coefficient alpha was .85 for the helping sub-scale, .86 for sharing sub-scale, .91 for relaxing sub-scale, and .80 for cooperating sub-scale, regarding internal consistency. High scores indicate that the child performs the prosocial behaviour of that sub-scale at a high rate.

DATA COLLECTION PROCESS

Participation in the research is on a voluntary basis. A voluntary participation form was sent to families through school administrators and teachers. Children of families who agreed to participate in the study were included in the study. The measurement tool used to measure the perspective taking skills of the children was applied to each child separately for an average of 20-30 minutes and collected by the researchers. In this process, before starting the scale application with the children, verbal consent was obtained from the children, and the children who did not want to participate in the study were excluded from the sample. The prosocial behaviour scale and the emotional regulation scale were filled by the teachers at different times.

ANALYSIS OF DATA

Data analysis was performed using the SPSS 22 program. First, missing data was checked and the median of nearby points, one of the missing data assignments method was used for scale items. The skewness and kurtosis values were examined for the assumption of normality, which is an important assumption for parametric tests. Data distribution between -2 and +2 was normal for skewness and kurtosis values (Field, 2009; George & Mallery, 2010). Although the data distribution was normal, outliers were also checked. The z standard values of all scale items were calculated and those outside the range of -3.29 and +3.29 among these standard values were checked. The z values obtained from the scale items of all participants are within this range. Then, for the regression analysis, it was checked whether there was a multivariate outlier and in this context, Mahalanobis distance was examined. Values with a probability of Mahalanobis distance less than p=.0001 are expressed as multivariate extreme values (Mertler & Vanatta, 2005; Tabachnick & Fidell, 2013). No multivariate extreme values were found in the data set. Thus, the analyses were completed with the data of 213 children.

FINDINGS

The effects of perspective taking and emotional regulation sub-scales on children's pro-social behaviours were examined by regression analysis. All scale scores were continuous and normally distributed. Various assumptions were used for multiple regression analysis. These assumptions were as follows: There must be a correlation between all variables, the dependent variable must be continuous and normally distributed, the independent variables (continuous ones) must be normally distributed, and there cannot be a multicollinearity problem between the dependent and independent variables (Pallant, 2007). The correlation between the variables is shown in Table 1.

Table 1. *Correlation between Variables*

	Perspective	Emotional	Helping	Cooperating	Relaxing	Sharing	Prosocial
Perspective	1						
Emotional	.169*	1					
Helping	0.096	.187**	1				
Cooperating	0.036	0.094	.537**	1			
Relaxing	0.068	.179**	.611**	.455**	1		
Sharing	0.073	.163*	.541**	.591**	.523**	1	
Prosocial	0.089	.203**	.833**	.707**	.841**	.831**	1

*p<.05; **p<.01

According to Table 1, there is a statistically significant correlation between perspective taking skills and emotional regulation (p<.05). There is a statistically significant correlation between emotional regulation and the prosocial behaviour scale total score as well as sub-scales of helping, relaxing, and sharing (p<.05). In addition, it was checked whether there was a multicollinearity problem between the independent variables, and it was determined that there was no multicollinearity problem since the tolerance value was greater than 0.10 and the VIF value was less than 10.

It can be seen that regression models regarding the effects of emotional regulation scale sub-scales and perspective taking scale scores on prosocial behaviours ($F_{(3,209)}$=5.166, p=.000, p<.05) and sub-scales of helping ($F_{(3,209)}$=5.516, p=.001, p<.05), cooperating ($F_{(3,209)}$= 4.208, p=.006, p<.05), relaxing ($F_{(3.209)}$=3.057, p=.029, p<.05), sharing ($F_{(3.209)}$=3.25, p=.023, p<.05) are statistically significant. R-squared (R2) is a statistical measure that represents the proportion of the variance for a dependent variable that's explained by an independent variable or variables in a regression model. According to this, these variables explain 6.9% of the variability in student prosocial behaviours, 7.3% of the variability in the helping sub-scale, 5.7% of the variability in the cooperating sub-scale, 4.2% of the variability in the relaxing sub-scale, and 4.5% of the variability in the sharing sub-scale (see Table 2).

Table 2. *Regression*

Scales and Sub-scales	Variables	B	Standard Error	β	T	p
Prosocial Behaviour	Continuous	4.744	0.563		8.432	0
	Perspective	0.025	0.012	0.140	2.051	0.041
	Emotional	0.357	0.135	0.188	2.641	0.009
	R=0.263	R2=0.069	Adjusted R2=0.056			
	F(3,209)=5.166	p=.000				
Helping	Continuous	4.801	0.681		7.046	0
	Perspective	0.032	0.015	-0.148	-2.18	0.03
	Emotional	0.371	0.164	0.161	2.262	0.025
	R=0.271	R2=0.073	Adjusted R2=0.060			
	F(3,209)=5.516	p=.001				
Cooperating	Continuous	6.366	0.747		8.523	0
	Perspective	0.018	0.016	0.078	1.133	0.258
	Emotional	0.080	0.180	0.032	0.446	0.656
	R=0.239	R2=0.057	Adjusted R2=0.043			
	F(3,209)=4.208	p=.006				
Relaxing	Continuous	4.224	0.700		6.032	0
	Perspective	0.022	0.015	0.101	1.468	0.144
	Emotional	0.455	0.168	0.195	2.704	0.007
	R=0.205	R2=0.042	Adjusted R2=0.028			
	F(3,209)=3.057	p=.029				
Sharing	Continuous	4.676	0.674		6.942	0
	Perspective	0.024	0.015	0.113	1.644	0.102
	Emotional	0.341	0.162	0.152	2.103	0.037
	R=0.211	R2=0.045	Adjusted R2=0.031			
	F(3,209)=3.25	p=.023				

*p<.05

According to Table 2, the effects of perspective taking (t=2.051, B=0.025) and emotional regulation (t=2.641, B=0.357) variables on children's prosocial behaviours were found to be statistically significant (p<.05). The effect of perspective taking on pro-social behaviour was positive, and the non-standardized regression coefficient (B) was calculated as 0.025. In other words, a 1-unit increase in children's perspective taking scores provides a 0.025-unit increase in their prosocial behaviour scores. The effect of emotional regulation skills on pro-social behaviour was positive, and the non-standardized regression coefficient (B) was calculated as 0.357. A 1-unit increase in children's emotional regulation scores provides a 0.357-unit increase in their prosocial behaviour scores. As can be seen, emotional regulation skills have a greater effect on prosocial behaviours compared to perspective-taking skills (β; 0.188>0.14).

The effect of the perspective taking score (t=2.18, B=0.032) and emotional regulation score (t=2.262, B=0.371) on the helping behaviour of children was statistically significant (p<.05). The effect of perspective taking on helping behaviour was positive, and the non-standardized regression coefficient (B) was calculated as 0.032. In other words, a 1-unit increase in children's perspective taking scores provides a 0.032-unit increase in their helping behaviour scores. The non-standardized regression coefficient (B) for the emotional sub-scale is 0.371 and its effect on the helping sub-scale is positive. A 1-unit increase in children's emotional regulation scores causes a 0.371-unit increase in their helping behaviour scores. In order of importance, emotional regulation most affects helping behavior and the perspective taking variable least affects helping behavior.

Only the effect of emotional regulation on children's relaxing behaviour is statistically significant (t=2.704, B=0.455, p<.05). The non-standardized regression coefficient (B) for emotional regulation

skills is 0.455 and its effect on cooperating is positive. In other words, a 1-unit increase in children's emotional regulation scores causes a 0.455-unit increase in cooperating scores.

Only the effect of emotional regulation on children's sharing behaviour is statistically significant (t=2.103, B=0.341, p<.05). The effect of emotional regulation skills on sharing was positive, and the non-standardized regression coefficient (B) was calculated as 0.341. In other words, a 1-unit increase in children's emotional regulation scores provides a 0.341-unit increase in their sharing scores.

DISCUSSION, CONCLUSION AND IMPLICATIONS

According to the research findings, the effect of the perspective taking score on the total score of prosocial behaviours and the "helping" sub-scale score of prosocial behaviours is statistically significant. We could not find any other study in the literature examining the correlation between perspective taking and prosocial behaviours or their effect on each other. However, it has been stated in other studies that perspective taking is the leading skill for empathy (Cigala et al., 2014). Researchers have often drawn attention to the special role of emotional empathy in motivating prosocial behaviours (Batson, 1987; Eisenberg, 2003; Eisenberg et al., 1989; Eisenberg et al., 1994; Eisenberg et al., 2006; Eisenberg et al., 2010; Toi & Batson, 1982). Young adults, middle-aged and elderly people were studied in the sample of a study that aims to examine the relationship between emotional empathy and prosocial behaviour with the age variable. As a result of the research, it was found that the rate of prosocial behaviour increased with increasing age, and it was determined that there was a correlation between emotional empathy and prosocial behaviour in all three age groups (Sze et al., 2012). Balçıkanlı and Yıldıran (2018) examined the relationship between the empathetic skill levels of indoor hockey players and their prosocial behaviour towards their teammates and the players of the opposing team. As a result of the research, it was determined that there is a correlation between empathetic skills and prosocial behaviours in sports. A study that tested the relationship between children's empathy development and their prosocial behaviour towards their peers using growth curve modelling for multiple points of time (24, 30, 42, 48, and 54 months) also revealed a correlation between empathy and prosocial behaviours. Therefore, all the results examined in the literature show that the development of empathy can contribute to prosocial behaviours. It can be seen that children who can better understand the emotions of others perform prosocial behaviours more (Taylor et al., 2013). To understand the feelings of others, it is necessary to have perspective taking skills. When we searched for the literature on the perspective taking skills and prosocial behaviours of preschool children, we also encountered some results that we think may be related to our research findings. For example, in a study conducted to examine the relationship between children's prosocial behaviours and moral judgment levels, it was determined that there is a positive and significant correlation between moral judgment and prosocial behaviour (Saygılı & Akkaynak, 2021). Erel (2016), on the other hand, found that children's perspective taking skills positively predicted their awareness of the intention underlying moral violations. When the results of these studies are evaluated together, it can be seen that perspective taking skills predict moral judgment, and there is a positive correlation between moral judgment and helping as well as prosocial behaviours. In another study on perspective taking skills, a moderately positive and significant correlation was found between the perspective taking skills of children aged 4-6 and their interpersonal problem-solving skills (Özlem & Temel, 2014). Considering that prosocial behavior such as helping and cooperating play a role in the solution of interpersonal problems, we think that this research finding is in line with the results of our research. In conclusion, it can be understood that all these findings in the literature support the results of our study, and it can be understood that perspective taking skills play a predictor role for prosocial behaviours. Therefore, it can be said that children are more prosocial to the extent that they can understand people and situations, understand why and how things happen and how they affect feelings.

As a result of the research, it was determined that the effect of the emotional regulation score on the total score of prosocial behaviours and the effect of prosocial behaviours on "helping", "relaxing" and "sharing" sub-scale scores were statistically significant. According to the study by Eisenberg et al. (2006), prosocial behaviors are affected by many factors, including children's emotional reactions, emotional regulation, needs, and desires. There are many studies in the literature proving the correlation between emotional regulation and prosocial behaviours (Eisenberg et al., 2007; Hastings, Rubin, & DeRose, 2005; Liew et al., 2010; Scrimgeour, Davis, & Buss, 2016). In the literature, we also found a study showing that the emotional regulation strategies of the children's parents are correlated with the prosocial behaviours of the children (Xiao et al., 2018). In a study examining emotional regulation and interpersonal problem-solving skills of preschool children, a positive and significant correlation was found between children's emotional regulation levels and interpersonal problem-solving skills (Apaydın Demirci et al., 2020). Considering that prosocial behaviour such as helping and cooperating play a role in the solution of interpersonal problems, we think that this research finding is in line with the results of our research. All the research findings examined above are in line with the results of this study, and it can be understood that emotional regulation skills predict prosocial behaviours. It can be said that as children's ability to regulate their feelings towards people and situations improves, their tendency to prosocial behaviours increases. In other words, children perform prosocial behaviours by trying to regulate their emotions for social norms, their values, their knowledge, and their internal urge to fit themselves in the right situation.

According to this research, emotional regulation predicts the sub-scale of "helping", "relaxing", and "sharing" together with the total score of prosocial behaviours; on the other hand, perspective taking predicts only the sub-scale of helping together with the total score. In addition, it was found that emotional regulation had a greater effect on the total score of prosocial behaviours and the "helping" sub-scale score of prosocial behaviours than the perspective taking score. It was also determined that emotional regulation and perspective taking did not significantly predict the cooperating sub-scale of prosocial behaviours. Paulus (2018) states that different types of prosocial behaviours (helping, sharing, relaxing, and cooperating) observed among children are not correlated with each other. Therefore, it can be said that perspective taking and emotional regulation skills affect prosocial behaviours without considering any such differentiation among prosocial behaviour types, and emotional regulation has a higher share in this effect. The components of perspective taking skills are defined as cognitive perspective taking, perceptual perspective taking and emotional perspective taking (Cigala, Mori, and Fangareggi, 2014). It has been thought that children's understanding of the emotions of others as well as their own emotions may be correlated with their emotional regulation skills (Eisenberg et al., 2005). In the light of all this information, it can be said that perspective taking for a person or situation predicts the prosocial behaviours of children. However, emotional regulation, as a skill that combines awareness of one's own emotions and self-regulation skills as well as understanding the emotions of others, predicts prosocial behaviours at a higher rate. Children may not perform prosocial behaviour when they achieve perspective taking for a situation or person. Similarly, children may not perform prosocial behaviour from time to time when they regulate their feelings towards a situation or person. This situation may be related to many factors such as the children's wishes, needs and emotional state in the process. However, as understood from this study and other studies with similar findings in the literature, both perspective taking and emotional regulation affect children's prosocial behaviour, and it can be said that children who can regulate their emotions are more likely to perform prosocial behaviours.

As in all studies, there are some limitations in this study. For example, the explanation of prosocial behaviors was examined by considering only two variables in this study, and other possible variables were not included. In future studies, models including other variables related to prosocial behaviors can be established.

AUTHOR CONTRIBUTION

- The first author has made substantial contributions to conception and design, acquisition of data, and reviewing and editing.
-The second author has been involved in drafting the manuscript, analyzing and interpreting of data, writing and revising it critically for important intellectual content
-The third author has investigated and reviewed the manuscript and given final approval of the version to be published.

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Do Epistemological Beliefs Predict Critical Thinking Dispositions?: A Cross-sectional Study with Turkish High School Students

Ali Orhan, Zonguldak Bülent Ecevit University, ali.orhan@beun.edu.tr
0000-0003-1234-3919

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Abstract

This study aimed to investigate whether high school students' epistemological beliefs differ by gender and parents' educational background variables and if their epistemological beliefs are significant predictors of critical thinking dispositions. The data for this study were collected with UF/EMI Critical Thinking Disposition Instrument and Epistemological Belief Scale and it was carried out with 178 high school students. This study revealed that while gender did not significantly affect students' epistemological beliefs, parents' educational background significantly affected their epistemological beliefs. Students who have parents with higher educational degrees had more sophisticated epistemological beliefs. Besides, students' source, development, certainty, and justification scores significantly predicted their critical thinking dispositions and they together explained 24% of the total variance in students' critical thinking dispositions. Students' source, development, certainty, and justification scores were positively correlated to their critical thinking dispositions.

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INTRODUCTION

Epistemology deals with the nature, source, limits, and characteristics of the knowledge (Hofer & Pintrich, 1997). In epistemology, answers are sought for questions about knowledge structure, such as the source, reliability, limits, accuracy, and validity of knowledge (Demir & Acar, 2005). In short, epistemology is a discipline that investigates the nature of knowledge and knowing and seeks answers to questions about this subject. Therefore, epistemology is not only concerned with knowledge itself but also investigates the relationship between the knower and the known phenomenon. For this reason, it examines all features of the process of knowing and the structure of knowledge (Cevizci, 2012). Epistemological beliefs (EBs) refer to the individual's personal beliefs about these questions and characteristics (Schommer, 1994). The individual's beliefs about the source, scope, and criterion of knowledge constitute that person's EBs. In other words, EBs are all of the individual's beliefs about knowing and knowledge (Hofer & Pintrich, 1997). Therefore, EBs include not only subjective views on the structure of knowledge but also the individual's views on the learning process (Schommer, 1990). Schommer (1990) suggested that EBs can be categorized under two titles, namely, sophisticated and naïve EBs. Individuals with naïve EBs believe that knowledge is certain and it can be seen as a set of isolated facts. Also, they think that learning ability is genetically determined and it is quick. On the other hand, individuals with sophisticated EBs believe that knowledge is integrated conceptions and tentative. Besides, they think that the speed of learning is gradual and ability of learning can be developed through experience.

When it is accepted that the beliefs and attitudes of individuals can affect the decisions they make and the behaviors they display (Pajares, 1992; Brown & Cooney, 1982), being able to accurately determine individuals' beliefs about the structure of knowledge and knowing will be beneficial to develop teaching-learning processes in the classroom (Hofer & Pintrich, 1997). In addition, while EBs are a factor that affects students' understanding and learning skills (Müller, Rebmann, & Liebsch, 2008), they also affect the teaching activities that teachers put into practice in their classrooms (Lee et al., 2013; Chan & Elliott, 2004). Therefore, EBs that affect both students and teachers in a versatile way (Biçer, Er, & Özel, 2013) are a variable that should be taken into consideration in educational activities and need to be factored into the process to increase success (Brownlee, Purdie, & Boulton-Lewis, 2001).

EPISTEMOLOGICAL BELIEFS AND CRITICAL THINKING

According to Hofer and Sinatra (2010), there is a link between critical thinking (CT) and EBs, and EBs are related to the individuals' ability to be critical on the reasoning and judgments that they employ to acquire knowledge throughout their life. Therefore, it can be said that individuals with sophisticated EBs are likely to be more critical in the thinking process (Getahun, Saroyan, & Aulls, 2016). Similarly, many researchers (Schommer, 1990; Bendixen & Rule, 2004; Dahl, Bals, & Turi, 2005; Hofer, 2004) state that individuals with sophisticated EBs have higher CT skills and dispositions because it is a fact that higher-order thinking skills like CT are required to have sophisticated EBs (Bendixen & Hartley, 2003). In addition, the cognitive process, which includes thinking skills, is greatly affected by the individual's beliefs on the source of knowledge, how knowledge is formed, and the structure of knowledge, etc. (Hofer & Sinatra, 2010). In other words, individual's EBs significantly affect CT. A learning environment that enables students to analyze, evaluate and interpret their surroundings also allows students to develop their EBs (Kuhn & Dean, 2004; Bendixen & Rule, 2004). That is to say, a learning environment prepared to develop CT will also positively affect the way EBs are formed or improved (Valanides & Angeli, 2005). It is possible to say that individuals with high CT skills and dispositions have sophisticated EBs (Kuhn & Dean, 2004). Anderson-Meger (2014) also states that maturation in EBs has a positive effect on the improvement of CT. Kuhn (1999) discusses EBs under four headings as realistic, absolutist, pluralistic, and evaluative and states that there is a significant association between these beliefs and CT. According to Kuhn (1999), CT skills and

dispositions of people who have a realistic belief in epistemology are not sufficient. People with realistic EBs believe that truth can be known directly, and CT is unnecessary for them. An absolute EBs can form the basis for a higher level of CT. People with absolute EBs have a dual belief system which means information is either true or false. CT is used as a tool in making this decision. In pluralistic EBs, although CT skills are not sufficient, judgments, opinions, and discussions can be freely chosen. According to people who have pluralistic EBs, the reality or accuracy of information depends on the belief of the individual. Therefore, CT is unnecessary at this point as well. Evaluative EBs is a stage in which claims and judgments are evaluated in the context of discussion and evidence. At this stage, CT is used as a tool for comprehension and understanding skills, and the EBs with the highest CT skills and dispositions are the evaluative EBs.

In the literature, we can find numerous studies concluding a significant relationship between EBs and metacognition (Adak, 2016; Bendixen & Rule, 2004, Dahl, Bals & Turi, 2005), mental risk-taking (Özbay, 2016), reflective thinking (Ekici, 2018), problem-solving (Hacıömeroğlu, 2011; Chan, 2007; Kutluca, 2018), thinking styles (Schommer & Hutter, 2002), and self-regulation (Braten & Stromso, 2005; Neber & Schommer, 2002; Pintrich, 2004; Green & Azevedo, 2007). In a similar vein, many studies in the literature have concluded that EBs and CT are significantly related to each other (Wyre, 2007; Başbay, 2013; Hyytinen et al., 2014; Koyunlu Ünlü & Dökme, 2017; Şıvgın, 2019). Also, there are many previous studies concluding that CT skills and dispositions increase in parallel with the maturation of EBs (King & Kitchener, 2004; Kuhn, 2005). Therefore, it is possible to say that as individuals' EBs mature, their CT skills and dispositions tend to develop (Bok, 2006; Kuhn, 1999). Wyre (2007) carried out a study which aimed to examine the effect of learning activities designed to develop CT skills on CT skills and EBs with 681 university students and concluded that the learning activities significantly improved the students' CT skills and EBs. According to Wyre (2007), when the individual starts to think about his/her thinking process, he/she will have more sophisticated EBs. Başbay (2013) also aimed to test the relationship between CT dispositions and EBs with structural equation modelling and concluded that students' CT dispositions affect EBs. In their study, Hyytinen et al. (2014) concluded that EBs and CT skills are intertwined and affect each other. Similarly, Koyunlu Ünlü and Dökme (2017), who carried out a study with 447 undergraduate students to examine the relationship between EBs and CT skills, concluded a significant, positive, and strong relationship between CT skills and EBs. Şıvgın (2019) conducted a study with 1205 high school students to investigate the association between high school students' EBs and CT and concluded that CT and EBs are significantly related. While students with naive EBs think that knowledge has a definite and unquestionable structure, students with sophisticated EBs believe that knowledge is not certain, changeable, and falsifiable (Barzilai & Zohar, 2012). Therefore, it can be said that more sophisticated EBs lead the way to higher CT skills and dispositions.

In short, EBs that affect many higher-order thinking skills also affect CT. CT and EBs, which are in mutual interaction, affect each other. Therefore, it is possible to say that people with sophisticated EBs will have high CT dispositions and skills (King & Kitchener, 2004; Kuhn, 2005; Bok, 2006; Getahun, Saroyan, & Aulls, 2016).

EPISTEMOLOGICAL BELIEFS, GENDER, AND EDUCATIONAL BACKGROUND OF FATHER AND MOTHER

Previous literature on gender differences in EBs reported conflicting results across different samples. While some studies concluded EBs did not significantly differ by gender (Trautwein & Lüdtke, 2007; Bakır & Adak, 2014; Buehl, Alexander, & Murphy, 2002; Youn, Yang, & Choi, 2001; Taşkın, 2021; Koç & Memduğoğlu, 2017; Kaya & Ekiçi, 2017; Chan & Elliott, 2002; Kazu & Erten, 2015; Elmalı & Yıldız, 2017; Schommer et al., 1997), there are also some other studies reported that gender significantly affected EBs (Özkal et al., 2017; Bendixen, Schraw, & Dunkle, 1998; Neber & Schommer, 2002; Schommer & Dunnell, 1994; Hofer, 2000; Aslan, 2017). Similarly, if the existing literature is investigated, it can be seen that there are some previous studies found that father and mother's educational background (EDB) was a significant variable that affected EBs (Schommer, 1990;

Bozpolat & Durdu, 2020; Yankayış, Güven, & Türkoğuz, 2014; Kırbaşlar, Arıca, & Barış, 2021). However, there are also some other contradictory studies reported that parents' EDB did not significantly affect EBs (Bakır & Adak, 2014; Koç Erdamar & Bangir Alpan, 2011; Eroğlu & Güven, 2006).

In short, it can be said that gender and father and mother's EDB are widely examined demographic variables within the context of EBs and the previous literature over gender and father and mother's EDB differences on EBs revealed inconsistent results across different countries and samples although huge body of literature indicated no significant effect of gender on EBs. According to Pintrich (2002), gender may not significantly affect EBs when EBs are measured in terms of specific sub-dimensions instead of more holistic and general ways of thinking. Therefore, no significant gender differences in EBs of students are expected in this study because the scale used to measure EBs of students has four sub-dimensions and EBs are investigated in terms of these sub-dimensions. When it is compared with gender differences, there are fewer studies (e.g. Bozpolat & Durdu, 2020; Yankayış, Güven, & Türkoğuz, 2014; Kırbaşlar, Arıca, & Barış, 2021; Bakır & Adak, 2014) investigating father and mother's EDB differences on EBs. Therefore, it can be said that there is a clear need to examine the effect of parents' EDB on EBs. Schommer (1990) stated that students who have more educated parents are possibly exposed to more substantial scientific resources at home or in school and have more chance for independence. Besides, more educated parents can provide the necessary support and guidance in social and cultural environments for their children. Therefore, it is expected that in this study that father and mother's EDB will have a significant effect on students' EBs and students with more educated parents will have more sophisticated EBs.

THE CURRENT STUDY

Although there are many correlational studies examining the relation between EBs and CT, the studies aiming to investigate the predictability of EBs on CT dispositions are scarce. The correlational studies have a limitation that makes it impossible to say the direction of the relationship between two variables. Although the previous correlational studies are essential because they provide evidence regarding the relationship between EBs and CT, these studies are limited to say the direction of this relationship. Therefore, investigating the predictability of EBs on CT dispositions is important. Although there are a few studies examining the predictive power of EBs on CT dispositions in the literature, majority of them were conducted with university students. Therefore, it can be said that this study is essential and differs from the other previous studies because it aims to provide additional evidence regarding the predictive power of high school students' EBs on their CT dispositions. Besides, although gender and parents' EDB are widely examined demographic variables with EBs studies, previous studies over gender and parents' EDB differences on EBs revealed contradictory results that let the researcher to investigate the effect of gender and parents' EDB on EBs in this study. So, this study aimed to determine whether high school students' EBs are significant predictors of their CT dispositions and whether their EBs significantly differ by gender and parents' EDB variables. Therefore, the following questions were sought:

1. Do high school students' EBs significantly differ by their gender?
2. Do high school students' EBs significantly differ by their father and mother's EDB?
3. Are high school students' scores on Epistemological Belief Scale sub-dimensions (source, certainty, development, and justification) significant predictors of their CT dispositions?

METHOD

A cross-sectional survey design was used in this non-experimental quantitative study. In a cross-sectional survey design which aims to depict what already exists in the population (Setia, 2016), the data are collected from participants at a specific point in time (Lavrakas, 2008). The

dependent variable was high school students' CT dispositions while predictor variables of the study were students' scores on source, certainty, development, and justification sub-dimensions of the Epistemological Belief Scale (EBC).

STUDY GROUP

This study was conducted with 178 students (100 female, 78 male) studying in two high schools in a city in the northern part of Turkey using a convenient sampling method. The mean age of them was 14.52 (SD=0.55) and their age ranged between 13 and 16. 52.8% and 47.2 of the students were 9th and 10th grade students, respectively. Before the study, a-priori power analysis was carried out with G*Power 3 software program (Faul et al., 2007) and it revealed that the minimal sample size needed to conduct a linear multiple regression analysis in this study (alpha=0.05; power=0.95; 4 predictor variables) to have a medium effect size (f^2=0.15) would be 129. Therefore, we can say that the sample size of 178 was very good for this study with four predictor variables, namely, source, certainty, development, and justification.

DATA COLLECTION TOOLS

UF/EMI CRITICAL THINKING DISPOSITION INSTRUMENT (CTDI)

CT dispositions were determined by CTDI developed by Irani et al. (2007) and adapted into Turkish by Kılıç and Şen (2014). CTDI has 25 items and three sub-dimensions. Reliability values of the sub-dimensions of CTDI ranged from 0.70 to 0.88 and it was calculated as 0.89 for the total instrument. Also, for this study, Cronbach's alpha values were calculated as 0.86, 0.62, and 0.70 for engagement, maturity, and innovativeness sub-dimensions, respectively. Besides, Cronbach's alpha value for the total instrument was calculated as 0.89 in this study.

EPISTEMOLOGICAL BELIEFS SCALE (EBS)

EBS, developed by Conley et al. (2004) and adapted into Turkish by Evcim (2010), was used to determine students' EBs. EBS has four sub-dimensions, namely, source (4 items), certainty (7 items), development (6 items), and justification (8 items). The reliability coefficients were 0.80, 0.78, 0.71, and 0.71 for certainty, justification, source, and development sub-dimensions, respectively. Also, the reliability estimates calculated for the sub-dimensions for this study ranged from 0.68 to 0.86.

DATA COLLECTION

Ethical committee approval was got from ZBEU (No: 120863 dated 31.12.2021) and the data were collected in the fall term of 2021-2022 academic year. All high schools were visited by the researcher to collect the data. All students were informed of privacy and confidentiality issues and their right to withdrawal from the study. The instruments were completed in about 25-30 minutes.

DATA ANALYSIS

Firstly, each variable was checked to see if there were any missing data and no missing data were observed. Then, the normality of the data was checked with skewness and kurtosis values and it was seen that the data had normal distribution (See Table 1). After that, outliers per variable were checked by Z transformation and Mahalanobis Distance (Mahalanobis D^2) scores were used to determine multivariate outliers. Z-scores and Mahalanobis Distance scores indicated that the dataset had no influential outliers. The possibility of high correlation among the predictor variables were checked by investigating Pearson correlation, CI, VIF, and tolerance values and no high correlation was seen among the predictor variables. Also, before conducting MANOVA, Henze-Zirkler test was used to investigate multivariate normality and it was seen that the data has multivariate normality. Besides, Box's M test results showed that covariance between the groups was equal (Box's M=150.920; p>0.01). The collected data were analysed with independent samples t-test, MANOVA test, Pearson correlation, and multiple linear regression with enter method. SPSS 20 statistical software was used for all of the analyses.

Table 1. *Skewness and Kurtosis Values for All Measured Variables*

	Skewness		Kurtosis	
	Statistic	Std. Error	Statistic	Std. Error
Engagement	-0.124	0.182	-0.310	0.362
Maturity	-0.038	0.182	0.456	0.362
Innovativeness	-0.121	0.182	-0.482	0.362
CTDI total score	0.004	0.182	-0.290	0.362
Source	0.442	0.182	-0.387	0.362
Development	-0.302	0.182	-0.584	0.362
Certainty	0.016	0.182	-0.340	0.362
Justification	-0.643	0.182	0.013	0.362

RESULTS

RESULTS ON PUBLICATION BIAS

Descriptive statistics of sub-dimensions of the EBS and the results regarding the gender differences are shown in Table 2.

Table 2. *Descriptive Statistics for the EBS Sub-dimensions*

	Total Sample (n=178)		Female (n=100)		Male (n=78)			
	$\overline{X}$	sd	$\overline{X}$	sd	$\overline{X}$	sd	$t_{(178)}$	p
EBS sub-dimensions								
Source	3.62	0.51	3.60	0.50	3.66	0.53	-0.813	0.41
Development	4.09	0.54	4.05	0.48	4.14	0.60	-1.118	0.26
Certainty	3.79	0.43	3.80	0.40	3.78	0.46	0.247	0.80
Justification	4.18	0.53	4.15	0.48	4.22	0.58	-0.902	0.36

Table 2 shows that high school students had highly sophisticated beliefs about source ($\overline{X}$ =3.62), development ($\overline{X}$ =4.09), certainty ($\overline{X}$ =3.79), and justification ($\overline{X}$ =4.18) of knowledge and learning. Also, it was found out that students' source sub-dimension (t_{178}=-0.813, p>0.05), development sub-dimension (t_{178}=-1.118, p>0.05), certainty sub-dimension (t_{178}=0.247, p>0.05), and justification sub-dimension (t_{178}=-0.902, p>0.05) scores did not differ by gender though male students presented slightly higher scores for each sub-dimension.

Table 3. *MANOVA Test Results Regarding EBS Sub-dimensions*

Effect		Value	F	Hypothesis df	Error df	p	η^2
Intercept	Wilks' Lambda (λ)	0.009	4185.312	4.00	154.000	0.00	0.99
Mother's EDB	Wilks' Lambda (λ)	0.814	2.046	16.00	471.115	0.01	0.05
Father's EDB	Wilks' Lambda (λ)	0.760	2.764	16.00	471.115	0.00	0.06
Mother's EDB* Father's EDB	Wilks' Lambda (λ)	0.619	1.645	48.00	595.263	0.00	0.11

Note: Mother's EDB=mother's educational background; Father's EDB=father's educational background

MANOVA test results indicated that EBS sub-dimensions scores significantly differed by students' mother's EDB (λ=0.814; $F_{(178)}$=2.046; p<0.05; η^2=0.05), father's EDB (λ=0.760; $F_{(178)}$=2.764; p<0.05; η^2=0.06), and mother's EDB *father's EDB (λ=0.619; $F_{(178)}$=1.645; p<0.05; η^2=0.11).

Table 4. *MANOVA Test Results Regarding EBS Sub-dimensions*

Source	Dependent variable	Sum. of squares	df	Mean square	F	p	η^2
Mother's EDB	Source	2.830	4	0.707	3.718	0.00	0.08
	Development	2.305	4	0.576	2.616	0.03	0.06
	Certainty	0.286	4	0.071	0.446	0.77	0.01
	Justification	3.482	4	0.870	4.299	0.00	0.09
Father's EDB	Source	3.956	4	0.989	5.197	0.00	0.11
	Development	3.331	4	0.833	3.780	0.00	0.08
	Certainty	2.157	4	0.539	3.368	0.01	0.07
	Justification	2.298	4	0.574	2.837	0.02	0.06
Mother's EDB* Father's EDB	Source	4.268	12	0.356	1.869	0.04	0.12
	Development	3.210	12	0.268	1.215	0.27	0.08
	Certainty	3.550	12	0.296	1.848	0.04	0.12
	Justification	8.631	12	0.719	3.553	0.00	0.21

Note: Mother's EDB=mother's educational background; Father's EDB=father's educational background

Students' source scores ($F_{(178)}$=3.718; $p<0.05$; η^2=0.08), development scores ($F_{(178)}$=2.616; $p<0.05$; η^2=0.06), and justification scores ($F_{(178)}$=4.299; $p<0.05$; η^2=0.09) significantly differed according to students' mother's EDB variable while their certainty scores ($F_{(178)}$=0.446; $p>0.05$; η^2=0.01) did not significantly differ. Also, students' source scores ($F_{(178)}$=5.197; $p<0.05$; η^2=0.11), development scores ($F_{(178)}$=3.780; $p<0.05$; η^2=0.08), certainty scores ($F_{(178)}$=3.368; $p<0.05$; η^2=0.07), and justification scores ($F_{(178)}$=2.837; $p<0.05$; η^2=0.06) significantly differed according to students' father's EDB variable. Besides, students' source scores ($F_{(178)}$=1.869; $p<0.05$; η^2=0.12), certainty scores ($F_{(178)}$=1.848; $p<0.05$; η^2=0.12), and justification scores ($F_{(178)}$=3.553; $p<0.05$; η^2=0.21) significantly differed by their mother's EDB*father's EDB variable while their development scores ($F_{(178)}$=1.215; $p>0.05$; η^2=0.08) did not significantly differ. So, we can say that both mother's and father's EDB were significant variables which can affect their EBS sub-dimensions scores with an intermediate effect based on Cohen's (1988) classification. However, mother's EDB *father's EDB variable affected high school student's justification sub-dimension scores with a large effect (η^2=0.21) based on Cohen's (1988) classification. Students who have parents with higher educational degrees possessed more sophisticated EBs.

Table 5. *Pearson Correlation Results among the Sub-dimensions of CTDI and EBS*

	Maturity	Innovativeness	Source	Development	Certainty	Justification
Engagement	0.530**	0.754**	0.300**	0.291**	0.254**	0.328**
Maturity	1	0.538**	0.275**	0.368**	0.225**	0.329**
Innovativeness	-	1	0.274**	0.359**	0.278**	0.347**
Source	-	-	1	0.296**	0.422**	0.314**
Development	-	-	-	1	0.227**	0.677**
Certainty	-	-	-	-	1	0.191*

Note: ** p< 0.01; * p< 0.05

As presented in Table 5, all of the sub-dimensions of CTDI and EBS were correlated to each other.

Table 6. *Multiple Linear Regression Results between CT Dispositions and Source, Development, Certainty, and Justification Scores*

	B	Std. Error	β	t	p
Constant	1.450	0.348	-	4.169	0.00
Source	0.138	0.069	0.152	1.999	0.04
Development	0.162	0.079	0.187	2.055	0.04
Certainty	0.165	0.080	0.152	2.063	0.04
Justification	0.162	0.080	0.185	2.023	0.04

$R=0.490$, $R^2=0.240$, $F_{(4, 177)}= 13.648$, $p<0.01$

As shown in Table 6, the regression model was significant ($F_{(4,177)}=13.648$, $p<0.01$). Also, it was found out that source ($\beta=0.152$, $t_{(178)}=1.999$, $p<0.05$), development ($\beta=0.187$, $t_{(178)}=2.055$, $p<0.05$), certainty ($\beta=0.152$, $t_{(178)}=2.063$, $p<0.05$), and justification ($\beta=0.185$, $t_{(178)}=2.023$, $p<0.05$) scores significantly predicted CT dispositions ($R=0.490$, $R^2=0.240$, $p<0.01$). Source, development, certainty, and justification together explained 24% of the total variance in students' CT dispositions. In addition to these, development ($\beta=0.187$) was the significant predictor which had the greatest effect on CT dispositions. Justification ($\beta=0.185$), source ($\beta=0.152$), and certainty ($\beta=0.152$) followed it.

CT dispositions= 1.450 + 0.138*source + 0.162*development + 0.165*certainty + 0.162*justification

DISCUSSION, CONCLUSION AND IMPLICATIONS

This study revealed that students had sophisticated EBs regarding source, development, certainty, and justification of knowledge and learning. Also, high school students' EBs regarding source, development, certainty, and justification sub-dimensions did not significantly differ by gender. When the existing literature over EBs is investigated, it can be seen that some previous studies found that gender was not a significant variable that can affect EBs (Bakır & Adak, 2014; Taşkın, 2021; Conley et al., 2004; Koç & Memduğoğlu, 2017; Kaya & Ekiçi, 2017; Schommer et al., 1997; Trautwein & Lüdtke, 2007; Youn, Yang, & Choi, 2001; Kazu & Erten, 2015; Elmalı & Yıldız, 2017). On the contrary, other studies reported that gender was a significant variable that affects EBs (Özkal et al., 2017; Bendixen, Schraw, & Dunkle, 1998; Neber & Schommer, 2002; Schommer & Dunnell, 1994; Hofer, 2000; Aslan, 2017). Therefore, it can be said that most of the studies, including this one, revealed that gender was not a significant variable that affects EBs. However, there are also other studies indicating gender was a significant variable that can affect individuals' EBs. We can say that further studies regarding the effect of gender on EBs should be carried out because of these inconsistent results of previous research.

Also, this study revealed that high school students' EBS sub-dimensions scores significantly differed by mother's EDB with an intermediate effect based on Cohen's (1988) classification except for certainty sub-dimension scores. Also, students' all EBS sub-dimensions scores significantly differed by father's EDB with an intermediate effect based on Cohen's (1988) classification. Besides, students' all EBS sub-dimensions scores significantly differed by mother's EDB*father's EDB variable except for development sub-dimension scores. While mother's and father's EDB variable significantly affected students' source and certainty sub-dimensions scores with an intermediate effect, it significantly affected their justification sub-dimension scores with a large effect based on Cohen's (1988) classification. It was found out that students who have parents with higher educational degrees had more sophisticated EBs. This finding may be attributable to the fact that students with more educated parents are more likely to be exposed to more substantial scientific resources in their home or school and they have more chance for independence (Schommer, 1990). Also, their parents can provide the necessary support and guidance in social and cultural environments for them. There

are some previous studies found that father and mother's EDB was a significant variable that affected EBs (Schommer, 1990; Bozpolat & Durdu, 2020; Yankayış, Güven, & Türkoğuz, 2014; Kırbaşlar, Arıca, & Barış, 2021). Therefore, we can say that the result of this study was confirmed by previous research although there are also some other contradictory studies reported that parents' EDB did not significantly affect EBs (Bakır & Adak, 2014; Koç Erdamar & Bangir Alpan, 2011; Eroğlu & Güven, 2006).

It was also found that students' source, development, certainty, and justification scores significantly predicted CT dispositions, and they together explained 24% of the total variance in students' CT dispositions. In their study aiming to examine the relationship between CT and EBs, Chan, Ho, and Ku (2011) concluded that EBs were the significant predictors of CT, and they together explained %11 of the variance in CT. According to Chan, Ho, and Ku (2011) sophisticated EBs predicted higher CT. Also, Koyunlu Ünlü and Dökme (2017) who investigated the relationship between CT dispositions and EBs of science teachers' candidates concluded a moderate correlation between EBs and CT dispositions. In their study investigating the relationship between EBs, CT dispositions, and metacognition via structural equation model, Akbay, Akbay and Başer Gülsoy (2018) concluded that EBs significantly predicted CT dispositions. Similarly, Şıvgın (2019) concluded that EBs were significantly correlated to CT dispositions in her study. Besides, Başbay (2013) carried out a study with 425 university students to examine the relationship between CT dispositions, EBs, and metacognitive awareness and concluded a significant association between CT dispositions and EBs. In addition to these, there are also other studies (Hyytinen et al., 2014; Rott, 2021; Rott & Leuders, 2017; Wyre, 2007; Kandemir & Eğmir, 2020) concluding that there was a significant association between CT and EBs. Therefore, we can say that the results of this study are in line with the results of previous research.

Previous research, including this study, indicated that EBs were significant predictors of CT dispositions. EBs have determinative effects on various variables such as individuals' ability of comprehension, their preferred study strategies, the effort and time they spend for learning, the way they interpret the new information they encounter for the first time and most importantly higher-order thinking skills like CT, creative thinking, or problem-solving (Brownlee, Purdie, & Boulton-Lewis, 2001; Tolhurst, 2007; Chan, 2007). Also, many researchers have the same idea that sophisticated EBs are a prerequisite for an individual to engage in CT (Bendixen & Rule, 2004; Dahl, Bals, & Turi, 2005; Hofer, 2004; Gallagher, 1998; Jones & Merritt, 1999) because sophisticated EBs constitute a basis for the flexible thinking which is a must for CT (Chan, Ho, & Ku, 2011). Therefore, it can be inferred that the individuals who have naive EBs will probably show poor CT performance. It can be said that sophisticated EBs lead to more-developed cognitive strategies for learning and naive EBs can be related to a less need for cognition which shows us the strong relationship between CT and EBs (Kuhn & Weinstock, 2002). According to Hofer and Sinatra (2010), the cognitive process, which includes higher-order thinking skills like CT, is highly affected by the individual's beliefs about the source, development, certainty, and justification of the knowledge and learning. In other words, EBs can highly affect individuals' CT skills and dispositions. Individuals with sophisticated EBs tend to be more critical in the thinking process (Getahun, Saroyan, & Aulls, 2016), and more sophisticated EBs have positive effect on the development of CT skills and dispositions (Anderson-Meger, 2014).

The beliefs in knowledge being fixed and absolute which are associated with naive EBs lead to unwillingness to participate in thinking and to be open-minded. Individuals with naive EBs will have a failure in performing good CT performance because drawing reasonable conclusions and making sound inferences are dependent on an adequate consideration of all kinds of viewpoints and arguments when facing a controversial issue and close-minded individuals with an absolutist thinking style as a result of naive EBs will probably focus only on his/her own viewpoint and the evidence that supports this viewpoint while ignoring the counterarguments which do not support his/her viewpoint and position. This can be shown as an explanation of why more sophisticated EBs predicted higher CT

dispositions which is an essential result of this study because a good critical thinker should be open-minded, confident to reason, intellectually curious about new challenges and new knowledge, willing to employ reasoning skill, and be able to effectively consider all viewpoints (Irani et al., 2007). However, the individuals with naive EBs about knowledge and learning have a single-perspective approach to problems, arguments, and issues, and they are unwilling to consider counterarguments. This lack of multiple perspectives and having a fixated perspective hinder the ability to produce, evaluate, and judge alternatives which results in poor CT performance.

In short, this study revealed that while gender is not a significant variable that can affect students' EBs, EDB of father and mother is a significant variable that can affect their EBs. Students who have parents with higher educational degrees also have more sophisticated EBs. Besides, students' source, development, certainty, and justification scores significantly predicted students' CT dispositions. These results of this study are confirmed by previous research and are in line with the theoretical background.

LIMITATIONS AND IMPLICATIONS FOR OTHER STUDIES

Although this study has some important results regarding the relationship between students' EBs and CT dispositions, it has several limitations. Firstly, the sample of the study can be shown as a limitation because this study was carried out with students studying in high school in a city in the northern part of Turkey. Therefore, it would be a great idea to examine the predictability of EBs on CT dispositions with other sample groups and compare the results with this study. Secondly, the data for this current study were collected with only self-report quantitative tools. Self-report quantitative tools can be influenced by social desirability. Therefore, data collection tools are the second limitation of the study. Other studies using qualitative or mixed methods can be carried out to have better understanding of the association between EBs and CT dispositions.

This study also has some important implications. It was found that high school students' EBs were significant predictors of their CT dispositions. This result emphasized the importance of EBs on CT dispositions. Therefore, it can be suggested that EBs should be implemented during the effort to enhance CT dispositions because any efforts to mature EBs will also have a positive effect on CT dispositions.

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Author(s) declare that they have no conflict of interest.

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The Relationship between Digital Reading Disposition and Internet-based Reading Motivation: A Study on Pre-service Teachers

Umut Birkan Özkan, National Defence University, uozkan@msu.edu.tr 0000-0001-8978-3213

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Abstract

This study focuses on the relationship between pre-service teachers' digital reading disposition and internet-based reading motivations, and in this context, it is aimed to examine the predictors of pre-service teachers' internet-based reading motivations on digital reading disposition. A quantitative research approach, using a relational survey design, was performed. The sample of the present study is the 401 pre-service teachers of Turkey. Correlation analysis and multiple linear regression analysis were used in the analysis of data obtained from two different scales. In the study, Digital Reading Disposition Scale and Internet Based Reading Motivation and Engagement Scale were used. Pre-service teachers' digital reading disposition were examined and it was found that the pre-service teachers' disposition towards digital reading were moderate. Besides, it was found that pre-service teachers considered themselves to be moderately competent and dedication in reading on the internet. The findings showed that digital reading disposition could be explained by pre-service teachers' perceived competence for internet-based reading. Although pre-service teachers' perceptions of difficulty towards internet-based reading were found to be related to digital reading disposition, it was not found to be a significant predictor. In addition, there was no significant relationship between pre-service teachers' digital reading disposition and their dedication and avoidance motivation to internet-based reading. The study concludes with a discussion of the meaning of the findings for educational implications and future research.

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INTRODUCTION

Information and communication technologies (ICT) and especially the internet have tremendous effects on each single part of our lives, how we behave and react. More and more people are using ICT and internet for various purposes. The number of internet users is known to be nearly 3 billion all over the World (Yaghi & Abdullah, 2020). Access to information has increased as there is at least one computer or mobile device in almost all houses (Bruce, 1997; Cuban et. al., 2001; Madden et. al., 2005; Mikulecky & Kirkley, 1998; Yaghi & Abdullah, 2020). Becoming such common, internet and computers have enabled everyone to reach the data they search for quite easily, which has made them to be the most reliable and trusted sources of data (Coiro & Dobler, 2007; Lewis, 2007; McKenna et. al., 1995). As a result, digital documents that can be accessed online and read from a screen have dominated in recent years (Buzzetto-More et.al., 2007; Coiro, 2011; Putro & Lee, 2017), replacing printed materials that have been used as a means of intellectual communication and literacy for over five centuries (Rose & Dalton, 2009). This brings digital reading to the fore.

Digital reading "combines reading strategies of books and understanding the features of the Internet, ICT, or digital reading environment" (Chen, 2017, p. 333). Baron (2017) and Tanner (2014) define digital reading as reading on a digital screen while it is described as "reading involving hypermedia technology" by Singer and Alexander (2017, p. 1011). Therefore, digital reading includes various forms such as hypertexts, hyperlinks, hypermedia (Coiro, 2011), printed or digital texts, animations, online tables and diagrams (Chen, 2017). Larson (2010, p. 21) suggested that these various forms "have the potential to unveil an array of new teaching and learning possibilities as traditional and new literacy skills are integrated in meaningful ways". Guthrie et al. (2004) and Popham (2009), on the other hand, mention that positive disposition is essential in effective learning in this digital age. So, a concept emerges that needs to be considered with digital reading: digital reading disposition (DRD).

The term disposition was defined as "tendency to edit, select, adapt, and respond to the environment in a recurrent, characteristic kind of way" (Carr & Claxton, 2002, p. 13). In Yaghi and Abdullah's (2020) study, five important dispositions were pointed out as "persistence, flexibility, collaboration, reflection and critical stance" (p. 76). The term which defines how people behave during digital reading is DRD (Yaghi & Abdullah, 2020). According to O'Byrne and McVerry (2009), who consider DRD more broadly, DRD is "attitudes and beliefs that lead to patterns of behavior that promote gains in the acquisition of knowledge" (p. 364). Researchers conducted studies to understand, measure, and explore DRD (Bulut & Karasakaloğlu, 2018; Coiro, 2012; O'Byrne & McVerry, 2009; Putman, 2014; Yaghi & Abdullah, 2020) and found that "reflection, persistence, and collaboration were significant within the development of digital reading disposition" (Putman, 2014, p. 6). In these studies, some of the suggestions to coming research were to analyze the relationships of other cognitive and affective factors with DRD. Although it is inherent in digital reading, one of the factors whose relationship with DRD has not been investigated until now is internet based reading motivation (IBRM).

The concept of IBRM is a result of the ICT and screens that the 21st century has made indispensable in our lives (Güzel & Elkıran, 2021). Reading motivation "can be defined as the extent of his or her intention to read a specific text in a given situation" (Schiefele et. al, 2012, p. 429). However, internet-based reading "may involve other processes of reading motivation and engagement than reading" printed texts (Brandmo & Braten, 2021, p. 34). Thus, it should not be overlooked that motivation has both positive and negative aspects (Braten et. al., 2019). For example, someone who does digital reading may perceive themselves as competent for reading and learning from what they read on the Internet and still perceive the digital texts they read as difficult and complex. Another issue that should not be overlooked is that reading motivation is differently concerned with reading for scholarly purposes and reading for relief (Schiefele et al., 2012). This

distinction is meaningful due to the importance of the internet in accessing information is increasing, and students of different education levels are "increasingly using the Internet for academic purposes" (Brandmo & Bråten, 2021, p. 23). Therefore, IBRM may be a more important factor for DRD.

Although there is no study in the literature on the relationship of IBRM with DRD, some studies have examined the relationship between motivation and general reading (Ahmadi et. al., 2013; Anmarkrud & Braten, 2009; Sun et. al., 2018; Yaghi et. al., 2019). Ahmadi et. al. (2013) reported that "reading motivation could have a positive impact on students' reading comprehension" (p. 15). Anmarkrud and Braten's (2009) study showed that motivation is important in reading competency of reader. The study of Sun et al. (2018) "reveals that highly motivated students exhibited a relatively serious reading pattern in a multi-tasking learning environment" (p. 209). According to the results of Yaghi et al.'s (2019) study on 170 university students, "students show carelessness toward the impact of motivation on online reading, however, they connected their motivation for online reading with the purpose of reading" (p. 49). Considering the results of previous studies pointing out the relationship between reading motivation and reading, and considering that digital documents are most easily accessible on the internet, it can be inferred that DRD may be related to IBRM.

Based on this background analysis, the current research was designed to obtain empirical evidence aimed at revealing the relationship between DRD and IBRM. Moreover, with the global COVID-19 epidemic, it can be said that the transfer of teaching activities from the traditional pattern designed as face-to-face activities in classrooms to the digital medium has brought DRD of pre-service teachers (PTs) to the fore. This evident change during the pandemic process makes it important to find out the relationship between DRD of PTs and technological advances, especially the internet which enables the fact that "a classroom is no longer the only venue where learning can take place" (Srijamdee & Pholphirul, 2020, p. 2934). The relationship between communication technologies and education becomes more important (Oliver, 2002), especially in the new era as the integration of the digital world and education has accelerated dramatically due to COVID-19. Consequently, teaching and learning is tried to be supported by written digital materials provided over the internet. When the role of the internet in facilitating access to readable materials is considered, finding out the relationship between PTs and DRD increases the importance of the study. Another important contribution of this study to the literature is that it presents a predictive model to show the contribution of IBRM on the DRD of PTs. Moreover, it contributes to filling in an important gap in this area by focusing on the relationships between DRD and IBRM in order to a supporting to efforts that can improve the performance of PTs in distance learning processes. All in all, since there is no study examining the predictions of IBRM on DRD in the literature review, it is thought that conducting a research on this subject will be a source of new research in the literature.

This study aims to examine the relationship between the DRD of PTs and their IBRM. Thus, an attempt was made to seek answers to the following research questions:

(1) Is there a statistically significant correlation between DRD of PTs and their IBRM?

(2) Are IBRM of PTs statistically significant predictors of their DRD?

METHOD

In this study, a quantitative research design in relational survey type was chosen. The study was carried out in January-February 2021 via an online learning portal. In the model of the research, there were five variables, one of which is independent (digital reading disposition) and four were dependent (perceived competence, perceived difficulty, dedication, avoidance). Besides determining the relationship between dependent and independent variables; it was also investigated how much the independent variables explain the change in the dependent variable (variance).

POPULATION AND SAMPLING

Target population of the study involves 3300 PTs studying in various academic programs at an education faculty of a state university in the northwest of Turkey in the 2020-2021 academic year. The study was carried out with a sample from the target audience using the convenience sampling method. The main reason for this is that PTs cannot be reached face-to-face due to the COVID-19 pandemic. As a result of the calculations made using Cochran's (1962, p. 56) formulas $n_0=t^2.S^2/d^2$ and $n=n_0/[1+(n_0/N)]$ were used in calculating the sample size for continuous variables; the minimum sample size representing the population unit of 3300 was found to be 344 for the error margin of .05 (d), the standard deviation score of .5 (S), the confidence level of .95 (t = 1.96). It can be said that a total of 401 participants, 309 (77.1%) female and 92 (22.9%) male, from whom the data were collected in this study, provided an adequate sample.

DATA COLLECTION

The data of the current study were gathered using two scales: Digital Reading Disposition Scale (DRDS) designed by (Bulut & Karasakaloğlu, 2018), which aims to determine PTs' disposition towards digital reading as opposed to printed reading material preference; and the Internet Based Reading Motivation and Engagement Scale (IBRMES) developed by Braten et. al. (2019) and adapted into Turkish by Ata & Alpaslan (2019).

DIGITAL READING DISPOSITION SCALE

DRDS developed by Bulut & Karasakaloğlu (2018) was used to determine the DRD of PTs in educational environments. This 5-point Likert type scale (ranging from 1 = totally inappropriate for me to 5 = totally appropriate for me) consists of a total of 12 items. As a result of exploratory factor analysis (EFA) the scale was found to be explaining 57.31% of the total variance. In Bulut & Karasakaloğlu's (2018) study, Cronbach's Alpha internal consistency coefficient was .952 whereas it was found to be .543 for all items in this study. Although there is much debate among researchers about which value is appropriate and acceptable for reliability, it can be said that the Cronbach's Alpha internal consistency coefficient between 0.50 and 0.70 indicates "moderate reliability" (Hinton et. al., 2004, p. 364). Similarly, George & Mallery (2020, p. 244) state “there is no set interpretation as to what is an acceptable alpha value”, and values above 0.50 show acceptable reliability.

INTERNET BASED READING MOTIVATION AND ENGAGEMENT SCALE

IBRMES was developed by Braten et al., (2019) and its Turkish version (Ata & Alpaslan, 2019) was used to find out PTs' levels of IBRM and interaction in educational matters. A 10-point Likert-type rating (1= strongly disagree, 10= strongly agree) was used in this scale which consists of 12 items and 4 factors (perceived competence, perceived difficulty, dedication, and avoidance) without any reverse scoring items. The scale explained 64.89% of the total variance in the EFA. Cronbach's Alpha values of the sub-factors of the scale are given in Table 1.

Table 1. *Cronbach's alpha values of IBRM and engagement scale sub-factors*

Scale	*Factor*	*Cronbach's Alpha*
Internet Based Reading Motivation and Engagement	Perceived competence	.793
	Perceived difficulty	.797
	Dedication	.825
	Avoidance	.795

In the original scale, Cronbach's Alpha values were reported as .76 for perceived competence, .79 for perceived difficulty, .76 for dedication, and .83 for avoidance (Braten et al., 2019). In the Turkish adaptation of the scale, Cronbach's Alpha values were found to be .82 for perceived

competence, .84 for perceived difficulty, .86 for dedication, and .83 for avoidance. The results given in Table 1 show that the sub-dimensions of the scale are "highly reliable" (Hinton et al., 2004, p. 364).

DATA ANALYSIS

The data were analyzed using IBM SPSS Statistics 22 program. Before performing statistical analysis, the data set was examined in terms of faulty coding, missing or outlier values. It was seen that there was no missing value in the data set. The skewness and kurtosis values were examined to see whether the data obtained in this study showed normal distribution. Table 2 shows the skewness and kurtosis values.

Table 2. *Skewness and kurtosis values of the variables*

Variables	*Skewness*	*Kurtosis*
Digital reading disposition	.02	.167
Internet-specific reading motivation and engagement	.43	2.00

The skewness and kurtosis values are given in Table 2 range from .02 to 2.00. The studies of Morgan et. al. (2004), George and Mallery (2020), and Tabachnick and Fidell (2013) indicate that the skewness and kurtosis ranges can be between -1 and +1, -2 and +2, and -3 and +3, respectively, to provide the assumption of normal distribution. According to these values, it can be said that the assumption of normal distribution was met in this study. Pearson Product-Moment Correlation Coefficient Analysis (PPMCCA) was used to determine the relationships between variables, and Multiple Linear Regression Analysis (MLRA) was used to examine the predictor variables. Also, to test the assumptions of Regression analysis; the tolerance, variance inflation factor (VIF), and condition indices (CI) and values of the predictor variables in the analysis are shown in Table 3.

Table 3. *Tolerance, VIF and CI values of the predictive variables*

Variables	*Tolerance*	*VIF*
Perceived competence	.743	1.346
Perceived difficulty	.786	1.271
Dedication	.710	1.409
Avoidance	.748	1.336

Durbin-Watson: 2.08

CI: Dimension 1= 1.00, Dimension 2= 3.73, Dimension 3= 6.08, Dimension 4= 9.51, Dimension 5= 12.78

When the values presented in Table 3 are examined, it is clear that the tolerance value of the independent variables is greater than .20, the VIF value is below 10, the Durbin-Watson coefficient is between 1.5-2.5, and the CI value is less than 30 (Petrini et. al., 2012; Robinson & Schumacker, 2009).

FINDINGS

This section includes analyzes for the sub-problems of the research.

RELATIONSHIP BETWEEN DIGITAL READING DISPOSITION AND INTERNET-BASED READING MOTIVATION DIMENSIONS

To find out the relationship between PTs' DRD and the sub-dimensions of IBRM, PPMCCA was conducted and the results are given in Table 4.

Table 4. *The arithmetic mean and standard deviation values of variables and correlations between variables*

	X̄	*S*	*1*	*2*	*3*	*4*	*5*
Digital Reading Disposition (1)	3.06	.49	1	.20**	-.11*	.05	-.07
Perceived competence (2)	6.40	1.72		1	-.08	.49**	-.20**
Perceived difficulty (3)	3.58	1.74			1	.05	.43**
Dedication (4)	5.30	1.86				1	-.24**
Avoidance (5)	2.46	1.62					1

**p<.01; *p<.05

Table 4 shows that PTs' DRD (X̄ = 3.06) are at a medium level. In addition, it was found out that PTs had a moderate level of motivation to read internet-based educational texts in the competence (X̄ = 6.40) and dedication (X̄ = 5.30) sub-dimensions while they had a low level of motivation in the avoidance (X̄ = 2.46) and perceived difficulty (X̄ = 3.58) sub-dimensions. When the standard deviation values were examined, it was seen that the most homogeneous distribution was in DRD (S = .49).

Various correlations were found between PTs' DRD and internet-based reading motivation and engagement sub-dimensions. There was a low level of positive correlation between DRD and perceived competence (r = .20; p <.01). There was a low-level negative relationship between DRD and perceived difficulty (r = -.11; p <.05). No statistically significant relationship was found between DRD and dedication and avoidance.

THE PREDICTION LEVEL OF INTERNET-BASED READING MOTIVATION AND ENGAGEMENT DIMENSIONS OF DIGITAL READING DISPOSITION

The results of MLRA regarding whether the sub-dimensions of PTs' IBRDM are significant predictors of DRD are given in Table 5.

Table 5. *The results of MLRA*

Predictors	R= .23 R^2= .05 $F_{(4,396)}$= 5.411 p= .000				
	Coefficients				
	B	*Std. Error*	*Beta*	*t*	*Sig.*
Perceived competence	.063	.016	.220	3.879	.000
Perceived difficulty	-.027	.015	-.095	-1.722	.086
Dedication	-.015	.015	-.056	-.964	.336
Avoidance	.001	.017	.005	.087	.931

As shown in Table 5, there was a low level and significant relationship between PTs' internet-based reading motivation and engagement and their DRD (R = .23; R^2 = .05; $F_{(4,396)}$ = 5.41; p = .000). These predictive variables explained about 5% of the variance regarding PTs' DRD. When the results regarding the regression coefficients were examined, it was found that perceived competence for internet-based reading (t = 3.88; p <.01) was a significant predictor of PTs' DRD. The perceived difficulty, dedication, and avoidance towards internet-based reading were not significant (p> .05) predictors of PTs' DRD.

DISCUSSION AND CONCLUSION

The present study focused on the relationship between PTs' DRD and IBRM. Even the way we teach, learn or work has significantly changed due to Internet. Parallel to this, our reading and writing habits have also changed (Leu et. al., 2004; San Miguel, 1996). In other words, “the existence and prevalence of technology and the Internet tempt people to alter their ways of reading” (Yaghi & Abdullah, 2020, p. 74). As denoted by Leu et al. (2004), new literacies such as digital reading are going under major changes and literacy and technology such as the internet are highly interconnected. The results of the study provided empirical evidence to support these opinions.

In this research, PTs' DRD were examined and it was found that the PTs' disposition towards digital reading were moderate. A few studies in the literature support this result (Bulut & Karasakaloğlu, 2019; Elkiran, 2021). As a result of the research of Bulut and Karasakaloğlu (2019), it was seen that the DRD of the PTs were at a moderate level. In Elkiran's (2021) study, it was found that the DRD of pre-service Turkish teachers were at a moderate level. One of the reasons why PTs' DRD are moderate may be that digital reading does not have a clear advantage or disadvantage compared to reading on printed materials. While reading long and complex texts from printed materials instead of reading from the screen helps to remember better, the convenience of digital reading with different text editing and search tools (Farinosi et. al., 2016) may have suppressed the PTs' reading disposition towards digital. Besides, that Turkey where the research sample was selected hasn't got the desired potential in terms of owning the necessary equipment for digital reading (Şen & Akdeniz, 2012; Toso et. al., 2015), when it comes to the materials such as course books which have numerous pages, digital materials cause more eye strain and other serious reading problems when compared to the printed ones (Vernon, 2006), students prefer reading in digital media for academic purposes (Keskin et. al., 2016) may also be the reasons for PTs' DRD to remain at a moderate level.

In the study, sub-dimensions of PTs' IBRM (perceived competence, perceived difficulty, dedication, and avoidance) were examined. The results of the research showed that while the perceived competence and dedication levels of the PTs were at a medium level, their motivation in the sub-dimensions of avoidance and perceived difficulty was at a low level. According to this result, PTs consider themselves to be moderately competent in reading from what they read on the internet. However, PTs allocate moderate time, persistence and effort while reading on the internet. They also do not perceive what they read on the internet as difficult or complicated and do not hesitate to read online. These findings were supported by Ata and Alpaslan's (2019) study in which they found out that pre-service teacher' perceived competence and dedication levels were medium, while their motivation in the sub-dimensions of avoidance and perceived difficulty was found to be low. In addition, in the study of Güzel and Elkıran (2021), which examined the motivation of Turkish teacher candidates for internet-based reading, the level of dedication of teacher candidates was moderate, similar to this study. However, unlike the findings of this study, the perceived competence levels of Turkish teacher candidates were high, while the levels of avoidance and difficulty were moderate (Güzel & Elkıran, 2021). In the study carried out by Maden (2018) with PTs, the findings showed that the participants were interested in reading on digital screens and they often understood the content better and quicker. This finding is consistent with those reported by Doty et. al. (2001). Considering the findings of other studies and that the majority of young people use the internet and most of them see the internet as their primary learning tool (Putman, 2014), it can be said that result of the present study is not surprising. However, the fact that self-regulated reading processes and inferential reasoning strategies are necessary for successful internet reading experiences (Coiro & Dobler, 2007) and the complexity of the internet's being large, variable, nonlinear, multimodal, unfiltered and unlimited (Dobler & Eagleton, 2015) may have caused PTs' levels of perceived competence and dedication to remain at a moderate level.

Within the framework of reviewable resources, the present study was the first to examine the relationship between DRD and sub-dimensions of IBRM. The results of the study showed that there was a positive, significant, and low-level correlation between PTs' DRD and perceived competence, which is one of the sub-dimensions of IBRM while its correlation with perceived difficulty was low level and negatively significant. Since the efficiency of performances such as digital reading depends on whether the competencies perceived by individuals are high or low (Senko, 2016), the existence of this relationship can be considered reasonable. In addition, the fact that individuals give importance to the competencies they perceive most and how much they strive to do it when they explain the things they can do may also support this fact (Graham & Taylor, 2016).

Another result reached in this study was that the perceived competencies of PTs, which is one of the sub-dimensions of IBRM, statistically significantly and positively predicted their DRD. It can be said that the results of Ng's (2012) study showing that improving young people's competencies in using technologies such as internet improves their digital literacy support this finding. In this respect, Coiro (2003) denoted that successful readers show persistency, flexibility, patience, creativity and confidence while online reading. These two studies provide sufficient support in discussing why perceived efficacy is a reasonable predictor, however, it should be discussed why the other three sub-dimensions were not statistically significant predictors of DRD. In this regard, the results of the studies conducted by Odabaş et. al. (2019) with university students, Maden (2018) with PTs, and Dağtaş (2013) with teachers can be helpful. The participants of these three studies were also from Turkey, as in the current study. In the study which Odabaş et. al. (2019) conducted to find out whether university students preferred digital text / electronic books or traditional reading environments, 63.7% of the participants stated that reading on printed book and / or paper text is fun and 80.4% stated that they found it more relaxing. In their studies, Dağtaş (2013) and Maden (2018) found that participants mainly preferred to read printed materials. Therefore, university students and teachers in Turkish society do not favor digital reading and internet-based reading anyway. Thus, perceived difficulty, dedication, and avoidance variables for internet-based reading may not be statistically significant predictors for digital reading.

Various implications can be made in the light of the results and discussions of the study. In the present study, it was found that the PTs' disposition towards digital reading and perceived competence and dedication towards internet-based reading were moderate. This result is extremely meaningful for teachers educating schools. Bibby et. al. (2009), Leu et al. (2004), and Liu (2005) assert that reading texts online is regarded as an alternative way of reading in the 1990s but it is being preferred more and more by the younger generations. To catch up with the contemporaries, teachers should learn and use digital texts and communicate on internet. The motto “we learn to read, then we read to learn" evolved into “we learn to read, and then we read to learn online" in today's online information age (Leu et. al., 2015, p. 139). This is what we need to keep in mind when working on pre-service teachers' disposition towards digital reading and some practical inferences can be made from this point of view. It seems necessary to increase their DRD, foster their positive attitudes towards digital reading and help them perceive themselves as more competent in internet-based reading during teacher education. For this, courses can be added to the teacher training curricula, where PTs can learn internet-based software that they can use in their professional life in the future. Moreover, PTs should be given some courses on digital literacy during undergraduate education. It is essential for them to be able to catch up with the latest technology, updating curricula, textbooks and course materials.

The current study found that the perceived competence of PTs for internet-based reading was positively correlated to their DRD, and Margaryan et. al. (2011) revealed that university students' learning attitudes are influenced by the teaching approaches of lecturers. Therefore, if the lecturers design activities to improve PTs' competencies for internet-based reading, they can increase their DRD. For this, lecturers can help PTs to incorporate internet-based reading materials into their learning processes (for example, discussing a digital article in lectures, reviewing an e-book assignment or other digital reading resources).

Revealing the relationship between PTs' motivations for internet-based reading and DRD further emphasizes the importance of focusing on individual differences in teacher training programs. Knowing these relationships can be very useful when designing curricula for education faculties. PTs with different DRD levels may have varied demands and be precise to dissimilar educational methods. For instance, PTs who perceive themselves as competent in internet-based reading may be genuinely enthusiastic about digital reading and inspire PTs with low perception of competence who seem willing to interact with digital reading materials in their lessons. For PTs who do not see themselves competent in Internet-based reading, it may be beneficial to explore and read

subjects that they are interested in, such as reading digital texts about their hobbies. In addition, considering that encouraging and supporting student-centered discussion around books encourages reading (Merga, 2015), organizing similar experiences by lecturers may have a significant role in helping PTs to find, select and read digital reading materials online.

For sure, more research can be done to examine the value and effectiveness of these proposed activities. Determining PTs' DRD during their education and after graduation can provide longitudinal data that will help us understand if pre-service teachers' disposition towards digital reading will change over time. In addition, it seems useful to examine the variables that may be related to PTs' DRD. Future research to be conducted with variables regarding individual differences and heterogeneous pre-service groups can provide the necessary perspective for training teachers with a DRD. As the purpose of reading may highly influence the preference of reading style (Brandmo & Braten, 2021; Schiefele et. al, 2012), further studies may "compare students' motivation and their engagement when reading on the Internet for academic purposes" (Brandmo & Braten, 2021, p. 37) with that for non-academic ones. When the highly growing demand for technology in both education and daily life is taken into account, it is significant to provide all the PTs with all the necessary 21st century skills. Thus, it is recommended that further studies should be carried out in order to show the attitudes and capabilities of PTs in using technology especially in literacy as it is known that the attitudes and tendencies of the teachers towards technology affects its effective use.

An important limitation of this study is that its findings only apply to PTs studying at a university in Turkey. This may threaten the generalizability of the results to larger sampling that better represent the universe. Future research may reveal whether PTs' DRD exist in a larger sample group.

As a result, this study has emphasized that DRD can be explained by PTs' perceived competence for internet-based reading. Although PTs' perceptions of difficulty towards internet-based reading were found to be related to DRD, it was not found to be a significant predictor. In addition, there was no significant relationship between PTs' DRD and their dedication and avoidance motivation to internet-based reading. Further studies can provide new perspectives to understand PTs' DRD, which is increasingly gaining more importance in today's education system.

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AUTHOR CONTRIBUTION

The author designed and directed the research, developed the theoretical framework, carried out the implementation, performed the calculations, analysed the data, wrote the manuscript.

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Future Time Orientations and the Hopelessness Levels of Preservice Music Teachers

Evin Erden Topoğlu, Aydın Adnan Menderes University, evinerden@hotmail.com
0000-0002-6731-5790

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Abstract

Since individuals' time perception plays a role in their future plans, goals, and motivation, it has a substantial impact on influencing one's behaviour. Therefore, it is important to determine the levels of future time orientations, as well as the levels of hopelessness' in the students towards increasing the levels of reaching the educational goals. The purpose of the present study is to investigate the preservice music teacher's future time orientations in terms of their genders, grades, and universities attended. As a part of the study, the students' levels of hopelessness were also analyzed. This included investigating the hopelessness levels of the participants with regards to their universities. The relationship between preservice music teachers' future time orientations and their levels of hopelessness were also analyzed. A total of 210 music education students participated in this descriptive study. Future Time Orientation Scale which was developed by Gjesme (1979) and Hopelessness Scale which was developed by Beck et al. (1974) were used as data collection tools. According to the results of the study, it was found that preservice music teachers have a mild level of hopelessness which means the participants are not particularly pessimistic. There were significant differences between the preservice music teachers' future time orientations and their genders, grades and universities. Likewise, there was a significant difference between the participants' levels of hopelessness and their universities. Also, correlations have been found between the participants' future time orientations and their levels of hopelessness. The results were discussed in the light of the literature.

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INTRODUCTION

Time cannot be turned back or experienced in advance, thus individuals perceive their present circumstances through their memories, their prior experiences, and their foresight. In fact, Zimbardo & Boyd (1999) have claimed that both the past and the future play a crucial role in shaping an individuals' present behaviours and personal decision-making process. According to Gjesme (1983), individual's future actions vary from person to person. Some individuals tend to be motivated by long-term goals, while other individuals are motivated by very short-term goals. The difference in individuals' decisions towards taking action based on the past or perceived future events is closely related to their time orientation.

According to Gjesme (1983) there are differences between general future time orientation and future time orientation on specific situations. One's future time orientation is independent from his/her future time orientation on specific situations. Therefore, he suggests that FTO measurements should be related to nonspecific situations in order to avoid certain valences. Although Gjesme (1979) suggests that FTO is a one-dimensioned concept, there are four factors which are "involvement", "anticipation", "occupation", and "speed" in his Future Time Orientation Scale. Involvement relates how much an individual is thinking and concerned about the future. Anticipation factor relates to the individual's expectations on future. Occupation is related to how much time an individual is occupied thinking about the future. Speed is related to the velocity of the upcoming events.

Since individuals' time perception plays a role in their future plans, goals, and motivation, it has a substantial impact on influencing one's behaviour. In the literature, there are a number of different definitions and viewpoints regarding the terms, future time orientation, future time perspective, and future attitude. While the use of terminology is interchangeable in the field, some psychologists mention the distinction between these terms, emphasizing that they have to be distinguished (İmamoğlu & Güler-Edwards, 2007). In this study future time orientation is used as the present expectations and beliefs related to future objectives (Husman & Lens, 1999).

Future time orientation is associated with the concepts as motivational, attitudinal, and affective factors. These associations emphasize how much a person imagines the future, the level of his/her optimism, and his/her beliefs about changing the future (Mac Giollabhui et al., 2018). There is a large range of studies, focusing on future orientation relationships, with a variety of variables, such as self-regulation (Bembenutty & Karabenick, 2004), academic achievement (Gutiérrez-Braojos, 2015), motivation (Nuttin, 1964), achievement motivation (Gjesme, 1981), socio-economic and socio-cultural status (Agarwal et al., 1983; Lee et al., 2017; Trommsdorff, 1983), behaviors that threaten health (Alvos et al., 1993), romantic relationships (Gürcan, 2015; Kalkan & Koç, 2010; Sakallı Uğurlu, 2003), individual differences (İmamoğlu & Edwards, 2007), and hopelessness (Breier-Williford & Bramlett, 1995).

Future time orientation is a concept that is both used and investigated by various domains, and has become a highly engaging theme for educational psychology (Eren, 2012; Eren & Tezel, 2010; Husman & Lens, 1999; Kauffman & Husman, 2004; Nuttin, 1964; Peetsma et al., 2005; Walker & Tracey, 2012). As education is considered one of the most important investments in human life, the field of educational psychology plays a major role in examining the plans, thoughts, goals, and future time orientations of the students themselves. One of the principle aims of education is to prepare individuals through an informed, systematic and sequential process of learning that will enable them to develop both their desire and ability to shape theirs, and their community's environment through the profundity and proficiency received through their personal investment in education. Therefore, understanding the impact of future time orientation is a crucial factor in examining how students interact with the standards of education and the ultimate outcomes.

A number of research studies have highlighted the positive influence of future goals on academic learning (Miller et al., 1996; Wigfield & Eccles, 1992). Likewise, Simons et al. (2004) have also accented the motivational importance of future goals for present school learning, persistence, and academic achievement.

Future time perspective theorists suggest that students' future plans for their education and career direction are guided by their long-term goals, as well as their short-term goals. And, these long-term plans also influence their learning processes (Kauffman & Husman, 2004; Peetsma et al., 2005). Since hopelessness is characterized by the absence of positive future expectations (O'Connor & Cassidy, 2007), it is also closely related with future time orientation. Both hope, and hopelessness reflect a person's estimation of the probability of their ability to achieve certain goals (Melges & Bowlby, 1969).

Setting goals for the future is a determinant factor in every facet of life. The consequences of decisions and plans that adolescent student make, will have a great effect on their future lives, adolescents tend to be less hopeless, as they tend to be more future-oriented. The reason for the lower level of hopelessness in adolescents can be derived from development of their cognitive capacity to orient towards the future (Mac Giollabhui et al.2018)

Current studies suggest that there is a close linear relationship with the students' motivations, proximal & distal goals, learning processes, and their future time orientations. However, it is important to determine the levels of future time orientations, as well as the levels of hopelessness' in the students towards increasing the levels of reaching the educational goals.

AIM AND RATIONALE OF THE STUDY

The aim of this study is to investigate the future time orientations of preservice music teachers in terms of four different variables (university, grade, gender, and level of hopelessness). In other words, the goal of the present study is to inquire whether there are differences between preservice music teachers' future time orientations and their universities, grades, and genders and whether there is a relation between participants' future time orientations and their levels of hopelessness.

These variables are substantial because of the five following reasons. First of all, teacher training itself aims to regulate and improve the teacher candidates' motivations, beliefs, and occupational plans that are parallel to the aims of this education (Eren & Tezel, 2010). In this sense, it is important to examine the future time orientations of preservice teachers according to the universities that they had preferred in order to reach their own educational goals. There are a few studies in the literature that studied the relations between preservice teachers' future time orientations/perspectives (Eren, 2012; Eren &Tezel, 2010) however, no studies were found on preservice music teachers' future time orientations. The present study focuses on preservice music teachers who are getting ready for giving education on the music domain which has individual, social, cultural, economic, and educational functions (Uçan, 2005). Preservice music teachers are engaged in a series of performance-based courses that require long-term regular practice (instrument, voice, choir, chamber music etc.). All of these courses necessitate a serious practice and planning. Shell & Husman (2001) emphasized the role of future time perspective beliefs play a role in motivating achievement and practice. In this sense, it is thought that investigating the preservice music teachers' future time orientations in terms of different variables is important.

Secondly, one of the independent variables of the present study is the universities which the participants receive education from. In the literature, a number of studies show that the priority in students' university preferences is the prestige of universities, campus, opportunities and sociability (Akar 2012; Çatı et al., 2016). It can be said that similar reasons are recognized in the preference of music teaching programs. In the literature, there are studies revealing the students or students' teachers who guide them in deciding on university preference focus on three universities (Dokuz Eylül

University, Gazi University, Marmara University) for their prestige (Güleç, 2007; İssi, 2008; Topoğlu ve Erden Topoğlu, 2018). In the light of this information, in the present study, the study group consisted of these three universities which preservice music teachers prefer the most.

Thirdly, the factors and the levels of future perspective are substantial as well as whether the future perspective is positive or negative. In the qualitative research that was carried out by Tarhan& Bacanlı (2016) participants defined the term hope as the positive emotions and thoughts towards the future, setting goals, making effort, believing and desiring, the positive emotions and thoughts on oneself. The results of the same study have shown that the individuals who have low levels of hope, tend to give up after making an effort for a while, run into a brick wall due to setting unrealistic goals or they cannot have the result they have expected due to the reason of focusing on one goal. In another study has shown that there is a negative medium relationship between future time orientation and depression and hopelessness (Breier-Williford & Bramlett, 1995). On the other hand, there are a few studies discussing the preservice music teachers' levels of hope and hopelessness (Ercan & Orhan, 2019). In this respect, it is important to investigate the preservice music teachers' future time orientations and their levels of hopelessness.

Fourth of all, gender is another independent variable in the present study. There are studies in the literature that investigated whether there is a difference between future time orientation and gender and they have different results (Gjesme's, 1979; İmamoğlu & Güler-Edwards, 2007). In this sense, the present study's result will have contributions to the literature.

Lastly as the individuals get older the length of future time orientation extends (Trommsdorff, 1983). In addition to this young people have goals for their education, having a job, and having a family (Güler Edwards, 2008). When it is considered that individuals get closer to having a job and having a family as their grades increase, it is thought that there are differences in future time orientation and grade variables. In addition, there are no studies found in the literature that investigated the difference between future time orientation and grade variables.

In the light of this information, it is important to investigate the preservice music teachers' future time orientations in terms of their universities, genders, grades, and their levels of hopelessness.

METHOD

RESEARCH DESIGN

For the purposes of the study, quantitative research design and relational survey model were used in this study. Relational surveys are studies that investigates the existence and degree of the relationship between more than one variable (Gürbüz & Şahin, 2017; Karasar, 2012). There are two kinds of relational research, correlation and comparison (Karasar, 2012). In the present study, both of them were used.

POPULATION AND SAMPLE

In this study target population, which the researcher can express an opinion about the universe by making use of the observations made on the sample set, was preferred rather than universe which is difficult to generalize (Balcı, 2015; Gürbüz & Şahin, 2017; Karasar, 2012). The best way to determine and limit the universe is to develop criteria appropriate to the aims of the study (Karasar, 2012). Therefore, the target population of the present study is the students of the three music departments (Dokuz Eylül, Gazi, Marmara) which are mostly preferred by the preservice music teachers (Güleç, 2007; İssi, 2008; Topoğlu ve Erden Topoğlu, 2018). Accessible population must be defined before the sample size is decided (Büyüköztürk et al., 2013). A number of formulas are used when determining the sample size (Bartlett, Kotrlik & Higgins, 2001). There are websites that enable researchers to calculate the sample sizes online (Kılıç, 2012). The sample size is calculated via "Raosoft Sample Size

Calculator" in the present study. 208 is determined for the sample size of the study with a confidence level of 95% and a margin error of 5% since 450 is the population of the study. A total of 210 music education students participated in this study. The data was collected in the spring semester of 2018-2019 academic year. 132 female (62.9%) and 78 male (37.1%) students attended the study voluntarily. The ages of the participants range between 17 and 32 (M=21.02, SD= 1.73). The participants were undergraduates who studied at Gazi University (21.9%), Marmara University (34.3%), and Dokuz Eylül University (43.8%). These universities are located in the largest three cities of Turkey. Furthermore, the music education departments of these universities are both the most established and the most preferred ones in Turkey. All four grades (1st=27.6%, 2nd=23.8%, 3rd=23.8%, 4th=24.8%) of undergraduate students of all universities attended the study.

DATA COLLECTION INSTRUMENTS

Personal Information Form: A personal information form was used to gather the data of participants' genders, grades, and universities.

Future Time Orientation Scale: The scale was developed by Gjesme (1979) to determine how an individual plans and thinks about the future. Gjesme (1979) suggests the future time orientation as a one-dimension tendency that not only informs how an individual both looks and plans for their future but, also suggests that there are four dimensions that interact with this tendency. Involvement is the dimension related to the individual's degree of focus on future events; anticipation is related to the individual's degree of preparation for the future events; occupation refers to the degree of an individual's time they spend planning their future; speed is related to how rapidly the future is approaching an individual. Cronbach Alpha coefficient was stated by Gjesme as .62 for the 14-itemed scale. 8 items of the scale require reverse coding. Higher scores refer to higher levels of future time orientation. The scale was translated into Turkish by Öner (2000) and the Cronbach Alpha coefficient was indicated as .61 for the Turkish version of the scale.

Beck Hopelessness Scale: Beck Hopelessness Scale is a self-reported, 20-itemed scale. It was developed by Beck et al. (1974) and it is aimed at assessing pessimist thoughts about the future, and negative expectations of adults and adolescents. Cronbach alpha coefficient was determined as .93 by Beck et al. (1974). It contains 20 items: 11, being true, and 9 are false. 9 of the items need to be reverse coded. Total scores can range from 0 to 20 and higher total scores signify greater levels of hopelessness. The score range between 0-3 indicates no hopelessness, 4-8 indicates mild, 9-14 indicates moderate, 15-20 indicates severe hopelessness. Cronbach alpha coefficient was found as .86 for the Turkish version of the scale (Seber et al., 1993).

DATA ANALYSIS

To determine whether the tests to be used were to be parametric or non-parametric, skewness and the kurtosis values were investigated for the gender variable and homogeneity of variance was also examined for the difference between participants' future time orientations, their grades, including universities. Also, homogeneity of variance was examined to reveal the difference between the levels of hopelessness of the participants and their universities. Since skewness and kurtosis values for the gender variable are between +1 and -1, a t-test for independent variables was performed. According to Pallant (2007), if the values are between +1 and -1 for the skewness and kurtosis, the distribution is deemed as very good. Due to homogeneity of variance assumption was met, one-way analysis of variance (ANOVA) tests were applied to determine the difference between the participant's future time orientations, including their grades and universities. Bonferroni tests were applied for determining the causes of significance. As a result of variances not being homogeneous, a Kruskal-Wallis test was applied in order to examine the difference between the participants' universities and their levels of hopelessness. In this study, the significance level is accepted as .05. However, to demonstrate the difference between the participants' future time orientations and their grades, the significant level was accepted as .0125. Likewise, to reveal the difference between the participants'

future time orientations and their universities, .0166 was accepted as significance level. Significance/number of groups formula was used for the Bonferroni correction (Miller, 1981). To investigate the relationship between the participants' future time orientations and the level of hopelessness, the Pearson Moments Correlation was used.

FINDINGS/RESULTS

The difference between future time orientations of the participants and their genders was examined by an independent samples t-test. The results of the analysis are presented below.

Table 1. *t-test Results Comparing Genders and the Future Time Orientations of the Participants*

	Gender	*n*	$\bar{X}$	*SD*	*t*	*df*	*p*
Anticipation	Female	132	8.61	2.68	.164	208	.87
	Male	78	8.54	2.76			
Involvement	Female	132	14.72	3.22	2.26	208	.025
	Male	78	13.67	3.31			
Speed	Female	132	9.22	1.82	.172	208	.044
	Male	78	8.67	1.98			
Occupation	Female	132	10.02	2.05	.168	208	.329
	Male	78	9.75	1.70			
FTO Total	Female	132	42.58	6.07	.593	208	.028
	Male	78	40.65	6.16			

According to Table 1, the future time orientations of female ($\bar{X}$=42.58, sd=6.07) participants are significantly higher than the future time orientations of male ($\bar{X}$=40.65, sd=6.16) participants (t_{208}=.593, p=.028). When the dimensions of the future time orientation scale were examined, there are no significant differences between participants' genders and anticipation (t_{208}=.164, p=.87) and occupation (t_{208}=.168, p=.329) dimensions of the scale. Whereas, there are significant difference between participants' genders and involvement (t_{208}=2.26, p=.025) and speed (t_{208}=172, p=.044) dimensions. The difference between the participants' grades and their future time orientations was analyzed by using a one-way analysis of variance test (ANOVA). The results are presented below.

Table 2. *ANOVA Results Comparing Grades and the Future Time Orientations of the Participants*

Variables	*Source of variance*	*Sum of Squares*	*df*	*Mean Square*	*F*	*p*	*Cause of significance*
Anticipation	Between groups	23.71	3	7.90	1.080	.358	
	Within Groups	1506.96	206	7.32			
	Total	1530.68	209				
Involvement	Between groups	20.39	3	6.80	.626	.599	
	Within Groups	2235.99	206	10.85			
	Total	2256.38	209				
Speed	Between groups	2.63	3	.88	.241	.867	
	Within Groups	748.55	206	3.64			
	Total	751.18	209				
Occupation	Between groups	55.05	3	18.35	5.236	.002	1<4
	Within Groups	721.84	206	3.50			
	Total	776.89	209				
FTO Total	Between groups	71.56	3	23.85	.625	.599	
	Within Groups	7858.80	206	38.15			
	Total	7939.37	209				

As seen in Table 2, there are no significant differences between the participants' grades and their future time orientations ($F_{3\text{-}206}$= .625, p= .599), anticipation ($F_{3\text{-}206}$= 1.080, p= .358), involvement ($F_{3\text{-}206}$= .626, p= .599) and speed ($F_{3\text{-}206}$= .241, p= .867) dimensions of the future time orientation scale.

However, there is a significant difference between the participants' grades and their occupation scores (F_{3-206}= 5.236, *p*= .002). A post hoc test was used to reveal the cause of significance, and the results have shown that 4th grade participants have significantly higher occupation scores than 1st grade participants. The difference between the participants' universities and their future time orientations was analyzed by using a one-way analysis of variance test (ANOVA). The results are presented below.

Table 3. *ANOVA Results Comparing Universities and the Future Time Orientations of the Participants*

Variables	*Source of variance*	*Sum of Squares*	*f*	*Mean Square*	*F*	*p*	*Cause of significance*
Anticipation	Between groups	6.58	2	3.29	.447	.640	
	Within Groups	1524.09	207	7.36			
	Total	1530.68	209				
Involvement	Between groups	64.50	2	32.35	3.046	.050	
	Within Groups	2191.88	207	10.59			
	Total	2256.38	209				
Speed	Between groups	2.285	2	1.14	.316	.730	
	Within Groups	748.89	207	3.62			
	Total	751.18	209				
Occupation	Between groups	41.70	2	20.85	5.870	.003	Deu>Gazi
	Within Groups	735.19	207	3.55			
	Total	776.89	209				
FTO Total	Between groups	184.18	2	92.09	2.461	.088	
	Within Groups	7746.19	207	37.42			
	Total	7930.37	209				

As seen in table 3, there are no significant differences between the participants' universities and their future time orientations (F_{2-207}= 2.461, *p*= .088), anticipation (F_{2-207}= .447, *p*= .640), involvement (F_{2-207}= 3.046, *p*= .050) and speed (F_{2-207}= .316, *p*= .730) dimensions of the future time orientation scale. Nevertheless, there is a significant difference between the participants' universities and their occupation scores (F_{2-207}= 5.870, *p*= .003). A post hoc test was used to reveal the cause of significance and the results have shown that participants, receiving education from Dokuz Eylül University have significantly higher occupation scores than participants, who receive their education from Gazi University. The difference between participants' universities and their levels of hopelessness was analyzed by using Kruskal-Wallis test. The results are presented below.

Table 4. *Kruskall-Wallis Test Results Comparing Universities and the Levels of Hopelessness of the Participants*

University	*N*	*Mean Rank*	X^2	*df*	*p*	*Cause of Significance*
GU	47	114.71	12.206	2	.014	GU>DEU
MU	73	117.34				MU>DEU
DEU	87	87.02				

According to the results in Table 4, there is a significant difference between the participants' levels of hopelessness and their universities (x^2 (df=2, n=207) = 12.206; p<.016). Mann-Whitney U tests were applied in order to reveal the cause of significance. According to the results of these tests, preservice music teachers, studying at Gazi University ($\bar{X}$=6.57, sd=4.84) and Marmara University ($\bar{X}$=6.62, sd=4.52) had significantly higher levels of hopelessness than preservice music teachers studying at Dokuz Eylül University ($\bar{X}$=4.39, sd=3.14). The relationship between the preservice music teachers' future time orientations and their levels of hopelessness was analysed by using Pearson Moments Correlation. The results are presented in Table 5.

Table 5. *Pearson Moments Correlation Results Between the Future Time Orientations and the Level of Hopelessness of the Participants*

	Anticipation	*Involvement*	*Speed*	*Occupation*	*FTO Total*	*Hopelessness*
Anticipation	1	.42	.176*	.145*	.551**	-.073
Involvement		1	.249**	.411**	.742**	-.344**
Speed			1	.246**	.579**	-.027
Occupation				1	.657**	-.266**
FTO Total					1	-.301**
Hopelessness						1

According to the results presented in Table 5, there is a negative significant correlation between the participants' future time orientations and their levels of hopelessness (r= - .30, p<.01). It is revealed that the variances' 9% can be explained by the level of hopelessness (r^2=.9). Also, negative significant correlations were found between the participants' involvement scores (r= -.34, p<.01) and occupation scores (r=-.27, p<.01) and their levels of hopelessness. When the effect sizes of these results were investigated, variances' 12% can be explained by the level of hopelessness on involvement dimension (r^2=.12), variances' 7% can be explained by the level hopelessness on occupation dimension (r^2=.7). There are no significant relationships between the participants' anticipation and speed scores and their levels of hopelessness.

DISCUSSION, CONCLUSION AND IMPLICATIONS

There are five remarkable findings in this study. There are significant differences between the preservice music teachers' future time orientations and their genders, grades and universities. Likewise, there is a significant difference between the participants' levels of hopelessness and their universities. Also, correlations have been found between the participants' future time orientations and their levels of hopelessness.

This study was aimed to reveal the future time orientations and the levels of hopelessness of the preservice music teachers. Female preservice music teachers have significantly higher future time orientation scores than males. Also, female participants have significantly higher involvement and speed scores than male participants. As mentioned earlier, involvement refers to the situation of how much an individual is focused on future events, while speed refers to the individual's perception of the velocity regarding the approaching future events. Therefore, female participants appear to be more concentrated on future events than males, and female participants perceive the time more rapidly than males. These results are similar with the results of Gjesme's (1979) study on 6th grade students. Gjesme found that girls have higher scores than boys in terms of future time orientation scores and girls also have higher scores on anticipation and occupation than do boys. In comparison, İmamoğlu & Güler-Edwards (2007) have found no difference between the future time orientations and genders of 295 undergraduate students of Middle East Technical University, a technical school in Turkey. In the literature, the results among gender and future time orientation are varied. The reason for differing results can be found from the different demographics, ages, cultures, and future expectations of the participants themselves. Considering that the participants are being studied in teacher training programs, it is possible for female preservice music teachers to see teaching more suited to their social position. As a matter of fact, some studies show females have higher attitudes toward teaching than males (Çapa & Çil, 2000; Tanrıöğen, 1997; Yazıcı & Kılıç, 2015). The profession of teaching is generally seen as a female occupation by society (Fidan et al., 2006). According to Giddens (2006/2012), women tend to adopt particular professions, as a result of gender discrimination. In the light of this information, male preservice music teachers may see themselves as less suited to the teaching profession in terms of their social role expectations. As such, they are less interested in being a teacher. The difference between male and female preservice music teachers' future time orientations can also differ from the effect of the implicit gender roles on male participants. Therefore, male participants may see themselves as less involved and less oriented towards their future. Further studies should be carried out on gender roles and occupational identities to clarify these results.

According to the findings, the occupation scores of the participants increase gradually as their grades progress such that, fourth graders have significantly higher occupation scores than first graders. This result indicates that, as the participants come closer to graduation, they tend to spend more time thinking about their future. This result can be related to the participants' anticipatory anxiety. In Turkey, there is a large number of teacher candidates who have graduated from teacher training programs, but fail to be assigned to the national education system. In this respect, the reason for the participants' growing concerns for their future, and the increased time they think about the future can emerge from the process of finding a job. According to Zaleski (1996), thinking about the future can cause positive thoughts as well as negative ones. In the literature, some studies reveal that undergraduates are more positive about their future in their freshman year. The results of the study carried out by Yıldız (2018) have shown that 415 undergraduate students from 5 different universities and 6 different majors have positive future prospects in their freshman years, but their future time expectations tend to decrease by degrees until they become senior students. Çetin and Kaya (2021) have carried out a study with 368 undergraduate students from 3 universities and 7 majors. The results of their study have shown that freshman students have significantly higher scores on their future time perspectives than senior students. The future time expectations and job-seeking anxieties of undergraduate students from distinct majors must be investigated through further studies in order to enlighten the causes of these conclusions.

The results of this study have shown that preservice music teachers who received their education from Dokuz Eylül University have higher occupation scores than preservice music teachers of Gazi University. Therefore, it would seem that Dokuz Eylül students spend more time thinking about their future, compared with Gazi University students. Also, results have shown that the Gazi University and Marmara University preservice music teacher graduates have significantly higher scores on levels of hopelessness than preservice music teachers of Dokuz Eylül University. These two results are consistent with the analysis that has revealed the relationship between participants' occupation scores and their levels of hopelessness. According to this finding, there is a significant (weak) negative relationship between occupation and hopelessness. This means that as the time an individual spends thinking about the future increases, the hopelessness level of that individual decreases. Consequently, the individuals who spend less time thinking about their future tend to be more hopeless. This result can be originated from employment opportunities that are getting more difficult day by day. Participants who have high degrees of hopelessness, may avoid thinking about the future because they may come up against a brick wall. It is also remarkable that the preservice music teachers who receive their education in İstanbul and Ankara, the main population centres, have higher levels of hopelessness. Further studies should be carried out for discovering the causes of these relationships.

Besides, small negative significant correlations between the participants' future time orientation total scores, and involvement scores and their hopelessness scores were found. According to these results, as the participants focus on the future events and plan their future, their levels of hopelessness decrease or vice versa. As the individuals are convinced that they will reach their goals and realize their plans in the future, their hopelessness levels decrease accordingly. Similarly, Melges & Bowbly (1969) suggested that hope and hopelessness refer to an individuals' estimate of the probability of his achieving certain goals. When the hopelessness results of participants, according to their universities were examined, in spite of differences between their universities, it was found that preservice music teachers have a mild level of hopelessness which means the participants are not particularly pessimistic. This result is similar to the findings in literature that investigate the levels of hopelessness of preservice teachers (Vatansever Bayraktar & Girgin, 2019; Ersoy et al., 2010; Şahin, 2009). The reason for this finding may occur from the perception of the teaching profession among society. Regardless, teaching is seen as a respectable occupation in Turkey. In fact, it is more likely for a teacher candidate to perform his/her profession as soon as after graduation when compared with

other professions. For further studies, it is suggested to compare the levels of hopelessness and the future time orientations of miscellaneous undergraduates with teacher candidates.

There are a number of limitations to this study. Since it was voluntarily participating research, all of the students in the related departments did not attend the study, which can limit the possibility to generalize. The underlying reasons for significant differences and relationships that were presented could be enlightened by qualitative data. It is further recommended that studies should be made in order to reveal these findings.

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Career-long clinical supervision among counselors in Turkey: Current experiences, needs, and preferred practices *

Mine Aladağ, Ege University, mine.aladag@ege.edu.tr 0000-0003-2112-9455

Burcu Pamukçu, Ege University, burcu.pamukcu@ege.edu.tr 0000-0003-2266-0176

Betül Meydan, Ege University, betul.meydan@ege.edu.tr 0000-0002-9978-6255

Melike Koçyiğit Özyiğit, Akdeniz University, mkocyigit@akdeniz.edu.tr 0000-0002-1446-9761

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Abstract

Career-long clinical supervision is still not common and is a relatively new study area in the counseling profession. Thus, this study aims to describe the current supervision experiences, needs, and preferred practices among counselors in Turkey, as well as the factors affecting their supervision experiences. For this purpose, cross-sectional survey design study was used and a total of 402 counselors participated in the study by using convenience sampling. The Supervision Experiences and Needs Online Survey Form developed by researchers was also used for data collection. The descriptive statistics and chi-square analyses conducted to analyze data. The results indicated that current supervision experiences are varied though very limited. Twenty-three percent (n=92) of the participants reported to receive supervision. They received mostly psychotherapy/counseling training supervision, and then work setting supervision and volunteer supervision respectively. The most common reasons for receiving supervision were developing interviewing/counseling skills (n=83); developing intervention skills for client's needs and problems (n=83); and learning a therapy/counseling approach (n=81). Besides, age, educational degree, work setting, work experience, and the professional organization membership was found to be the factors of receiving supervision. The supervision needs, methods, techniques, and supervisor characteristics were varied with respect to current and preferred practices. Most participants (n=381) want to receive regular, monthly, and face-to-face supervision from supervisors as professionally trained and experienced counselors with supervisor training. Overall, this study highlights the necessity of developing accessible, affordable supervision opportunities as well as the development of a pool of trained supervisors.

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INTRODUCTION

CAREER-LONG CLINICAL SUPERVISION

Continuous reflection is described as one of the central processes of counselor/therapist development, and it highlights how stagnant or deteriorating processes may occur if the counselor/therapist, for some reason, does not engage in the process (Rønnestad & Skovholt, 2003). Therefore, clinical supervision has a pivotal role in promoting counselor development across their professional life span as well as positive client outcomes and effective agency functioning (Borders et al., 2014).

By virtue of the demonstrated the importance and value of clinical supervision for career development, professional counseling/psychotherapy associations (e.g., The British Association for Counseling and Psychotherapy, The Psychotherapy and Counseling Federation of Australia, and The American Counseling Association) have, internationally, formulated some regulations concerning the status of career-long supervision in membership and practice requirements for continuous professional development, quality control, and accountability. For example, Great Britain, Ireland, Australia, and New Zealand recognize this by mandating career-long supervision for most mental health practitioners (e.g., minimum one and a half-hour supervision for each month, or 10 hours of supervision every year), while the United States recognize this as an essential part of continuous professional development activity.

Parallel with these developments, there have also been questions raised in the literature on the topic. For instance, whether counselors need to continue with supervision after training, what kind of factors are associated with these needs, and what the current and preferred practices are, if indeed there are any. For example, several studies found that the rate of receiving career-long supervision among counselors changed between 13%–35% in national survey studies conducted in the United States (Borders & Usher, 1992; Page et al., 2001), whereas it changed from 69% to 98% in the UK, Republic of Ireland, and Australia, with the high supervision rates (BACP, 2015-2016 Report; Gabbay et al., 1999; Grant & Schofield, 2007; McMahon & Errity, 2014; Townend et al., 2002). These studies also indicated that the majority of counselors needed to receive supervision and preferred supervision from a supervisor who has supervision training (e.g., Borders & Usher, 1992; Page et al., 2001). Furthermore, recent research has demonstrated the benefits, satisfaction rates, and effectiveness of clinical supervision. For example, some of the most reported supervision benefits were increased self-awareness, professional development, emotional support, feeling more connected with other counselors, and coping with difficult practice situations (e.g., Clarke, 2001, as cited in Clarke et al., 2007; Vallance, 2004; Yin Tan, 2019).

Today, there is widespread acceptance of the value of clinical supervision in the professional life of mental health practitioners (Borders, 2016; Goodyear et al., 2016). In agreement with this acceptance, a growing curiosity has emerged to uncover empirical evidence revealing the impact of supervision on both practitioners' behaviors and client outcomes (Goodyear et al., 2016; Grant & Schofield, 2007; Spence et al., 2001). In addition, there is a growing need to investigate how to improve supervision methods for those who supervise practitioners. (Bernard & Goodyear, 2019; Goodyear et al., 2016).

CAREER-LONG CLINICAL SUPERVISION IN TURKEY

Clinical supervision has become a hot topic in the past few years, increasingly receiving the attention of counselor educators as well as counselors in Turkey. However, there are no standards for counseling practicum and the supervision hours required to complete either undergraduate or graduate counselor training. Currently, research shows us that clinical supervision is systematically and regularly offered for individual counseling practicum. However, it seems difficult to say the same thing for other practicums and field practice courses requiring supervision (Aladağ & Kemer, 2016; Atıcı &

Çam, 2013; Coşgun Ilgar & Ilgar, 2013, Özyürek, 2009). It is still very hard to claim that clinical supervision has been an integral aspect of counselor training at all levels. Similarly, there are no formally defined competencies for clinical supervisors, in that a formal certification to practice as a supervisor has not yet been established (Aladağ & Kemer, 2016; Poyrazlı et al., 2013; Siviş-Çetinkaya & Karaırmak, 2012). Clinical supervisors are usually faculty members and practitioners. Furthermore, career-long clinical supervision is neither mandatory nor an essential requirement for counselors. Attending supervision is also not a requirement of employment. Counselors rarely have opportunity for supervision in mental health professional environments. A lot of the time, counselors work without the benefit of clinical supervision.

Aladağ and Kemer (2016) have identified that it is difficult to claim a prevalent culture of career-long clinical supervision apart from informal collegial/peer consultation among counselors. Özkan et al. (2009) found that only half of the participants (n = 165) received supervision for their practices. In a significant attempt to address the supervision needs of school counselors, Çoban (2004, 2005) developed a peer supervision model and found it to be effective in decreasing school counselors' burnout level. Up to now, there have only been two studies specifically examining career-long clinical supervision among counselors in Turkey.

In different studies of professional development of experienced therapists, one study found that out of 51 therapists, just a quarter reported receiving supervision (Bilican & Soygüt, 2015). In another survey study of couple and family therapists, the findings showed that 70 therapists (n = 204) were receiving supervision. (Akyıl et al., 2015). Indeed, findings are limited, it is unclear how systematic the supervision is for those practitioners who do seek supervision or how they are using it. We have no clear information whether supervision practice/service has been needed, received, valued, and benefited or not among counseling practitioners in Turkey (Koçyiğit-Özyiğit & İşleyen, 2016).

Considering the global developments in career-long clinical supervision, it seems so critical to discuss the necessity, status, and future of career-long supervision for counseling practitioners in Turkey. The primary goal of this study was to explain counselors' current career-long supervision experiences, needs, and preferred approaches to create a foundation for these discussions. The study also aimed to describe the factors regarding counselors' supervision experiences including gender, age, educational degree, work setting and experience, professional organization membership, and personal therapy. The study results might provide a detailed baseline for the development of career-long clinical supervision practices, policies, and opportunities. Hopefully, it would also contribute to the fledgling international discussion regarding the career-long clinical supervision of counselors, as clinical supervision itself moves toward globalization.

METHOD

The methodological details of the study are presented in this section. The design of the study, participant characteristics, data collection instruments, procedure and data analysis are explained respectively.

RESEARCH DESIGN

A cross-sectional survey design was used to describe the current supervision experiences, needs, and preferred practices among counseling practitioners, and to describe the factors affecting their supervision experiences (Fraenkel et al, 2012).

PARTICIPANTS

The survey was aimed to reach counselors working in various settings from all over Turkey who held (at the minimum) a bachelor's degree and working as a counselor. In parallel with this aim, the

convenience sampling method was used and the data of the present study was collected from 402 counselors. The sample characteristics details are summarized in Table 1.

Table 1. *Sample Characteristics*

Characteristics	n	%
Sex		
Women	299	74
Men	103	26
Degree		
Bachelor's	285	70.9
Master's	95	23.6
Doctoral	22	5.5
Work Setting		
Public school	233	58
University (academic)	25	6.2
Private practice	11	2.7
Private school	40	10
Guidance and research center	44	10.9
Other (e.g., ministries, university counseling centers)	49	12.2
Experience (years)		
Less than a year	68	16,9
1–5	147	36,6
6–10	113	28,1
11–15	41	10,2
16–20	20	5,0
21+	13	3,2

As shown in Table 1, the majority of the participants in the study is women (%74). The ages of participants ranged between 21 and 53, with a mean age of 29 (M = 29.11, SD = 6.15). Participants mostly graduated from Guidance and Counseling undergraduate programs (70.9%) and more than half of them worked in public schools (58.0%). Participants were from the following geographic regions: Marmara (27.6%), the Aegean (22.7%), Central Anatolia (12.2%), the Mediterranean (7.6%), the Black Sea (7.6%), East Anatolia (6.4%) and Southeastern Anatolia (6.5%).

DATA COLLECTION INSTRUMENTS

Supervision Experiences and Needs Online/Web-Based Survey Form (SENOSF)

SENOSF was developed and piloted by the researchers. Researchers developed SENOSF through a sequence of steps. First, to understand existing counseling practices and the supervision needs of counselors working in various work settings, a pre-open ended questionnaire (including five questions related with staff position, typical type of counseling services and client populations, supervision needs of counseling practitioners, if any) was sent via emails to 15 volunteer counselors. Also, for that purpose, researchers make brief individual interviews through telephone conversations with six counselors. In parallel, researchers visited and examined the web pages of different well-known national professional associations and private counseling centers related with supervision practice

services and opportunities. At this point with all these understandings, three different type of supervision experience emerged including a) psychotherapy/counseling approaches training supervision, b) work setting supervision, c) volunteer supervision. Based on this information, the questionnaire was created to understand parameters of supervision process based on each experience. Afterwards, researchers examined the related survey studies in the literature. Herein, the questions related with reasons for receiving and not receiving supervision in the present study adapted from another survey study (Grant & Schofield, 2007) with the permission of second researcher (Dr. Schofield). In the end of steps, researchers developed a draft form. Next, researchers received feedback from three experts for clarity of the draft form. Lastly, online survey form was tested through *a pilot study* with five counselors/practitioners and based on their feedback, a descriptive introductory instruction has been added to each section.

SENOSF started with an introductory *"Informed Consent Form"* and included three main sections respectively with open-ended, fixed choice, and rating scale questions. At the same time, SENOSF included conditional questions. In other words, participants were directed to the questions based on their responses. Therefore, the number of questions changed in accordance with participants' answers. The first section includes questions concerning demographic and professional information. The second section includes questions of supervision experiences except undergraduate and graduate training (e.g., reasons for receiving supervision or not, duration and frequency, supervision methods and techniques, supervisor characteristics, and supervision satisfaction). The last section contains questions of supervision needs and preferences (e.g., reasons for supervision needs, duration and frequency of supervision, supervision formats/methods, supervision techniques, and supervisor characteristics). The survey's style did not allow participants to leave any questions unanswered. As a result, no data was missing.

PROCEDURE

Data were collected through a web-based survey by using an online data collection platform since using this method has the advantage of accessing large and various population with the potential of detailed, comprehensive, and huge amounts of data (Lefever, et al., 2007). The researchers reached the participants via individualized emails, social media accounts, and their Turkish professional e-mail accounts. The survey was announced on the social media accounts of the Turkish Psychological Counseling and Guidance Association. Also, the websites of associations and institutions providing psychotherapy training were checked and sent emails to the e-mail addresses of the practitioners. Since data were collected through a web-based survey, all responses were anonymous. Within the scope of the research, a detailed Informed Consent Form was also prepared and the individual consent of the participants during the data collection process was obtained.

DATA ANALYSIS

Prior to data analyses, the data obtained from the participants through open-ended questions were grouped under certain categories. The descriptive statistics (e.g., frequency, percentage, means and crosstab tables) were used to analyze the data. The chi-square analyses also conducted to explore differences within the subgroups included gender, age, educational degree, working setting, work experience, geographic regions, professional organization membership, and personal therapy experiences.

RESULTS

CHARACTERISTICS OF THOSE WHO RECEIVE SUPERVISION

The data of the present study collected from 402 counselors. Sample characteristics of participants receiving supervision are listed in Table 2.

Table 2. *Sample Characteristics of Participants Receiving Supervision*

Descriptive Characteristics	n	%
Age		
21–25	28	30.4
26–30	21	22.8
31–35	20	21.7
36–40	8	8.7
41–45	10	10.9
46+	5	5.4
Degree		
Bachelor's	40	43.5
Master's	40	43.5
Doctoral	12	13.0
Work Setting		
Public school	39	42.4
University (academic)	12	13.0
Private practice	9	9.8
Private school	8	8.7
Guidance and research center	8	8.7
Other (e.g. ministries, university counseling centers)	16	17.4
Experience (years)		
Less than a year	12	13
1–5	21	22.8
6–10	31	33.7
11–15	14	15.2
16–20	6	6.5
21+	8	8.7

As shown in Table 2, 23% (n = 92) of the participants received supervision, while 77% (n = 310) did not. Of those receiving supervision, 72% (n = 66) were women and 28% were men (n = 26). Additionally, the participants mostly worked with adolescents (72.8%), families (71.7%), and adults (65.2%) in their work settings. Individual interviews (90.1%), carrying out trainings/seminars/conferences (84.2%), and individual counseling (81.4%) were the most common services offered by counselors.

FACTORS ASSOCIATED WITH RECEIVING SUPERVISION

Chi-square tests of independence were performed to examine the relationship between receiving supervision and participants' demographic characteristics. The results demonstrated that the relationship between gender and receiving supervision was not significant ($\chi^2(1) = .44$, $p = .51$). However, a significant relationship was found between age and receiving supervision ($\chi^2(5) = 20.75$, $p= .001$). The 46 years old and over (62.5%) and 41 to 45 years old (45.5%) participants were more likely to receive supervision than other age groups. Participants who had doctorate (54.5%) and a master's degree (42.1%) were more likely to receive supervision than participants with an undergraduate degree ($\chi^2(2) = 45.03$, $p = .000$).

Also, participants working in university counseling centers (85.7%) and private practices (81.8) were more likely to receive supervision than participants in other settings ($\chi^2(7) = 55.83$, $p = .000$). Participants who had worked as a counselor for more than 21 years were receiving more supervision than others ($\chi^2(5) = 23.07$, $p = .000$). Conversely, no significant interaction was found between the geographic regions of participants and receiving supervision ($\chi^2(7) = 13.37$, $p = .064$). Additionally, participants who were a member of a professional association received more supervision than participants who were not ($\chi^2(1) = 13.53$, $p = .000$). Lastly, no significant relationship was found between personal therapy and receiving supervision ($\chi^2(1) = 2.87$, $p = .090$).

REASONS FOR RECEIVING OR NOT RECEIVING SUPERVISION

Reviewing the reasons for receiving supervision, the most common include developing interviewing/counseling skills (90%); developing intervention skills for client's needs and problems (90%); and learning a therapy/counseling approach (88%). The most common reasons cited for receiving supervision are listed in Table 3. On the other hand, the most common reasons for not receiving supervision were consulting with peers when needed (84%); not able to access a suitable supervisor or institution (71%); and not able to afford the money for supervision (68%).

Table 3. *Reasons and Preferences for Receiving Supervision*

	Participants received supervision (n = 92)		Participants wanted to receive supervision (n = 381)	
Reasons & Preferences for receiving supervision	n	%	n	%
Developing interviewing/counseling skills	83	90.2	366	96.1
Developing intervention skills	83	90.2	368	96.6
Learning a therapy/counseling approach	81	88	343	90
Developing assessment and conceptualizing skills	78	84.8	346	90.8
Making practice more effective	77	83.7	364	95.5
Getting help in dealing with difficult clients	76	82.6	366	96.1
Updating the theoretical knowledge and getting new	74	80.4	353	92.7
Assessing effectiveness in practice	72	78.3	352	92.4
Increasing competencies in remedial counseling	70	76.1	354	92.9
Increasing competencies in crisis intervention and trauma	70	76.1	352	92.4

* For more detailed information, please contact the corresponding author.

SUPERVISION EXPERIENCES

Participants who received supervision described their supervision experiences in three types: namely, *psychotherapy/counseling approaches training supervision (PCTS)*, *work setting supervision (WS)*, and *volunteer supervision (VS).* Summary of the supervision experiences of the participants were presented below in Table 4.

Table 4. *Summary of Supervision Experiences and Preferences*

		Methods			Techniques										Characteristics of Supervisors			
Supervision Experiences (n = 92)	N	Individual	Group	Live	Self-report	Instruction	Case presentation	Transcripts	Session report	Experiential	Modeling	Live observation	Audiotape	Videotape	Certified*	Experienced in Counseling**	Supervisor Training	Experienced in Supervision***
Psychotherapy/Counseling Approaches Training Supervision	57	37	48	23	46	33	34	18	28	18	12	8	14	11	57	57	55	57
Work Setting Supervision	31	11	15	4	15	14	7	2	7	6	3	4	5	1	24	24	15	23
Volunteer Supervision	35	20	22	9	26	19	17	11	12	9	5	1	4	3	33	33	30	30
Supervision Preferences (n = 381)		341	242[a] 285[b]	194	228	219	226	110	198	202	187	153	132	147	354	379	364	376

* *Certified means that the supervisor had professional counseling/psychology training and certificates as evidence for his/her professional competency.*
*** Experienced in Counseling means the counselor had worked in the field for many years, had seen many clients, had practical experience and had been perceived as a good practitioner etc.*
**** Experienced in Supervision means that the counselor had been giving supervision for many years, was more seniors and had been perceived as a good supervisor.*
a: Group with colleagues from the same institution
b: Group with colleagues from the different institution

As shown in Table 4, of the total participants who received supervision (*n* = 92), 57 participants (62%) indicated that they received *PCTS.* To complete *PCTS,* most of the participants (42.3%) pointed out that they must receive supervision for at least 50 hours. Of the total participants who received supervision (*n* = 92), 31 participants (33.7%) mentioned that they received *WS,* and 35 participants (38.0%) indicated that they received *VS*.

In Table 4, the supervision experiences of participants were summarized with respect to types of supervision, supervision methods and techniques, and supervisor characteristics. Examining the details of supervision methods, in terms of *PCTS,* participants who received *individual supervision* expressed that they mostly received face-to-face (91.9%), 1–2 hours (56.8%) of individual supervision once a week (22.2%) or once a month (22.2%). Participants who received *group supervision* reported that they mostly received face-to-face (95.8%) supervision in groups of 6–12 peers (45.8%), once a month (31.3%) or quarterly (20.8%).

Regarding *WS,* participants who received *individual supervision* declared that they received face-to-face supervision (35.5%) for less than an hour (22.6%) once a week (12.9%) or every time they needed supervision (19.4%). Participants who received *group supervision* stated that they received face-to-face (48.4%) supervision in groups of 6–12 peers (25.8%) once a week (16.1%) or once a month (22.6%).

In terms of *VS,* participants who received *individual supervision* reported that they mostly received face-to-face supervision (51.4%) of less than an hour (25.7%) whenever they needed it (22.9%). Participants who received *group supervision* reported that they received face-to-face (62.9%) supervision in groups of 6–12 peers (34.3%) once a month (17.1%) or quarterly (8.6%).

SATISFACTION WITH SUPERVISION

Participants were allowed to indicate their satisfaction with supervision levels by providing answers to questions on (a) the perceptions of competency levels of supervisors, (b) the supervisory relationship's contribution to counseling effectiveness, and (c) counseling self-efficacy. Examining the percentages of satisfaction with supervision, 19 participants (54.3%) who received *VS* stated that they were satisfied with their supervision; 25 (43.9%) participants who received *PCTS* reported that they were satisfied; and four participants (12.9%) who received *WS* reported that they too were satisfied.

In terms of *satisfaction with supervisors' competency*, 30 participants (52.6%) who received *PCTS* perceived their supervisors to be competent. In *WS*, five participants (16.1%) and 18 participants in VS (51.4%) reported that their supervisors were competent. Regarding the *satisfaction with the supervisory relationships*, 28 *PCTS* participants (49.1%), five *WS* participants (16.1%), and 18 *VS* participants (51.4%) indicated that the supervisory relationship made a considerable contribution to the effectiveness of their counseling.

Lastly, for *satisfaction with supervision in terms of its contributions to supervisees' self-efficacy*, 21 participants (36.8%) who received *PCTS* reported that supervision made a considerable contribution; three participants (9.7%) who received *WS* pointed out the same, and for those receiving *VS*, 18 participants (51.4%) felt that supervision also made a considerable contribution to their self-efficacy.

SUPERVISION PREFERENCES

Majority of participants receiving supervision (95.7%) stated that they would like to receive supervision again. Similarly, 94% of the participants not receiving supervision wanted to receive supervision. The most common reasons for wanting to receive supervision included developing intervention skills (96.6%), developing interviewing/counseling skills (96.1%), getting help in dealing with difficult clients (96.1%), and making practice more effective (95.5%). The other reasons for wanting to receive supervision are shown in Table 3.

Examining participants' supervision preferences, 336 of them (88.2%) wanted to receive face-to-face supervision, and only 38 (10%) of them wanted to receive online supervision. The majority of the participants (n = 175, 45.9%) wanted to receive supervision once a month, while others preferred once a week (n = 84, 22%), and some, whenever they needed it (n = 83, 21.8%). Additionally, 69% (n = 263) of the participants preferred to engage in 1–2-hour long supervision sessions, 15% (n = 57) of them preferred less than an hour and 12% preferred 3–4-hour supervision sessions. The supervision preferences of participants with respect to supervision methods and techniques and supervisor characteristics are summarized in Table 4.

DISCUSSION, CONCLUSION AND IMPLICATIONS

This study "with the representation of participants working in various settings from seven geographic regions" could be described as the first national survey study of career-long clinical supervision of counselors in Turkey. With respect to the supervision experiences, needs, and preferences of counselors, the overall results indicated that current supervision experiences are varied but very limited. Just a small minority of counselors (23%) reported receiving supervision. These results were consistent with the findings of previous studies (e.g., Akyıl et al., 2015; Bilican & Soygüt, 2015; Özkan et al., 2009) while providing detailed information on the scope of current supervision experiences. The low rate was also similar to some of the national survey studies conducted in the United States (Borders & Usher, 1992; Page et al., 2001; Silva et al, 2016), but contrasts to those in the UK, Republic of Ireland, and Australia with high supervision rates (from 69% to 90%) (Gabbay et al., 1999; Grant & Schofield, 2007; McMahon & Errity, 2014).

As stated in the introduction, the different findings of receiving supervision rates across countries clearly indicates the importance of the status of clinical supervision as a requirement, as well as the necessary formation of a clinical supervision culture among counselors throughout their professional lives. For example, in a recent study conducted in the United States (Henriksen et al., 2019), the results showed that there was little consistency across states and jurisdictions regarding the requirements for post degree supervision and the researchers pointed out the need for a national discussion on the development of a national model of postgraduate supervision requirements. Therefore, it is thought that a similar discussion of how to create a stronger supervision culture in Turkey is needed, and perhaps, it could be a good start to having a supervision obligation in this process. It may be appropriate to set up a task force and/or branch of the Turkish Psychological Counseling and Guidance Association to focus exclusively on counseling supervision as suggested by Aladağ and Kemer (2016).

Majority of counselors reported that the most common reasons for not receiving supervision were: (a) consulting with peers, (b) inability to access a suitable supervisor or institution, or to afford the money for supervision, and (c) the lack of opportunity to receive supervision through professional associations (a finding also appears in Bilican & Soygüt, 2015, and Grant & Schofield, 2007; Silva et al, 2016). Informal collegial/peer consultation is practical and no doubt valuable supportive. McMahon and Patton (2000) found that informal network provide support and not supervision. Hence, the two have overlapping but distinct functions, and cannot substitute for each other (Bernard & Goodyear, 2019). This shows us that unfortunately, accessible, and affordable supervision opportunities do not exist in Turkey. Participants received mostly PCTS, then WS, and finally VS. Supervision options look varied but obviously not prevalent and very limited. Also, supervision options outside of work setting are costly options. As a result, there is a need to find creative solutions to provide appropriate, accessible, and affordable options to meet this supervision need and desire in Turkey. Providing regular and adequate supervision opportunities for counselors as a requirement of employment seems rather significant.

The most common reasons given by both participants who had supervision experience and those who wanted to receive supervision were very similar. On the one hand, practitioners have many needs, from the most basic counseling skills and interventions to the more specific advanced skills and competencies, such as crisis and trauma as parallel with many studies in the existing literature (Borders & Usher, 1992; Grant & Schofield, 2007; Hair, 2013; McMahon & Patton, 2000; Page et al., 2001) except work setting requirement (Borders & Usher, 1992), and accountability (McMahon & Patton, 2000). On the other hand, practitioners in Turkey had also different reasons from practitioners in studies, such as the development of assessment, conceptualizing, and intervention skills. It may be linked to the lack of counselor training deficits in Turkey, as evidenced by research, in terms of educating counselors with the essential and acceptable counseling competences. (e.g., Yerin Güneri et al., 2007; Tuzgöl-Dost & Keklik, 2012). Moreover, disasters, terror attacks, political conflicts, divorce, abuse and neglect, domestic violence, and migration in Turkey can reveal the need for increase competencies in remedial counseling, crisis intervention, and trauma (as in Dinçel & Demirtaş - Zorbaz, 2015; Şavur & Aslan Tomas, 2010).

All these supervision needs may be related to their developmental level, since most participants held an undergraduate degree and were working with less than five years' experience by the time of our study. Therefore, participants in our study could be described as novice professionals. We may place them in their novice professional phase as some studies (Bilican & Soygüt, 2015; Yerin Güneri et al., 2007) have deemed it fit. Accordingly, they may be typically experiencing an increased sense of the complexity of counseling work and being confronted with professional challenges inadequately mastered. Lastly, participants' need for assessing their effectiveness in practice indicated the most basic professional and ethical need and concern. Some unsupervised school counselors described their experience as being "stuck in the way," "losing touch with the norm," "not aware of what you are doing right or wrong," "stultified," and "a nightmare because of accountability" (McMahon & Patton, 2000). At the end of these findings, it can be said that such descriptions raise concerns about the counseling effectiveness of those who are consistently unsupervised, as pointed out by McMahon and Patton (2000).

It was also found that supervision was carried out primarily through group supervision. This finding differs considerably from the literature since group supervision is one of the least used methods (Borders & Usher, 1992; Gabbay et al., 1999; Grant & Schofield, 2007; Page et al., 2001; Townend et al., 2002; Silva et al, 2016). Interestingly, in the literature, the most preferred method is individual supervision and then group supervision with colleagues from different institutions. Consequently, it can be very beneficial to understand the details of the group supervision process and it is mostly used in current supervision practices. Moreover, we think that the participants' choice of individual supervision would be explained by their need being more individualized, deeper, intense, self-awareness focused supervisory feedback. Besides, these preferences might be related to cultural issues and counselors may not want to talk about their struggles and difficulties in their professional life in front of colleagues.

Very similar to participants' supervision experiences, self-report, case presentation, and instruction were found to be the most used and preferred supervision techniques in agreement with the existing literature (Borders & Usher, 1992; Townend et al., 2002; Silva et al, 2016). This finding means that current supervision practices are mainly focused on what counselors say about their practice but not what may be taking place. Consequently, this makes the objectivity and effectiveness of supervision highly controversial (Bernard & Goodyear, 2014; Borders & Brown, 2005; Borders & Usher, 1992; Ellis, 2010), since it is argued that a self-report may be representative of the worst supervision experience. We also think that counselors may not be aware enough of what kind of supervision will contribute best to their development. As a result, it is critical to increase the knowledge and awareness of both supervisors and counselors regarding the role and value of purposefully using multiple techniques. This should include direct observation, as well as active and experiential

techniques for adequate and effective supervision. This is also a critical component of the ethical supervision process as highlighted in best practices guidelines, documents, and studies (Borders et al., 2014; Ellis, 2010; Milne & James, 2000).

Regarding supervisors' characteristics, we found some differences according to the supervision type, especially with respect to supervisor training. Firstly, majority of counselors described their supervisors as experienced practitioners with professional training and certificates for all supervision types. On the other hand—unlike PCTS and volunteer supervision—the lowest supervisor experience and supervisor training rates were found for WS. However, our findings are consistent with the findings of the survey studies conducted in different countries since supervisors were generally described as certified and experienced counselors or psychologists with the rate of supervisor training between 15% and 64% (Borders & Usher, 1992; McMahon & Patton, 2000; Page et al., 2001; Townend et al., 2002).

In our study, supervisors of psychotherapy/counseling approach training supervision were the group of supervisors with the most training. This is because they are required to have been certified as a supervisor based on the international and national psychotherapy/counseling-related organizations' unique requirements. However, the training rates findings were a bit unexpected, especially for supervisors of volunteer and WS (who had 50%–85% rates), because formal supervisor training is rare in Turkey and just a limited number of doctorate programs include supervision training courses (Aladağ, 2018). The authors questioned whether the participants could have assumed or really asked and learned that their supervisors had supervisor training. Therefore, future studies might find it useful to investigate the professional development of supervisors in Turkey.

In different survey studies, being a certified and experienced practitioner with supervisor training is the most preferred supervisory characteristic, and this is consistent with our findings. (Borders & Usher, 1992; Page et al., 2001; McMahon & Errity, 2014). As Townend and colleagues (2002) stated, there are undoubtedly many gifted supervisors, delivering quality supervision, who have never had any formal training. But there is the potential risk of—as Peake et al. (2002) entertainingly described—being a supervisor without supervision training, which is like being a first-time parent, either 'raising our kids like we were raised' or, the converse, swearing to 'never raise our kids like my dysfunctional parents raised me' (p. 116). Ellis (2010) found that supervisors with training have been significantly less often rated as engaging in inadequate or harmful supervision by supervisees. Besides, studies reveal the benefits of supervisor training including enhanced confidence and theoretical knowledge (McMahon & Patton, 2000; McMahon & Simons, 2004; Milne & James, 2000; Milne et al, 2011; O'Donovan et al, 2017), enhanced cognitive growth (Peace & Sprinthall, 1998), and the experience of less dogmatic and more supportive supervisors (Stevens et al., 1998). In this regard, increasing the availability of qualified supervisor training programs is critical and urgent for more qualified supervisors.

Regarding supervision satisfaction, the results showed the highest satisfaction rates for volunteer and PCTS, with WS achieving the lowest rates. Though the existing literature have inconsistent findings regarding clinical supervision satisfaction, greater satisfaction was found to be related to (a) having more frequent, accessible, and regular supervision, (b) supervisor expertise and experience, and (b) the quality of the supervision relationship and atmosphere (Gabbay et al., 1999; Grant & Schofield, 2007; McMahon & Errity, 2014; Townend et al., 2002; Yin Tan, 2019).

In the findings, high satisfaction with VS might be related to the selection of supervisors based on previous satisfying training experiences. On the other hand, low satisfaction with WS might be related to supervisor's characteristics concerning supervision experience/training and/or work setting dynamics such as psychological safety and power differentials (Hair, 2013; McMahon & Errity, 2014). This argument is supported in our findings of preferences since participants mostly preferred receiving group supervision with colleagues from different institutions under the supervision of external/off-site supervisors.

Our most interesting finding relates to the significant interactions between receiving more supervision and being older than 40/50, having more than two decade's worth of experience, and having a doctoral and/or master's degree(s). Similar result was obtained in another study conducted in Turkey (Özkan et al., 2009). However, there were also contradicted results (e.g. Gabbay et al., 1999; Grant & Schofield, 2007), showing that more experienced practitioners seemed to receive less supervision. Another finding also relates to the significant interactions between receiving more supervision and working in university counseling centers and private practices. We also think that more individual counseling practices might lead to a greater need for supervision as explained in similar studies (Borders & Usher, 1992; Grant & Schofield, 2007). It is also possible for counselors in these settings to be more open to professional development.

LIMITATIONS

Although the response rate looks acceptable related to the representation of the population, the sample of our study is limited to volunteer counselors who responded to the survey. So, we do not know whether the characteristics of the non-respondents differ in a systematic way from those who chose to respond. Moreover, current supervision experiences and needs were examined from the perspectives of the counselors as supervisees however, the supervisors, the other critical actor or side of the supervision process, were not included in this study. Second, as with all surveys, no matter how well designed, the results are sometimes difficult to interpret, and it can also be difficult to determine how the counselors' self-reported satisfaction rates relate to actual competence/performance in supervisory practice.

IMPLICATIONS FOR FURTHER PRACTICE AND RESEARCH

Our study provides a national profile of the supervision experiences, needs, and preferences of counselors in Turkey. It is encouraging that, although limited, current supervision experiences are varied with mostly high satisfaction rates (except for WS). However, our results provide some empirical support that counselors often work without the benefit of clinical supervision. It is urgent and necessary, therefore, to discuss the harm that this will create to their well-being and health as well as the client outcomes.

That said, it is also promising that counselors are increasingly wanting to receive supervision for their professional growth in relation to a wide range of needs. Correspondingly, the results of the present study clearly demonstrate the need to provide regular and systematic supervision opportunities for counselors in Turkey. Based on these needs, improving, increasing, diversifying, and strengthening convenient, accessible supervision services/opportunities offered by professional associations and/or public institutions (especially schools) is quite critical for Turkey. At this point, it is believed that developing a pool of trained supervisors will be a critical step among experienced counselors. In other words, to increase access to supervision opportunities, competent supervisors should be available. Therefore, counselor educators and supervisors, especially those who carry out supervisor training courses as well as supervision practices and research at universities, could carry out collaborative projects with professional associations and public institutions to serve as context and to provide communities for training supervisors or those engaging in clinical supervision. Furthermore, in addition to creating practice guidelines, it would be very useful to develop a policy that propose and promote clinical supervision practice standards for qualified counselors and supervisors working with the public.

As career-long supervision is still a relatively new area of study both globally and nationally; there is the need for detailed and comprehensive research in this area. It is thought that qualitative studies on counselors' experiences of clinical supervision with respect to unique, multiple, and diverse dimensions, as well as the professional development of supervisors, would enhance our understanding of this key professional practice deeply. Continued research investigating the effectiveness of supervision and supervision satisfaction as well as to determine what factors most influence this

effectiveness and satisfaction would be of value. Lastly, as is understood, our knowledge about supervision has been mostly related to the supervision of candidates/novices in the formal training process, such that as Goodyear et al. (2016) pointed out, we should explore clinical supervision practices more and also determine how to change supervision practices for those who supervise practitioners.

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AUTHOR CONTRIBUTION

All authors contributed to the study conception and design. All authors have actively participated to write the manuscript. All authors read and approved the final manuscript.

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Research Article

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Mothers' Involvement in Emergency Remote Education: A Case Study in the COVID-19 Pandemic Era

Senem Sanal-Erginel, Final International University, senem.erginel@final.edu.tr
0000-0003-1956-583X

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Abstract

The purpose of this study was to provide an insight into the parental involvement process in emergency remote education by focusing on a group of mothers during the first wave of the COVID-19 pandemic in Northern Cyprus. In this case study, the data was collected through a semi-structured interview form, a life context questionnaire, and a socio-demographic information form. The rigorous thematic analysis of the rich data revealed that the participants were intensively involved in their children's remote education while taking on various overwhelming responsibilities including teaching. They thought that they were obliged to become involved intensively as they considered that the content and methods of teaching were not appropriate for learning remotely. They also believed that their involvement was needed and demanded by the children and their teachers. However, despite the participants' advantageous life contexts and access to material and cultural resources, they struggled in this exhaustive involvement process. They self-questioned their teaching responsibilities, roles, and competencies during the emergency remote education period.

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INTRODUCTION

In March 2020, soon after the first positive COVID-19 case was detected in Northern Cyprus, all the schools and education-related supporting services were closed. This was followed by putting the whole country into quarantine, which lasted for approximately two months. After an initial period of confusion, schools and universities gradually switched to remote education – some immediately, others much later and in a distorted manner. During this period, the transition from face-to-face education to mandatory fully remote education occurred without sufficient time to adapt the curricula or instruction. Bozkurt and Sharma (2020, p. ii) described this situation as "emergency remote teaching", differentiating it from "online distance education"; while the latter is always an option, the former is an obligatory attempt to create temporary solutions to the immediate problems caused by a global health crisis.

In these unprecedented times, all the stakeholders in education – including parents with school-age children – were rushed into emergency remote education, not knowing how this unfamiliar experience would unfold.

PARENTS AND THEIR INVOLVEMENT IN EDUCATION IN THE TIME OF THE PANDEMIC

Parents generally reacted negatively to the emergency remote education that occurred as a result of the school closures. A large-scale study on Chinese parents with young children revealed that there was a tendency to resist, even to reject, remote learning in this period; parents believed that it was inadequate. They also thought that neither they nor their children were ready for remote education (Dong, Cao, & Li, 2020). Another study, from Ireland, stated that parents with young children missed the early childhood education and care programs, which supported the children's socio-emotional development, structure, and routine (Egan, Pope, Moloney, Hoyne, & Beatty, 2021).

In this period, parents were left alone to deal with their children's learning, which was a challenging task. Spinelli, Lionetti, Pastore, and Fasolo (2020) reported that parents were stressed; they found it difficult, without support, to deal with their children's education during the quarantine period. Similarly, a study by Garbe, Oulu, Logan, and Cook (2020) reported that parents struggled, during this period, with balancing their multiple responsibilities; maintaining their children's motivation; accessing learning and reaching outcomes. There is literature stating that during the pandemic crisis, the school curricula, mostly due to their pre-determined and rigid natures, often failed to respond to emerging needs and conditions in education (Gul & Khilji, 2021; Hughes, 2020; Li, Zhang, Dai, & Hu, 2021; Roll, Chiu, & Huang, 2020).

Research indicates that there is a link between pandemic-related stressors, anxiety and depressive symptoms, and greater perceived parental stress (Brown, Doom, Lechuga-Peña, Watamura, & Koppels, 2020). Brown et al. also stated that parents' negative financial situation was a factor in their increased anxiety. A study in Singapore confirmed that parental stress increased during the COVID-19 lockdown period and that this hurt the parent-child relationship. Furthermore, this elevated parental stress was found to have increased the incidence of harsh parenting (Chung, Lanier, & Wong, 2020). According to Griffith (2020), excessive parental stress occurs when there is a mismatch between the demands of parenting and the resources available, and it is defined as being related to parental burnout. Also, parental burnout is linked to perfectionism which could be self-oriented or socially prescribed (Sorkkila & Aunola, 2020). The former connotes the perfectionism parents expect of their parenting, while the latter refers to parents' perceptions of others' expectations of their parenting.

It seems that parental factors influenced communication between mothers and children in the pandemic period. For example, a study revealed that mothers' older age and a higher level of education positively affected their relationship in this period (Uzun, Karaca, & Metin, 2021). This is in line with Reay's (2002) argument that mothers who had positive educational experiences and who

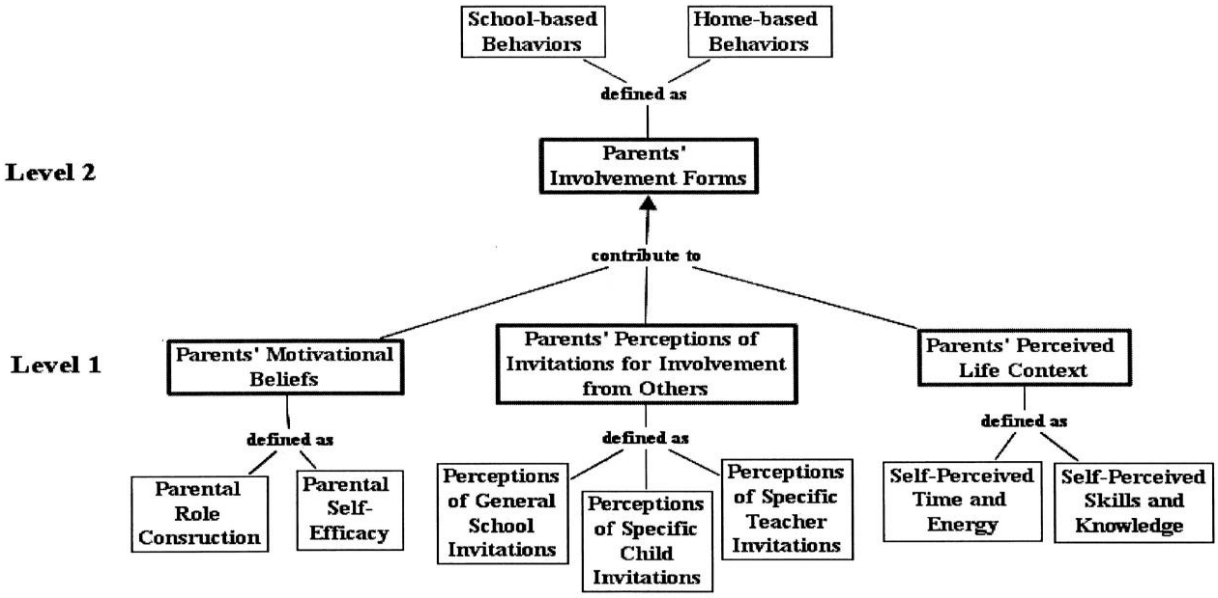
were from middle-class families were more involved in their children's education. Similarly, a study revealed that there was a significant relationship between mothers' education levels and students' self-efficacy and academic achievement in learning the English language (Ocak & Tiraki, 2020).

CONCEPTUAL BACKGROUND OF PARENTAL INVOLVEMENT

Parental involvement is regarded as a desirable behavior (Hoover-Dempsey et al., 2005; Walker, Wilkins, Dallaire, Sandler, & Hoover-Dempsey, 2005). According to Hoover-Dempsey et al., parents are motivated to involve by their role construction and sense of self-efficacy. Also, the invitations for involvement from school, teachers, and children form to be another set of motivators for parental involvement. It is also stated that elements of parents' life context, which involve parents' knowledge, skills, time, and energy, play an important role in motivating parents to involve in their children's education.

Hoover-Dempsey and Sandler's multi-level theoretical model, from their original work in 1995 and 1997 (Reed, Jones, Walker, & Hoover-Dempsey, 2000; Walker et al., 2005), is significant in research on parental involvement. This model provides a conceptual framework of factors that affect the process of parental involvement. This model was revised by Walker et al. (2005) into three overarching constructs parents' motivational beliefs; parents' perceptions of invitations for involvement from others; and parents' perceived life context (see Figure 1 below).

Figure 1. *Levels 1 and 2 of Hoover-Dempsey and Sandler's theoretical model of the parental involvement process*



PARENTS' MOTIVATIONAL BELIEFS

Parents' role construction, which is part of their belief systems, seems to have a significant influence on their decisions for involvement. Hoover-Dempsey et al. (2005) explain that parental role construction is a social construct, that is influenced by social groups, personal beliefs, and by parents' own schooling experiences. Accordingly, it is responsive to changes, and it varies in line with the social conditions. The types of parental role construction are presented as follows: "parent-focused role construction" refers to parents feeling the ultimate responsibility for the child's education; "school-focused role construction" pertains to the school having the ultimate responsibility for the child's education; and "partnership-focused role construction" concerns the shared responsibility of both parents and school for the child's education (Walker et al., 2005, p. 90). Empirical research revealed that parents' perceptions of invitation for involvement from their children, the school's expectations

of parental involvement, and the school's climate, have a substantial impact on the parents' role formation (Whitaker & Hoover-Dempsey, 2013).

Parents' sense of self-efficacy, which refers to parents' beliefs about their capability, is another construct that supports and guides parental involvement (Walker et al., 2005). Accordingly, those parents who believe that their involvement will create a positive impact on the child's learning tend to involve themselves more, in varied forms.

PARENTS' PERCEPTIONS OF INVITATIONS FOR INVOLVEMENT

Another factor that appears to affect parents' involvement is their perception of invitations and demands from the children or their teachers to help with homework. Research suggests that children's age, performance level, and the parent-child relationship are influential in invitations (Hoover-Dempsey et al., 2001). Also, teacher invitations were found to have a significant impact on parents' decision to involve in children's schoolwork.

PARENTS' PERCEIVED LIFE CONTEXT

Parental life context includes parental skills, knowledge, time, and energy, and it is regarded as an important motivator for parents in their decisions to involve (Hoover-Dempsey et al., 2005). These contextual elements are related to the resources available to them, and these resources create and determine involvement opportunities. They state that socio-economic status is often associated with access to these resources. For example, parents of lower socioeconomic status may possess lower levels of school-related knowledge or skill, as a result of less schooling for themselves, or lower levels of access to support systems (Horvat, Weininger, & Lareau, 2003).

FORMS OF PARENTAL INVOLVEMENT

Parental involvement occurs in the form of behaviors and activities. For example, home-based behaviors include helping children with homework; and school-based activities involve attending school events. Having acknowledged these, Hoover-Dempsey et al. (2005) cautioned that parents' over-involvement could have a negative influence on a child's education, as it could, for example, reduce the child's chances to take on responsibility for their learning.

Grounded on the conceptual background on parental involvement and the recent research findings on parental involvement in the first wave of the pandemic, this study aims to shed more light on parental involvement in parental response to emergency remote education by focusing in-depth on the experiences of a group of mothers with school-age children in Northern Cyprus. The available literature calls for more empirical research to better understand parental engagement in children's education during the pandemic (Brown et al., 2020; Griffith, 2020). In this crisis period, parents around the globe struggled with schoolwork (Chung et al., 2020; Dong et al., 2020; Egan et al., 2021; Garbe et al., 2020; Spinelli et al., 2020). This research could contribute to the literature by providing insight into the parental involvement process as to why and how they became involved and how their life context perceptions affected their decision to involve. Henceforth, the study aimed to illuminate the following research questions in the research context: Why did mothers involve in emergency remote education; how did they involve in emergency remote education, and in what ways did mothers' perceived life contexts affect their involvement?

Although the study is limited to a small group of 14 mothers, its findings could contribute to our understanding of parental involvement in emergency remote education from the perspectives and experiences of the participating mothers. Additionally, the study findings may contribute to the conceptual model on parental involvement and its interpretation during the COVID-19 era.

METHOD

This is a case study, within the qualitative research paradigm, that aimed to illuminate the parental involvement process during emergency remote education by focusing on a group of mothers

in the Northern Cyprus context. Qualitative research adopts an in-depth, individualized, and contextually sensitive approach to understanding how people construct meaning from their experiences (Patton, 2015). For this purpose, qualitative data provide in-depth information on authentic life experiences while focusing on events in their natural environments (Miles, Huberman, & Saldaña, 2014).

A case study is a suitable research strategy when "… 'how' or 'why' questions are being posed, when the investigator has little control over events, and when the focus is on a contemporary phenomenon within some real-life context" (Yin, 2003, p. 1). This case study is context-specific, "… situated in time, place, culture, and situation" (Charmaz, 2006, p.131), which means that it is restricted to the social context from which the data were gathered. It focused on the involvement of a group of mothers, who were living in Northern Cyprus, and on their experiences during the engagement in their children's emergency remote education in the first wave of the COVID-19 pandemic (Charmaz, 2006).

ETHICAL APPROVAL

For the current study, ethical approval was obtained from the Ethical Committee of the university to which the researcher is affiliated. The research was based on voluntary participation; the volunteers read and signed an "informed consent" form that openly explained the purpose of the research, and how data would be collected and used. During the data collection procedure, the researcher once again, orally and in writing, informed the research participants about the research aims and the research procedures, and how the data would be used. The participants were informed that they could leave the research if they wished to do so. During the data analysis and reporting, the participants' names were removed for anonymity and confidentiality purposes.

RESEARCH PARTICIPANTS

In this study, purposeful sampling, convenience sampling, and snowball sampling strategies were employed. A purposeful sampling strategy refers to selecting information-rich cases that could provide ample information to contribute to the purpose and the depth of the study (Patton, 1990). In this case, the information-rich participants were from a homogenous group of mothers. The convenience sampling strategy was used to obtain information from participants who were easily accessible to the researcher, in terms of proximity or for administrative reasons (Etikan, Musa, & Alkassim, 2016). In the current study, firstly, the voluntary participants who were nearby were contacted. The first participants were mothers whose children attended private primary schooling, in closer proximity to the researcher. Later, more participants were reached, through snowball sampling. This meant, in this instance, that those mothers who were contacted primarily, and agreed to volunteer in the study, recommended others with school-age children who might be interested in this research. This allowed rapid access to rich data sources in a convenient fashion (Patton, 1987). It also allowed for the expansion of breadth and depth of data, as it enabled more access to more lives and experiences, and thus, a better exploration and illumination of the subject matter.

As for the sample size in the current research – to judge the sample size of the study, it is advisable to pay attention to the study purpose and rationale, and whether the data allows meaningful comparisons, to develop and reach explanations (Guest, Bunce, & Johnson, 2006). The participants in the current study are fourteen mothers who lived in Northern Cyprus during the first lockdown period of the COVID-19 pandemic. Sampling continued until the point at which no new information was obtained, in other words, until saturation (Roberts & Bowers, 2014). Lincoln and Guba (1985) confirm this stating that in purposeful sampling, the size is determined based on informational consideration and if the information that is received from participants becomes redundant, sampling may cease. Table 1 provides demographic information about the participating mothers.

Table 1. *Participating Mothers' Demographics*

Specifications	*Responses*	*N*
Age Range	51-55 years old	1
	46-50	4
	41-45	7
	36-40	1
	31-35	1
Education	University graduate	9
	Post-graduate	5
Reported income level	Middle-to-high income	9
	Middle income	5
Housing	House with a garden	12
	Apartment with a balcony	2
Number of children	Single child	8
	Two children	6

In this study, all the participants were biological mothers, within a nuclear family composition, who were residing in Northern Cyprus. According to the participants' responses to the socio-demographic information form, their professions were as follows: teacher, psychologist, clinical psychologist, engineer, academician, international relations specialist, physician, bank clerk, and insurance clerk. Nine mothers were reported as working mothers; of these, four were full-time and five part-time. Eight of the nine stated that their work routine was influenced due to the pandemic.

The age range of the participants' children was between 4 and 15, with a mean value of 8.6 years old. Accordingly, the children's year groups at school ranged from the reception year to year 10, with the highest number of children in year 2 (8 children), followed by year 5 (3 children). All these children were attending synchronous lessons, varying from 20 minutes to 6 hours, with an average of 85 minutes per day. Those parents who responded declared that the time spent on homework was between 30 minutes and 9 hours, with an average of 126 minutes a day. Except for one mother, the remaining mothers reported that they could speak English; nine of them considered their English level as 'good' and four as 'average'.

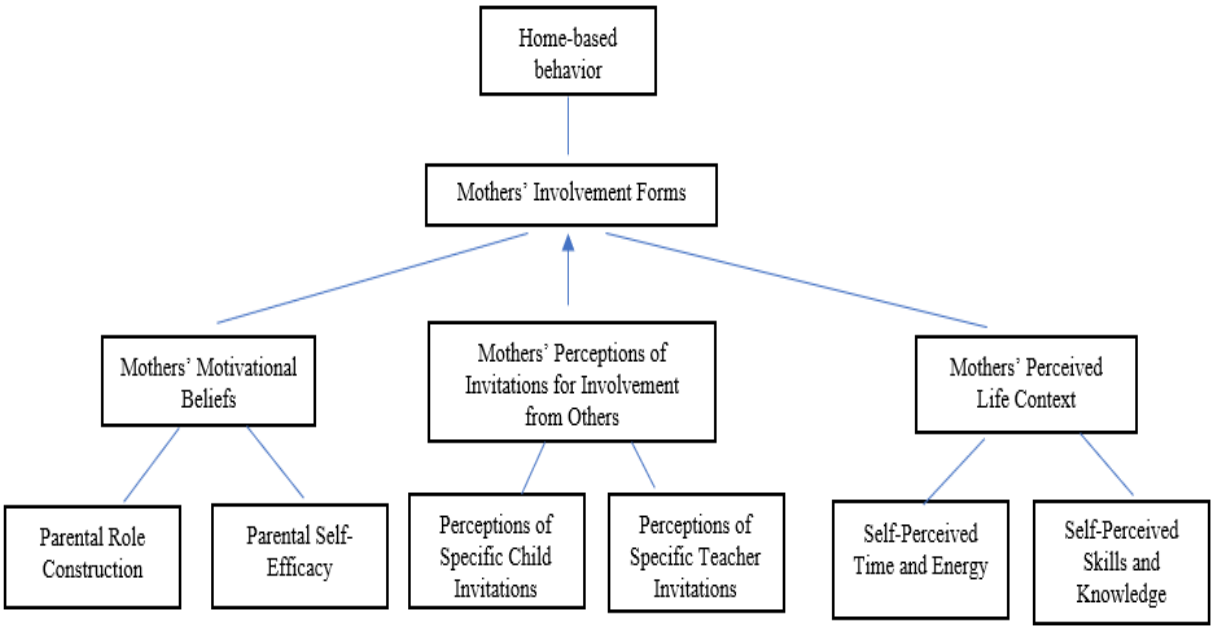
The children of these mothers were in private schooling, with a majority in the junior primary, that provided English-medium education. During this period, these children received their remote education via Zoom. The homework exchange, and communication with the teacher, were through ClassDojo or Edmodo, which are virtual school communication platforms for communication between the school and the students/parents.

DATA COLLECTION

Qualitative research data provide rich, holistic, and in-depth information, on a specific case that is focused and confined to the unique local context (Miles et al., 2014). In this study, rich data was obtained using multiple data collection methods until data saturation was reached. Charmaz (2006) states that the depth and scope of data are significant in explaining empirical events; therefore, data saturation is the key to qualitative data collection. Data saturation is described as "… the point at which no new information or themes are observed in the data" (Guest et al., 2006, p. 59). Accordingly, Guest et al.'s empirical study indicated that saturation was reached within 12 interviews. They indicated that the basic elements for meta-themes were already present in the first six interviews. Additionally, Patton (2015) stated that whether saturation is achieved in a study also depends on the research purpose.

In this study, the data collection instruments were a semi-structured interview form, a perceived life context questionnaire, and a demographic information form. Both the interview form and the perceived life context questionnaire were based on the conceptual model of parental involvement, which was adapted from the revised theoretical model of Walker et al. (2005), which was originally developed by Hoover-Dempsey and Sandler in 1995 and 1997. In the adapted model, the only constructs that were omitted from the revised model were the constructs on "Perceptions of General School Invitations" and "School-based Behaviors" (p.88) to match the study context, as education was remote. Figure 2 illustrates the adaptation of the conceptual model.

Figure 2. *The adapted version of Walker et al.'s (2005) revised model on parental involvement*



The semi-structured interview form was adapted from the parental involvement scale developed by Walker et al. (2005). The interview guide focused on the following constructs: Parental role construction, parental self-efficacy, perceptions of specific child invitations, and perceptions of specific teacher invitations, leaving out the school invitation construct. The original items in the scale, which was a 6-point Likert scale, were adapted to an open-ended question format with an emphasis on the COVID-19 period. The item content was kept as in the original. For example, in the original scale, under the section on parental role construction for involvement, item 3 "I believe it is my responsibility to help my child with homework" (p.100) was adapted as "Do you believe that it is your responsibility to help your child with homework in the COVID-19 period?". Similarly, under the section on parental self-efficacy for helping the child succeed in school, item 4 "I feel successful about my efforts to help my child learn" (p.101) was adapted as "Do you feel successful about your efforts to help your child learn in the COVID-19 period?". The semi-structured interview form contained a total of 21 open-ended questions on the constructs, as opposed to 29 items in the original scale. The reason for the decrease in number was the omission of the reversed items found in the original scale such as "I don't know if I am getting through to my child" (p.101), and the items concerning school, as education was remote. The interview questions were first prepared in English and translated into Turkish, the native language of the participants. An expert check was obtained for clarity and answerability while comparing each question to the items in the original scale corresponding to the constructs. Afterward, the interview form was pilot tested with two participants, and necessary changes, which were mainly on language clarity in Turkish, were incorporated.

The life context questionnaire focused on the participants' perceived life context. In the questionnaire, as per the original scale, there were six items under the 'time and energy' construct,

and nine items in the 'knowledge and skills' construct. For example, "I have enough energy to help my child with homework" (Time and energy), and "I know how to explain things to my child about his or her homework" (Knowledge and skills) (Walker et al., 2005, p. 102). In the questionnaire, the 6-point scale format of the original scale was modified to a 2-point scale format - 'Agree/Disagree'. The original English version was translated into Turkish. The Turkish translation was checked by the expert before its use. Later, it was pilot tested with two participants for its clarity. However, a reliability check was not conducted on the questionnaire, and this should be noted as a limitation of this study.

The socio-demographic information form included 25 closed- and open-ended questions that sought information in four major areas: 1) socio-demographic information on the participants; 2) the impact of the lockdown on the participants' professional lives; 3) basic information on their children and their education, and 4) how mothers coped with their children's emergency remote education.

These instruments were originally prepared in English and translated into Turkish, the participants' native language. The expert check was obtained for each of the instruments during the peer-debriefing phase to validate that the concepts under study are included adequately (Yin, 2009). Before the actual use, the data collection instruments were pilot tested with two participants for language and clarity, and necessary alterations and modifications were made. The data was collected in three focus-group interviews and four individual interviews. These interviews were audio-recorded, as per informed consent, for analysis.

The data collection took place immediately after the end of the quarantine period when the measures had been eased. The interviews were conducted face-to-face in the open air. The life context questionnaire and the socio-demographic information forms were completed by the participants during the meeting for the interviews. When the data were collected, in June, the children had already been involved in emergency remote education for two months, i.e., since the beginning of April 2020.

DATA ANALYSIS

Before the analysis, the recorded interviews were fully transcribed, and the name of each participant was omitted. Each was assigned a code, for example, "M1", to conceal the participating mother's name while reporting. Hence, the letter 'M' referred to 'mother', and the number was given based on the chronological order of the interviews.

Lincoln and Guba (1985) explain that in qualitative research data analysis "involves taking constructions gathered from the context and reconstructing them into meaningful wholes" (p. 333). In this study, thematic coding was conducted to analyze the data that was obtained through the interviews. This was done in two coding cycles: In the first cycle of coding, the data were read several times to construct the interpreted meaning of the data. In this process, the data was coded and sub-coded to allow extensive detailing of the rich data to indicate the emerged interrelationships. During the first cycle of the coding, process coding was utilized. This allowed connoting action, interaction, and consequences in the data (Miles et al., 2014). While coding, simultaneous coding was conducted as, in some cases, the data suggested multiple meanings that necessitated multiple codes. The coding process was repeated for each data set; and each time the codes and subcodes were compared, revised, and refined. After the first cycle of coding, a matrix was developed to arrange the data for easy viewing. In this matrix, the codes, subcodes, and quotations from the raw data were placed so that the connection with the raw data was maintained during the analysis process.

In the second cycle of coding, pattern coding was conducted which allowed the associated codes and subcodes from the first cycle to be gathered under umbrella-like categories that could capture the essence of the codes. In this phase, the matrix was revised multiple times as the second cycle continued; and the abbreviations were added to the codes. This phase was followed by the verification of the coding by cross-checking the thematic categories and codes with the raw data. Throughout the analysis, reading, rereading, and coding continued to the point of saturation (Egan et al., 2021). In this

comprehensive analysis, each thematic category needed to be well-represented by many cases in the data (Urquhart, Lehmann, & Myers, 2010).

Three main thematic categories emerged as a result of the above-mentioned systematic thematic coding analysis: Obligation for involvement; intensive involvement; and reflection on the involvement process. The codes and sub-codes were displayed to associate interrelationships, and coding abbreviations were devised to facilitate the coding process. Accordingly, Obligation for involvement (O) was motivated by 'Distrusting emergency remote education' (O-DERE) about the following concerns as sub-codes 'Perceiving teaching content and methods ineffective' (O-DERE-I), 'Observing lack of active student participation (O-DERE-LAP) and finding homework overwhelming (O-DERE-HO). The second thematic category was found to be the participating mothers' 'Intensive involvement' (I) in the form of 'Teaching and helping homework' as a code (I-THH), with sub-codes as 'Active teaching' (I-THH-AT), 'Learning to teach' (I-THH-LT), and 'Helping homework' (I-THH-HH). 'Initiating communication' (I-IC) was the second code within this thematic category. This took place through 'Interacting with the child on schoolwork' (I-IC-C) and interacting with the teacher (I-IC-T). Reflection on the involvement process (R) emerged as the third thematic category. This was in the form of 'Self-questioning' (R-Q) the following issues as sub-codes - the teacher-role (R-Q-TR), their 'Teaching competencies' (R-Q-TC), and their over-involvement (T-Q-I). The second code under the Reflection thematic category was 'Experiencing tension' (R-T) about 'Fulfilling requirements' (R-T-FR) and 'Competing with the fellow mothers' (R-T-C).

The analysis was displayed in tables (Table 2; Table 3; and Table 4) in the following part with the attributions to the participating mothers to indicate their contribution. This analysis process was followed by a rigid audit trial process which is discussed in detail below. In addition to the concerns regarding reliability, ensuring research validity was given utmost care in this study. As Yin (2009) states, case studies need to consider construct validity for investigating and operationalizing the concepts, internal validity for relationships among concepts, and external validity for the generalizability of the findings. In this study, the conceptual framework on parental involvement was considered both in data collection, analysis, and discussion of the research findings which aimed to contribute to the construct and internal validity of the study. The rigorous description of the research method, results, conceptual background and literature of the phenomenon, and the discussion of the findings aimed to help increase the external validity of this study.

The data analysis was reported using narrative description while benefitting from direct quotations from the participants. The quotations that were placed in the text were translated from Turkish to English, using back-to-back translation.

TRUSTWORTHINESS

Validity and reliability of data collection procedure and analysis are crucial for a study that could allow trustworthy findings (Lincoln & Guba, 1985). In this analysis, the researcher paid utmost attention to enriching the credibility of the findings.

DATA TRIANGULATION

Data triangulation incorporates multiple procedures to allow the consideration of multiple perspectives to make meaning of the phenomenon (Stake, 1994). In the current study, data triangulation was achieved by seeking data through multiple methods: semi-structured interviews, parents' perceived life context questionnaire, and a demographic information form.

PEER DEBRIEFING

Peer-debriefing contributes to the credibility of a study by allowing a competent professional outside the study context to analyze materials and listen to the researcher (Erlandson, Harris, Skipper, & Allen, 1993). In the peer-debriefing process, an experienced colleague, with ample research

experience in qualitative research from a different university, was invited. The debriefing sessions involved informal discussions in which the peer asked questions that helped the researcher to reflect on the research process including data collection, data analysis, and reporting of the results.

AUDIT TRAIL

An audit trail is a valuable technique that aims to increase the credibility of the study findings (Erlandson et al., 1993). In this study, the competent peer who was engaged in the peer-debriefing process audited the data analysis process. This was accepted as an advantage since the peer was already well-informed on the study with essential background knowledge. Following the guidance by Lincoln and Guba (1985, as cited in Erlandson et al., 1993, pp. 148-149), the audit trial materials were provided to the auditor in six categories: 1) raw data (interview audio recordings, interview guide, completed life-context questionnaires, and socio-demographic information guide); 2) data reduction and analysis products (interview transcripts); 3) data reconstruction and synthesis products (data analysis sheets of every data source; coding, matrix; and tables); 4) process notes (draft semi-structured interview guides; life-context questionnaires; and draft socio-demographic information form); 5) materials relating to intentions and dispositions (the draft research paper), and 6) information relative to any instrument (the final versions of the piloted data collection instruments).

During the auditing phase, after the first check of the data, the auditor requested a Zoom meeting on coding. In this meeting, the researcher and the auditor randomly selected and coded a set of data which was followed by comparing and discussing coding until a consensus was reached. Based on this, the auditor made suggestions, which the researcher considered, and revised coding accordingly. This was followed by the second round of audit, which was followed by the second Zoom meeting to provide oral feedback. The researcher took the feedback into account and revised it accordingly. In this process, the auditor also checked and verified the translation of the quotations in the report. The audit continued in intervals during the analysis and reporting phases. As a result, the auditor made further suggestions on the illustration and reporting of the data.

FINDINGS

This study focused on a group of mothers and their involvement in their children's education during the emergency remote education that was provided in the first school closures due to the COVID-19 pandemic. The data that was obtained from the semi-structured interviews were analyzed using coding, which is an analytic strategy within the qualitative research paradigm (Miles et al., 2014). This analysis revealed three interrelated thematic categories: Obligation for Involvement, Intensive Involvement, and Reflection on the Involvement Process. The thematic categories, codes, and sub-codes were identified and reported in detail below with direct quotations from the raw data.

THEME 1. OBLIGATION FOR INVOLVEMENT

As displayed in Table 2, the participating mothers perceived that they were obliged to involve in their children's education. They did not consider the emergency remote education effective or sufficient. They found that the teaching content and methodologies were not appropriate for remote online education. Also, there was a concern that the homework was excessive and difficult.

Table 2. *Obligation for Involvement*

Thematic Categories	*Codes*	*Sub-Codes*	*Participating Mothers*
Obligation for involvement	Distrusting emergency remote education	Perceiving teaching content and methods ineffective	M1; M2; M3; M6; M5; M7; M8; M9; M11; M12; M14
		Observing the lack of active student participation	M1; M3; M5; M11; M12
		Finding homework overwhelming	M1; M2; M7; M6; M11; M12; M14
	Responding to invitations/demands	Responding to direct invitations/demands from the child	M1; M3; M4; M5; M6; M7; M8; M9; M10
		Responding to indirect invitations/demands from the teacher	M1; M2; M3; M4; M5; M6; M7; M8; M11; M12; M13; M14
		Responding to direct invitations/demands from the teacher	M4; M5; M6; M7; M8; M9

DISTRUSTING EMERGENCY REMOTE EDUCATION

An overwhelming number of mothers shared their concerns about the teaching content and methods that were employed in remote education in this case. There was criticism that the content of core subjects such as mathematics was overwhelmingly complicated for the children to understand without support. Particularly those mothers who were teachers by profession believed that the teaching materials and methods were not appropriate for remote online teaching and learning. For example, a mother (M12) criticized that the teacher was trying to explain a complex mathematical structure using the “direct method” as if they were in the classroom. Similarly, another mother complained that the teacher was trying to implement the usual course subject content using the pre-COVID methods. She criticized that the teachers insisted on implementing the curriculum as if nothing had happened (M14).

Another point of concern was the lack of sufficient student participation during synchronous lessons. This was observed by several mothers while sitting next to their children during these lessons or while overhearing the lessons. For example, one mother said, “The children do not listen. One is busy changing his name, the other one plays with his dog. Teaching time is not very productive” (M1).

Several participating mothers thought that the homework that the children received during this period was an excessive amount, and overwhelmingly difficult for the student’s level of competence. Therefore, the mothers felt that their involvement was necessary; otherwise, the children could not complete the schoolwork. For example, a mother was worried, and she said “Today the children’s homework today was very difficult. Equations. Did he understand this topic during the lesson? If we don’t help, this homework cannot be completed by the children themselves” (M7). Similarly, some mothers thought that the type of homework and the projects that were assigned, such as preparing book covers, required them to step in and help, as the children could not complete them without support.

RESPONDING TO INVITATIONS/DEMANDS

Despite that several mothers stated that they self-initiated involvement in children’s education as a usual routine during pre-COVID times, they emphasized that their involvement has overwhelmingly increased during emergency remote education. Also, accordingly, the children’s demand from their mothers to help them with schoolwork increased substantially during this period.

For example, one mother explained "He asks me to do the homework together. He used to do this before as well; but at that time, I did not need to teach the topic" (M6).

Almost all the participating mothers perceived that their involvement was indirectly demanded by the teacher. Many thought that their active involvement was demanded, judging from the amount and complexity of their children's homework on daily basis. For example, a mother said "They must expect us to help. We receive 10 pages of homework every day. For the child to be able to do this, the teacher must be expecting help from us. Indirectly!" (M2).

In addition to the indirect invitations for help, some mothers reported that teachers also made explicit demands for help with schoolwork. For example, a mother (M5) said that the teacher contacted her and asked her to teach the parts her child did not understand during the lesson. Additionally, several mothers reported that the teachers contacted mothers directly to ask for help in keeping the children engaged in front of the screen during the synchronous lessons.

THEME 2. INTENSIVE INVOLVEMENT

As shown in Table 3, the data analysis revealed an overwhelming involvement from the participating mothers in their children's education during this period. They were teaching, organizing schoolwork, helping, and sometimes completing their children's homework. To teach effectively, some mothers worked on developing effective teaching strategies. Some mothers said that they were learning the topics before teaching them to their children so that their teaching became more effective. Additionally, all the mothers expressed that they were intensively involved in homework completion.

Table 3. *Intensive Involvement*

Thematic Categories	*Codes*	*Sub-Codes*	*Participating Mothers*
Intensive involvement	Teaching and helping with homework	Active teaching	M1; M2; M3; M4; M5; M6; M7; M8; M10; M11; M12; M13; M14
		Learning to teach	M2; M4; M5; M8; M12
		Helping homework	M1; M2; M3; M4; M5; M6; M7; M8; M9; M10; M11; M12; M13; M14
	Initiating communication	Interacting with the child on schoolwork	M1; M2; M3; M4; M5; M6; M7; M8; M9; M10; M11; M12; M13; M14
		Interacting with the teacher	M1; M2; M3; M4; M5; M7; M8; M9; M11; M12; M13; M14

TEACHING AND HELPING WITH HOMEWORK

Almost all the participating mothers said that they were engaged in active teaching during emergency remote education. They felt that their children needed them to explain the topics as they thought the children were not able to understand during synchronous lessons. This led many mothers to spend substantial time teaching the schoolwork. Several mothers described themselves as "mother-teacher" and explained that they had become like "teachers at home" during this period. Accordingly, a mother explained her contribution as follows: "At the moment, we are doing all the teaching. We are doing the teaching and the teachers are providing the support. I mean we changed positions" (M11).

The issue of how to teach in the best way to attain the students' level and competence by using effective teaching strategies was the concern of several mothers. Some others said that they studied the topics to be taught in advance, watched related videos on YouTube, or accompanied the child

during synchronous lessons to prepare beforehand. A mother said "I do not know how to teach. In the first months, I sat down together with the child in all the synchronous lessons to see how the teacher was teaching the subjects, and I followed the same teaching method with my son" (M4).

According to the data, all the participating mothers were involved in helping the children to complete their homework. They all thought that it was their responsibility to help their children with their homework; however, they added that their contribution has substantially increased during emergency remote education. They explained that they made sure the homework was completed correctly on time despite that they were aware that it was often excessive and above the child's level of competence. Cases were admitting that homework was completed by the mothers themselves so that it could be sent on time. The mothers explained that they spent a long time engaged in homework. One mother explained her routine during this period as:

> First, I watch videos to understand the teaching topic of the day. Then, we watch the videos together with my son. Then, I do the teaching, and then we decide on how we do the homework. Then, I get him to do his homework. We spend the entire day doing homework. (M8)

INITIATING COMMUNICATION

All the mothers self-perceived themselves as responsible for initiating and maintaining communication with the school, class teacher, other parents, and their children. All of them explained that they interacted with their children on schoolwork in this period. While some mothers explained that their communication with their children increased as there was more homework to do; some others expressed that their communication diminished during this period. The amount of homework, mothers' perceived tension while teaching and their perceived lack of patience seemed to have affected their communication negatively.

Several mothers expressed that they maintained communication with the class teacher in this period. This communication was via ClassDojo or through WhatsApp, and mostly on homework completion. Also, it was reported that there were no parent-teacher meetings that could facilitate better communication, particularly on effective teaching strategies.

THEME 3. REFLECTIONS ON THE INVOLVEMENT PROCESS

The data revealed that the participating mothers experienced confusion and stress while involved in their children's education during the emergency remote education period. The results are displayed in Table 4).

Table 4. *Reflection on the Involvement Process*

Thematic Categories	*Codes*	*Sub-Codes*	*Participating Mothers*
Reflection on the involvement process	Self-questioning	Questioning their 'teacher' role	M2; M4; M10; M11; M12
		Questioning teaching competence	M1; M2; M4; M6; M7; M11; M12
		Questioning over-involvement	M1; M2; M4; M5; M6; M11; M12
	Experiencing tension	Fulfilling requirements	M4; M7; M8; M9; M10; M11; M12; M13
		Competing with fellow mothers	M6; M7; M8; M9

SELF-QUESTIONING

Many participants were self-questioning their increased responsibilities in this process. Some of them openly questioned and protested their newly acquired teaching role and responsibilities, saying that they did not volunteer to take the teaching responsibility. For example, a mother said, "I am not a mother who wants to take a teaching role. I am doing it because I must" (M4). Another one, who was

a teacher by profession, was also struggling; she said "I cannot apply the things I know. With my child, I lose my teacher identity and I become a mother" (M12).

Concerning the above, several mothers thought that they did not have adequate teaching competencies. For example, one of their concerns was whether they knew how to teach this age group. Another concern was related to whether their teaching approach was in line with that of the teachers'. This concern was particularly voiced by the mothers who were teachers by profession. For example, they wanted to know how to treat spelling errors while teaching in English (M12); or how to teach complex topics (M1).

Using the appropriate level of expertise to match the children's level of knowledge and understanding was another issue about teaching competence. A mother voiced her concern as follows: "We are all educated, and we have seen these subjects. However, going down the child's level and explaining them accordingly is a different matter" (M6).

The data revealed that several mothers self-questioned their over-involvement in their children's education in this period worrying that their over-involvement could cause more harm than good. One of the concerns in this regard was related to the impact of their excessive involvement on their children's autonomy. Some said that ideally, they preferred their children to be autonomous learners. For example, one mother (M7) described herself as a disciplined and autonomous learner in all her life and explained that this was how she had built her career. She said that ideally, she wanted to raise her child in the same way.

Also, there was a worry that their excessive involvement in the schoolwork gave a misleading message to the teacher. There was a worry that the teacher might have thought that the children were able to follow the lessons or complete an excessive amount of schoolwork without problems. After all, the homework was on time and completed correctly.

EXPERIENCING TENSION

The data indicated that the schoolwork created pressure and tension at home, and with other mothers. At home, besides the increasing responsibilities in household duties, the substantial amount of schoolwork seemed to have created tension. Accordingly, there was stress between the mother and the child, and between the mother and other family members, particularly with the father. Some of the reasons that triggered this stress were said to be the mothers' overwhelming involvement, the competitive approach of the mother toward homework completion, and the children's refusal to accept the mother in the teaching role. For example, a mother explained her frustration while struggling to teach:

> Right now, I feel like I am drowning. I never give up fighting, but I am struggling. I'm swallowing as I am swimming. I am aware of my mistakes because my child hears my voice as if it is coming out of another mother she had not known before. She must be saying 'how come this voice is coming out of my mom!' and I am saying 'how come this voice is coming out of me!' I get upset. I fear harming my child's self-confidence…(M11)

Also, the data showed that there was competition among mothers based on their children's success in the remote lessons and in homework completion; and this created stress and tension. For example, a mother said, "There is a war among us about who got how many Dojo points during the week. There are so many people who ask me how many Dojos we collected this week" (M8). This competition was so much so that the children's success was perceived as the mothers' success.

In addition to the interview data, the participant's responses to the life context questionnaire concerning their perceived life contexts on their time, energy, knowledge, and skills were analyzed. This analysis is displayed in Table 5 and Table 6, as below.

Table 5. *Self-Perceived Time and Energy*

	Resource availability	*%*
	I have enough time and energy to….	
1	communicate effectively with my child about the school day.	85.7
2	help out at my child's school.	50.0
3	communicate effectively with my child's teacher.	92.8
4	attend special events at school.	92.8
5	help my child with homework.	92.8
6	supervise my child's homework.	92.8

As shown in Table 6, a large majority (85.7%) of the participating mothers perceived that during this period, they had time and energy to communicate effectively with their children about school. Similarly, almost all the participants (92,8%) perceived that they had time and energy to: communicate effectively with their child's teacher, attend special events at school (in the pre-Covid period), and help their child with homework, and supervise their child's homework. However, only half of the participants (50%) perceived that they had time and energy to help out at their children's schools (in the pre-Covid period).

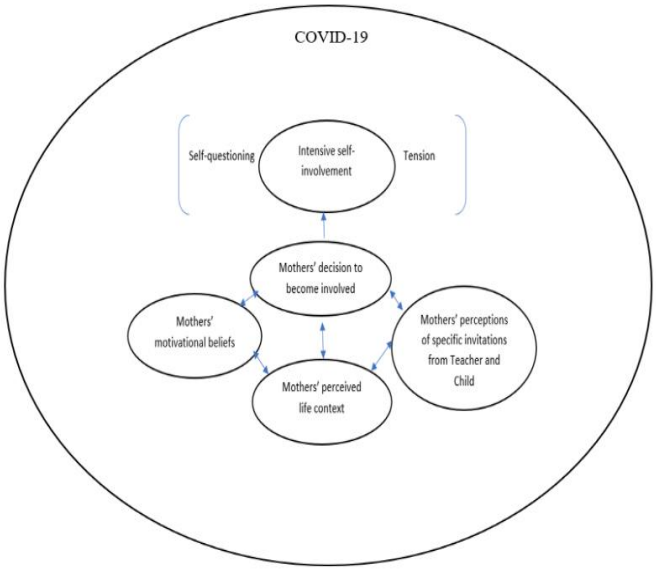
Table 6. *Self-Perceived Knowledge and Skills*

	Resource availability	*%*
1	I know about volunteering opportunities at my child's school.	71.4
2	I know about special events at my child's school.	92.8
3	I know effective ways to contact my child's teacher.	100
4	I know how to communicate effectively with my child about the school day.	100
5	I know how to explain things to my child about his or her homework.	85.7
6	I know enough about the subjects of my child's homework to help him or her.	92.8
7	I know how to communicate effectively with my child's teacher.	100
8	I know how to supervise my child's homework.	100
9	I have the skills to help out at my child's school.	92.8

As far as the perceived knowledge and skills were concerned, as displayed in Table 4, the data revealed that all the participants thought that they had the knowledge and skills to find ways to contact and communicate with their child's teacher. Likewise, all of them regarded that they had the knowledge and skills to communicate effectively with their child about school and to supervise his/her homework. Furthermore, almost all the participants (92.8%) felt confident about helping out their children with schoolwork as they perceived that they had the necessary knowledge and skills. When it comes to how to explain things to children, there is a slightly lower perception (85.7%) of the skills and knowledge of this competence. Although a large proportion of the participants (92.8%) viewed that they knew about the special events at schools, there seemed to be a lower level (71.4%) of awareness of volunteering opportunities at the children's schools.

The data that was obtained through semi-structured interviews, life context questionnaires, and socio-demographic information form revealed that the results were interrelated and interdependent. This implies internal homogeneity within the findings. Figure 2 displays the study findings and the interrelationship of the contributors considering the adapted conceptual model on the parental involvement process (Walker et al., 2005).

Figure 3. *Participating Mothers' Involvement in Emergency Remote Education*



DISCUSSION, CONCLUSION, AND IMPLICATIONS

This study was conducted immediately after the first COVID-19 lockdown measures were eased, and it covered the period of complete school closures and the sudden shift to emergency remote education in the Spring of 2020. The aim was to illuminate parental involvement in emergency remote education by focusing in-depth on understanding the experiences of a small number of mothers with school-age children in Northern Cyprus. Face-to-face semi-structured interviews, life context questionnaires, and a socio-demographic form were utilized as data collection instruments to seek data on their involvement. The rigorous data analysis revealed that the participating mothers felt that they had to involve intensively in their children's learning, due to the problems they experienced in emergency remote education, and to answer the invitations from the children and their teachers on their involvement. Their engagement in education was highly demanding, and this overwhelming process led mothers to self-doubt and experience tension.

The study findings revealed that the participating mothers took overwhelming responsibilities in their involvement in the children's learning, and most of them described themselves as "mother-teacher" since they adopted a teaching role at home. Some of them were concerned with their teaching strategies; therefore, they undertook further responsibility to study the teaching topic in advance (M8) or watched synchronous lessons to understand the teacher's teaching style to facilitate the child's learning (M4).

In this case, the participants' involvement seemed so extreme that some mothers found themselves competing for ClassDojo points, while two of them claimed to be "the champions of the week" (M7; M8). Some mothers admitted that their competitive attitude created tension, among their respective family members, and with other mothers. This type of over-involvement could have negative impacts on the child's education, as it could lead to negative developmental, social, and educational consequences (Hoover-Dempsey et al., 2005). This was confirmed by some of the participating mothers as they were concerned that their excessive involvement could impact their children's learner autonomy (M2; M3).

It is also important to consider the power of invitation for parental involvement. Accordingly, teachers' invitation for involvement was found to be a profound motivator on parents' decision to involve while exceeding the influence of socio-economic factors (Hoover-Dempsey et al., 2001). In this

study, almost all the mothers perceived that their children and class teachers expected and demanded their intensive involvement. These invitations had a strong impact on the participants who had access to resources, i.e., knowledge, skills, time, and energy. This situation confirms the literature (Walker et al., 2005).

Also, the mothers had the impression that their involvement would make a positive impact as they considered themselves equipped to make a substantial contribution to their children's learning. By judging their socio-economic situation, educational background, and professional experience, they had access to material and cultural resources. Their life context questionnaire results confirmed this as all of them perceived having knowledge, skills, time, and energy for parental involvement (Hoover-Dempsey et al., 2005). This confirms Reay's (2002) statement that mothers' personal educational histories and their past educational experiences have an impact on their approach to their children's education and on how effective they are in dealing with their children's teachers. According to Reay, those mothers from middle-class families tend to refer to their own positive educational experiences and become more involved in their children's education. Likewise, in this study, the resourceful participants reported that they initiated and maintained communication with their children's teachers in this period.

The relationship between mothers' profiles and their engagement with their children is confirmed in another study in the pandemic context. Uzun et al. (2021) established a positive link between the mothers' ages, levels of education and their relationships with their children. Similarly, another study confirmed that there was a positive relationship between mothers' education levels and their children's levels of self-efficacy and achievement in English language learning (Ocak & Tiraki, 2020). This could confirm that social factors and perceived access to resources might affect mothers' motivational beliefs for parental involvement. In this study, the participating mothers were of high-education background whose majority of ages ranged from 40-50 with perceived knowledge, skills, time, and energy. The results also revealed that they believed to be responsible and capable of helping their children succeed at learning.

In the study, almost all the participants exhibited a parent-focused role construction (Hoover-Dempsey et al., 2001; Walker et al., 2005). They undertook a variety of responsibilities, ranging from teaching, assisting, and even doing their children's homework. Undoubtedly, the unusual time in which they lived influenced their forms of involvement. These findings confirm that parental role construction is a social construct, and it responds to changes and conditions in society (Hoover-Dempsey et al., 2005).

However, the data indicated that the demanding involvement led the participating mothers to experience tension and self-doubt at the same time. Several of them questioned their teaching role at home. For example, this situation created an overwhelming feeling of protest for one mother, as she explained that she was struggling between two roles as a mother and as a teacher (M12). Some mothers explained that heavy involvement in the children's education was not their choice but an obligation (M4; M12). The excessive involvement, in addition to the elevated domestic responsibilities, created a sense of inadequacy among many participating mothers. Despite their advantageous educational backgrounds and access to resources, they reported that they were struggling in this exhaustive involvement process. These findings are in line with the research concerning the first wave of the pandemic. Spinelli et al.'s (2020) study revealed that parents found it difficult to deal with children's education during the quarantine period of the first wave of the pandemic. Similarly, another study found that parents experienced problems while maintaining the children's access to learning, creating motivation for learning, and reaching learning outcomes (Garbe et al., 2020).

The participating mothers' worries, dilemmas, and tensions could be interpreted as signs of parental burnout (Brown et al., 2020; Chung et al., 2020; Griffith, 2020), which may be due to the self-oriented or socially prescribed perfectionism (Sorkkila & Aunola, 2020). This confirms Hoover-

Dempsey et al. (2005) as they also stated that parental role construction is a social construct that is influenced by society and by past experiences of parents' education. This was evident in this study, as several mothers, explained they had to complete all the homework on the same day, often causing more burden and stress on themselves, and their relationships with their children. Many of them made sure that homework was completed on time daily, without faults, knowing that it was above the child's capacity. For example, one mother (M11) admitted that insisting on completing all the homework caused frustration and tension between the mother and the child; nonetheless, she reported that she continued to teach and deliver homework in the same manner. So it could be that the participating mothers' high expectations of themselves and their children due to self-oriented or socially prescribed perfectionism could have contributed to more stress and tension during this period.

On the other hand, it should not be neglected that the findings revealed that the participating mothers considered themselves obliged to involve intensively due to the shortcomings in emergency remote education in this context. They regarded that the teaching content and methods were not suitable or effective for their children's remote learning. As far as the instruction and curriculum were concerned, the study showed that the participants distrusted the emergency remote education in this period. Accordingly, some mothers made informed comments and criticisms on many aspects of the instruction in this period such as the use of teaching materials and methods (M1; M12). Also, there was an excessive amount of homework with a high level of difficulty. Similarly, Dong et al.'s study (2020) voiced parents' disbelief in the emergency remote education for their young children. They considered it inadequate and ineffective. Likewise, Garbe et al. (2020) reported that parents were concerned about the quality and quantity of curriculum material, and their children achieving an adequate academic level during this period. Indeed, in many cases, the school curricula failed to respond, to meet the immediate needs and conditions that occurred as a result of the school closures, which led to the abrupt shift to emergency remote education (Gul & Khilji, 2021; Li et al., 2021 Roll, et al., 2020). Whereas, according to Hughes (2020), the COVID-19 pandemic could be an opportunity to bring necessary changes to curriculum design and implementation by incorporating alternative formative assessment procedures and reducing the ever-enlarging curriculum content. Hughes underlined the principle of "less is more" (p. 71) in instructional design and urged a more "… mindful, authentic, and humanly paced approach" (p. 69). He also emphasized reducing the curricular content, eliminating homework, or adjusting students' levels of cognitive complexity, so that parental help is minimized.

To conclude, the study aimed to provide an in-depth understanding of parental involvement in emergency remote education by focusing on the experiences of a small number of mothers in Northern Cyprus. Hoover-Dempsey and her colleagues (2001; 2005; 2013) stated in numerous studies that parental involvement and their active participation in children's education is highly beneficial. However, as this study showed, the pandemic crisis, particularly its first wave, placed immense responsibilities and pressure on parents, in this case, study on the participating mothers.

Direct invitations and demands from children and teachers in addition to the mothers' concerns on the shortcomings of emergency remote education were found to be important elements in their decisions to involve overwhelmingly. In this case, the participants' access to resources seemed to have functioned to their advantage as it contributed positively to their motivational beliefs; however, on the other hand, their high expectations might have added more stress to their involvement process during the emergency remote education in this context.

For future research, it is important to investigate if any lessons have been taken regarding curriculum and instructional planning and implementation for remote learning in the study context with or without a global crisis. Also, it is recommended to conduct a further study on parental involvement and include the school factor, as in this study it was omitted due to remote education. Furthermore, a similar study could be conducted in the same context with a similar group of

participants to investigate the parental involvement patterns further and possibly compare with the pandemic period.

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Research Article

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Evaluation of a Pilot Peer Advising Program for University Students: Voices from Advisees and Advisors

İlknur Bayram, Dr., TED University, ilknur.bayram@tedu.edu.tr 0000-0001-8109-8051

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Abstract

This program evaluation study aims to investigate the peer advisors' and advisees' perceptions regarding a pilot peer advising program designed to facilitate the orientation process of newly-registered university students. The study was based on qualitative data gathered from participants in the academic year of 2018-2019 at a foundation university in Turkey. Findings suggest that the program offer several benefits such as smoother university adaptation, peer-to-peer communication, effective advisor support, meeting new people, communication skills, and increase in self-confidence. Suggested improvements in the program are; more advisee participation, better promotion of the program, more meetings and social gatherings, advisees assigned per advisors, advisor training, and advisor selection, and continuing advisor support.

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INTRODUCTION

Transition from high school to university is a major turning point in many individuals' lives. University is different from high school in many ways and adjusting to life at college can be quite challenging and stressful for many (Brooks and DuBois 1995). Among the causes of stress are living apart from parents, learning how to function as independent adults, making new friends, and acquiring academic study skills (Parker et al. 2004). If not properly dealt with, these stressors might result in a sudden decline in academic performance, or high drop-out rates (Yelten et al. 2018).

Advising is an indispensable part of students' university experience as it plays a key role in the academic life of all students. Universities offer support to first-year students in different ways and forms to tackle adjustment problems; academic advising provided by faculty members and peer support provided by existing students. Peer support aims to complement faculty support since it is believed that faculty may fall short of empathizing with students and look at issues from their perspective as a result of the fact that they are not students any longer (Diambra 2003).

In the most general sense, peer advising can be described as peers helping peers. Dennis (2003) defines peer support as the informal, natural, emotional, and informational support provided and received by people who share similar experiences. Although this definition pertains to a health care context, it has been equally applicable to educational settings. Peers offer support and guidance on issues that do not require professional support or at times when professional support is out of reach.

Peer advising provides students not only with information about academic issues such as scheduling, course registration and selection, but also with counseling about students' individual needs. It also helps create bonds among existing and new-coming students. The relationship between those equal parties serves to close the gap between faculty and students whose relationship is based on an unequal power relationship (Biaggio et al. 1997).

Peer support mechanisms are variously called "peer advising", "peer support", or "mentoring", yet serve to provide undergraduates with informal support about issues such as course selection, campus resources, extra-curricular activities on campus, and etc. "Peer advising" will be used throughout the paper to refer to peer support or mentoring programs at universities. "Peer" in this study refers to a university student who is nearly the same age, and has the same social position as other students.

CONCEPTUAL FRAMEWORK

There are several studies related to peer advising focusing on the strengths of the program in terms of advisors and advisees. Studies also recommend modifications to improve the efficiency of future peer advising programs. For instance, Johnson et al. (2000) point out that peer advisors might serve as an accessible network of support for students and this form of support is easier to reach when compared to support provided by administrative staff or faculty members.

Program benefits for advisors were listed as networking, gaining leadership skills and confidence, developing career skills, learning about personal strengths and weaknesses, and being aware of personal talents (Rawana et al. 2015). As pointed out by Chambliss and Takacs (2014), when students establish a strong and healthy relationship with their peers and faculty, they will not only become more involved with the subjects they study but also be more successful in their coursework. Posa (2011) contends that peer advisors improve students' academic success, increase collaboration among peers, as well as problem-solving and decision making skills. Peer advising also paves the way for personal reflection.

Diambra (2003) underlines the fact that peer advisors adopt different roles such as leader, mentor, guide, facilitator, role model, and listener, so they grow personally, hence professionally. They also help build a sense of kinship with fellow students as they listen, encourage, support, and observe

advisees. Similarly, Griffin et al. (2015) assert that peer advisors develop leadership, communication and organizational skills thanks to the peer advising program, which also establishes a sense of community among advisors and advisees involved. Peer advisors also reported that they felt proud of themselves because they made a positive difference in advisees' lives. They added that their knowledge about university in terms of the academic resources provided and departmental issues had increased as a result of their participation in the program.

The advising process requires time and commitment. Diambra and Cole-Zakrzewski (2002) suggest that peer advisors take ownership of the program and show initiative in organizing appointments with their advisees. This service is becoming increasingly popular as faculty gets more and more busy and falls short of addressing students' advising expectations. Advising services are considered to play a key role in the excellence of faculty as well. Support from advisors help students have a clearer idea about faculty expectations, thus positively affecting student retention and academic success. A skillfully planned advising program will, undoubtedly, produce favorable results for faculty and advisors, yet it is the advisees who will benefit most from such a program.

In their study, Rosenthal and Shinebarger (2010) underline that there is a gap between what students need and what the advising programs provided by faculty members offer students. They claim peer advisors may help bridge that gap and offer help in non-academic issues causing trouble for most first-year students. One advantage of peer advisors is that it is easier to access them and keep in touch with them on a regular basis. The support received also helps students have higher college GPAs.

This support is crucially important when different populations of students are in question. In a recent study by Ames et al. (2015) a mentorship program for students with special needs was designed and its effectiveness was evaluated. The results of the study showed that students were highly satisfied with the program and they reported that it helped them to reach their personal goals. In addition, Johnson et al. (2000) underline that peer advising play a crucial role in providing a network of support for non-traditional students such as adult women students in community colleges who have access to limited social support. Peers help women new to university feel less stressed and worried by addressing their concerns immediately. Waghel et al. (2017) designed a mentoring program for pharmacy students and it was reported that students benefitted from the program in terms of gaining new perspectives into their major, yet they faced challenges such as scheduling, and communication between both parties.

Despite several benefits, Diambra (2003) however, warns us about the challenges of the program. He remarks that peer advisors need to be constantly guided and supported. To provide them with such support, we need supervisors who have sufficient amount of time for planning and devoting ongoing attention to advisors.

One of the challenges that needs to be addressed is the fact that more students need to benefit from the program and this requires persistence and time invested in advertising (Rosenthal and Shinebarger 2010). It is expected that the popularity of the peer advising program will result in an increase in the number of advisees because through word-of-mouth recommendations more students become aware of the program. On the other hand, advisors complain about low attendance rates in advising meetings and sessions, yet they also report that they cannot respond to all the questions posed by advisees. A solution to this dilemma needs to be worked out (Griffin et al. 2015).

As indicated by the findings of international studies, the literature suggests that there are positive outcomes for both parties, and if challenges are addressed, more students will continue to benefit from peer advising. In Turkey, universities such as Koç (https://kuakran.ku.edu.tr/), Ankara (http://pdr.education.ankara.edu.tr/akran-danismanligi-programi/) and Özyeğin (https://www.ozyegin.edu.tr/tr/ogrenci-yasam-ofisi/akran-danismanlik-programi) offer peer advising services to their students. However, program evaluation studies about regarding these services are scarce. In one study, Aladağ (2009) evaluated the peer advising program designed for students enrolled

in Education Faculty at Ege University. Results of the study indicated that advisees had positive feelings about the program for four reasons; advisors' friendly attitudes, being listened to, constant and regular meetings, being informed about academic and social issues. Advisees also stated that they wished there were more meetings, meetings were held in a more comfortable atmosphere, and it was easier for them to arrange meetings. Aladağ (2009) recommends that the program needs to be more widely publicized throughout the university and more support from faculty members is essential. Advisors also asked for a more sustainable advising program to be carried out in all the faculties of the university.

Albayrak-Kaymak (2008) designed a peer advising program for prep school students at Boğaziçi University and piloted it for a semester. She found out that participation was low, and this decreased the motivation of advisors. To remedy the situation, it is recommended that advisors take a more active role in promoting the program such as visiting the classrooms in person to encourage more advisees to participate, paying evening visits to dormitories, and cooperating with student representatives to increase the number of social and academic departmental events.

This study was carried out bearing in mind the fact that there needs to be more studies evaluating the effectiveness of peer advising programs taking into account the perspectives of advisors and advisees. The researcher wanted to investigate whether the pilot peer advising program was a viable form of support that would prove beneficial for first-year university students. The study was carried out to shed light on the following research questions;

1. How often and why do advisees seek help from advisors?
2. What do advisors and advisees think of the pilot peer advising program in terms of its strengths?
3. What do advisors and advisees think should be improved in the implementation of the peer advising program?

METHOD

RESEARCH DESIGN

Case studies focus on a single unit to arrive at a detailed description and understanding of the case (Ary et al., 2010). Cases are commonly associated with people; yet, a program, an institution or an event can also be regarded as a case (Dörnyei, 2007). The case in this study is the Pilot Peer Advising Program. This study was designed as a case study aiming at evaluating the effectiveness of the Pilot Peer Advising Program in a descriptive manner. Qualitative evaluations of peer advisors and advisees participating in the Pilot Peer Advising Program in the fall semester of 2018-2019 academic year at a foundation university in Turkey were employed as the main data collection tool in the study.

PILOT PEER ADVISING PROGRAM

Pilot Peer Advising Program, which was carried out in the fall semester of 2018-2019 academic year, was a one-semester program designed to offer guidance to prep and freshman students in their transition to the life at the university where this research was conducted (Diambra, 2003). It was delivered and overseen by the Center for Teaching and Learning (CTL). Program aimed to help new students feel welcomed and supported as they started a new life in a university setting (Albayrak, 2008). Peer advisors were students who had completed at least one year of study at their department, and were supervised by CTL. They were chosen among volunteers committed to help newly registered prep and freshman students. They received compulsory advisor training before they started to offer advisory support. The training included seminars on university services and procedures, campus resources, advisor roles and responsibilities and basic communication and leadership skills (Rosenthal & Shinebarger, 2010). Faculty from the department of guidance and psychological counseling was

consulted in the organization and implementation of the training program. Advisors who completed the whole training were considered eligible to assume advising roles.

Peer advisors were assigned groups of incoming students (between 15 to 20) preferably in the same faculty. They provided general support by sharing their experiences at the university and/or directing the student to the correct point of contact when needed (Aladağ, 2009). They met their advisees either as a group or individually throughout the academic term. A meeting could be a social one, like a meal out, or it could be more focused on any concerns or questions students have. The relationship between a peer advisor and their group of students were informal and non-academic. Peer advisors were requested to provide non-judgmental support and advice about being a student at the university. They were expected to spend 1 to 2 hours per month to keep in contact with the incoming students. They were advised not to provide any kind of academic tutorial assistance, assessment advice and counselling, promote themselves as experts to their fellow students, review assignments, and meet with advisees off campus. The timeline of the program is presented in Table 1.

Table 1. *Peer Advising Program Timeline*

Date	*Action*
August,2018	Advisor application and selection
September,2018	Advisor training
September,2018	Advisees are assigned to advisors
September,2018	Advisors send introductory emails to advisees
October,2018	Advisor-advisee Meeting 1
November,2018	Advisor-advisee Meeting 2
December,2018	Advisor-advisee Meeting 3
January,2019	Evaluation Surveys & Closing

PARTICIPANTS

Participants of this study were 34 advisors who volunteered to provide support to newly registered students. Peer advisors were selected according to the following criteria: (1) being a 2nd, 3rd or 4th grader at the university where this research was conducted, (2) having a GPA of 2.00 and above, (3) having no prior disciplinary record, (4) participating in the advisor training program, (5) participating in the orientation program, (6) voluntariness to take part in the Peer Advising Program for the duration of an academic term. Peer advisor profile is set out in Table 2.

Table 2. *Advisor Profile*

Faculty	*f*	*%*
Education	12	35.3
Arts and Sciences	9	26.5
Economics and Administrative Sciences	2	5.9
Architecture	6	17.6
Engineering	5	14.7
Gender	*f*	*%*
Female	29	85.3
Male	5	14.7
Age	*f*	*%*
20	7	20.6
21	10	29.4
22	15	44.1
23	2	5.9
Total	34	100

In addition to advisors, 26 advisees participated in this study as well. Peer Advising Program was introduced to all the newly registered students. In the academic year this study was conducted, 852 students had registered and constituted the entire advisee population. Among 852 students, 71 stated that they wished to benefit from the Peer Advising Program. Out of 71 advisees, only 26 volunteered to take part in this study. Advisee profile is set out in Table 3.

Table 3. *Advisee Profile*

Faculty	*f*	*%*
Education	9	34.6
Arts and Sciences	3	11.5
Economics and Administrative Sciences	3	11.5
Architecture	5	19.2
Engineering	6	23.1
Gender	*f*	*%*
Female	15	57.7
Male	11	42.3
Age	*f*	*%*
18	10	38.5
19	12	46.2
20	3	11.5
32	1	3.8
Total	26	100.0

DATA COLLECTION AND ANALYSIS

In order to examine the viewpoints of advisors and advisees participating in the program, two sets of evaluation forms were designed and administered. Items in the forms were developed by the researcher based on literature on peer advising. Forms were shared with a faculty from the guidance and psychological counseling department to seek expert opinion. Items in the forms were also piloted with one advisor and advisee through cognitive interviews in which the participants were asked to think aloud while responding to the items (Wills, 2005).

Peer Advising Program Evaluation Form for Advisors: Upon the completion of the program, advisors came together to collect their certificates and fill in the evaluation form. Forms were filled in anonymously and returned to the researcher in an envelope. The evaluation form was comprised of two sections. In the first section, background information about advisors such as their age, gender and faculty was collected. In the second section, advisor viewpoints regarding the program were asked with questions such as; (1) What do you think was positive about the program?, (2) What do you think needs to be improved about the program?, (3) Please share your comments and suggestions to improve the program.

Peer Advising Program Evaluation Form for Advisees: As soon as the program was completed and advisors and advisees met for the last time, advisees were contacted through e-mail and asked if they wanted to participate in the study. The link of the online evaluation form was sent to advisees who accepted to take part in the study, and their replies were anonymously recorded. The online evaluation form was comprised of two sections. In the first section, background information about advisees such as their age, gender and faculty was collected. In the second section, advisee viewpoints regarding the program were asked with questions such as; (1) How often did you seek support from your advisor?, (2) In what areas did you seek support from your advisor?, (3) What do you think was positive about the program?, (4) What do you think needs to be improved about the program?, (5) Please share your comments and suggestions to improve the program.

Data collected from responses to open-ended questions were coded by the researcher under themes. Research questions constituted the main themes, and codes were eventually grouped according to research questions. Responses were read several times to detect the recurring themes. Those themes were categorized systematically and later assigned specific codes. Codes were derived inductively from the data set. The cyclical data analysis model proposed by Wellington (2000) was employed to analyze data. The model is comprised of six steps; (1) reading the data several times and taking notes, (2) reflecting on data before actual analysis, (3) analyzing data and identifying codes and categories, (4) checking and revising codes and categories, (5) linking the study with prior research studies and (6) reflecting on the study as a whole. After the initial analysis was completed, another round of coding was carried out two months later to check for coding consistency (Gibbs, 2007).

FINDINGS

ADVISEES' EVALUATIONS OF THE PEER ADVISING PROGRAM

FREQUENCY AND REASONS FOR SEEKING ADVICE

Results showed that 34,6% of the advisees received help from their advisors once a month, followed by 19,2% of them who reported they asked for help whenever they felt they needed help. However, 23,1% of the advisees also reported that they never did so.

An analysis of the reasons for seeking advice showed that advisees mostly wanted to learn about university resources such as facilities, centers, communities and etc. (28,3%), and their faculty and department (21,7%).

Table 4. *Frequency and Reasons for Seeking Advice as Reported by Advisees*

Frequency	*f*	*%*
Once a month	9	34.6
Twice a month	3	11.5
Three times a month	3	11.5
Whenever I needed	5	19.2
Never	6	23.1
Total	26	100.0
Reasons for seeking advice	*f*	*%*
Faculty and departmental issues	10	21.7
Faculty staff issues	5	10.9
Course related issues (registration, schedule, content etc.)	7	15.2
University resources (social facilities, centers, et.)	13	28.3
IT issues	4	8.7
English language school	7	15.2
Total	46	100.0

STRENGTHS OF THE PROGRAM

The strengths of the program as reported by advisees were categorized under three codes: university adaptation, effective advisor support, and meeting new people.

Table 5. *Strengths of the Program as Reported by Advisees*

Theme	*Codes*	*f*	*%*
Strengths of the program	University adaptation	14	43.8
	Effective advisor support	11	34.4
	Meeting new people	7	21.9
	Total	32	100

As displayed in Table 5, advisees reported that they found the program beneficial in that it helped them to adapt to the university context in a shorter time period. One advisee commented "*my advisor took me around and showed me the campus facilities such as the library, the sports center, and*

she also told me about the common abbreviations used in the university." He also reported that without this support "*it would have taken him quite more time to learn about these*." Similarly, another advisee said "*it made my job easier in getting used to the life on campus*."

Another strength of the program was reported to be the effectiveness of the support provided by advisors as can be seen in the comments of one of the advisees "*my advisor was very caring and knowledgeable. He helped me whenever I felt lost, and provided me with quite handy information about the school. He guided me in critical issues such as course registration*." Another advisee reported "*my advisor emailed me regularly and invited me to meetings and social gatherings. Seeing the school from a student's perspective was also great. I found this very useful for not feeling like an alien*."

Meeting new people and making new friends were considered as a positive effect of the program. One advisee said "*I usually can't approach people easily to be friends with them, but this program made it possible for me to make friends with the support of my advisor*." Another advisee said "*Since I was a freshman, I didn't know anybody at first. In the meetings, I had the chance to see new people and socialize with them*."

SUGGESTED IMPROVEMENTS FOR THE PROGRAM

Improvements suggested by advisees fell under 3 categories as listed in Table 6: more advisee participation, more meetings and social gatherings, and continuing advisor support.

Table 6. *Suggested Improvements for the Program as Reported by Advisees*

Theme	*Codes*	*f*	*%*
Suggested improvements for the program	More advisee participation	11	42.3
	More meetings and social gatherings	9	34.6
	Continuing advisor support	6	23.1
	Total	26	100

An improvement suggested by the advisees was related with participation levels. An advisee commented as follows: "*I think it is a common problem that not many people show up in the meetings. This was also the case in our advisory meetings a well. I think more people should attend to create a better and more motivating atmosphere*." The reason why they could not attend was mostly attributed to the busy schedule of advisees as underlined by one of the advisees in the following way "*Just because of my schedule, I couldn't attend some of the meetings. I wish they could have been held after class hours*."

Although advisees thought that participation was an important issue, they also wanted to have more meetings and social gatherings. One advisee commented "*I think having more meetings would be great. Seeing my advisor more often would make me feel relieved and more motivated*." Another advisee pointed out "*Meetings were OK, but I think we needed more social activities with music and food. That would definitely motivate more people to come*."

Advisees also stated that the program should continue when they start their undergraduate courses. One advisee commented "*I think the program should not end after a term. It would be better if it could continue for a year or even two years*." They thought they would need further help from their advisors, because "*prep school and department is very different from each other. I know I will have many issues to resolve when I start my major, so an advisor's support will be necessary*."

ADVISORS' EVALUATIONS OF THE PEER ADVISING PROGRAM

STRENGTHS OF THE PROGRAM

Strengths of the program as stated by advisors were categorized under 5 codes: university adaptation, peer-to-peer communication, meeting new people, communication skills, and increase in self-confidence.

Table 7. *Strengths of the Program as Reported by Advisors*

Theme	*Codes*	*f*	*%*
Strengths of the program	University adaptation	25	44.6
	Peer-to-peer communication	12	21.4
	Meeting new people	11	19.6
	Communication skills	5	8.9
	Increase in self-confidence	3	5.4
	Total	56	100

As displayed in Table 7, advisors were in the opinion that peer advising program enabled the incoming students to feel welcome and make a smooth transition to university life. They stated that "*the fact that a peer who went through similar stages in the past could talk to the new students proved extremely beneficial in terms of getting to know the university context*". One advisor also reported that "*thanks to the program, newcomers had the opportunity to ask everything that bothered them to an advisor who was more knowledgeable and experienced than them. This made it easier for them to feel like a part of the community.*"

With regard to peer-to-peer communication, an advisor commented that "*I know from myself that it can be very challenging for a freshman to get used to university. There might be many things unfamiliar to newcomers. I think it is much better to talk about such issues with a former student rather than a faculty or administrative staff.*" They also stated that "*it was easier for them to reach us through email, WhatsApp or meetings".* In addition to that advantage, advisors reported that *"since we were peers, nobody felt ashamed or nervous to ask simple, silly questions*."

Advisors reported that they also benefited from the program as it helped them make new friends on campus. One advisor said "*meeting new people was a great experience for me. It helped me gain new perspectives, and most importantly the excitement that newcomers felt motivated us as advisors.*" Another advisor said that he found the program useful because he "*could meet people from diverse backgrounds such as advisors from different faculties and advisees coming from various cities around Turkey*."

Improving advisors' communication skills was reported as one of the benefits of the program. One of the advisors reported that peer advising program helped her "*become a better listener and give clear responses to the questions posed by advisees*" One advisor commented that "*I tried to put myself in their shoes by thinking back on my feelings and experiences as a prep student. This helped me provide better feedback to my advisees.*" Another advisor also reported that "*I'm a psychology and counseling student, and this program was great in that it showed me how important it was to build trust and rapport between people if we want an effective communication to take place*."

Advisors thought that the program made them more self-confident as pointed out by one of the advisors "*Being responsible for 15-20 advisees is a big responsibility, and seeing that I can guide people and meet them in person, answer their questions made me trust my own abilities.*" Another advisor said "*Before being an advisor, I used to be scared of talking in front of even a small group of people. But taking this chance and helping others as their peers helped me realize my potential as a guide*."

SUGGESTED IMPROVEMENTS FOR THE PROGRAM

Improvements suggested by advisors fell under 5 categories as listed in Table 8: more advisee participation, better promotion of the program, advisees assigned per advisors, advisor training, and advisor selection.

Table 8. *Suggested Improvements for the Program as Reported by Advisors*

Theme	*Codes*	*f*	*%*
Suggested improvements for the program	More advisee participation	31	44.3
	Better promotion of the program	25	35.7
	Advisees per advisors	7	10
	Advisor training	4	5.7
	Advisor selection	3	4.3
	Total	70	100

Advisors thought that more advisees should benefit from this program. Monthly informal meetings organized by the advisors could not attract the attention of as many advisees as expected. Advisors had a difficult time trying to reach advisees through their emails, which eventually decreased the number of participants during meetings and gatherings. One of the advisors comments are as follows: "*Very few people came to the meetings, and some of the new students did not reply my emails at all*." Advisors thought that this was mostly because of the fact that "*new students usually were not in the habit of checking their university email accounts.*" Arranging common meeting hours presented another challenge since "students we had to advise were scattered at different levels at prep school" which meant that their courses ended at different hours, hence finding a suitable timeslot was an issue for advisors.

It was also reported by advisors that the number of advisees attending meetings and seeking help would have increased if the program had been better promoted both before the university started and throughout the whole semester. One advisor commented "*I remember incoming students were informed about the program during the orientation, but we saw that this wasn't enough. We should have done more than that*." Advisors' suggestions were as follows: "*We could shoot mini videos telling about the program." "We could spread the word through flyers, brochures*." and "Why didn't we try asking for help from the faculty to promote the program among freshmen?"

Another challenge the advisors had to face was the number of advisees assigned to them. Each advisor had to take care of 15 to 20 advisees, and this was found to be too many to handle for a single advisor. "*Trying to reach 20 people at a time was very demanding. If this number were no more than 10, I could have handled many things more properly*." Another advisor commented that "having to deal with many people made me anxious. I couldn't bring them together and even follow who replied my email and who didn't."

Advisors thought that trainings offered to them before the program started could be improved in content and number. One of the advisors commented as follows: "*We could have received more trainings on how to communicate more effectively with our peers*." Another advisors requested trainings on "*sharpening advisors' leadership and organizational skills*." They also wanted to receive more informative trainings on the university procedures and campus resources so that they could direct their advisees in a better informed manner.

Last but not least, advisors thought that they should have gone through a more rigorous selection process as pointed out by one of the advisors in the following way; "*The selection of advisors need to be more competitive. There could have been a committee of prior advisors, faculty and program coordinator that evaluated the advisor in an interview-like exam*." Another advisor also suggested that "*advisors should be selected a lot earlier so that more time could be allocated to their selection in a more careful way.*"

DISCUSSION, CONCLUSION AND IMPLICATIONS

Results of this study showed that advisors and advisees find the peer advising program helpful in several aspects. Not only the advisors but also the advisees think that the program facilitates the

university adaptation process for first-year students. University adaptation has been highlighted in previous studies as a strength of peer advising programs (e.g. Biaggio et al. 1997; Johnson et al. 2000; Aladağ, 2009). Another strength of the program reported by both advisors and advisees is that it enables students to meet new people. A similar result has been reported in other studies conducted by Diambra (2003), and Waghel et al. (2017).

Advisors found the program helpful in that it provided them with a structured context in which they can communicate with their peers on an equal basis. Student interaction is reported to increase the satisfaction level of university students (Tahoon, 2021), and peer-to-peer communication has been documented as a positive aspect of peer advising initiatives (Biaggio et al., 1997; Dennis, 2003; Diambra, 2003;). Instead of asking their questions to faculty or administrative staff, students could address them to other students who are almost the same age or have similar social status. Asking questions such as "which instructor should I take this course from? or where can I get my transcript?" to their peers was perceived to be less threatening by advisees.

In this study, it was found out that advisors benefitted from the program in terms of sharpening their communicative abilities by becoming a better listener, empathizing with others, and building rapport. This was considered to be a unique opportunity for advisors as it will directly affect their personal and professional lives. Diambra (2003) and Griffin et al. (2015) underline the different roles advisors perform within the scope of a peer advising program. Acting as a leader, mentor, listener and facilitator, advisors strengthen their communication and leadership skills, and gain self-confidence as well. A perceived increase in advisors' self-confidence was also among the findings of this study. Advising approximately 20 students, helping them get better accustomed to university life, and receiving positive feedback regarding their advising capacities benefitted advisors in terms of confidence building. An increase in advisors' problem-solving skills (Posa, 2011) could have positively affected their self-confidence as well.

In addition to better adapting to university and meeting new people, advisees also reported that they considered the program to be successful because of the effective advisor support they were provided with. Diambra and Cole-Zakrzewski (2002) suggest that advisees will benefit from the program most when advisors take ownership of the program and respond to issues causing concern for advisees especially when they can't receive sufficient support from faculty members. Similarly Rosenthal and Shinebarger (2010) also highlight that there is a gap between the sort of advising incoming students need and the one offered to them by faculty. Peer advisors help close this gap by providing the kind of support advisors most require in an informal and easy-to-reach manner.

This study revealed that the existing peer advising program needs to be modified in some important aspects. One of the downsides of the program as reported by advisors and advisees was that not many advisees were willing to participate in the program. This echoes what other studies report as a challenge that needs to be overcome (Rosenthal and Shinebarger 2010, Griffin et al. 2015). As also suggested by Aladağ (2009) and Albayrak-Kaymak (2008), advisors in our case recommended that better promotion of the program might encourage more advisee participation. The dilemma is that although advisees did not show up to the meetings, they asked for more meetings and social gatherings to be organized as part of the advising program. Another surprising finding of the study was that despite low attendance rates, advisors complained about the number of advisees assigned to them. They suggested limiting the number of advisees per advisor to 10 so that they can take care of each of the advisees more properly and effectively. Griffin et al. (2015) report a similar challenge and points out that precautions need to be taken to remedy this situation.

Research shows that advisors need constant guidance and support (Diambra, 2003). Advisors in our study drew our attention to the type of guidance they needed by recommending that they need to receive trainings about communication and leadership skills. In addition, they asked for special sessions to be organized to inform them about the university with regard to its academic and

administrative procedures, and resources and facilities on campus. As the results of this study suggested, advisees mostly sought advice in issues regarding faculty members, departments, courses, facilities, IT, and English language school respectively. Therefore, more informative sessions about those subjects could be offered to advisors. An advisor manual could also be of great help for future reference.

They also emphasized that to pick the right advisor, and increase the quality of the program, there is a need for a more comprehensive selection process, which should start at least a few months before the program starts. In her study, Albayrak-Kaymak (2008) reports that she carried out one-to-one interviews with potential advisors, read through their transcripts, and checked whether they fulfilled certain criteria such as being flexible, social, willing to spend time for the implementation of the program, personal traits and so on. This could be an example future program organizers can follow.

In Aladağ's study (2009), it was the advisors who asked for a more sustainable program. In our case, however, advisees underlined that they are in need of continuing advisor support, and they felt unhappy about the fact they would be deprived of advisor support in their second semester and/or year at university. This was especially the case with prep students who were expecting different challenges in their transition to departmental studies.

Universities attempt to provide assistance to newly-registered students in various ways. Peer advising is one of these attempts and is critical for stimulating the adaptation process of new-coming students to a university context. It is an acknowledged fact that students who are new to life at university have specific needs that can easily be identified by fellow students who had gone through similar experiences in their own transition period (Diambra, 2002). For students to successfully integrate into university, they should engage in academic and social settings. Otherwise, it is most likely that they will suffer from feelings of isolation, resulting in a possible decrease in student retention (Tinto, 1993).

This study shows the strengths and challenges of a peer advising program in a Turkish university setting, and even in its most immature form such a program can help university students overcome feelings of loneliness, build a strong sense of community, utilize campus resources, and thus meet their immediate advising needs. Developing lasting relationships and sharpening interpersonal skills are among the perceived benefits of the program.

However, as is the case in every program, the pilot peer advising program needs to undergo modifications based on the feedback received from advisors and advisees. This will result in an ongoing improvement and produce better results for the participants.

Studies suggest that participation in peer advising programs has a positive effect on advisees' academic success (Chambliss and Takacs 2014; Posa, 2011). This study did not investigate whether there was an increase in the GPA's of the advisees' taking part in the program. Future research studies may investigate the effectiveness of the program taking this fact into account.

As suggested by the advisors in this study, advisor selection needs to be handled carefully. Having a set of criteria for advisor selection, and a committee to interview candidate advisors should be compulsory. The committee may consist of faculty members, administrative staff from student counselling centers and an experienced advisor. The training of advisors also needs special attention. Advisors should be trained in university procedures and resources as well as basic advising skills. An advisor handbook might also prove very useful as a reference book.

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Research Article

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A Grounded Theory Approach to Educational Aspirations of Youth in North Cyprus: Personal, Parental, and Community-Related Factors on a Divided Island

Tuba Gokmenoglu, Ministry of National Education, tubafidan@gmail.com 0000-0003-0710-4390

Ferda Ozturk Komleksiz, European University of Lefke, fozturk@eul.edu.tr 0000-0001-8373-9481

Gary Grossman, Arizona State University, gary.grossman@asu.edu 0000-0001-7599-0641

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Abstract

Future aspirations play a definitive role in adolescents' developmental outcomes. This research aims to explore the factors involved in building the educational aspirations of high school students in North Cyprus. The study is designed as grounded theory on the contextual framework of the ecological systems model and integrative theory. The research design involves multiple data sources including 101 semi-structured interviews with students, teachers, and school administrators of high schools, ministerial officials, and political leaders of North Cyprus. The findings illuminate the role of parental, personal, and community-related factors that influence students' aspirations. The results reveal that these factors are intertwined, some of which lead to the emergence of other factors. Identifying these relationships has implications for school administrators, teachers, and policymakers, enabling them to design stimulating school settings and eliminate the adverse effects of these factors to encourage students to develop their future aspirations.

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INTRODUCTION

Socioeconomic factors have always been involved in educational matters and consistently have a significant role in forming students' educational experiences, outcomes, future aspirations, and expectations (Rojewski, 2005). The aspirations and expectations of students predict a variety of factors such as academic outcomes, grades, exam scores, educational attainment, motivation, behavioral and emotional difficulties, school attendance, and school bonding (Astone & McLanahan, 1991; Cunningham, Corprew, & Becker, 2009; Dubow, Boxer, & Huesmann, 2009; Marcenaro-Gutierrez & Lopez-Agudo, 2017). Therefore, across nations, there is a growing global interest in the educational aspirations of students, especially adolescents, and an appreciation that the exploration of the factors may inform policymakers on the possible strategies to improve school management and students' academic outcomes (Day, Gu, & Sammons, 2016; Hosler & Stage, 1992).

Research suggests that future aspirations, such as completing high school and having a stable job, support students' overall social and behavioral adjustment (Cunningham et al., 2009; Dubow et al., 2001; Wyman et al., 1993). The literature proposes that the optimistic students on educational aspirations, that is, those who believe that they can reach higher goals, show higher performance than their peers who tend to have more pessimistic educational aspirations (Messersmith & Schulenberg, 2008; Ou & Reynolds, 2008). Thus, the factors that make students optimistic about their educational aspirations are critical indicators for educators and policymakers.

FACTORS AFFECTING THE EDUCATIONAL ASPIRATIONS

There is a consensus on defining educational aspirations that often refer to how much education one wants to achieve, i.e., the level of education students believe they will attain in the future (Khattab, 2003). The overall thrust of the theory suggests that educational aspirations are functions of parental variables, social roles, and socioeconomic status (Elliot & Beverly, 2011; Goodman & Gregg, 2010; Hartas, 2016; Herrold & O'Donnell, 2008; Huang et al., 2013); gender (Gil-Flores et al., 2011; Powers & Wojtkiewicz, 2004); race/ethnicity (Cook et al., 1996); teacher expectations and biases (Dee 2005; Gershenson et al. 2016; Gregory & Huang 2013), school climate in terms of social and academic facilities (Beal & Crockett, 2010; Christofides et al., 2012; Foley et al., 2009), and an environment of high unemployment (DeJaeghere, 2016). The research also generally acknowledges the support and investment of the family as defining students' educational aspirations (Alloway et al., 2004; Berrington, Roberts, & Tammes, 2016; Lazarides, Viljaranta, Aunola, Pesu, & Nurmi, 2016; Louie, 2001). The literature has also documented the importance of personal variables such as valuing school/homework, school self-esteem, and perception of courses as being significantly associated with students' aspirations (Abu-Hilal, 2000; Filozof et al., 1998; Garg et al., 2002). The research devoted to parental variables highlights the influence of parental involvement in educational settings and parents' aspirations with the students' educational aspirations (Greenaway & Cruwys, 2015; Murayama et al., 2016; Wang & Benner, 2014). On the other hand, many studies showed that community level and environmental factors also determine the students' aspirations. Indeed, the quality of the neighborhood affects the probability of completing high school and attending college (Hope, 1995; Leventhal & Brooks-Gunn, 2000).

All of these variables can be expressed as three categories: parental variables, personal variables, and community-related variables. This conceptual review shows that both individual and collective relationships need to be considered to understand how educational aspirations developed. Thus, there is no single factor that accounts for sufficient variance by itself to determine a developmental outcome (Nichols et al., 2010). Bronfenbrenner's (1979) ecological systems framework acknowledges examining multiple layers of a system, affecting the child's developmental pathways. In this approach, the environment includes the home, school, and neighborhood surrounding the child's daily life. This model focused on the dynamic interaction effects of multiple systems, including

students, parents, and the community. Bronfenbrenner mentions five environmental systems defined as Microsystem, Mesosystem, Exosystem, Macrosystem, and Chronosystem (Christensen, 2016).

Bronfenbrenner and several other developmental theorists made a substantial contribution to understanding better the child's role and behaviors in his/her context surrounding different levels. However, some variables found as critical factors in child development (e.g., social class, ethnicity, race, gender, discrimination, and segregation) are unaddressed in many sociodevelopmental frameworks and approaches, such as the organizational, transactional, and ecological levels (Garcia Coll et al., 1996). In their integrative model, Garcia Coll et al. (1996) argued that the normative development of children could only be completely explained in the context of a historically established system of social stratification. Their model contributed to the child development theory by highlighting the roles of ethnic-racial experiences and stratification factors (e.g., stereotypes), and criticized the lack of understanding of group differences in prevalent conceptual frameworks, such as ignoring minorities, perpetuating false stereotypes, and/or disrupting lifestyles (Sue & Sue, 1990). Garcia Coll's framework also suggests exploring and promoting the expanded role played by networks of families and close relatives in the developmental processes of disadvantaged children that may protect them from economic difficulties and social and psychological pressures from society. Furthermore, the integrative theory asserts that the differences of certain groups are particularly prominent in child development. The development of the child is an iterative and multilevelled process. But it is most represented by the psychological and social segregation of the child, the stimulating/inhibiting environments, and the reciprocal effects on family processes. Therefore, there is a need to fully include contexts outside of the family (Garcia Coll et al., 1996).

Engaging Garcia Coll et al.'s (1996) integrative model and Bronfenbrenner's (1979) ecological systems model as leading conceptual frameworks in this paper, we explore the salient variables affecting the students' educational aspirations of different high schools in North Cyprus. Educational aspirations are both predictors of academic and social achievement as well as a result of academic and social achievement (Gorard, Huat, & Davies, 2012). As such, identifying and supporting students' educational aspirations are critically important. Concerning unrecognized nations, the issue becomes whether the relative isolation of learners in this environment impacts those aspirations, and potentially limits academic achievement and social adjustment. There has been little examination of this question, and in the case of North Cyprus, virtually nothing at all. This paper will examine the degree to which the status of North Cyprus as an unrecognized nation impacts the influence of more generally defined variables. This study also examined factors from the student, parent, school, and community levels and their independent and interrelated impacts on educational aspirations within a sample of different North Cyprus high schools.

THE PRESENT STUDY

The existing research discussed above has extended our knowledge of the importance of academic expectations and aspirations and illuminated variables associated with potential discrepancies between educational expectations and aspirations and family-child educational aspirations (Boxer et al., 2011; Dubow et al., 2009; Murayama et al., 2016). Furthermore, many studies deal with parental and student aspirations to predict academic achievement, school attendance, attitudes towards school and learning, and college entrance (Astone & McLanahan, 1991). Considering the educational aspirations of students and parents, over-aspiration has been identified as a predictive factor of students' development, depression, confidence, and academic performance (Greenaway & Cruwys, 2015; Murayama et al., 2016; Wang & Benner, 2014). Although the factors forming students' educational aspirations have long been studied, the literature shows that the variables predicting and determining the educational aspirations are much more complicated than previously thought (Akos et al., 2007). This complexity becomes manifest concerning Cyprus. Given its status as two nations inhabiting one small island and the complex issues that often plague communities, the matter of lower

educational aspirations among students with low socioeconomic status (SES) characteristics becomes particularly complex. Therefore, it becomes particularly important in Cyprus to analyze these issues from multiple perspectives. In this study, we aimed to explore several variables that may affect educational aspirations among socioeconomically disadvantaged and educationally at-risk urban public high school students and socioeconomically and educationally advantaged college-type high school students and determine what these unique influences are for adolescents in North Cyprus.

Some background about Cyprus is critical to understanding this complexity. Cyprus is a divided island and has contained two nation-states since 1983, the "Turkish Republic of Northern Cyprus" in the north and the "Republic of Cyprus" in the south, although the de facto split occurred almost a decade earlier. After the 1974 division, enforced by the United Nations, many thousands of Turkish Cypriots and Greek Cypriots were displaced and forced to migrate, causing social and political conflict on the island that has persisted for more than four decades and appears to be intractable, despite numerous attempts to resolve it. Currently, the northern part of the island is not a part of the European Union (EU), and is recognized only by Turkey. Further, while settlement negotiations continue, seeking some formula for a single state based on political autonomy, political equality, bizonality, and bicommunality, the chances do not seem favorable in the foreseeable future (Zembylas & Bekerman, 2008). This impacts every aspect of life in Northern Cyprus, most crucially in terms of a profound lack of international investment and industrial innovation over a 50-year period in which the global economy fueled by neo-liberal policies surged. Agricultural and industrial production exists only in very small scale enterprises. Thus, job opportunities, including those for well-qualified university and vocational-technical graduates, are very limited, making serious underemployment and unemployment challenges. Young people entering the workforce, therefore, have to rely far more on leveraging individual resources than do similarly qualified youth in the rest of the world, including their peers on the other side of the island. If these young Turkish Cypriots have dual citizenship (e.g., Northern Cyprus and EU nation), they will tend to leave the island to study or work in the United Kindom, Australia, or EU countries (Mertkan-Ozunlu & Thomson, 2009). This causes a major drain of highly capable future workers, but on an individual level, it is preferable to the alternative. For those not so advantaged, the prospects are bleak. This begs the question of not only what Northern Cyprus youth will do, but also how schools at the apex of these contradictions should respond.

Besides the problems of youth, schools also face increasing pressures involving the recent migration of others in the region, fleeing political and economic upheaval. Cyprus' geographic location has made it a prime destination for refugees from war-torn Syria, failing states in Central Asia, and political dissidents from Turkey, among other places. This creates even more stress on social life in the Turkish Republic of Northern Cyprus (TRNC). The citizens of TRNC are already marginalized; these new migrants are marginalized even more profoundly (Vural & Rustemli, 2006). The children of these new immigrants, challenged as they are in terms of basic needs, are even further disabled by an inability to speak the major language of Northern Cypriot society (Turkish). These issues, too, come to the doorstep of schools. The serious questions this complexity of social conditions bring and that the schools must answer are: What kinds of educational aspirations can young people in North Cyprus reasonably have? What are the hindering and enabling factors in this context? This, then, is the setting in which high school students develop their educational aspirations and to which schools respond. These issues are the foci of this study.

METHOD

The study is designed in the context of grounded theory to examine student aspirations through theoretical analysis. This method enables the researcher to make sense of large amounts of data (Charmaz, 1996; Glaser & Strauss, 2017). Grounded theory methods are suitable for studying social psychological concepts such as motivation, emotions, identity, prejudice, and conflict by examining the individual processes, interpersonal relations, social processes, and the interaction effects (Charmaz

& Belgrave, 2007). Since grounded theory has an inductive nature, it is used to explore the participant's meanings (Glaser, 1978). In this way, grounded theory creates a bridge between interpretative analyses and positivist assumptions.

PARTICIPANTS

The sample utilized purposive sampling , which can establish common patterns emerging from a wide range of differences (Patton, 2015). To maximize the differences and identify the picture of aspirations of public high school students, the students were selected from a diversity of high schools, nationalities, gender, GPAs, and districts. There are 31 public high schools in the north, 14 of which participated in the study. Data were collected through interviews with high school students (n=56) from all six districts (Table 1). The students are from different nationalities, including Turkish Cypriots and students from other countries (primarily Turkey, Moldova, Hungary, Russia, United Kindom, Pakistan, Syria, and the Turkic Republics). Students from each of three different types of public high schools participated in the study. Their GPAs ranged between 5.00 and 9.40 (out of 10.00). The student sample compares favorably with the proportions of students in North Cyprus in these categories generally.

Table 1. *Demographics of Students*

Variables		*n*
High School Type	College-Prep	7
	General	21
	Vocational-Technical	28
Nationality	North Cyprus	11
	Turkey	21
	Both	18
	Other	6
Gender	Female	21
	Male	35
Having A Private Tutoring Course	Yes	12
	No	44
Total		56

Additionally, 24 teachers, 12 school administrators, four ministerial officials, and five political leaders were recruited as participants. Participating teachers came from disciplines including Literature, Geography, Chemistry, German, Art, Mathematics, Technical and Vocational Education, and Guidance and Counseling. Their teaching experience ranged from 3 to 31 years. The home disciplines of administrators were English, Literature, Sociology, Computer Science, Biology, Music, and Technical and Vocational programs. Their experience ranged from 21 to 31 years. The officials group was composed of the Ministry of Education inspectors, consultants, and undersecretaries. All these officials were teachers before coming to their current positions. The five most influential political parties with a large base of voters were included in the study: One party leader, two former ministers of education, and two education representatives of parties were interviewed. Three of them were academicians, and two of them were teachers. In total, 45 non-student educational professionals participated in the study, creating the total study sample, *n*=101.

DATA COLLECTION AND ANALYSIS

To collect the data, semi-structured interview protocols were developed based on the essential aspects of aspirations assumed by the ecological systems approach and integrative theory, namely parental, personal, and community-related factors. Once the protocol was finalized, two researchers from the psychology and sociology disciplines provided feedback. The revised protocol was piloted in three different public schools with eight students and six teachers. After the pilot study, necessary changes and revisions were made to the protocols.

A three-step approach of grounded theory was adopted for the analysis (Glaser & Strauss, 2017; Strauss & Corbin, 1990). First, the data were coded line-by-line to keep ourselves close to the data, as Glaser (1978) suggests. Each researcher reviewed the data independently to identify the codes. Initial codes ranged widely across different categories. In the second step, the researchers calculated the intercoder reliability with a consistency rate of 87%. This step also helped researchers compare the initial codes and explore the further relationships among them. In this step, many codes were revised and matched or combined. In the third step, categories were created based on the codes emerged in the data. We further attempted to build a conceptual framework based on our findings to understand better the affecting factors of students' aspirations. We used the Maxqda Analytics Pro software was used throughout the coding and progressively organizing of the data. While presenting the data, quotes from student opinions were coded as S, citations from teachers were coded as T, citations from school administrators were coded as A, quotes from ministry officials were coded as Ministry of National Education (MoNE), and quotes from political leaders were coded as P. Each interviewee was assigned a number so that the letters and numbers at the end of quotes represent the rank and group of the interviewee.

A variety of safeguards were engaged to ensure the validity and reliability of the data. The data collected from high school students were then triangulated by the responses of other stakeholders, namely teachers, school administrators, ministerial officials, and political leaders (Miles, Huberman, & Saldana, 2014). Parallel interview forms were developed to provide the face and content validity of the instrument. An expert panel reviewed the schedule, and data were gathered in the final application through interviews with 101 participants in private discussions to ensure the confidentiality of the interviews.

FINDINGS

The educational aspirations of high school students are evaluated based on the opinions of the different participants. According to students; one of them hopes to join the army; three of them are not considering attending university; one of them wants to be a soccer player; one of them wants to go abroad to find a job; thirteen students report an aspiration to attend university in Turkey; and thirty students wish to attend university in North Cyprus. None of the North Cypriot university-bound students have decided what to study.

The subjects that students want to study at university differ according to the type of high school they attend. Accordingly, in interviews from "College-Prep" high schools, all the students are considering medicine, law, and engineering. By contrast, students at "General" high schools state that they want to go to a university or vocational college in such fields as sports, conservatory, public relations, management, banking, service occupations, literature, and nursing. In "Vocational-Technical'' high schools, the results are quite different, and the number of students who want to go to university decreased dramatically. Only 10 students who wish to go to university are planning to continue in their field, while others want to try new areas. The students, who do not wish to attend university, would like to work in professions related to their departments such as cooking, chef, hotel management, electric, electronic, restaurant management, and secretarial jobs.

According to most teachers (*n*=20), students have aspirations, but they are not optimistic about their ability to realize them. What they study is not the issue; they just want to attend a university. Other teachers complain that students could not identify "real" goals, which tended to concern occupations people see in their daily lives, those which are popular, or those they think would make them more employable. Vocational high school teachers report that their students do not have high aspirations and aim at getting an ordinary job related to their field. Most of the teachers (*n*=20) said that male students plan to study in any university department so that they can apply for police positions after graduation.

The findings on the factors affecting the educational aspirations of high school students focus on three major categories of factors, namely, "Parental," "Personal," and "Community-Related," were summarized in Table 2.

Table 2. *Categories and Codes of Factors Affecting the Educational Aspirations*

Categories	*Description*	*Codes*
Parental Factors	Parents' educational aspirations and attitudes towards their children's choices, career plans, and aspirations are significantly associated with students' academic outcomes and educational aspirations (Elliott & Beverly, 2011). Parental assets explain the variance of students' aiming for higher aspirations and reaching better educational support and encouragement, and thus academic outcomes (Zhan, 2006).	Parents' Attitudes Parents' Aspirations Parental Assets
Personal Factors	Contextual influences include ethnic background, socioeconomic status, personal resources, perceived life barriers like adaptation level, and language barriers that influence students' aspirations (Hartas, 2016; Khattab, 2013).	Ethnic Roots Social Living Conditions
Community-Related Factors	Being in a rich community, school, and social resources, both inhibiting/promoting environments, and adaptive culture directly affect students' aspirations (Beal & Crockett, 2010; DeJaeghere, 2016; St. Pierre, Mark, Kaltreider, & Campbell, 2001)	Educational Politics, Opportunities, and Facilities Political Climate

PARENTAL FACTORS

Parents' attitudes and *aspirations* towards their children's educational aspirations and career choice, and *parental assets* emerged from the data as important variables. Although college-prep high school students report their university education aspirations, all their teachers believe that students do not aspire or have low aspirations. They claim that students lack "purpose as regards future" because "they are spoiled by their parents" and "think that whatever they do, they will still send them to a university."

> *Universities in Cyprus are easy for them. Whatever they do, they will enter the universities here with or without a scholarship. For this reason, they do not have the ambition and motivation to study. Very few students want to go to a university in Turkey or take private courses for this goal. (T16)*

> *50% think like that: "If I cannot enter a university in Turkey, we have schools here [in TRNC]. I have another chance." (A6)*

MoNE officials emphasize the attitude of parents and claim that Cypriot parents tend to have a decisive say in the goal-setting process of the adolescents:

Unfortunately, there are serious problems in the child-raising culture of Turkish Cypriot society. It isn't about the teenagers themselves. The over-protective family is widespread in our country. The parents choose teenagers' goals on behalf of them. They do not want to send them to universities far from here, even if they are more qualified. (MoNE3)

Families have the perception that their child must always be a teacher, lawyer, doctor, or dentist. We have to overcome these ideas. Can the system in North Cyprus provide family education and career guidance? It cannot. (MoNE4)

One of the students from general high school supports this by explaining her situation:

My dream is to study Korean Language and Literature. Every family wants their child to have a profession like a doctor or a lawyer. They say I am free to choose one of them. My parents tell me they are with me no matter what I choose, but not in Korean. I'm not free. When I select the program I want, they will show an adverse reaction. I did not dare to tell them. (S53)

As MoNE4 and S53 mention, parents' aspirations differ from students' in this sample. Another student said that he does not speak to his parents about this topic; 13 students said that their parents do not support the area or country they want to study, and 45 students said that their parents do not interfere in the area that the student wants to study but do have a say in the country they want to study in.

If I want to go to Turkey…my parents won't let me. They don't want to send due to safety concerns. But I would like to study in Turkey. (S54)

MoNE officials and political leaders commonly state that students usually aim to study at a university. However, these aspirations are affected by financial conditions. If family assets are not favorable, they tend to target free public universities in Turkey; however, students with financial means aim at studying in Europe or at private universities in North Cyprus. The students' data proves this claim, and 25 students emphasize the importance of receiving a scholarship while studying at university since their parents do not have the necessary wealth to support them.

PERSONAL FACTORS

Interviewee groups emphasized the importance of *ethnic roots* and *social living conditions* as critical determinants. All teachers and administrators mention that immigrant students' low economic conditions, language barriers, adaptation problems, and life conditions harmed their goals.

When the economic level and socio-cultural level of the family are high, the importance given to education increases. More than 50% of our children do not have a study room. The value given by parents to education is debatable in these cases because of the living conditions and opportunities they can serve their children. (A4)

Political leaders emphasize that most of the students in public schools have to work, and as parents have to work for long hours, they can not spend enough time with their children. Furthermore, having to work in a job often reduces their academic achievement, and in turn, affects aspirations.

Some children skip school and go to work with their parents. These children have to support their family. (MoNE2)
Usually, these children are from worker families, people who immigrated here to work. Some of their families came illegally. These people are working for meager wages and living in very unfavorable conditions. Most children lack clothes, they have difficulties in buying books, and don't even have overcoats. (P4)

COMMUNITY-RELATED FACTORS

Educational politics, opportunities, and facilities and *political climate* are the codes emerged under the category community-related factors.

EDUCATIONAL POLITICS, OPPORTUNITIES, AND FACILITIES

Interviewees state that systemic factors about education impact student achievement and, thus, educational aspirations. The quality of education, sense of education, educational policies, and applications affect students' faith in success and create despair about aspirations.

All school administrators acknowledge that there are limited social, cultural, and sports activities at schools. Teachers and administrators report that students who do not have high academic aspirations still show success in sports or artistic fields. The lack of such activities created negative results.

> *Government policy has to change. I think it's forgotten that there are children here. There must be places where children can be active. There is nothing in terms of sports and culture. When they are not present, children acquire bad habits. (T16)*

Similarly, all teachers and administrators mention the improvement of physical conditions at schools and creating areas where different activities can be made would help students be directed to not only certain professions but also to new areas. All politicians and ministerial officials also take attention to the low academic and social facilities, even the physical conditions of public high school buildings, by comparing them with private high schools. At this point, personal and community-related codes converge.

> *There is a gap between private schools and public schools in terms of working hours, discipline inside the school, and the quality of the facilities inside the school; Students feel "otherized" at public schools. School begins to turn into a place where economic and social discrimination in this society are reflected. Public schools are places where children of low-income families are enrolled. Education institutions perpetuate social injustice is being felt. (P3)*

All interviewees other than students point out there is a need for more effective guidance available to students at younger ages. While school staff did not mention their lack of guidance for the students in building their aspirations, all politicians highlighted the importance of knowing the children and helping them in exploring themselves.

> *We have problems in guiding children. At schools, students are told that they can succeed if they want. But they are not told what to do. What is the child skilled at? The child does not know. (P2)*

The politicians are also at the same stand as all other interviewees, complaining that a coherent sense of education cannot be established in the country. According to the participants, the characteristics that should be acquired by a generation that would contribute to the future of the country were not defined and guided.

> *Children cannot set high aspirations themselves, and neither can families. It is education that has to help set the goals of the children. It will determine where we want to see the education standard five years from now. (P4)*

The students' data also proves that students need guidance for career planning, setting or reaching goals, effective study habits, and also counseling for test anxiety.

> *It is challenging to set a higher goal for me. Because I have a problem of can not work hard. I am getting bored quickly. (S36)*

> *I am afraid. I am always afraid of failing at university exams. I suffer from a panic attack when taking an exam and I forget what I already know. (S50)*

I am in a verbal field; people ask, "What can you do in that field?" And I also think that I will have difficulty. I regret a lot. (S48)

This code proves that neither factor alone has sufficient variance to determine a developmental outcome. This could actually be considered as a personal factor. However, not being able to decide on aspiration, and not being able to decide exactly what one wants, appeared in this category as an underlying variable. Regarding this, students report that they are not knowledgeable about many professions.

I still do not know what to select because I am afraid of making decisions. It turned out that I was successful in the verbal area, but I am in the quantitative department. My math scores are high, but I do not like it. I do not know anything about professions. I spoke to my guidance teacher. As we had no internet connection in our school, she told me to do my search and bring the information. But I did not take any serious step in this as I am afraid of making decisions. (S53)

Another policy factor affecting aspirations is the grade passing system in high school. Even the students emphasize as there is no failing, they do not need to study hard nor set high academic aspirations.

With the new system, you can pass the class in any case, even if you get three [system is out of 10]. My son says, "Dad, I have the right to get three from a course, and I will use it." My son does that. In our time, getting 3 was something to be ashamed of. We used to study to get higher grades. (P2)

Teachers, administrators, ministerial officials, and politicians questioned teacher qualities and lack of inspections when asked about factors affecting students' aspirations. They agree that education should be governed after being freed from political concerns.

There is a political side to teacher assignments. While choosing teachers, they have to be chosen with the right attitude. Unfortunately, the commission which conducts the exam is created through political assignments. People who do not deserve it can also be assigned. (T23)

Teachers must not be assigned to life terms. Teachers must know that if they are not good, if they can not help students set high aspirations, they have to resign. (MoNE2)

Again, almost all the students state that they could pass the university entrance exam if "teachers gave better lectures" (S13). A school administrator supports students by complaining about the lack of questioning for the quality of education: In the system, no one inspects my school and asks, "what is the reason for this mess?" (A1)

Furthermore, all interviewees emphasize that North Cyprus does not have its own national secondary education curriculum and uses the program belonging to Turkey. Students said that the topics handled in full-day teaching programs in Turkey could not be finished in TRNC where education is half-day, or, as they are covered very fast, they are not learned in detail. For this reason, people with financial means go to private courses or take private tutoring after school to compete with students in Turkey in a university exam.

We don't have our own program. It is sent from Turkey. Turkey applies it full-day, whereas we try to shrink it between 8:00 and 13:00. (A1)

Likewise, depending on the program and schedule, teachers and administrators conclude that course books and related materials are not produced as unique to North Cyprus but brought from Turkey. Administrators claim that books were not delivered from Turkey on time. For this reason, they had difficulties in the first few months of the academic year, which affects the quality of instruction.

All participants believe that half-day education affects student achievement negatively and that students are behind their peers in Turkey academically. A student summarizes the negative influence of this:

We come to school at 08.30, it ends at 13:00. The teacher to comes and takes the attendance for 35 minutes, then he lectures for half an hour, that's all, it is awful.(S40)

One teacher points out that not being at the school after 1.00 pm impacts student lifestyles and take attention to how the future aspirations are shaped in a negative way for the students who have to work to support their families and do not have private tutoring opportunities after school:

Some students are making money by working at bars and casinos illegally. Those who can speak English can make very good money. They give some to their parents and spend the rest to buy drugs and cigarettes. Drugs are very cheap; they can find Bonzai for 5 TLs [about $1]. Under these conditions, you accelerate the existing problems when you send them away from school early. (T20)

All the participants other than the teachers mentioned that teacher absenteeism, which emerges due to frequent union strikes, worsens the situation. Teachers often strike for several days a week, and strikes can go on for very long periods of time. School administrators and politicians criticized teachers who did not follow a remedial program at the end of the strike, affecting students' preparation for the university entrance examinations.

In this country, all unions are using the same instrument without considering the impacts. As they always use strikes, education is interrupted. There are losses all the time. Nobody thinks, "We had a strike for 3 months. Let us make up for that loss." (P3)

When teacher absenteeism occurs, other problems emerge. Even with the best curriculum and teaching practices, teacher absenteeism will continue to be a major problem.

POLITICAL CLIMATE

All interviewees, including students, claim that unemployment and limited areas of employment in the country force them to adopt lower aspirations and lead them to hopelessness.

Unfortunately, if they have the means, our high school students can easily settle into university programs here, but after completing these programs, they cannot find a job in their field. (MoNE1)

The students are already aware of the problem raised by MoNE1, and most of them aspire to a more placeable profession. While the "College-Prep" students can dream of different occupations and want to attend universities abroad, most (n=32) "General" and "Vocational" high school students have lower aspirations. The change in the aspiration is not only rooted in parental assets but the unemployment problem in the country. Thus, students prefer professions that will always be needed and bring civil servant opportunities like lifetime job guarantee. All administrators highlighted that the purpose of university attending aspiration is to create a route for being a policeman or soldier:

When you ask, "what would you like to study, what would you like to do?", boys want to be a soldier or policeman, girls want to be a nurse. Attention that these are the most employable fields. (A3)

The fact that North Cyprus is not recognized and the atmosphere of uncertainty created by the fact that the divisive political issue remains unsolved were cited by all interviewees, including students, as the reasons for hopelessness among students for the future.

Cyprus negotiations continue for 40 years; the process is ongoing. In this country, depression and pessimism is the dominant mood. Naturally, the youth are affected, too. (A7)

MoNE1 explains how this political climate affects students' aspirations:

The political structure of Cyprus causes problems. Due to embargoes and isolation, Turkish Cypriot youth cannot find a place in the world. Even if he does sports, he knows that he cannot carry it outside North Cyprus. Also, if he does art, he knows that he cannot take it outside North Cyprus. Even if he is the best in a specific field, he notices that it is limited to North Cyprus only. (MoNE1)

DISCUSSION, CONCLUSION, AND IMPLICATIONS

The findings revealed that high school students enrolled in public schools in Northern Cyprus are having problems in setting goals. Those students with academic goals often do not set them high, tending to seek education and training to make them easily employable. Only a few are aiming at graduating from university. In other words, except for the one student, who dreams of learning Korean literature and language and going to Korea, none of the participants talked about the 'dreams' of the students in the country. These findings are rather thought-provoking for the future of the country since the literature shows that the lack of aspirations and indecisiveness of adolescents lead to low or insufficient academic achievement, depression, and lower well-being (Cheryan, 2014; Gorard, Huat, & Davies, 2012).

Parental attitudes, aspirations and assets, ethnic background, socioeconomic status, living conditions, educational policies, opportunities, facilities, and political climate were salient in this study as influencing factors of youth's educational aspirations. These codes were framed under three categories from the perspectives of ecological and integrative development approaches. There is a vast amount of study in the literature examining the relation of discrepancies between academic aspirations and expectations, the parental-child differences between educational aspirations and academic achievement to theoretically associated with social, economic, academic, and behavioral variables (Boxer et al., 2011; Lv et al., 2018). The large body of the research was designed as survey studies and explored the correlations between the variables mentioned before. In this study, grounded theory methodology, which provides in-depth data and rich conceptual analyses, was chosen to contribute to the scope of questionnaire-based studies in the literature (Charmaz, 1996). The narrative data in this study allowed an in-depth understanding of the parental and personal variables when combining them with community-related variables.

Most of the students in the data are immigrants with lower family assets that bring other factors together as a barrier to setting higher future aspirations. These factors marginalize these groups compared with their peers from the hosting communities (Keddie, 2012). Having poorer living conditions and socioeconomic status forces most students to work illegally or make them aspire to employable professions. These findings are not only associated with parental and personal factors, but also the community-related factors that change the situation. Garcia Coll et al. (1996, p.1896)'s integrative approach highlights the interactive relation between "inhibiting/promoting environments and adaptive culture" on the family-related variables and children's development. Similarly, St. Pierre et al. (2001) highlight that attending rich communities, schools, and social facilities may perform as a barrier against the undesired behaviors typically related to poor neighborhoods, including substance abuse, low academic achievement, and school dropout. The findings are also important for the inclusive education literature and can also be used to inform educational policy departments about the effect of migration policy on establishing future aspirations. This research contributes to existing research investigating school climate and inclusive education and the relationship between educational aspirations and students' academic outcomes with inclusive education (Cook et al., 1996; Dimitrova et al., 2018; Flecha, 2015) by exploring educational policy and community-level factors affecting the mostly disadvantaged and immigrant students' aspirations in Northern Cyprus. Aspiring

to employable occupation is not unique for North Cyprus students, and it is a well-documented motivation for most immigrant hosting countries generally (Hoffman et al., 2003).

Our findings also align with existing knowledge on the effect of parental and personal variables (Majoribanks, 2003; Zhan & Sherradan, 2003) and contribute the literature by providing a lens through socioeconomic status' creating a chain effect of shaping aspirations by having lower family assets and barriers to reach the quality of instruction, appropriate curriculum, rich club and social activities, individualized guidance opportunities. The study was undertaken within a Northern Cyprus context and could therefore be seen as limiting, but the narrative of adolescents' aspirations development can not be interpreted separated from the community-related factors is global. The lack of political recognition and the embargoes applied to the country, which prevent the development of such sectors as agriculture, tourism, and banking in Northern Cyprus, have been identified by some studies (Katircioglu, 2006). The uncertainty of the future of the north side, the political and economic embargo, resulting in a lack of job opportunities, and a limited job diversity could be accepted as a factor of the lower aspirations since economic development indeed has a direct impact on the social and economic life of a society (Katz, 2004). However, the consequences of this dispute on the young are devastating to their academic aspirations. Thus, while the relative poverty and dislocation in North Cypriot society negatively impact students' educational aspirations, as is evident elsewhere in the world with similar conditions, the isolation adds an extra dimension, enhancing the sense of hopelessness. Indeed, the impact of all of these factors affects students' educational aspirations everywhere. But they have an accelerator effect in North Cyprus, creating a vacuum that makes holding high academic aspirations nearly pointless. The high school experiences have a high impact on the post-secondary education plans (Hossler & Stage, 1992). While the Cyprus problem is expected to continue for a while, political actors should develop more permanent policies to overcome students' despair. Long-term strategic planning in the education sector as a state policy is desperately needed, aggressively moving forward to address academic infrastructure, curriculum, career development, and teacher absenteeism. Indeed, without such decisive action, the potential for students building higher educational aspirations and hope for their future careers may be limited.

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Research Article

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Examination of the Opinions of Pre-School Teachers Regarding the COVID-19 Pandemic Period's Reflection of Pre-School Education

Endam Düzyol, Research Assistant, İstanbul Kültür University, e.duzyol@iku.edu.tr
0000-0002-1616-5200

Günseli Yıldırım, Prof. Dr., Dokuz Eylül University, gunseli.yildirim@deu.edu.tr
0000-0002-2513-7105

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Abstract

In this study, it was aimed to examine the opinions of preschool teachers about the distance education process in preschool education in the COVID-19 pandemic. The research is designed as a case study, one of the qualitative research designs. The working group consists of 22 preschool teachers. A semi-structured interview form was used as a data collection tool. The data obtained in the research were examined separately by the two researchers and content analysis was carried out. Miles and Huberman's formula was used to calculate reliability among researchers and the harmony was found to be 86. When the views of the preschool teachers who participated in the study are investigated, it is seen that the teachers carried out distance education activities through "the use of technology and the cooperation of the family" during the COVID-19 pandemic. During this process, teachers stated that they had problems with "children, families, participation and technology". It is seen that there are teachers who use different methods and techniques when preparing daily plans, as well as teachers who cannot perform activities that support social development. All preschool teachers participating in the research think that the COVID-19 pandemic process has negative effects on children such as social-emotional development, physical and psychological violence in the family environment. In distance education, it is seen that families support children especially in "preparing a learning environment". Teachers expressed that the COVID-19 pandemic process leads to a different experience in their professional development and that they use new methods and techniques.

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INTRODUCTION

The COVID-19 pandemic has had profound effects in many ways, especially in health and education, as also social and economic. The rapid spread of COVID-19 and its emergence as an epidemic and becoming a threat to all countries of the world has led to radical measures being taken in societies. During this extraordinary period, "education" is considered one of the areas experiencing the greatest change (Can, 2020). Face-to-face education has been suspended in schools all over the world and distance education has been started. Nearly 770 million students moved away from their schools with the closure of schools all over the world (Zhong, 2020). In this process, Turkey, like all countries of the world, has taken diverse precaution related to education. The transition to the distance education system by making various arrangements related to educational activities is within the scope of these measures (Ministry of Health, 2020). Republic of Turkey Ministry of National Education decided to temporarily suspend face-to-face education and move to distance education for preschool, elementary, high school levels on March 16, 2020. It has been expressed that distance education will be expanded by providing compensatory training via the Education Information Network (EBA) and TRT via television (Republic of Turkey Ministry of National Education, 2020). More than one million educators and more than 20 million students have transitioned to distance education and tried to maintain continuity in education (Karip, 2020).

Distance education is an educational model in which students contact synchronously or asynchronously with each other and their teachers via the internet through online platforms in e-learning environments and information is transmitted (Gökdaş & Kayri, 2005; Yorgancı, 2014; Akyürek, 2020). It is carried out in various ways such as computer, radio-tv broadcasts, video conferences, teleconferences, written materials, web and internet tools (Moore & Kearsley, 2011). In terms of time and space, distance education offers a more flexible environment than face-to-face education (Bozkurt, 2017; Solak, Ütebay & Yalçın 2020). It leads to communication between teachers and students living in different places and to the creation of a collaborative working environment (Altıparmak, Kapıdere & Kurt, 2011). Nevertheless, distance education has some limitations besides such advantages. Distance education prevents the development of students' socialization, skills and attitudes (Lau, Yang & Dasgupta, 2020).

During the COVID-19 pandemic, distance education has had a critical effect on the lives of individuals besides preschoolers at all levels. In the preschool period, which is seen as the basis for future periods of life, children show important progress in all areas of improvement (Aryanti, Warsini & Haryanti, 2018). It is one of the periods when individuals are most open to learning. In this period, it is aimed to gain basic concepts; support cognitive, physical, social-emotional, self-care skills and language development. 0-6 years of age and education received during this period are of great importance because it affects the environmental individuals presented in the preschool period throughout their lives (Kağıtçıbaşı, Sunar, Bekman & Cemalcılar, 2005; Tabuk, İnan & Tabuk, 2018). Since preschool children are the smallest group in age compared to children at the other level, they are seen as one of the most affected groups in the process of transitioning from face-to-face education to distance education with the COVID-19 pandemic (Yalman Polatlar & Bayram Tuncay, 2020). While higher-level students can effectively benefit from the distance education process, preschoolers may have difficulty because their attention span is quite short (McNeill, 2020). Children learn by doing and living through various sensory and physical activities during this period. Therefore, it is thought that the preschool period is the most limited education level when applying distance education activities. Children should be hearten to learn through activities that require art, music, movement and practice. In addition, children during this period have social-emotional needs in the form of understanding/expressing emotions, engaging in empathic behaviors, taking responsibility, communicating and interacting with their peers and adults (Hao, 2020). Children's interactions and communication with their parents, as well as their friends and teachers, are very important (Aral &

Kadan, 2018). Preschool teachers, who have made a great contribution to the development of children and were taken as the first role models, have experienced many problems during the pandemic process. The remote online execution of training and the closure of schools have forced teachers and caused some problems. In the covid-19 pandemic that has influenced the whole world, an important task has been assigned to preschool teachers for the realization of a qualified education process (Balaman & Hanbal Tiryaki, 2021; Başaran, Doğan, Karaoğlu & Şahin, 2020). Teachers, while adapting to the distance education system in a short time, supported children and parents. Therefore, teachers have played a key role in this process (Demir & Özdaş, 2020).

It is seen that the first applications regarding distance education at higher levels date back to centuries ago (Kaya, 2002). On the other hand, when the relevant literature in Turkey and abroad on the practices related to distance education in the preschool period is investigated, it is seen that the studies are new and limited (Akkaş Baysal, Ocak & Ocak, 2020; Hartatik & Bia'yuni, 2020; Kim, 2020; Kuset, Özgem, Şaşmacıoğlu & Güldal Kan, 2021; Yalman Polatlar & Bayram Tuncay, 2020). For this reason, it can be said that new research is needed to determine and eliminate the deficiencies related to distance education in preschool education. It is thought that conducting research that includes the opinions of teachers, who are the most critical part of the process, about distance education activities will contribute significantly to the relevant literature.

In this study, it was aimed to examine the opinions of preschool teachers about the distance education process in preschool education in the COVID-19 pandemic. For this purpose, answers to the following questions were sought:

1. How did preschool teachers conduct the distance education process during the COVID-19 pandemic?
2. What kind of changes have preschool teachers made in pre-school education during the distance education process?
3. What kind of problems did preschool teachers experience in distance education during the COVID-19 pandemic?
4. How do preschool teachers think parents provide support to their children in distance education process?
5. What are the recommendations of preschool teachers regarding distance education in preschool education?

METHOD

RESEARCH DESIGN

The research is designed as a case study from qualitative research patterns. Case studies aim to examine an up-to-date situation holistically and in-depth from a realistic perspective (Akar, 2016). Case studies are indicated as a qualitative approach that examines limited events over time with data collection tools covering multiple sources such as observation, interviews, reports, documents and identifies themes related to events (Creswell, 2014). In case studies, based on the "How and Why" questions, an event that the researcher cannot control is examined in a real environment (Yıldırım & Şimşek, 2011). In this regard, the opinions of preschool teachers regarding the reflection of the COVID-19 pandemic process on preschool education were examined in depth.

SAMPLE

The study group was defined by using convenient sampling method, which is one of the purposeful sampling methods, which is easily accessible. Purposive sampling enables in-depth research by selecting rich situations in accordance with the purpose of the study. It is preferred when working on situations involving certain characteristics (Büyüköztürk, Kılıç Çakmak, Akgün, Karadeniz & Demirel,

2018). Researchers select the participants among the easy-to-reach and volunteer people in convenience sampling (Gravetter & Forzano, 2012).

The study group consists of 22 preschool teachers working in independent kindergartens affiliated to the Ministry of National Education in the Buca district of Izmir province.

DATA COLLECTION TOOLS

In this study, a semi-structured interview form was used as a data collection tool. A semi-structured interview form is a data collection tool that allows individuals to make comparisons by identifying common and different points between their thoughts about specific events or situations (Creswell, 2014; Yıldırım & Şimşek, 2011; Gay, Mills & Airasian, 2012). So as to collect data in the research, a form containing 10 questions was created by the researchers by applying the opinions of experts in the field of preschool education. By piloting with five teachers, the level of comprehension of the questions was measured and the interview form was given its final form.

The questions on the interview form are as follows:

"How did you conduct distance education during the COVID-19 pandemic?"

"What kind of problems did you experience in distance education during the COVID-19 pandemic?"

"What changes do you think distance education has led to in your daily plans?"

"What are the behaviors you observed in children when switching from distance education to face-to-face education?"

"How do you think the COVID-19 pandemic affects children?"

"What kind of problems do you think children experience in distance education?"

"How do you think parents provide support to their children in distance education?"

"How do you think the COVID-19 pandemic affects your professional development?"

"How do you evaluate distance education activities during the COVID-19 pandemic?"

"What are your recommendations regarding distance education in preschool education?"

DATA COLLECTION PROCESS

Preschool teachers were informed about the purpose of the research by visiting independent kindergartens with a medium socio-economic level in Buca district of Izmir province. The 22 preschool teachers who agreed to participate in the study voluntarily were asked when they were available and interview dates were determined. Face-to-face interviews were conducted in order to obtain the data in depth. In the interviews, care was taken to establish a warm and comfortable environment with the teachers. The interviews lasted about 20-30 minutes with each teacher. The data of the interviews with the voice recorder have been converted into written documents by the researchers.

DATA ANALYSIS

The data obtained in the research were assessed by content analysis method. Content analysis is the systematic analysis and interpretation of information obtained from various documents, archives, visual documents and mass media (Gökçe, 2006). "Content analysis consists of four stages: coding the data, finding the themes, organizing the codes and themes, and defining and interpreting the findings" (Yıldırım & Şimşek, 2011).

The data obtained in the study were analyzed separately by two researchers and a content analysis was made. Categories and themes were created within the codes. Afterwards, the codes, categories and themes produced separately by the researchers were compared and clarified. The formula "Reliability = Consensus / Consensus + Disagreement" developed by "Miles and Huberman (1994)" was used to calculate reliability among researchers. According to the results obtained, the percentage of agreement among the researchers was found to be 86.

Obtained findings are presented in tables. While the findings were tabulated, the codes were specified as frequencies. The interview forms of the participants were specified as S1, S2, S3…. The reliability and validity of the study were increased by including the sentences belonging to the determined categories. For the internal validity of the study, expert review was sought. The research process is explained in detail to increase its external validity.

FINDINGS/RESULTS

This section provides codes, categories, themes and direct citations to determine the opinions of preschool teachers regarding the reflection of the COVID-19 pandemic on preschool education within the scope of the sub-objective of the research.

"How Did Preschool Teachers Conduct Distance Education During the COVID-19 Pandemic?"

The views of the preschool teachers who participated in the research regarding the distance education activities carried out during the COVID-19 pandemic are presented in Table 1.

Table 1. *Distance education activities*

Theme	*Categories*	*Codes*	*f*
Distance Education Activities	Use of Technology	Zoom "T1, T4, T5, T7, T8, T9, T11, T12, T13, T15, T16, T17, T18, T19, T20, T21, T22"	17
		EBA "T3, T9, T14, T16, T17, T18, T21"	7
		WhatsApp "T6, T11, T15, T16, T19"	5
	Cooperation with the Family	Communication with parents "T2, T4, T10, T11, T15, T19"	6

When table 1 is examined, it is seen that the theme of "Distance Education Activities" is categorized as the use of technology and cooperation with the family.

The codes and frequencies obtained for the category of use of technology are as follows:

Zoom (f=17), EBA (f=7) and WhatsApp (f=5).

Some of the views of preschool teachers regarding this category are as follows:

T6: *"We have conducted lectures and interviews through internet and WhatsApp groups."*

T12: *"During the pandemic process, we carried out live lessons through zoom as a lesson to the distance education application every day. In live lessons, we primarily made games with visuals. I tried to give all the students a say."*

T14: *"I conducted live lessons through EBA and individual interviews with children."*

T19: *" During the COVID-19 pandemic, I conducted distance education by giving lessons on Zoom for 3 hours a week and by sending examples of the activity flow, which we prepared in a way that could be applied under family guidance, via WhatsApp to families every day."*

The codes and frequencies obtained for the category of cooperation with the family are as follows:

Communication with parents (f=6).

Some of the views of preschool teachers regarding this category are as follows:

T2: *"I have kept in contact with parents as much as possible. I think that I am successful, at least I ensure the communication with my students."*

T4: *"After collecting material at school, I tried to get them to the parents. We continued our lessons through Zoom."*

T15: *"I carried out the daily activity plan by sharing it with families on WhatsApp, giving live lessons via zoom, giving feedback to home studies and providing one-to-one communication with students."*

When we examine the views of the preschool teachers who participated in the study, it is seen that education activities are carried out through technology in order not to interrupt education during the COVID-19 pandemic. In addition, it can be said that some teachers spend most of their time together and carry out effective educational activities in this process in cooperation with families that have an undeniable effect on their development.

"What Kind of Problems Did Preschool Teachers Experience in Distance Education During the COVID-19 Pandemic?"

The opinions of the preschool teachers who participated in the study about the problems they experienced in distance education during the COVID-19 pandemic are presented in Table 2.

Table 2. *Problems in distance education*

Theme	*Categories*	*Codes*	*f*
Problems in Distance Education	Children	Difficulty concentrating "T1, T5, T6, T13, T15, T21"	6
		Not communicating "T15"	1
	Family	Inability to use technology "T4, T11, T14, T15"	4
		Interfering with children "T6, T7, T8, T17"	4
		Not providing support to children "T12, T14, T19"	3
	Participation	The number of siblings "T2, T3, T9, T10, T11, T15, T16, T20"	8
		Economic inadequacy "T15, T19"	2
	Technology	Lack of infrastructure "T2, T11, T13, T16, T18, T22"	6

When table 2 is examined, it is seen that the theme of "Problems in Distance Education" is categorized as children, family, participation and technology.

The codes and frequencies obtained for the category of problems with children are as follows:

Difficulty concentrating (f=6) and not communicating (f=1).

Some of the views of preschool teachers regarding this category are as follows:

T15: *"There were many problems, such as the inability of students who are not accustomed to speaking in front of the screen to actively participate in the process, and the inability of introverted students to express themselves in this process."*

T21: *"This process was heavy for the age group and could not concentrate."*

The codes and frequencies obtained for the category of problems with families are as follows:

Inability to use technology (f=4), interfering with children (f=4) and not providing support to children (f=3).

Some of the views of preschool teachers regarding this category are as follows:

T8: *"There was a lot of intervention and expectation from the parents."*

T11: *"I think that distance education in pre-school education is difficult and not efficient enough. The fact that parents did not know enough about computers prevented children from actively participating in some activities."*

T12: *"While there should be parent support for activities held at home, some parents could not spare time."*

The codes and frequencies obtained for the category of problems related to participation are as follows:

The number of siblings (f=8) and economic inadequacy (f=2).

Some of the views of preschool teachers regarding this category are as follows:

T3: *"In children with a large number of siblings, the priority was older children and participation decreased."*

T19: *"It is very difficult to achieve equal opportunities between students when distance education is carried out. Due to economic difficulties, the ability to access the internet and computer varies."*

The codes and frequencies obtained for the category of problems related to technology are as follows:

Lack of infrastructure (f=6).

Some of the opinions of preschool teachers regarding this category are as follows:

T16: *"There were those who could not attend due to connection problems, conflicts with the other child's lesson in the family. I also had a connection problem. When the time was up, sometimes the activities could be left unfinished."*

When the preschool teachers who participated in the study examined the opinions, it is seen that preschool children have difficulty getting their attention in distance education. In this regard, it can be said that the distance education process is not suitable for the age group and developmental characteristics of children. In addition, the inability of families to use technology is cited as an element that prevents children from actively participating in the educational process. In cases where the number of siblings is high, it is stated that the participation of children decreases. It is thought that the lack of technological tools is having an effect on this situation along with the lack of economic opportunities. Connection problems arising from lack of infrastructure in the distance education process are thought to prevent both children and teachers from participating in the course and an interactive process.

"What Changes Has the Distance Education Process Led to in the Daily Plans of Preschool Teachers?"

The opinions of the preschool teachers who participated in the study regarding the changes caused by distance education in their daily plans are presented in Table 3.

Table 3. *Changes in daily plans in distance education*

Theme	*Categories*	*Codes*	*f*
Changes in Daily Plans in Distance Education	Using Different Methods and Techniques	Fun activities "T1, T2, T5, T6, T17, T20, T22"	7
		Home-accessible activity plans "T4, T11, T12, T15, T18"	5
	Limitation in Activities	Individual activity plan "T3, T10, T19, T22"	4
		Failure to perform activities supporting motor and social development areas "T8, T9, T12"	3
		Reducing the variety of activities "T7, T13, T14, T16, T19, T21"	6

When table 3 is examined, it is seen that the theme of "Changes in Daily Plans in Distance Education" is categorized as different method-technical use and limitations in activities.

The codes and frequencies obtained for the different method and technical usage category are as follows:

Fun activities (f=7) and home-accessible activity plans (f=5).

Some of the views of preschool teachers regarding this category are as follows:

T2: *"Its content and method have changed, and I have prioritized fun activities."*

T15: *"In distance education, I mostly included activities that can be applied at home with the family in daily plans."*

The codes and frequencies obtained for the limitation in activities category are as follows:

Individual activity plan (f=4), failure to perform activities supporting motor and social development areas (3) and reducing the variety of activities (f=6).

Some of the views of preschool teachers regarding this category are as follows:

T8: *"I had to reduce the variety of activities. This situation negatively affected the children's large-small motor skills and social skills."*

T14: *"During the distance education process, I had to limit the variety of activities because the live lessons were limited in time."*

T19: *"Our daily plans have been simplified. Activities that require group interaction have been removed. More individual and more basic acquisitions that do not provide peer learning were emphasized."*

When the opinions of the preschool teachers participating in the research are examined, it is seen that the teachers focus on activities that they can implement with their families and that can be fun for children while preparing their daily plans in the distance education process. In addition, teachers stated that they cannot support social development by applying individual studies. This situation is considered to be a significant problem especially in the pandemic process, where people need to be supported socially-emotionally. Integrating interactive group work into teachers' plans is seen as important for children's social development and psychological health.

"What are the Behaviors Observed by Preschool Teachers in Children when Switching from Distance Education to Face-To-Face Education?"

The behaviors observed by the preschool teachers who participated in the study in children when moving from distance education to face-to-face education are presented in Table 4.

Table 4. *Behaviors observed in children when switching from distance education to face-to-face education*

Theme	*Categories*	*Codes*	*f*
Behaviors Observed in Children When Switching from Distance Education to Face-to-Face Education	Positive Behaviors	Supporting social-emotional development "T1, T15"	2
		Sense of longing for school and peers "T5, T11, T12, T13, T14, T15, T16, T22"	8
	Negative Behaviors	Attention deficit and behavioral disorder "T2, T3, T4, T6, T7, T8, T9, T10, T12, T18, T19, T21"	12
		Hyperactivity "T12, T14, T19"	3
		Low self esteem "T16, T17, T20"	3

When table 4 is examined, it is seen that the theme of "Behaviors Observed in Children When Switching from Distance Education to Face-to-Face Education" is categorized as positive behaviors and negative behaviors.

The codes and frequencies obtained for the positive behaviors category are as follows:

Supporting social-emotional development (f=2) and sense of longing for school and peers (f=8).

Some of the views of preschool teachers regarding this category are as follows:

T15: *"The students were very happy and very excited. They said they missed their school, their friends, their teacher at every turn. Playing together in groups of friends, talking face-to-face and communicating contributed positively to their social emotional development."*

The codes and frequencies obtained for the category of negative behaviors are as follows:

Attention deficit and behavioral disorder (f=12), hyperactivity (f=3) and low self esteem (f=3).

Some of the views of preschool teachers regarding this category are as follows:

T2: *"They certainly exhibit much more aggressive behavior. They have absolutely no patience, they cannot tolerate the misbehavior of others."*

T12: *"Irritability and hyperactivity were observed."*

T16: *"Children's belief and confidence that they would do a job or an activity in particular had decreased."*

There are positive and negative behaviors observed by preschool teachers participating in the research when they switch from distance education to face-to-face education. Within the scope of positive behaviors, it has been determined that the social-emotional development of children whose social-emotional development has weakened during the pandemic process is supported when they switch from distance education to face-to-face education. It has also been observed that children feel a sense of longing for school and their peers, and their interactions are strengthened. Within the scope of negative behaviors, it was stated by the teachers that attention deficit and behavioral disorders were observed in children. In this context, it is thought that it is significant for teachers to carry out studies that will keep children's attention alive in the distance and face-to-face education process.

"How Has the COVID-19 Pandemic Affected Children, According to Preschool Teachers?"

The opinions of preschool teachers who participated in the study on the impact of the COVID-19 pandemic on children are presented in Table 5.

Table 5. *The impact of the COVID-19 pandemic process on children*

Theme	*Categories*	*Codes*	*f*
The Impact of the COVID-19 Pandemic Process on Children	Negative	Negative impact on social-emotional development "T1, T3, T4, T5, T6, T7, T8, T9, T10, T11, T12, T13, T14, T15, T16, T17, T18, T19, T20, T21, T22"	21
		Physical and psychological violence in the family environment "T2, T7"	2
		Technology addiction "T2, T21"	2

When Table 5 is examined, it is seen that the theme "The Impact of COVID-19 Pandemic Process on Children" is categorized as negative impact.

The codes and frequencies obtained for the negative impact category are as follows:

Negative impact on social-emotional development (f=21), physical and psychological violence in the family environment (f=2) and technology addiction (f=2).

Some of the opinions of preschool teachers regarding this category are as follows:

T2: *"I think that children are addicted to screens during the epidemic. I also think that families are exposed to physical and psychological violence because their tolerance for their children decreases."*

T6: *"It negatively affected the social development of children. There were negativities in terms of game making and communication skills."*

T15: *"I don't think it has any positive effect. The pandemic has negatively affected children in all aspects, especially socially."*

T21: *"It has led to more technology-addicted, isolated children."*

All preschool teachers who participated in the study think that the COVID-19 pandemic process has a negatively affects children. It has been stated that children's social-emotional development is especially affected in this process. Therefore, it is thought that studies should be carried out to support the social-emotional development of children in face-to-face and distance education.

"What Kind of Problems Have Children Experienced in Distance Education According to Preschool Teachers?"

The opinions of the preschool teachers who participated in the research about the problems experienced by children in distance education are presented in Table 6.

Table 6. *Problems experienced by children in distance education*

Theme	*Categories*	*Codes*	*f*
Problems Experienced by Children in Distance Education	Developmental Problems	Social-emotional problems "T1, T3, T4, T6, T8, T9, T10, T11 T13, T14, T15, T16, T17, T18, T20, T22"	16
		Excessive weight gain "T15"	1
		Technology addiction "T2, T5, T7, T12, T17, T18, T22"	7
	Educational Problems	Problems with children's learning "T1, T12, T15"	3
	Familial Problems	Inadequacies of families regarding the education of their children "T18, T19, T21"	3

When Table 6 is examined, it is seen that the theme of "Problems Experienced by Children in Distance Education" is categorized as developmental, educational and familial problems.

The codes and frequencies obtained for the category of developmental problems are as follows:

Social-emotional problems (f=16), excessive weight gain (f=1) and technology addiction (f=7).

Some of the views of preschool teachers regarding this category are as follows:

T7: *"Technology addiction emerged and behavioral disorders occurred."*

T14: *"As a result of the individual interviews I made, the children's statements that they miss their school, teachers and friends very much make us think that they are unhappy and have social-emotional problems in this sense."*

T15: *"Physically, the children experienced weight gain."*

The codes and frequencies obtained for the category of educational problems are as follows:

Problems with children's learning (f=3).

Some of the views of preschool teachers regarding this category are as follows:

T12: *"Due to the inability to use the five senses that are victims of technology, there was a lack of learning."*

The codes and frequencies obtained for the category of familial problems are as follows:

Inadequacies of families regarding the education of their children (f=3).

Some of the views of preschool teachers regarding this category are as follows:

T19: *"There were inequalities of opportunity for disadvantaged children depending on factors such as knowledge and skills of people who are interested in the home environment of children. Families also differed in terms of accessing the material."*

When the views of preschool teachers participating in the study are examined, it is seen that children experience social-emotional problems in distance education and become addicted to technology. In addition, the inequality of opportunity in face-to-face education has increased during the pandemic process and has negatively affected children and families. This situation makes us think that an efficient process is not realized in distance education.

"How Do Parents Provide Support to Their Children in Distance Education, According to Preschool Teachers?"

The views of the preschool teachers who participated in the research regarding the support that families provide to their children in distance education are presented in Table 7.

Table 7. *Support provided by families to their children in distance education*

Theme	*Categories*	*Codes*	*f*
Support Provided by Families to Their Children in Distance Education	Supportive Families	Psychological support "T1, T8, T10, T15, T19, T20"	6
		Preparing a learning environment "T2, T3, T4, T11, T12, T13, T14, T16, T19"	9
		Supporting education with in-home activities "T5, T6, T10, T11, T18"	5
	Unsupportive Families	Indifference "T2, T7, T9, T10, T17"	5
		Emotional abuse "T20, T21, T22"	3

When table 7 is examined, it is seen that the theme of "Support Provided by Families to Their Children in Distance Education" is categorized as supportive families and unsupportive families.

The codes and frequencies obtained for the supportive families category are as follows:

Psychological support (f=6), preparing a learning environment (f=9) and supporting education with in-home activities (f=5).

Some of the opinions of preschool teachers regarding this category are as follows:

T11: *"Without the support of the families, the distance education process could not be carried out. Children were able to participate with the help of their parents in both home activities and online lessons."*

T13: *"Our parents provided support in every way. They prepared the materials for the activities we planned."*

T15: *"In distance education, families have great duties and responsibilities. They were one-on-one psychologically and socially supportive."*

The codes and frequencies obtained for the category of unsupportive families are as follows:

Indifference (f=5) and emotional abuse (f=3).

Some of the views of preschool teachers regarding this category are as follows:

T7: *"They weren't interested. I think families also need support."*

T20: *"We have noticed that unconscious families make children more emotionally depressed."*

When the opinions of the preschool teachers participating in the study are examined, it is seen that the families especially support the children in "preparing the learning environment" in distance education. However, it has been stated that there are families who do not take care of their children as well as supportive families. The first effects of parents, who have a key role, on children are of utmost importance. In this context, it can be said that it is important to increase awareness of parents so as to realize and maintain an efficient education process in distance and face-to-face education.

"How Do Preschool Teachers Think the COVID-19 Pandemic Affects Their Professional Development?"

The opinions of preschool teachers who participated in the research on the effect of the COVID-19 pandemic process on their professional development are presented in Table 8.

Table 8. *Impact of the COVID-19 pandemic on the professional development of preschool teachers*

Theme	*Categories*	*Codes*	*f*
Impact of the COVID-19 Pandemic on the Professional Development of Preschool Teachers	Positive	Variety of methods and techniques "T1, T17"	2
		A different experience and development "T3, T4, T6, T7, T8, T10, T15, T20, T22"	9
		Development of the use of technology "T2, T5, T11, T12, T13, T14, T19, T21"	8
	Negative	Intolerance "T9"	1
		Feeling inadequate "T16, T18"	2

When Table 8 is examined, it is seen that the theme "Impact of COVID-19 Pandemic Process on The Professional Development of Preschool Teachers" is categorized as positive and negative.

The codes and frequencies obtained for the positive category are as follows:

Variety of methods and techniques (f=2), a different experience and development (f=9) and development of the use of technology (f=8).

Some of the opinions of preschool teachers regarding this category are as follows:

T17: *"I was able to ensure the active participation of children in education through various activities using different techniques."*

T7: *"I had a different experience and tried to improve myself so I could do something remarkable for the kids."*

T5: *"I saw all my shortcomings in digital. I did my best to learn. I got to know various web tools and used my lesson in the most appropriate way."*

The codes and frequencies obtained for the negative category are as follows:

Intolerance (f=1) and feeling inadequate (f=2).

Some of the views of preschool teachers regarding this category are as follows:

T9: *"Staying at home for a long time led to laziness. I can't stand the voice of children."*

T16: *"Of course it had a negative impact. Since I could not come to school and be with the children, I could not feel that I was a full teacher."*

When we examine the views of the preschool teachers who participated in the study, it is seen that the COVID-19 pandemic process leads to a different experience in their professional development. Teachers stated that this process supports their professional development, especially in terms of technology use skills. However, there are teachers who are positively affected, as well as teachers who are negatively affected. With the psychological effects of the COVID-19 pandemic process on all individuals, it is seen that there are teachers who have decreased tolerance for children and feel inadequate. It is thought that various educational activities should be presented taking into account the psychological health of the teachers.

"How Do Preschool Teachers Evaluate Distance Education Activities During the COVID-19 Pandemic?"

The opinions of the preschool teachers who participated in the research regarding distance education activities during the COVID-19 pandemic are presented in Table 9.

Table 9. *Evaluation of distance education activities during the COVID-19 pandemic*

Theme	*Categories*	*Codes*	*f*
Evaluation of Distance Education Activities During the COVID-19 Pandemic	Positive	Being organized and successful "T1, T2, T10, T12, T13, T19, T20"	7
		Using new methods and techniques "T4, T5, T6, T7, T8, T15, T16, T22"	8
	Negative	Inability to provide group activity "T3, T18, T21"	3
		Feeling inadequate "T9, T11, T14, T17"	4

When table 9 is examined, it is seen that the theme of "Evaluation of Distance Education Activities During the COVID-19 Pandemic" is categorized as positive and negative.

The codes and frequencies obtained for the positive category are as follows:

Being organized and successful (f=7) and using new methods and techniques (f=8).

Some of the views of preschool teachers regarding this category are as follows:

T13: *"I think that the activities were successful because I aimed to attract children's attention, to use time efficiently, and to reach every child."*

T5: *"I used different activities in different ways so that children could be more active, and this practice contributed a lot to me professionally."*

The codes and frequencies obtained for the negative category are as follows:

Inability to provide group activity (f=3) and feeling inadequate (f=4).

Some of the views of preschool teachers regarding this category are as follows:

T3: *"Limited participation negatively affected group dynamics. Since the children were at home, I had a hard time offering different opportunities."*

T14: *"I tried my best, but I would like to point out the fact that I am not as good as face-to-face training."*

When the views of the preschool teachers participating in the study are examined, it is seen that they evaluate the distance education activities in the COVID-19 pandemic process positively and negatively. While some teachers stated that they used new methods and techniques in this process and offered a successful education; some teachers stated that they felt inadequate and could not provide group activity. It is thought that the inability of preschool teachers to provide group activity in the distance education process prevents children from socializing. However, since the preschool period is one of the most open to social-emotional development, teachers should create an effective educational environment. In this context, it is thought that various opportunities should be provided to improve teachers' skills in classroom management in the distance education process.

"What Are the Recommendations of Preschool Teachers Regarding Distance Education in Preschool Education?"

The recommendations of the preschool teachers who participated in the research regarding distance education in preschool education are presented in Table 10.

Table 10. *Recommendations on distance education in preschool education*

Theme	*Categories*	*Codes*	*f*
Recommendations on Distance Education in Preschool Education	Recommendations for practice	Family participation "T3, T11, T12"	3
		Enriched event content "T1, T2, T5, T6, T7, T8, T19, T20, T22"	9
		Face-to-face education "T2, T4, T9, T10, T12, T13, T14, T15, T18, T21"	10
	Recommendations for teachers	Training teachers "T16, T17, T19"	3

When table 10 is examined, it is seen that the theme "Recommendations on Distance Education in Preschool Education" is categorized as recommendations for practice and teachers.

The codes and frequencies obtained for the category of recommendations for the application are as follows:

Family participation (f=3), enriched event content (f=9) and face-to-face education (f=10).

Some of the views of preschool teachers regarding this category are as follows:

T5: *"Considering the attention span of children, different studies that can activate more auditory and other sensory organs should be planned. Daily lesson hours should be planned appropriately so that children do not spend too much time in front of the computer."*

T12: *"Guidance can be given to parents on issues such as spending quality time at home with the student. Thus, family participation should be allowed."*

T15: *"I think that face-to-face education has a positive effect for children rather than distance education in pre-school education."*

The codes and frequencies obtained for the recommendations category for teachers are as follows:

Training teachers (f=3).

Some of the views of preschool teachers regarding this category are as follows:

T19: *"Teachers' ability to use technology should be developed. Unfortunately, most of us are still not good enough. An evaluable distance education process should be planned and teachers should be included in it. I think we are lacking in getting feedback."*

Preschool teachers participating in the study made recommendations for practice and teachers in the distance education process. Within the scope of the application, teachers stated that distance education should not be applied to preschool children due to their developmental characteristics; emphasized the need for face-to-face education. Nonetheless, if distance education will take place, it is suggested to implement enriched activity contents that allow children to have fun. In addition, teachers suggested that they should be trained in order to develop their own skills and to provide a better education process to children.

DISCUSSION, CONCLUSION AND IMPLICATIONS

In this study, it is aimed to examine the opinions of preschool teachers regarding the reflection of the COVID-19 pandemic process on preschool education. In conclusion of the research, it is seen that preschool teachers carried out distance education activities through technology use and family cooperation during the COVID-19 pandemic. When the studies on the applications used by teachers during the COVID-19 pandemic process are examined, the Zoom application according to Kılıç (2020), the WhatsApp application according to Hartatik and Bia'yuni (2020), the Education Information

Network (EBA) Pınar and Dönel Akgül (2020) has been actively used. This situation supports that the technological tools used by teachers in the distance education process are similar. It has been stated by preschool teachers that parents support children and teachers in the distance education process (Aykar & Yurdakal, 2021). In this regard, it is considered that preschool teachers carry out distance education activities in cooperation with families and this support is important.

Preschool teachers stated that children have difficulties in communicating and concentrating in the distance education process. It has been determined that families have problems such as not being able to use technology, interfering with children and not providing support to children. In addition, it is seen that there are problems in the distance education process due to the large number of siblings and economic inadequacy.

In the research, it is seen that children have difficulty getting their attention in distance education. In the research carried out by Yürek (2021), it was stated that the activities for play/movement should be carried out because the attention spans of preschoolers are short. In this study, the inadequacy of families in using technology and lack of infrastructure are also mentioned as the factors preventing an active education process from taking place. Similarly, it has been stated in the relevant literature that the lack of equal infrastructure and the inadequate level of knowledge of families regarding the use of technology can lead to disruptions in education (Brom, Lukovsky, Gregor, Hannemann, Strakova & Svoricek, 2020; Viner, Russell, Croker, Packer, Ward, Stansfield, Mytton, Bonell & Booy, 2020). Additionally, in this study, it is seen that children's participation in lessons decreases in cases where the number of siblings is high. The research carried out by Mohan, McCoy, Carroll, Mihut, Lyons and Domhnaill (2020) also found that other siblings had a negatively affect on children's participation in the distance education process. In this regard, it can be said that execute studies that will keep children's attention alive, raise awareness of the use of technology and improve infrastructures in the distance education process can reduce the problems experienced in the distance education process.

It has been determined that preschool teachers utilizate various techniques and methods that are fun for children and that they can apply with their families when preparing daily plans during the distance education process. Additionally, it is seen that there are teachers who practice personal activities and cannot perform activities that support social development. It has been stated by Kırık (2014) that in order to execute the distance education process efficiently, the gains should be accurately determined, and activities related to group work should be established. In this study, since it covers preschool period, various studies that children can apply at home with their families can be presented by teachers. It is considered that it is critical for children's development and mental health for teachers to create activity content enriched with interactive group work.

In this study, it is seen that teachers observe positive and negative behaviors such as " sense of longing for school and peers, attention deficit and behavioral disorder" in children when they switch from distance education to face-to-face education. In the study carried out by İçen (2021), it was indicated that the pandemic process had compelling effects for all children in social isolation. It can be said that it is significant for teachers to carry out studies that support their social-emotional development in order to reduce these negative effects on children.

All preschool teachers participating in the research think that the COVID-19 pandemic process has negative effects on children such as social-emotional development, physical and psychological violence in the family environment. In the study conducted by Kuset, Özgem, Şaşmacıoğlu and Güldal Kan (2021), it was stated that distance education is "inefficient" compared to face-to-face education in children receiving preschool education and that the biggest problem in the distance education process is "communication". In this regard, it can be said that face-to-face education is suitable for preschool children. In cases where face-to-face education will be limited, it is considered that distance

education is supportive for preschoolers, and it may be appropriate to realize a hybrid model in which face-to-face applications are performed alternately.

In the distance education process, it is seen that children have problems socially and emotionally. The study conducted by Erbay (2008) determined that the social skills of children who started first grade without pre-school education were lower than that of children with preschool education. This situation shows that preschool education supports children's social skills and that teachers should do supportive work in the distance education process. In consequence of this study, it is seen that preschool children become dependent on technology during the distance education process. In the research conducted by Akkaş Baysal, Ocak and Ocak (2020), parents expressed that children want to stay on screen longer and screen addiction occurs. The study also shows that there are problems with children's learning during the distance education process. It is known that the time limit in online courses leads to problems in education (Yılmaz, Güner, Mutlu, Doğanay & Yılmaz, 2020). In this case, it can be said that the flexibility in the face-to-face training process cannot be achieved in online courses. In the study, it was determined that some families have inadequacy in the distance education process. A study by Dong, Cao and Li (2020) found that during the COVID-19 pandemic, Chinese parents had negative attitudes and a sense of inadequacy regarding online education. It is thought that it is significant for teachers to carry out the process consciously in cooperation with parents in order to achieve efficient distance education.

It is seen that families especially support children in "preparing a learning environment" in distance education. However, in this process, it is stated that there are families that support children as well as families that do not care for their children. Parents' attitude towards children is very important in children's cognitive and personal development (Aslanargun, 2007). In this context, it is thought that children's development will be adversely affected if parents do not provide support to children. In parallel with Genç (2005), the importance of parents working closely with teachers on the needs and wishes of children was emphasized.

Preschool teachers indicated that the COVID-19 pandemic process led to a different experience in their professional development. Teachers stated that this process supports their professional development, especially in terms of technology use skills. In the research conducted by Özkul, Kırnık, Dönük, Altunhan and Altunkaynak (2020), it is seen that distance education activities contribute to the personal development of teachers and effective learning process planning by using various methods and techniques that are not used in face-to-face education. In this context, it is considered that the distance education process plays a role in the development of teachers' knowledge and skills. However, in this study, it is seen that besides the teachers who were positively affected in their professional development during the pandemic process, there were also teachers who were negatively affected. In order to eliminate the negative effects of this process and to provide an effective education, it is thought that it is important to implement various practices to improve the mental health of teachers.

Preschool teachers who participated in this study evaluated the distance education activities in the COVID-19 pandemic in a positive and negative way. Some teachers say that they use new methods and techniques in this process and offer a successful education; some teachers stated that they felt inadequate and could not maintain group activeness. In the research conducted by Demir and Kale (2020), teachers stated that distance education activities were sufficient or moderately adequate during the COVID-19 pandemic. In this study, the majority of teachers evaluate distance education activities positively. In this context, it can be said that the findings are supportive of each other.

Preschool teachers believe that distance education should not be applied to preschool children due to their developmental characteristics; emphasized the need for face-to-face education. Similarly, in the research conducted by Balaman and Hanbal Tiryaki (2021), teachers stated that they do not see distance education as the first choice and that distance education can not replace face-to-face

education. Additionally, in this study, if distance education is going to be realized by teachers, it is recommended to apply enriched activity contents that allow children to have fun. Various activity practices are seen as an effective tool in the development of preschool children (Can Yaşar & Ünsal Kaya, 2018). Therefore, it is thought that it is significant to present enriched activity contents to children in the distance education process, as stated by the preschool teachers in the study. In addition, in this study, pre-school teachers suggested that "teachers should be trained" in order to develop their own skills and to offer a better education process to children. When the relevant literature was examined, no finding was found that the teachers made suggestions regarding their own education. However, it is thought that it is important for teachers, who have a critical effect on children's lives, to be aware of this situation and to offer them training on the use of technology, which they think is inadequate.

In line with the results of this research, the following recommendations are presented:

- Regarding crisis management and an efficient training process in distance and face-to-face education, parents and teachers should be trained.
- Preschool teachers should cooperate with the family in order to enable children to participate in distance education and to increase family support.
- Preschool teachers should plan enriched activities suitable for children's development, considering the psychological health of them.
- Preschool teachers should implement interactive studies to support children's social-emotional development.
- In order for distance education to be carried out successfully, infrastructure works must be improved.

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AUTHOR CONTRIBUTION

- First author have made significant contributions to conception, design, and acquisition of data.

- The second author have been involved in drafting the article, analysis and interpretation of data.

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Psychometric Features of the First Part of the Youth Anxiety Measure (Yam-5-I) in the Turkish Children's Sample

Öner Çelikkaleli, Assist Prof. Dr., Muğla Sıtkı Koçman University, celikkaleli@gmail.com
0000-0003-0210-3647

Sezai Demir, Assist Prof. Dr., Hatay Mustafa Kemal University, demirsezai01@gmail.com
0000-0002-7767-4105

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Abstract

Murris et al (2017) developed the Youth Anxiety Measure (YAM-5-I), according to DSM V criteria in order to determine the anxiety levels of children and young people. In this study, basic validity and reliability studies were carried out by Simon et al (2017) within the framework of adapting the 27-item form of this scale for children aged 8-12, in which they carried out validity and reliability studies, to the Turkish sample. Youth Anxiety Measure (YAM-5-I), the Perceived Family Social Support Scale and the Cognitive Distortion Scale for Children were used as data collection tools. In the construct valid study conducted within the framework of validity studies, it was seen that the second-level factor structure with five factors of the scale had good fit values (χ^2/sd= 1.86, CFI= .90, IFI= .90, TLI= .90, GFI= .90 and RMSEA= .04). In another validity study, significant relationships were found between the total score and subscale scores of the scale and the Perceived Family Social Support Scale and the Cognitive Distortion Scale for Children, except for the Separation Anxiety subscale. In reliability studies, the Cronbach alpha coefficient is .87 for the total scale and subscales. Between 65, the correlation between the synonyms is .80 for the total scale and the test-retest correlation coefficients are .74 for the total scale; For the subscale, it was found to vary between .64 and .90. These findings show that the MCQ 5-I measure the anxiety levels of the Turkish child sample in a valid and reliable manner.

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INTRODUCTION

In addition to being one of the most common psychological disorders (Jacobi et al., 2004), anxiety is a major problem that can cause significant deterioration in the emotional, social, and academic functioning of young people (Essau et al.,2000; Messer & Beidel, 1994; Strauss et al., 1987; Strauss et al., 1988; Turner et al., 1987). This disorder in childhood becomes typically chronic in adulthood (Baxter et al., 2014; Kessler, et.al., 2005) and is a critical risk factor particularly for depression, while increasing the risks for other psychopathologies (Cole et al.,1998; Polikandrioti et al., 2018). Thus, research on childhood anxiety disorders take on a new significance. For this reason, numerous studies have focused on the root of the anxiety problem and the factors affecting effective treatment (Muriset al., 2017).

Extensive epidemiological studies conducted among adults (Kessler et al., 1994; Regier et al., 1984; Wittchen et al.,1991; Wittchen & Essau, 1993) have shown that anxiety disorders mostly begin early in life, such as during childhood and adolescence. According to the study performed by Pollack, et.al. (1996), 54% of adults with panic disorder suffer from childhood anxiety disorders, and the adults who suffered from anxiety disorders in their childhood have significantly more anxiety and depressive disorders than those with no history of such disorders in their childhood. Further, scholarly evidence shows that anxiety disorders of childhood are not just temporary for many children, and if untreated, such disorders may affect their adolescence and adulthood (Pfeffer et al., 1988; Keller,et.al., 1992). Therefore, it is of great importance to identify clinically anxious children as early as possible and to offer them appropriate interventions (Spence, 1998).

Although anxiety is naturally functional, high levels of anxiety can undermine the life quality of individuals, leading to a significant decrease and dysfunction (Achenbach, Howell, McConaughy & Stranger, 1995; Essau, et.al., 2000). Moreover, high levels of anxiety tend to persist for a long time and may even evolve into anxiety disorders (Kessler et al., 2005; Simon et al.,2014). Afterall, childhood and adolescence anxiety is not always temporary, and in many cases; It is aimed at mathematics class (Özbek & Uyumaz, 2020), learning a foreign language (Sönmez & Kurtoğlu, 2021) and general anxiety, but is thought to cause other resident psychological disorders in later childhood and adulthood (Cartwright-Hatton et al.,2006). Valid and reliable measurement tools are needed to identify children with anxiety and to make early intervention in childhood anxiety which may underlie the development of anxiety disorders in later life.

There are various widely known measurement tools aimed at measuring children's anxiety levels or symptoms. The most popular one among these tools is the State-Trait Anxiety Inventory for Children developed by Spielberger et al., (1983) and adapted into Turkish by Özusta (1995) as the State-Trait Anxiety Inventory for Children. Another measurement tool is the Revised Children's Manifest Anxiety Scale-2, developed by Reynolds & Richmond (1978) and adapted into Turkish by Çözümlü (2014) as the Explicit Anxiety Scale for Children. Further, the Screen for Child Anxiety & Related Disorders (SCARED) was developed by Birmaheret al. (1997) and adapted into Turkish the Childhood Anxiety Screening Scale (Çakmakçı, 2004). The Social Anxiety Scale for Children (SASC-R) was designed by La Greca & Stone (1993) and adapted into Turkish by Demir et al., (2000) as the Revised Form of the Social Anxiety Scale for Children. Another scale used to measure the anxiety of children in Turkey is the Separation Anxiety Assessment Scale (Eisen & Schaefer, 2005), which has been introduced to the Turkish literature by Teze and Arslan (2016) as the Separation Anxiety Assessment Scale. There are also scales that have been developed but not adapted to Turkish. Among them, there are the Fear Survey Schedule for Children-Revised (Ollendick, 1983), the Social Phobia and Anxiety Inventory for Children (Beidel & Turner, 1998), the Multi-dimensional Anxiety Scale for Children (March et al., 1997) and the Spence Children’s Anxiety Scale (Spence, 1998). As can be seen, the scales used in Turkey are adapted scales.

Though there are a whole lot of evidence on the reliability and validity of each of these scales, the most notable weakness of these scales is that they fail to recognize the changes in the Statistical Manual of Mental Disorders Psychiatric 5 (2013) by the American Association Diagnostic that may affect the assessment of anxiety. The first of these changes involves the inclusion of selective mutism in anxiety, which is considered as the principal symptom of the anxiety problem (Muris & Ollendick, 2015), and the second is the exclusion of obsessive-compulsive disorder and post-traumatic stress disorder, which are no longer considered a syndrome of anxiety. Considering these changes, it is plausible to argue that the scales presented above are not directly linked to the newly identified anxiety disorders. Therefore, evaluating and classifying anxiety based on these scales may lead to differences, which result in inconsistencies in the way practitioners and researchers discuss anxiety problems in children and youth (Muris et al., 2017). Furthermore, given the growing evidence that selective mutism is a prominent feature of anxiety (Wittchen et al.,2010), selective mutism has evolved into an aspect that needs consideration in the determination and investigation of childhood anxiety disorder, and that contributed to the need for new measurement tools to include selective mutism. Because of all these, it is considered important to bring a measurement tool suitable for the new criteria of childhood anxiety disorder into Turkish, as it can fill the gap in this area.

The above-mentioned SCARED (Birmaher et al., 1997) is one of the scales aimed at evaluating the factors related to generalized anxiety disorder, separation anxiety disorder, panic disorder, social phobia, and school phobia as well as different forms of anxiety disorders. However, the original scale development studies on the SCARED were carried out on children clinically diagnosed with anxiety. This has necessitated the need to develop a Turkish measurement tool for which a validity and reliability study is conducted in a sample of children not clinically diagnosed.

In this regard, this study has examined the validity and reliability of the first part of the Anxiety Scale for Children developed considering the DSM (5) criteria of Murris et al. (2017), which consists of 28 items, on the 27-item form obtained from confirmatory factor analysis (CFA) on the non-clinical sample of children by Simon, et. al. (2017), in the non-clinical Turkish sample. It is reported that the 5-factor model fits better when the item (17th item in the original scale) that reads "*When I panic, I am afraid that I could die*" in the original 28-item scale is removed from the scale (Simon et al., 2017). Moreover, 90% of the children in that study responded "Never" to this item. For this reason, and also because of the potentially negative impacts of the concept of death on children, this item has not been included to the analyses and the resulting 27-item form has been adapted accordingly.

That said, the purpose of this study is to perform the psychometric studies related to the validity and reliability of the 27-item form, which was designed for children aged 8 to 12 years by Simon et al., (2017), of the 28-item first part of the Youth Anxiety Measure developed considering the DSM (5) criteria proposed by Murris et al. (2017) to determine the anxiety levels of children and adolescents aged 8 to 18 in the sample of Turkish children.

METHOD

This section informs on the study groups, the data collection tools and data analysis.

STUDY GROUPS

With in the framework of this study, data were collected from three groups according to the permission of Hatay Mustafa Kemal University Rectorate Social and Humanities Scientific Research and Publication Ethics Commission dated 05.03.2021 and numbered 12. Data were gathered first from 456 children (including 248 female and 208 male) with an average age of 12.70 (.99) for confirmatory factor analysis, then from 83 children (50 female and 33 male) with an average age of 12.30 (1.03) for test-retest, and lastly from 56 children (116 female and 140 male) with an average age of 11.95 (1.20) for criterion-related validity.

DATA COLLECTION TOOLS

YOUTH ANXIETY MEASURE (YAM-5-I): The original scale was developed by Murris et al. (2017) on a sample ranging from 8 to 18 in age; its validity and reliability studies for children aged 9-12 were conducted by Simon et al. (2017). The item (17th item) that reads "When I panic, I am afraid that I could die" in the original 28-item scale was removed from the scale considering modification suggestions because 90% of the children participating in the study answered “never” to this item. The resulting 27-item form consists of 5 sub-scales, including Separation Anxiety (6 items), Selective Mutism (4 items), Social Anxiety Disorder (6 items), Panic Disorder (5 items) and General Anxiety Disorder (6 items). After removing the item (item 17) with a low factor load in the CFA conducted for the construct validity, the five-factor second-order model, as the original construct, fits well ($\chi2$=829, df=314; $\chi2$/df=2.5; RMSEA=0.063, SRMR=0.057). The YAM-5-I, which is a Likert-type self-rating scale, is scored from 0 to 3 (0 being “never”, 1 being “occasionally”, 2 “often” and 3 “always”). For the internal consistency of the scale, the McDonald's omega (ω) coefficient of the entire scale was found as .92 whereas the internal consistency coefficients of the sub-scales ranged between .75 and .82. The test-retest reliability study yielded .86 for the entire scale, .75 for separation anxiety, .54 for selective mutism, .81 for social anxiety, .81 for panic disorder, and .78 for general anxiety. All items in the measurement tool are positively scored, and higher scores obtained from both the total scale and the sub-scales represent higher levels of anxiety.

SURVEY OF CHILDREN'S SOCIAL SUPPORT (SOCSS): To determine the perceived social support of children from their families, this study drew on the Perceived Family Support sub-scale of the SOCSS. The original scale was developed by Dubow and Ullman (1989). The adaptation of this scale into Turkish was carried out by Gökler (2007). The measurement tool is a Likert-type scale with 41 items and a 5-point scoring. The principal component analysis was performed for the construct validity of the scale, and it showed that the items of the scale were under three factors explaining 40.22% of the total variance. These factors were named as “Support Received from Friends”, “Support Received from Family” and “Support Received from Teacher” considering the original measurement tool. As for the criterion-related validity, a negative significant correlation was found between the total scores on the scale and the total scores on the Depression Scale for Children. For the reliability of the scale, the Cronbach's alpha internal consistency coefficient was found as .93 for the entire scale, and as .89, .86 and .88 for the sub-scales, respectively. To ensure reliability, a test-retest study was conducted as well; the correlation coefficient was calculated as .49. Further, the split-half reliability of the scale was .82; the item-total test correlations ranged between .34 to .64. High scores on the scale mean high perceived social support by the individual. The internal consistency coefficient of the Sub-Scale of Perceived Family Social Support was found as .86.

COGNITIVE TRIAD INVENTORY FOR CHILDREN (CTI-C): The measurement tool was developed by Kaslow et al., (1992) to measure automatic thoughts that reflect cognitive distortions in children. The adaptation of this scale into Turkish was carried out by Güloğlu (2006). The scale uses a 4-point Likert-type scoring. The EFA yielded that 20 items in the original version of the scale were removed because they lacked sufficient load value in any factor, and a two-factor structure was obtained. The CFA on the two-factor structure obtained through the EFA, showed that the scale fits well ($\chi2$ (103)=243.42, $p< .001$, $\chi2$ /df =2.36, GFI =.93, AGFI= 0.91, CFI= 0.93, RMSEA=.057, and SRMR =.056). The criterion-related validity study was conducted for validity, and the correlation coefficient between the CDSFC and the Hopelessness Scale for Children (HP-C) was obtained as .66. To test the reliability of the scale, the Cronbach's alpha internal consistency coefficient was calculated and found as .81 for the entire scale, and .80 and .75 for the sub-factors, respectively. High scores on this scale represents high cognitive distortion. The internal consistency coefficient of this scale was found as .83 based on these data.

DATA ANALYSIS

The data were entered into the SPSS (Statistical Package for Social Sciences) 22. In analyzing the missing data, the data were replaced by the mean of the series. That is, the mean of the scores in the column with the missing data is calculated and empty cells are filled with the mean accordingly. According to Tabachnick and Fidell (2001), a small number of missing data in large samples is very unlikely to cause significant changes in the values of parameter estimates of complex models.

Most of the analyses were performed using the statistical package program SPSS; also, confirmatory factor analysis was carried out using the AMOS 22 package program. The Pearson's Product-Moment Correlation Coefficient was calculated for the test-retest reliability study performed at a two-week interval. Further, the MANOVA test was used for reliability to identify the difference between the groups considering the gender variable. The internal consistency coefficient was determined using Cronbach's alpha (α). The correlations between the YAM-5-I and the Perceived Family Support Scale and the Cognitive Distortion Scale were calculated for the criterion-related validity. Before performing all these analyzes, it was examined whether the data were normally distributed and whether there was a multi collinearity problem. Accordingly, the Skewness coefficient was .501 and the Kurtosis coefficient was -.096. This finding indicates that the data are normally distributed. In addition, it is seen that the correlation coefficients for the relationship between dependent and independent variables vary between -.49 and -.01. These findings show that there is no multi collinearity problem between the variables.

Confirmatory factor analysis (CFA) was conducted using AMOS 22 to reveal the factor structure of the YAM-5-I. The single scale factor, five-factor first-order, five-factor second-order and second five-factor second-order models of the scale (the item that reads "Meeting new people makes me uncomfortable" under the sub-scale of Social Anxiety in the original scale was included in the sub-scale of Selective Mutism based on the suggestion of Modification Indices and because of the low factor load of the sub-scale of Social Anxiety) were tested. Chi-square ($\chi 2/sd$), TLI, CFI, IFI, GFI and RMSEA fit indices were used for the criteria of good fit values for the model. A good fit is indicated by a $\chi 2/sd$ value below 5 according to Anderson and Gerbing (1984), by the TLI and CFI values ranging between 0.90 and 0.95 according to Yuan & Bentler (1998), by the IFI value of 0.90 and above according to Marsh, Balla & Hau (1996), by the GFI value of 0.90 and above according to Shevlin & Miles (1998), and by the RMSEA value less than 0.05 according to Browne and Cudeck (1993).

FINDINGS

This section presents findings on the validity and reliability studies performed on the measurement tool.

VALIDITY STUDIES

For the validity of the YAM-5-I, criterion-related validity and construct validity were examined. The findings obtained are given below.

For the criterion-related validity, the relationship between the YAM-5-I and the perceived family support and cognitive distortion was investigated. Table 1 offers the findings obtained.

Table 1. *Correlation Between The Total Score And Sub-Scales Of The Yam-5-I And The Family Support Scale And The Cognitive Distortion Scale*

Variables		1	2	3	4	5	6	7	8
YAM-5-I	1-Selective Mutism	1							
	2-Social Anxiety	.27**	1						
	3-General Anxiety	.19**	.64**	1					
	4-Panic Disorder	.27**	.60**	.69**	1				
	5-Separation Anxiety	.20**	.39**	.40**	.44**	1			
	6-Total Anxiety	.44**	.83**	.85**	.84**	.65**	1		
7- Perceived Family Social Support		-.12*	-.14**	-.16**	-.26**	-.01	-.19**	1	
8- Cognitive Distortion		.21**	.25**	.25**	.34**	.09	.31**	-.49**	1

*p<.05, **p<.01

Table 1 shows that the total score and sub-scale scores of the YAM-5-I had significant negative correlations with the scores of the perceived family social support, except for the sub-scale of Separation Anxiety, but had significant positive correlations with the cognitive distortion. Further, all the sub-scales of the YAM-5-I had significantly positive correlations with each other and with the total scale.

Table 2 presents the model fit values obtained for alternative models designed to test the structural validity of the YAM-5-I

Table 2. *Alternative Models Of The Yam-5-I And Goodness-Of-Fit Values*

Model	**χ^2**	**sd**	**p**	**χ^2/sd**	**CFI**	**IFI**	**TLI**	**GFI**	**RMSEA**
1-Single-Factor Model	955.909	323	0.00	2.95	.77	.77	.75	.84	.07
2-Five-Factor First-Order Model	662.586	314	0.00	2.11	.87	.87	.86	.89	.05
3-Five-Factor Second Order	645,75	315	0.00	2.05	.90	.89	88	.90	.05
4-Five-Factor Second Order (after the inclusion of item 11 to the sub-scale of Selective Mutism)	592.456	317	0.00	1.86	.90	.90	.90	.90	.04

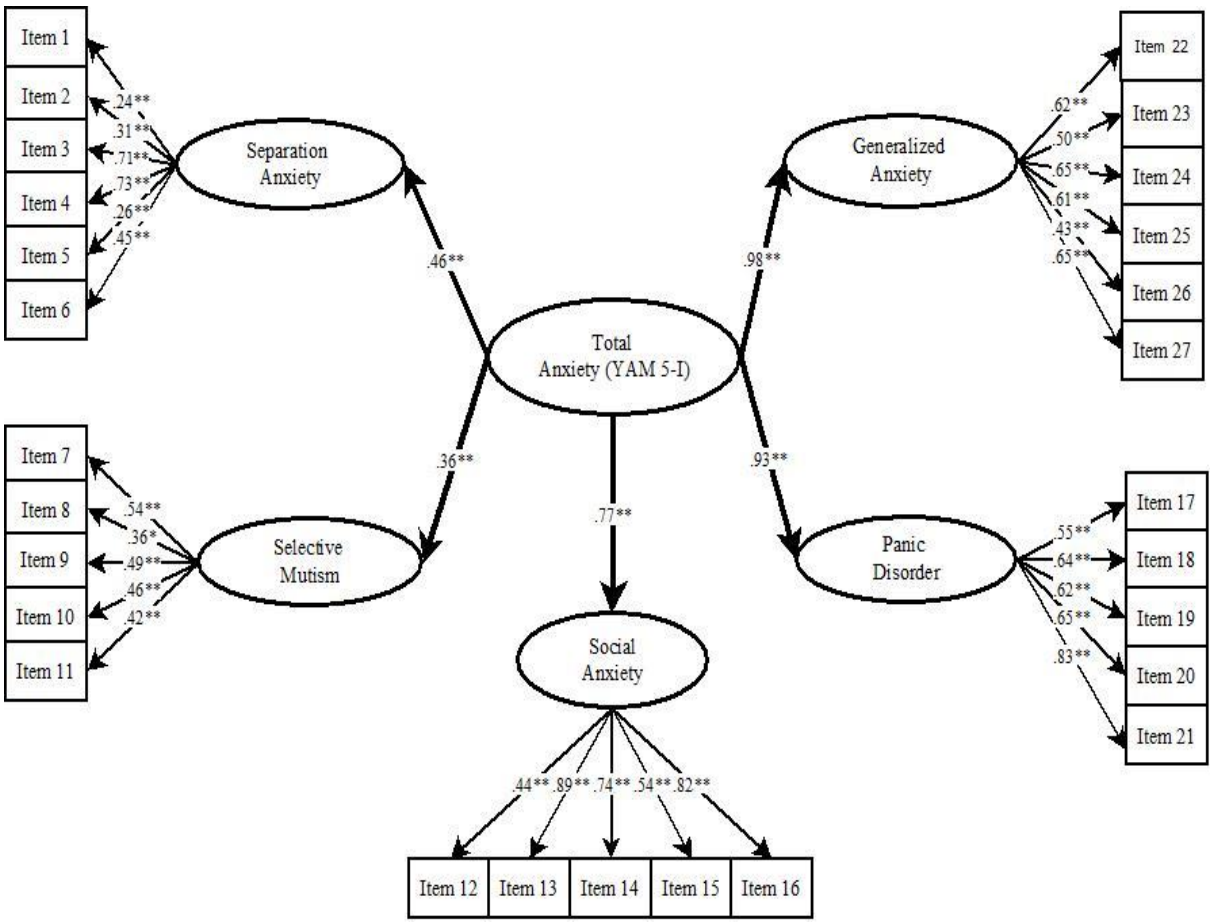
It is clear from Table 2 that an alternative factor analysis strategy was followed in the CFA on the YAM-5-I. Accordingly, the original structure of the scale was compared to one-factor, five-factor first-order and five-factor second-order models. However, in the five-factor second-order factor analysis, the 11th item (that reads meeting new people makes me uncomfortable) under the sub-scale of Social Anxiety in the original scale was included in the sub-scale of Selective Mutism based on its modification index, and it is notable that the five-factor second-order CFA yielded better fit values (Model 4). Thus, the 11th item, which was under the sub-scale of Social Anxiety in the original scale, was included in the sub-scale of Selective Mutism.

Table 2 demonstrates that the χ^2/sd value obtained in model 4 (1.86) showed a better fit compared to the values obtained in model 1(χ^2/sd = 2.95), model 2 (χ^2/sd= 2.11) and model 3 (χ^2/sd= 2.05). Also, it is notable that the CFI, IFI, TLI, GFI and RMSEA values of the Model 4 were better than other models. Consequently, it is plausible to argue that the Five-Factor Second-Level model obtained from Model 4 has good fit values for children living in Turkey (See Table 2).

Figure 1 indicates that the path coefficients for the items of the sub-scale of “Separation Anxiety” ranged between .26 and .73; for the items of the sub-scale of ”Selective Mutism" ranged between .36 and.54; for the items of the sub-scale of ”Social Anxiety" varied between .44 and .89; for

the items of the sub-scale of ”General Anxiety" ranged between .43 and .65 whilst the path coefficients for the items of the sub-scale of “Panic” varied between .55 and .83. The coefficients for all the identified paths were found significant.

Figure 1. *Standardized Factor Loading Values for Second Level Confirmatory Factor Analysis of the Turkish Version of the Youth Anxiety Measure Developed According to DSM-5 Criteria*



**p<.00

RELIABILITY STUDIES

The correlation coefficient between the test-retest studies conducted at a two-week interval was r=.74 for the total scale. In the test-retest study, this was .64 for the sub-scale of Separation Anxiety, .82 for Selective Mutism, .90 for Social Anxiety, .90 for Panic Disorder and .90 for General Anxiety. Based on the data of the CFA, the Cronbach's alpha coefficient was .87 for the total scale, .70 for the sub-scale of Separation Anxiety, .65 for the sub-scale of Selective Mutism, .80 for Social Anxiety, .76 for Panic Disorder and .79 for General Anxiety Disorder. Further, the correlation between the split-halves for the total scale is (Spearman-Brown) was found as .80. The item total test correlations ranged between .17 and .63.

Table 3 offers findings on the differentiation of the general anxiety and the sub-scales of the YAM-5-I by sex (girls and boys), which was determined in another reliability study performed to identify the expected differences in the Anxiety Scale for Children adapted into Turkish between groups.

Table 3. *The MANOVA Results On The Total and Sub-Scale Scores Of The Children On The Yam-5-I By Sex*

YAM-5-I	Gender	$\overline{X}$	Sd	F	p	η2
Separation Anxiety	Girl	10.01	2.78	2.406	.122	.005
	Boy	9.58	3.17			
Selective Mutism	Girl	6.81	1.77	4.604	.032	.010
	Boy	7.21	2.22			
Social Anxiety	Girl	10.76	3.87	1.977	.160	.004
	Boy	10.27	3.62			
General Anxiety	Girl	12.78	4.00	6.667	.010	.014
	Boy	11.82	3.91			
Panic Disorder	Girl	9.55	3.21	14.676	.000	.031
	Boy	8.44	2.92			
Total Anxiety	Girl	49.93	11.59	5.430	.020	.012
	Boy	47.33	12.19			

The results of the MANOVA conducted on the General Anxiety and sub-scales by gender reveal significant differences in children by gender [Wilks Lambda (Λ)=.944, F=5.358, p<.000]. This finding means that the scores of the children on the linear component that consists of anxiety and its sub-scales vary depending on their gender. Table 2 demonstrates that separation anxiety (F= 2.406, p>.05) and social anxiety (F= 1.977, p>.05) in children do not differ by gender; however, there are significant differences for boys in selective mutism (F= 4.604, p<.05), for girls in general anxiety (F= 6.667, p<.05), for girls in panic disorder (F= 14.676, p<.05) and for girls in total anxiety (F= 5.430, p<.05). The effect size was assessed considering the d index proposed by Cohen (1988), since the independent variable has two levels. The results yield that gender has a "small" effect on separation anxiety, selective mutism, social anxiety, general anxiety, and total anxiety whereas it has a "moderate" effect on panic disorder.

DISCUSSION, CONCLUSION AND SUGGESTIONS

This study has performed the basic validity (construct validity, criterion relative validity) and reliability (Cronbach's alpha internal consistency, Spearman-Brown split-half reliability and test-retest reliability) studies on the Turkish adapted version of the first part (the original measurement tool consists of two parts, measuring anxiety in the first part and panic disorder in the second) of the Anxiety Scale for Children, developed based on the DSM-5 criteria, on the normal (non-sick) children aged 10-15 years. The YAM 5-I (i.e., the first part of the scale) includes items that measure separation anxiety, selective mutism, social anxiety disorder, panic disorder and general anxiety disorder, which are defined as the components of anxiety by the DSM-5.

The confirmatory factor analysis on the Turkish children sample of the YAM-5-I determined that when the item that reads "Meeting new people makes me uncomfortable" under the sub-scale of Social Anxiety in the original scale was included in the sub-scale of Selective Mutism based on the suggestion of Modification Indices, the resulting five-factor second-order CFA yielded better fit values. Therefore, it can be argued that this also validated the predicted five-factor structure with the newly added sub-scale of “selective mutism” based on the DSM-5 and indicated its compatibility with the original scale. In an interview with three children (two girls and one boy) in this age range about the inclusion of the item that reads “Meeting new people makes me uncomfortable” to the sub-scale of “Selective Mutism” differently from that in the original scale, these children were asked whether meeting new people make them uncomfortable or not; all of them, similarly answered that meeting new people would not make them uncomfortable, but they find it bothering to meet new people because they don't want to answer questions such as Which team do you support?, How is school going? or Which parent do you love more? right after they meet such people. These answers also

explain why this item has been included in the sub-scale of “Selective Mutism". Thus, cultural factors seem to play a critical role in this regard.

In the study conducted for the validity of the YAM-5-I, the correlations between the YAM-5-I and Cognitive Distortion for Children were examined; and the results showed significantly positive correlations with the total score on the YAM -5-I and its sub-scale, except the sub-scale of Selective Mutism. There is no scholarly evidence in the literature that supports such finding. Nevertheless, the studies performed with similar variables in different samples support that the scale can yield the psychometric values necessary for criterion-related validity. For example, with the sample of the 6th graders attending secondary school, Gökkaya (2019) reported a positive correlation between exam anxiety and cognitive distortion, but did not find any significant correlation between cognitive distortion and constant anxiety scores. İsaoğlu & Tuzcuoğlu (2021) studied with the Syrian immigrant university students and found out a significantly positive relationship between cognitive triad and anxiety. Similarly, Jacobs and Joseph (1997) carried out a study with adolescents aged 13 to 18 and identified significantly positive correlations between cognitive triad and anxiety. From this standpoint, the significant correlations between the scores of the YAM -5-I and cognitive distortion supported the criterion-related validity of the scale.

Besides, the correlations between the YAM -5-I and the total score on the Perceived Family Social Support were examined; the results revealed significantly negative correlations between the sub-scale scores, excluding the sub-scale of Selective Mutism, and the Perceived Family Social Support Scale. There are no research findings obtained with a similar sample and measurement tools reported in the literature that directly support this finding. However, there are findings reported by studies with similar sample and similar variables. One of them, Öztürk (2014) found out that the perceived parental support negatively predicts social anxiety in university students, indicating a negative correlation between these variables. In another study, Karalar et al. (2018) determined a significantly negative relationship between perceived parental social support and social anxiety. Baltacı & Hamarta (2013) yielded a significantly negative relationship between all sub-dimensions of perceived social support (family, friends, and teachers) and social anxiety among university students. These findings provide another evidence of criterion-related validity regarding the YAM -5-I, as it reveals significantly negative relationships with perceived family support, as theoretically expected. Güler (2012) argues that when the adapted scale produces significant relationships with the measurement tools, this indicates that the adapted scale achieves criterion-related validity. In other words, the YAM-5-I validly measures anxiety in children.

Within the framework of criterion-related validity, significant correlations were obtained between the other subscales of YAM-5-I, with the exception of the Selective Mutism subscale, and between total anxiety and cognitive distortion and perceived family social support. In developing the scale in the age group of 8-18 (Murris et al., 2017), most experts who contributed to this process considered the items of the sub-scale of Selective Mutism, which is the new sub-scale of anxiety disorder, as the items of the sub-scale of Social Anxiety. This may be linked to the rare cases of selective mutism and the lack of knowledge among the experts to distinguish these two conditions from each other. Therefore, in this scale, it was evaluated that it would be appropriate to measure selective mutism in children with new items that can be an indicator of selective silence in daily life. Further, Murris et al. (2017) stated that the fact that selective mutism is a low-prevalence condition in society can also bring about a number of problems about the validity of the sub-scale of Selective Mutism.

As for the reliability of the scale, the Cronbach's alpha internal consistency coefficients of the scale were calculated first. The results show that this coefficient was .87 for the total scale, .65, the lowest, for the sub-scale of Selective Mutism and .80, the highest, for General Anxiety Disorder. These obtained values indicate the reliability of the scale in general terms. According to Tezbaşaran (1996), a reliability coefficient of .70 and above indicates the reliability of the scale. In the study that designed the YAM-5-I (Murris et al., 2017), the Cronbach's Alpha internal consistency coefficient was .91 for the

total scale, .67, the lowest, for the sub-scale of Selective Mutism, and .87, the highest, for the sub-scale of General Anxiety Disorder. Also, in the validity and reliability study conducted for the YAM-5-I for the age group of 8-12, Simon et al. (2017) calculated the omega(ω) reliability coefficients as .91 for the total scale, .50, the lowest, for the sub-scale of Selective Mutism and .82, the highest for the sub-scale of General Anxiety Disorder. The adaptation study performed in the Spanish sample (Fuentes-Rodriguez et al., 2018) found the Cronbach's Alpha reliability coefficient of the YAM-5-I as .84 for the total scale, .58, the lowest, and .86, the highest, respectively for Selective Mutism and General Anxiety Disorder. It is plausible to argued that the findings from these developments and adaptation studies support the findings obtained under this study. The common findings from all the studies underline that the internal consistency of the total scale is high whereas the sub-scale with the highest reliability is General Anxiety Disorder, and the sub-scale with the lowest reliability is Selective Mutism. Murris et al. (2017) stated that the reason for this may be related to the fact that a small number of items aimed at measuring selective mutism seek to reveal its low-level correlation with anxiety. Therefore, this might be also due to the fact that children in this age group derive different meanings from these items on selective mutism. As already mentioned above, a significant number of experts in the study group of anxiety stated that they had difficulty in distinguishing the items of selective mutism and social anxiety from one another (International Child and Adolescent Anxiety Assessment Expert Group).

The correlation coefficient between the test-retest studies conducted at a two-week interval was r=.74 for the total scale. In the test-retest study, this was .64 for the sub-scale of Separation Anxiety, .82 for Selective Mutism, .90 for Social Anxiety, .90 for Panic Disorder and .90 for General Anxiety. This finding is congruent with the findings of Murris et al. (2017), Fuentes-Rodriguez et al. (2018) and Simon, et.al. (2017). The similarity of the scores obtained in different time periods once again shows that this scale can give reliable information about the course of anxiety in children and the gains in treatment of anxiety as a result of interventions.

Moreover, this study examined whether the total score on the YAM-5 and on its sub-scale differed by gender and concluded that the impact of gender on anxiety (separation anxiety, selective mutism, social anxiety, general anxiety, and total anxiety) is small and moderate (panic disorder). This finding is supported by the findings that the research with the sample of Spanish children usually report that gender has a small effect on anxiety symptoms (Fuentes-Rodriguez et al. 2018; Orgilés et al., 2012). This indicates that this scale can achieve a stable measurement in different cultures.

The studies that compare anxiety levels in children by gender with the Spanish sample determined that the scores of girls on the total scale were higher than those of boys; girls outscored boys in Separation Anxiety, Social Anxiety, Panic Disorder and General Anxiety Disorder whereas there was no significant difference in Selective Mutism (Fuentes-Rodriguez, et al., 2018). Castellanos and Hunter (1999), Costello, Mustillo et al. (2003) and Craske (1997) found that demographic variables such as age and gender are important in investigating anxiety in children, and most studies point out that girls experience more anxiety than boys. On this, another study was conducted to find out why girls may experience more anxiety; Bodden et al. (2009) reported that girls experience more anxiety due to stereotypes related to their gender. According to these authors, it is recognized that girls culturally exhibit more symptoms of anxiety. Another study by Muris et al. (2017) concluded that girls had higher scores in separation anxiety, social anxiety disorder, general anxiety disorder and total anxiety compared to boys whilst there was no difference in selective mutism and panic disorder.

Simon, et.al. (2017) also ascertained that girls had higher scores in Separation Anxiety and Social Anxiety Disorder, while boys had higher scores in Total Score; further, there was no significant difference in Selective Mutism, Panic Disorder and General Anxiety Disorder. Studying the sample of Iranian children, the researchers concluded that there was no difference between girls and boys in Total Anxiety; that boys had higher scores than girls in Selective Mutism, and that there was no difference in Separation Anxiety, Social Anxiety, General Anxiety and Panic Disorder by gender (Soltani et al.,2020). In contrast to these findings, another study found no significant difference by gender

(Fuentes-Rodriguez, et al., 2018). Notably, there are different findings regarding gender reported by different studies. In this regard, it seems that the findings of this study are supported by the findings obtained from the studies in different cultures and with different samples.

All the findings on reliability and validity indicate that the YAM-5-I incorporates psychometric values that can measure childhood anxiety in the Turkish children sample. Despite this, this study, like any other study, has some limitations. The limitations identified and recommendations for these limitations are as follows:

- Anxiety is a critical psychological problem, and it may be misleading to make serious decisions about it based on the findings of a single study. Therefore, further validity and reliability studies for this scale in various different samples are needed.
- Since there is no finding on whether the scale can classify individuals as anxious and non-anxious, future studies that concentrate on this may provide important insights into anxiety-related modeling.
- The fact that this study has been conducted with a non-clinical sample alone may provide misleading findings about the validity and reliability of the measurement tool with a clinical sample. For this reason, it is important to consider the findings on this scale in clinical and non-clinical samples comparatively.
- The scale did not have a cut-off score, which may pose a problem for classification. In this regard, studies with a large sample may benefit from gender-specific cut-off scores or norms.
- It is known that gender and age are important factors in anxiety; yet, this study did not involve the measurement invariance of the scale by these variables. Thus, future studies may focus on the measurement invariance of this scale based on variables such as gender, age, place of birth (village, city).
- The data regarding the scale were collected from a restricted area. Therefore, there may be problems in the generalizability of the findings. To eliminate this, it is recommended to collect more extensive data from different educational backgrounds and geographical regions and re-perform the analysis based on these data.
- This study has investigated the validity and reliability of the scale for children. However, its validity or reliability has not been tested in a sample of adolescences. Future studies may test the validity and reliability of the scale in a sample of adolescences.

COMPLIANCE WITH ETHICAL STANDARDS

Ethical Approval: All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.
Consent to Participate: Informed consent was obtained from all individual participants included in the study
Conflict of Interest: On behalf of all authors, the corresponding author states that there is no conflict of interest.
Funding: No funding was received for conducting this study.
Data Availability: Data and material are available from the corresponding author upon reasonable request.

AUTHOR CONTRIBUTION

- The first author contributed to the analysis of the data, literature review and findings section.
-The second author contributed to the collection of data, introduction, conclusion and discussion section.
- Both authors contributed to the design of the research.

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Views of Master's Students at Health Sciences on Their Academic Self-Efficacies

H. Gülhan Orhan-Karsak, Assoc. Prof. Dr., Kırklareli University, gorhan811@gmail.com
0000-0001-5927-6341

Mehmet Özenç, Assoc. Prof. Dr., Necmettin Erbakan University, mozenc51@gmail.com
0000-0001-6339-4092

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Abstract

The study explored the academic self-efficacies of Master's students' at Kırklareli University's Graduate School of Health Sciences. The study was carried out during the Fall semester of the 2016-2017 academic year. The participants included eight female and one male master's student. The qualitative study employed the phenomenology design. Content analysis was conducted for data analysis. The data was collected using a semi-structured interview form made up of 14 open-ended questions. The collected data is presented using mind maps. The study results revealed Master's students' views on their self-efficacies in academic writing, research methods and techniques, data collection and analysis, academic socialization, and other factors affecting their academic self-efficiency. The study results showed that, for academic self-efficacy, the work discipline came first. The students believed that they were adequate in doing homework and were meticulous, but were inadequate in writing projects, articles, books, and book chapters. Students were indecisive about which method and technique they should choose, found their existing knowledge levels low, felt inexperienced, and they felt like they needed to do more research. They also felt inadequate in using the terminology related to the field during data collection.

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INTRODUCTION

Thesis based Master's degrees are educational programs that enable students to gain the ability to access, compile, interpret and evaluate information by using scientific research methods, whereas non-thesis master's programs are educational programs that teach how to use the knowledge of professional subjects in practice. The Ph.D. program, on the other hand, is the highest level of postgraduate education that focuses on the scientific research process in-depth and aims to develop Ph.D. student's analysis and synthesis skills. Aiming for specialization and personal development, graduate education is an education level that is affected by academic and social integration, satisfaction with undergraduate education, a desire to achieve a degree, family's education level, and the amount of financial support, in other words, family income (Ethington & Smart, 1986). While undergraduate education offers a broad and general education, graduate education offers further education in a specific discipline or sub-discipline. It provides an in-depth understanding so that the student can become an expert in his/her study area. A qualified graduate program teaches effective use of technology and advanced skills such as problem-solving, creativity, critical thinking, effective oral presentation (Ebel, 2001). In this context, graduate education is very important in improving the social and cultural fabric of life and society, in the sense that countries can build a staff of highly talented leaders and experts in different fields who are the key to their countries' development. Individuals receiving graduate degrees make significant contributions to their countries and the global world by providing economic, social, and cultural welfare at the national and international levels (Council of Graduate Schools, 2008). Despite these contributions, there are many problems in graduate education today. Regarding these problems, Duan and Shan (2013) highlighted problems such as lack of qualified academic advisors and low student quality in graduate education, while also pointing out students' weak theoretical readiness and low ability to solve real-life problems. They stated that the main reason behind these mentioned problems is the fact that the offered graduate education activities are not effective and do not develop students' self-learning skills. They also argued that the candidates applying for graduate education are not ready personally, have family problems affecting their education, and have financial problems hindering their education life. In addition, the length of the graduate education and the intensity of the course load lead to both financial and motivational losses for the students. Thus, the graduate students who need to both work and continue their education are forced into unfair competition with students who do not have to work. Also, as Santiago and Einarson (1998) stated, students' academic readiness, the disadvantages they experience in the situation, and their expectations about faculty-student interactions also affect their academic self-efficacy and career expectations. Furthermore, Cheng, Tsai, and Liang (2019) revealed that, particularly, academic resilience's commitment, emotion control, and challenge sub-dimensions are strong predictors of graduate students' academic self-efficacy. These study results proved the relationship between graduate students' academic resilience and their academic self-efficacy. In other words, as graduate students' level of academic resilience increases, their level of academic self-efficacy also increases. Cheng, Tsai, and Liang (2019) also drew attention to the fact that graduate students who understand academic resilience will be able to recognize and evaluate the reasons for their failure and learn how to overcome academic difficulties.

In order to overcome all these problems and increase the quality of graduate education and graduate students' efficacy, it is necessary to increase graduate students' perceived general self-efficacy and academic self-efficacy beliefs. In general, self-efficacy belief is the belief that individuals can achieve a certain task. Self-efficacy belief affects whether individuals start the behavior related to the task, their continuity in performing the behavior, their motivation for the behavior, and ultimately their performance. Self-efficacy has an important function in realizing new learning or acquiring a new skill and maintaining or learning this skill by displaying it as a behavior (Kotaman, 2008). Self-efficacy is not a skill, but it is an individual's belief about what one can do with one's own skills in certain situations. In other words, it can be expressed as the belief in the ability to coordinate what one can

do to achieve the designed goals. Individuals' self-efficacy belief is influenced by observing other people's behavior. Individuals who believe that they have a lower level of skill than other individuals are also more prone to depression than other individuals. However, individuals who have a strong belief in their own abilities respond with a milder approach to other individuals who have a higher level of skill than them. They make an effort to overcome any difficult situation they encounter and do not give up (Maddux, 2002). In this context, students with low self-efficacy beliefs give up quickly in difficult learning situations, whereas students with high self-efficacy beliefs have high motivation levels and make an effort to overcome difficult situations without giving up. These efforts increase students' achievement levels (Pintrich & DeGroot, 1990; Robbins, Lauver, Le, David & Langley, 2004). From this point of view, self-efficacy belief is closely related to motivation for learning and academic achievement. In recent years, researchers stated that there are relationships between student achievement and three types of efficacies. They listed these efficacies as student self-efficacy, teacher self-efficacy perception, and school's total efficacy. Eccles (1983) and Pintrich (1988, 1989) stated in their studies on the relationship between self-efficacy belief and learning and motivation that students who organize their learning goals like an expert and have an awareness of the importance of their task learn more with metacognitive strategies and use cognitive strategies more. In addition, students with high motivation levels use cognitive strategies more, have higher metacognition, and perform their tasks better (as cited in Pintrich & De Groot, 1990). Pajares (2002) also expressed that even if students' previous achievement levels are different, students with high self-efficacy are more hardworking, more resistant to difficulties, optimistic, and less anxious, and they are more successful in academic terms. Students with a high belief that they can fulfill their academic tasks give more place to the use of cognitive and metacognitive strategies and continue to work longer than those who do not. Furthermore, students with stronger academic self-efficacy use cognitive strategies and self-control strategies more effectively by using metacognitive strategies. Self-efficacy is a facilitator in cognitive participation. Thus, using cognitive strategies more to increase self-efficacy belief increases performance. For this reason, a combination of will and skill is a necessity for achievement.

In the literature, studies on self-efficacy have been mostly conducted on mathematics self-efficacy (Ardi, Rangka, Ifdil, Suranata, Dharnis, Afdal, & Alizamar, 2010; Ayotola & Adedeji, 2009; Rozgonjuk, Kraav, Mikkor, Orav-Puurand, & That, 2020), science and technology self-efficacy (Evans, 2014; Yoon, Vonortas, & Han, 2020), emotional self-efficacy (Bassi et. al., 2018; Caprara et. al., 2008; Ulutas, 2016), academic self-efficacy (Kader & Eissa,2015; Aktas, 2017; Bagci, 2018; Hirlak et. al., 2017; Honicke & Broadbent, 2015; Koludrović & Ercegovac, 2015; Yokoyama, 2018), social self-efficacy (Karakoyun, 2016; Satici, Kayis, & Akin, 2013), entrepreneurial self-efficacy (Koenig, 2016) and general self-efficacy (Gündoğdu, Dursun, & Saracaloğlu, 2020). Self-efficacy expectation is "one's abilities self-convincing about it". Positive self-efficacy increases the motivation of the expectation of provides and makes one willing to make an effort, whereas negative self-efficacy expectation causes one not to act on his/her own initiative or get a job done. It is pointed out that this causes the individual to leave without finishing (Yılmaz, Gürçay, and Ekici 2007). In this context, graduate students' academic self-efficacy beliefs are a factor that will affect their ability to cope with difficulties and thus their success in graduate education. Therefore, it is important for students to have positive academic self-efficacy beliefs. Academic self-efficacy refers to an individual’s decision regarding their ability to organize and execute their actions in order to achieve the desired performance (Bandura, 1996).

In their study, Ferla, Valcke, and Cai (2009) revealed that academic self-efficacy predicts academic achievement. Koludrovic and Ercegovac (2017) determined that the level of fulfilling academic tasks also has a significant effect on intrinsic and extrinsic motivation. In addition, they concluded that graduate students have significantly more intrinsic motivation than undergraduate students, and are more committed to studying, thus increasing their academic self-efficacy. They also stated that compared to young undergraduate students, their professional expectations are clearer

and they are intrinsically motivated to acquire the necessary efficiencies to perform better in their future careers.

Students with high academic self-efficacy can achieve success by not giving up in the face of a problem, making a high level of effort, and working hard, in other words, they have positive feelings about their learning tasks, and thus their academic self-efficacy levels increase even more. Similarly, students with strong academic self-efficacy can answer questions without hesitation and achieve success thanks to their positive beliefs about academic work and their belief that they can answer the questions they are asked (Bassi, Fave, Steca, & Caprara, 2018; Liew, McTigue, Barrois, & Hughes, 2008; Medrano, Flores-Canter, Moretti, & Pereno, 2016; Yalnuz, 2014; Yılmaz, Gürçay, & Ekici 2007).

The studies on academic self-efficacy in the literature are mostly at the undergraduate level (Adeyemo, 2007; Akbay & Gizir, 2010; Chemers, Hu & Garcia, 2001; Elias & Loomis, 2000; Özsüer, İnal, Uyanık, & Ergün, 2011; Sagone & De Caroli, 2014). However, in Turkey, studies on academic self-efficacy at the graduate level are quite limited. It is very important to increase the academic self-efficacy beliefs of graduate students to increase the quality of graduate education.

Along with the Bologna Process, the Turkish Council of Higher Education defined the qualifications for graduate education, just like it did for undergraduate education. Within the framework of qualifications, the qualifications of graduate students at the level of knowledge, skills, and competencies were defined. Knowledge refers to theoretical and applied qualifications, skills to conceptual-cognitive and applied qualifications, and competencies for being able to work independently and take responsibility, learning, communication, and field-specific competencies (Turkish Council of Higher Education, 2011). In this context, a Master's education, which is the first step of graduate education, aims to provide students with the skills to access, evaluate and interpret knowledge. Students who complete their master’s education after undergraduate education are deemed to have taken the first step towards becoming a scientist. While receiving their master’s degree, the scientists should acquire the knowledge, skills, and attitudes specific to their field of specialization, as well as the competencies, scientific attitudes, and behaviors related to the research methods and techniques they will use while writing their theses (Karaman & Bakirci, 2010). While describing the functions of master’s education, Arıcı (1997) emphasized the competencies that Master’s students should acquire, and expressed these competencies as producing science and art, perceiving social problems correctly, developing solutions to problems, and contributing to the education of high-level manpower.

The individuals' goals to start graduate education are also the above-mentioned desire to be a scientist, their interest in theoretical subjects, and their desire to do scientific research, learn the scientific research process, gain a scientific perspective, and make an academic career (Erkılıç, 2007). For this reason, starting with the academic exams, improving Master’s students’ different skills such as scientific research, data collection, analysis, academic writing, and academic research should be aimed using theoretical and practical ways. As Aslan (2010) stated, Master’s students feel inadequate about answering numerical questions in the graduate school exams, mastering a foreign language, understanding and using linguistics and education terminology, designing projects, finding a thesis subject, writing a thesis, and mastering research methods and techniques, statistics, and research ethics. Within the framework of this purpose, as Özsüer et al. (2011) stated, taking into account Master’s students’ perceptions, predictions, and evaluations on their own abilities related to the different competencies mentioned above can be considered a way to discover new perspectives on academic self-efficacy beliefs.

In this context, it is vital to increase Master’s students’ academic self-efficacy belief levels in order to increase the quality of education, realize the academic self-efficacy beliefs of the students in the field they study, and successfully fulfill the goals of master’s education, which is the period in which scientists are raised. Academic self-efficacy in master’s education is one of the least discussed topics.

It can be said that the studies on this subject are insufficient (Karakütük, 2000, 2002; Özoğlu, 2001: cited in Aslan, 2010).

A long chain of variables consisting of different components that Master's students try to gain competence while continuing their graduate education, such as scientific research, data collection, analysis, academic writing, and producing academic works affect students' academic self-efficacy beliefs. In the present study, the different variables mentioned above that affect the academic self-efficacy beliefs of Master's students are discussed. In other words, the present study explored Master's students' views on their academic self-efficacy regarding scientific research, data collection, analysis, academic writing, and producing academic works. For this reason, answers to the study questions stated in the following section were sought. The answers to the following questions were sought in line with the study's general purpose of determining Master's students' views on their academic self-efficacy.

1. What are Master's students' views on self-efficacy in academic writing?
2. What are Master's students' views on research methods and techniques self-efficacy?
3. What are Master's students' views on data collection self-efficacy?
4. What are Master's students' views on data analysis self-efficacy?
5. What are Master's students' views on academic socialization self-efficacy?
6. What are Master's students' views on their self-efficacy related to other factors?

METHOD

RESEARCH DESIGN

In the present study, the phenomenology design, one of the qualitative research methods, was employed to explore Master's students' experiences regarding their self-efficacy and the differences and similarities between them, and the reasons behind these. In a phenomenology study, which lies its foundations in philosophy and psychology, the common meaning of the experiences of a few people or participants of a phenomenon or concept is defined together together with the common characteristics of the participants, resulting in reaching the essence of individuals' lives (Creswell, 2013). The study was carried out before 2020. Therefore, an ethics committee report was not required.

STUDY GROUP

The study was conducted with nine Master's students attending X University's Graduate School of Health Sciences during the Fall semester of the 2016-2017 academic year. The participants, 23-30 years old, included one male and eight female Master's students. Four of them were doing their graduate work in Child Development, two in Nursing, and three in Public Health. While determining the study group, criterion sampling, one of the purposeful sampling methods, that provides an in-depth examination of the situations obtained in the study was used (Patton, 1997). Criterion sampling is a sampling method in which participants are determined by the criteria decided before the study. For this purpose, the decision-makers can be researchers as well as information based on literature (Yıldırım & Şimşek, 2011). The criterion used in the determination of the participants in this study was the participants being active students of a graduate program carried out under the roof of X University and voluntarily accepting the interview. The participant group was chosen because one of the researchers was teaching a course to them.

DATA COLLECTION

To collect the data, a semi-structured interview form including 14 open-ended questions was developed using the relevant literature. Draft interview questions were formed based on the categorical notes obtained from the examination of the studies in the literature that investigated the beliefs and problems experienced by graduate students regarding their academic self-efficacy, and the observation notes on the problems experienced by graduate students of two faculty members who

were offering graduate courses. In the finalization of the interview form, the opinions of two academicians working in the field were taken. Based on the opinions of the experts who were working as lecturers in the education sciences department of different universities, two questions were removed from the interview form. After the form was applied to a student as a pilot and her opinions were taken, the form was restructured based on the opinions of the experts and the student, given its final form. The data was collected through face-to-face interviews with the participants. The interviews were carried out individually in the empty classrooms of the faculty building after students' graduate classes ended. Before the interview, the participants' consent was taken, and the interviews were recorded on a voice recorder. The shortest interview took 45 minutes, whereas the longest one took 65 minutes.

DATA ANALYSIS

Before data analysis, the audio recordings were deciphered and transcribed. A 28-page written data set was obtained from all participants. Content analysis steps were taken to analyze the data. According to Başfırıncı (2008), in content analysis, all kinds of content such as text, pictures, or images are systematically examined to make the collected data meaningful. In line with the purpose of content analysis as stated by Özdemir (2010) and Tavşancıl and Aslan (2001), similar data were gathered around certain themes according to the messages and meanings they contained, and were coded in an order that the reader could understand and were interpreted and described. In addition, for data analysis, the three stages of Miles and Huberman (1984) were followed, namely data reduction, data display, and conclusion drawing and verification.

VALIDITY

In order to ensure the content validity of the developed interview form, first, the opinions of two academicians regarding the interview questions were taken. To determine the level of agreement, the coder reliability formula [Reliability = Number of Agreements / (Number of Agreements + disagreements)] suggested by Miles and Huberman (1994) was used. Accordingly, the inter-coder reliability was found as 75%. Since this rate would be low compared to Miles and Huberman, a third evaluator who was a lecturer in the field of educational sciences and studying qualitative patterns was asked to code. The agreement between the three evaluators was recalculated according to the specified formula and the agreement was found to be approximately 82%. According to this, it is expected that the consensus among coders will be at least 80% (Miles & Huberman, 1994). The internal validity of the study was checked by two students participating in the study. For external validity, the participating students' views are presented with direct quotations from the views in the interview form.

FINDINGS

The findings obtained after the data analysis are presented in figures. Explanations and some participant views are given under the figures. In the study, six main themes and sub-categories were formed. The themes and categories formed after the content analysis are presented in Table 1.

Table 1. *Themes and Categories*

Themes	***Categories***
Views on self-efficacy in academic writing	Views on self-efficacy in homework /presentation/project writing Views on self-efficacy in finding thesis topic/thesis proposal/writing thesis Views on self-efficacy in writing articles/books/book chapters
Views on self-efficacy in research methods and techniques	
Views on self-efficacy in data collection	Views on self-efficacy in understanding and using the terminology in the field Views on self-efficacy in understanding and using articles written in a foreign language Views on self-efficacy in accessing and browsing the literature Views on self-efficacy in using computers and software
Views on self-efficacy in data analysis	
Views on self-efficacy in academic socialization	Views on the participation in symposium, congress, workshop events, and concerns Views on the communication with faculty members and thesis advisors
Views on other factors affecting self-efficacy	

VIEWS ON SELF-EFFICACY IN ACADEMIC WRITING

Master's students' views on self-efficacy in academic writing were grouped into categories such as views on self-efficacy in homework/presentation/project writing, views on self-efficacy in finding thesis topic/thesis proposal/writing thesis, and views on self-efficacy in writing articles/books/book chapters.

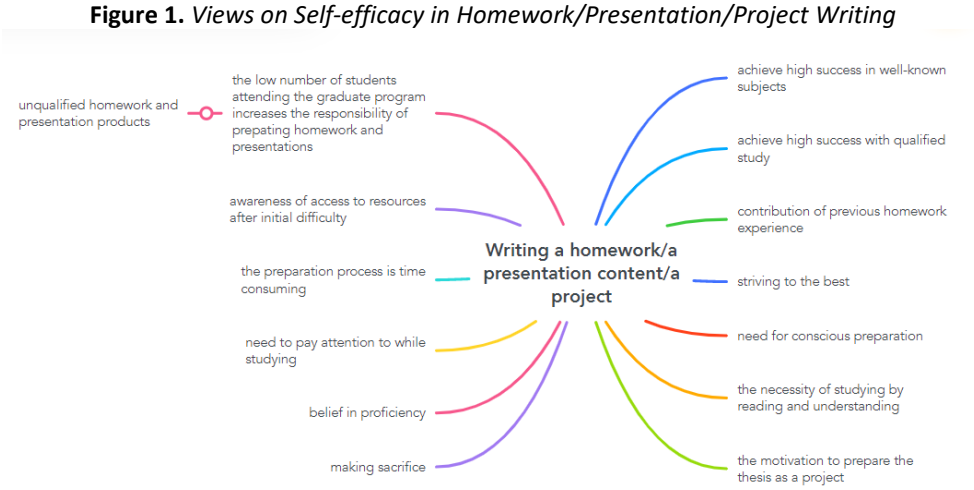
Table 2. *Sub-categories of Views on Self-efficacy in Academic Writing*

Views on self-efficacy in academic writing	Views on self-efficacy in homework /presentation/project writing Views on self-efficacy in finding thesis topic/thesis proposal/writing thesis Views on self-efficacy in writing articles/books/book chapters

VIEWS ON SELF-EFFICACY IN HOMEWORK/PRESENTATION/PROJECT WRITING

In Figure 1, findings regarding Master's students' views on self-efficacy in homework/presentation/project writing that were categorized under views on self-efficacy in academic writing are presented.

Figure 1. *Views on Self-efficacy in Homework/Presentation/Project Writing*



According to Figure 1, Master's students' views on self-efficacy in homework/presentation/project writing category has thirteen views, namely striving to be the best, making sacrifice, belief in proficiency, need for conscious preparation, the necessity of studying by reading and understanding, the low number of students attending the graduate program increases the responsibility of preparing homework and presentations, awareness of access to resources after initial difficulty, achieving high success in well-known subjects, achieving high success with qualified study, the preparation process is time consuming, need to pay attention to while studying, contribution of previous homework experience, and the motivation to prepare the thesis as a project. Students are of the opinion that the necessity of focusing their attention and reading, and the aim of achieving a high level of success by conducting a quality study affect their self-efficacy in academic writing. Some of the Master's students' views on the aforementioned theme are given below by the category name titles.

The low number of students attending the graduate program increases the responsibility of preparing homework and presentations:

S2. The number of people in the Master's program is two. This sometimes causes us to prepare three presentations in a week. If we take into account my outside responsibilities, sometimes products with limited quality are produced. Despite all these conditions, I think I am not bad.

I don't have experience in writing a project, but I think about writing a project during the thesis:

S3. I feel experienced indoing homework and presentations. The contribution of the graduate-level courses was great in this regard. I don't have experience in writing a project, but I will also think about writing a project during my thesis.

To need for conscious preparation, the necessity of studying by reading and understanding:

S4. I am selfless while preparing homework and I do it by reading and understanding the subject. I approach presentations and projects with the same awareness.

To achieve high success in well-known subjects, achieving high success with qualified study:

S6. I think that I can do much better work when I work well for presentations or when I present on the subjects that I am good at.

Awareness of access to resources after initial difficulty:

S7. Since I am a little meticulous, I want it to sit with me. So, the process of preparing a presentation takes a little longer for me. At first, I didn't know where I could find resources and what resources I should use. Now, I can find what and where the resources are.

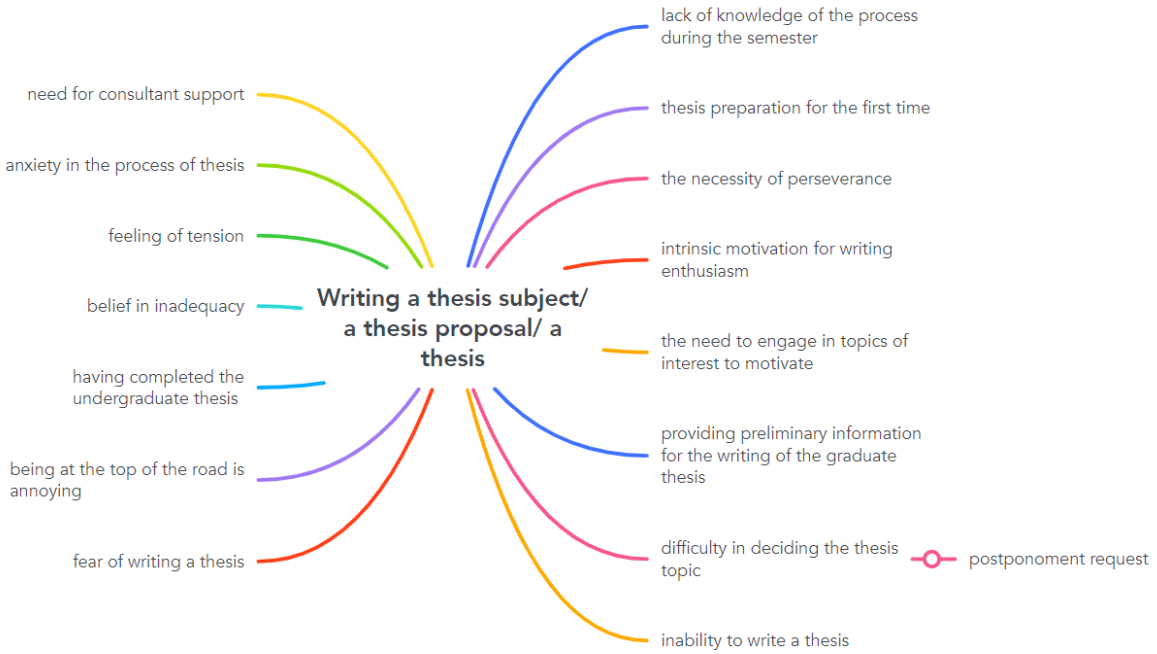
The preparation process is time-consuming, I need to pay attention while studying:

S8. When I do, good things come out, but I don't find myself efficient in using time.

VIEWS ON THE SELF-EFFICACY IN FINDING THESIS TOPIC/THESIS PROPOSAL/WRITING THESIS

In Figure 2, findings regarding Master's students' views on self-efficacy in finding thesis topic/thesis proposal/writing thesis that were categorized under views on self-efficacy in academic writing are presented.

Figure 2. *Views on Self-efficacy in Finding Thesis Topic/Thesis Proposal/Writing Thesis*



According to Figure 2, Master's students' views on self-efficacy in homework/presentation/project writing category has fourteen views, namely feeling of tension, belief in inadequacy, having completed the undergraduate thesis, providing preliminary information for the writing of the graduate thesis, being at the top of the road is annoying, difficulty in deciding the thesis topic, fear of writing a thesis, inability to write a thesis, lack of knowledge of the process during the semester, thesis preparation for the first time, the necessity of perseverance, intrinsic motivation for writing enthusiasm, the need to engage in topics of interest to motivate, the need for consultant support, and anxiety in the process of thesis. The students emphasized that they mostly saw themselves as inadequate in writing a thesis. The majority of the students stated that they experienced indecision about their thesis topic, that they felt anxious and inadequate, that the education about writing a thesis was insufficient, that their prior knowledge and readiness were insufficient, that they did not know how to write a thesis, and that they were afraid to write a thesis. Some of the Master's students' views on the aforementioned theme are given below:

Difficulty in deciding the thesis topic:

S1. It was very difficult for me to decide on the subject. I believe in the saying of a journey of a thousand miles begins with a single step, but I prostrate.

The fear of writing a thesis:

S3. I believe that I have successfully passed the thesis topic selection and thesis proposal part, but I feel inadequate and fearful about writing the thesis. I have a feeling that everything will come to a stop in some part of the thesis.

The need for consultant support:

S5. I am moving forward with the help of my advisor. I think I'm having trouble with this because I'm just at the beginning of the road.

Inability to write a thesis, lack of knowledge of the process during the semester:

S8. I think that the education I received is insufficient for writing a thesis.

Having completed the undergraduate thesis:

S9. I think that identifying topics in line with my own interests is more productive in terms of motivation to study. I haven't written a thesis proposal before, but since I had written an undergraduate thesis, I think my prior knowledge will be beneficial.

VIEWS ON THE SELF-EFFICACY IN WRITING ARTICLES/BOOKS/BOOK CHAPTERS

In Figure 3, findings regarding Master's students' views on self-efficacy in writing articles/books/book chapters that were categorized under views on self-efficacy in academic writing are presented.

Figure 3. *Views on Self-efficacy in Writing Articles/Books/Book Chapters*

According to Figure 3, students mostly stated that they need to read many articles to feel competent in writing an article, book, or chapter and that they need to be inspired by different academicians. The majority of the students (five) described the process of writing an article as difficult and emphasized that it is necessary to be a professional in order to write on an asked subject. Some of the students mentioned not having a desire to learn and write, and expressed that the lack of experience in writing articles, books, or book chapters created a feeling of inadequacy. Some of the Master's students' views on the aforementioned theme are given below:

S2. I've never written an article, book chapter, or book. I'm trying to overcome my problems with foreign language and acquire the necessary competencies. I don't see why not, I'm hopeful.

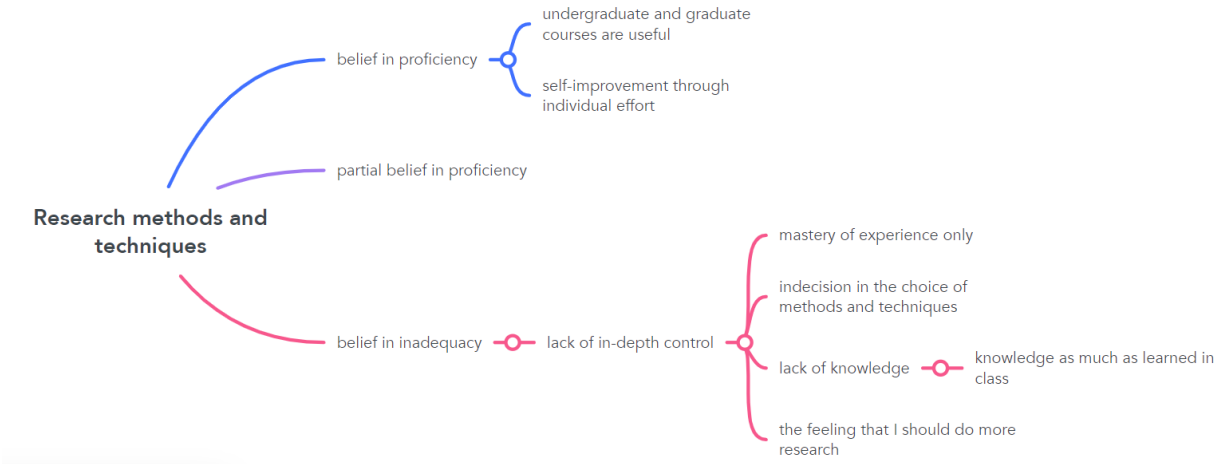
S3. I've never written an article or a book chapter. I know that I need to read more and be inspired by more academics about writing articles. I think writing an article is a difficult process.

S5. Based on our experiences in the courses, I think I can write, but of course, I think I have a long way to go to be the best.

VIEWS ON SELF-EFFICACY IN RESEARCH METHODS AND TECHNIQUES

In Figure 4, Master's students' views on self-efficacy in research methods and techniques are presented.

Figure 4. *Views on Self-efficacy in Research Methods and Techniques*



According to Figure 4, Master's students' self-efficacy beliefs regarding their research methods and techniques were grouped into three categories. While the majority of the students stated that they had a feeling of inadequacy regarding research methods and techniques, four of them stated that they felt partially competenet, and two of them stated that they felt competent due to individual effort and the benefits they gained from their undergraduate and graduate courses. Some of the Master's students' views on the aforementioned theme are given below:

S4. I am not adequate enough at this.

S8. I am not enough, but I believe that I can improve myself by reading and learning.

S9. As much as what I learned in class.

S2. I don't think I am competent, but I can adapt once I have identified the techniques I want to use.

VIEWS ON SELF-EFFICACY IN DATA COLLECTION

Master's students' views on self-efficacy in data collection were grouped into categories such as views on self-efficacy in understanding and using the terminology in the field, views on self-efficacy in understanding and using articles written in a foreign language, views on self-efficacy in accessing and browsing the literature, and views on self-efficacy in using computers and software.

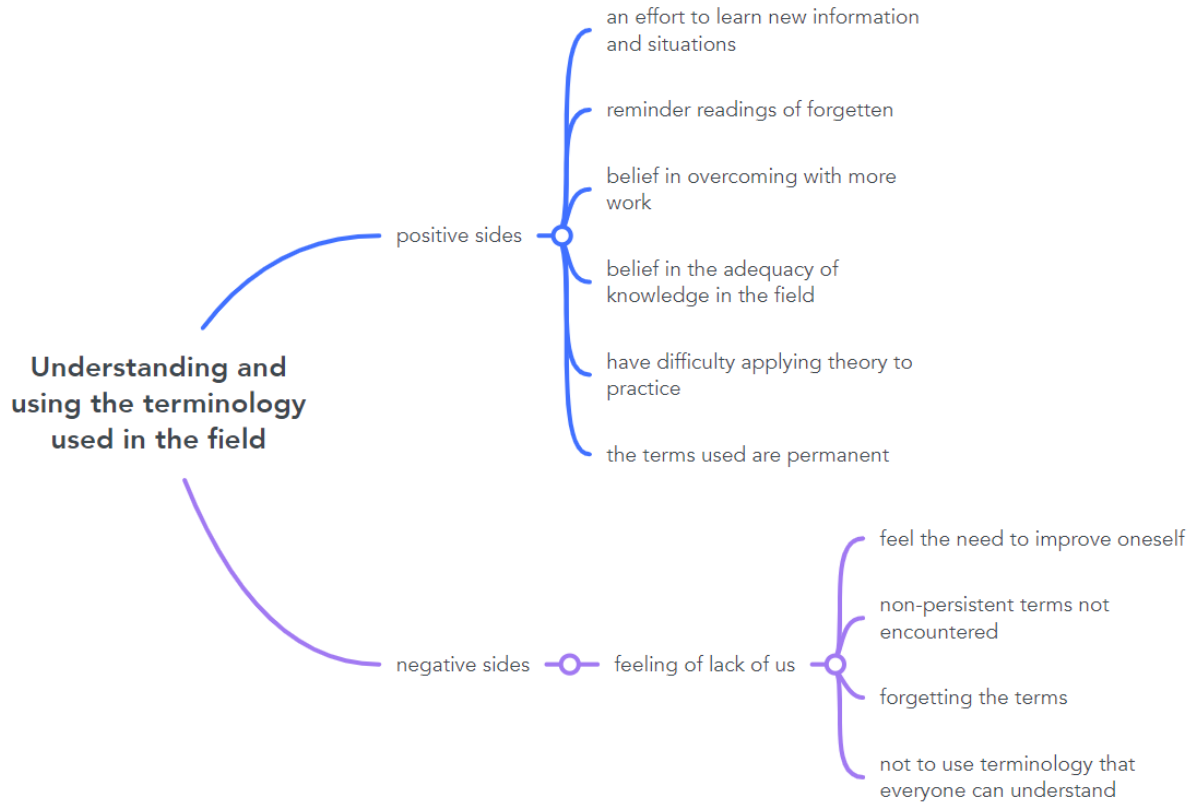
Table 3. *Sub-categories of Views on Self-efficacy in Data Collection*

Views on self-efficacy in data collection	Views on self-efficacy in understanding and using the terminology in the field
	Views on self-efficacy in understanding and using articles written in a foreign language
	Views on self-efficacy in accessing and browsing the literature
	Views on self-efficacy in using computers and software

VIEWS ON SELF-EFFICACY IN UNDERSTANDING AND USING THE TERMINOLOGY IN THE FIELD

In Figure 5, Master's students' views on understanding and using the terminology in the field that were categorized under views on self-efficacy in data collection are presented.

Figure 5. *Views on Understanding and Using the Terminology in the Field*



According to Figure 5, Master's students' views on self-efficacy in understanding the terminology used in the field were grouped under two categories, positive and negative. In the positive category of self-efficacy in understanding and using the terminology used in the field, the ideas of an effort to learn new information and situations and belief in overcoming with more work stand out the most. In the negative category, the students complained the most about forgetting the terms and not using terminology that everyone can understand. Some of the Master's students' views on the aforementioned theme are given below:

S2. Although I think that I am adequate, I always try to make up for my shortcomings, read to remind myself what I have forgotten, and learn about new things I have encountered.

S3. I find myself adequate in understanding the terminology used in my field, but I see that I have shortcomings in using it, and I hope that this can be corrected by studying more.

S4. I didn't choose to use a lot of terminologies so that everyone can understand them. But the information is doomed to be forgotten.

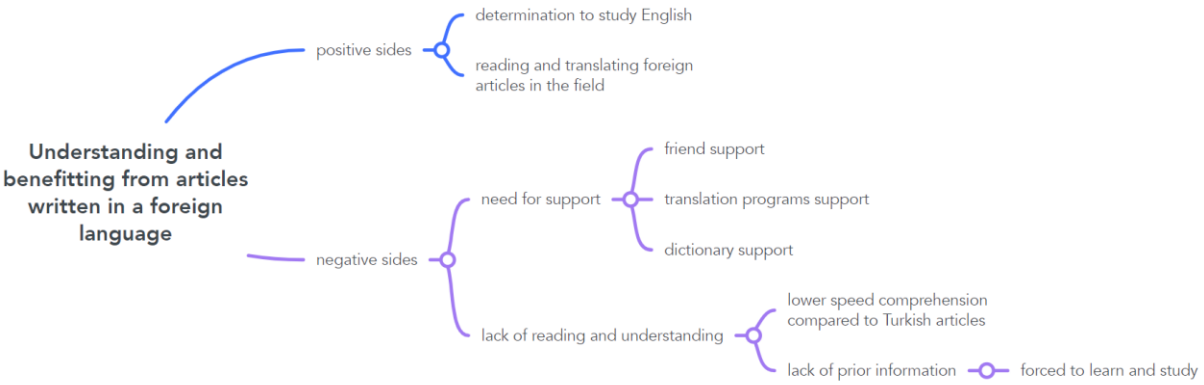
S5. Although I think that there are many subjects that I need to improve myself on, I feel confident in my field. But I have some difficulties in putting my theory into practice even if my theoretical knowledge is better.

S7. The terminological words I use constantly are permanent, but I may have problems with words that I don't use regularly.

VIEWS ON SELF-EFFICACY IN UNDERSTANDING AND USING ARTICLES WRITTEN IN A FOREIGN LANGUAGE

In Figure 6, Master's students' views on understanding and using articles written in a foreign language that were categorized under views on self-efficacy in data collection are presented.

Figure 6. *Views on Understanding and Using Articles Written in a Foreign Language*



According to Figure 6, Master's students' views on self-efficacy in understanding articles written in a foreign language were grouped under two categories, positive and negative. Regarding the positive aspects, the students mostly stated that they were determined to study English f(8). In addition, three students mentioned reading and translating foreign articles in the field. In the negative category, all of the students f(9) stated that they lacked reading and understanding. In this context, the majority f(7) again expressed that they had lower speed comprehension compared to Turkish articles. Some of them f(2) talked about the lack of prior information. Some of the Master's students' views on the aforementioned theme are given below:

S2. I'm pretty inadequate. I can say that I move heaven and earth with the help of dictionaries.

S3. I feel inadequate in understanding and reading articles written in a foreign language. To better understand and analyze these studies, I study in English and I try to translate articles related to the field.

S4. I understand foreign resources by translating them using Google translate and I understand better.

S5. I find myself bad. I'm trying to improve it by doing translations.

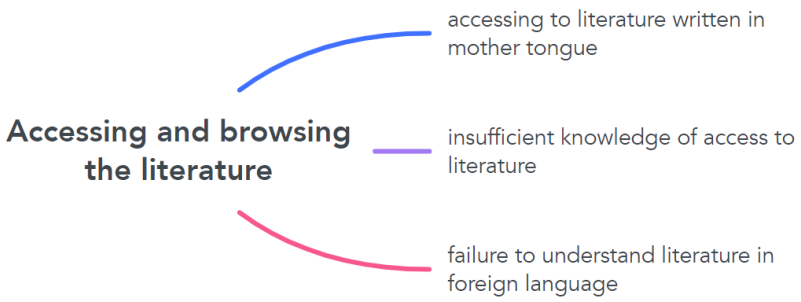
S6. Even though I understand them at a slower rate than Turkish studies, I prefer to use them. First of all, I always read the abstracts and have general knowledge about the subject, so it is easier to catch the keywords in the study. Sometimes I get support from online translation systems by breaking down the parts that I have difficulty translating. If they've been used in Turkish studies before, I also examine them.

S7. I have a lot of problems with foreign language. Since I don't have a background in this, it is a bit difficult for me to learn and work on this. I'm trying to fill this gap by doing translations using the internet.

VIEWS ON SELF-EFFICACY IN ACCESSING AND BROWSING THE LITERATURE

In Figure 7, Master's students' views on accessing and browsing the literature that were categorized under views on self-efficacy in data collection are presented.

Figure 7. *Views on Accessing and Browsing the Literature*



According to Figure 7, Master's students' views on self-efficacy in accessing and browsing the literature were grouped under two categories, accessing literature written in the mother tongue, insufficient knowledge of access to literature, and failure to understand literature in a foreign language. Most of the students f(6) talked about insufficient knowledge on accesing literature. In addition, a significant majority f(5) stated that they fail at understanding literature in a foreign language. Some of them f(3) emphasized the difficulty of accessing literature in the mother tongue. Some of the Master's students' views on the aforementioned theme are given below:

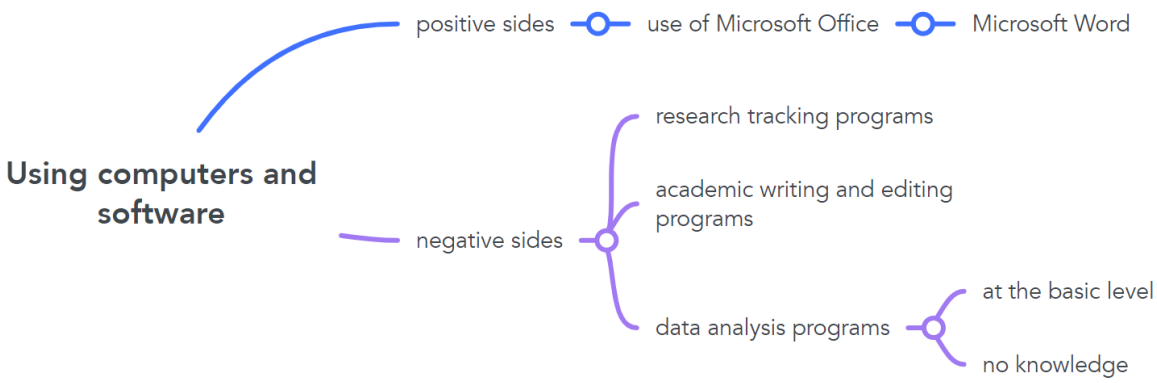
S3. I think that I've improved myself in accessing the literature. I can ask my friends and thesis advisor about the things that I don't know about literature review. I use the ways I learned while doing research.

S5. I think my professional efficacy is high. I don't think I have any problems accessing resources.

VIEWS ON SELF-EFFICACY IN USING COMPUTERS AND SOFTWARE

In Figure 8, Master's students' views on using computers and software that were categorized under views on data collection self-efficacy are presented.

Figure 8. *Views on Using Computers and Software*



According to Figure 8, Master's students' views on self-efficacy in using computers and software were grouped under two categories, positive and negative. On the positive side, the students f(9) emphasized their ability to use Microsoft Word. On the negative side, they f(8) mostly focused on the difficulties they experienced in using data analysis programs and stated that they either knew these programs at a basic level or did not know them at all. Again, some of them f(4) stated that they found themselves inadequate in using research tracking programs, while others f(3) stated that they were inadequate in using academic writing and editing programs. Some of the Master's students' views on the aforementioned theme are given below:

S1. I'm not proficient in programs other than Office.

S2. I can use Office programs effectively. In the SPSS program, I can do simple operations, so I am inadequate. I've heard of research tracking and word processing programs, but I don't use them.

S3. I think I have shortcomings in using the computer. I can use Word from Office programs. I don't know how to use data analysis programs. While researching articles, I sometimes come across the Researchgate site. I think I'm better at using national databases. I'm having problems when using databases of foreign sources because of my shortcomings with a foreign language.

S4. I don't use database programs at all.

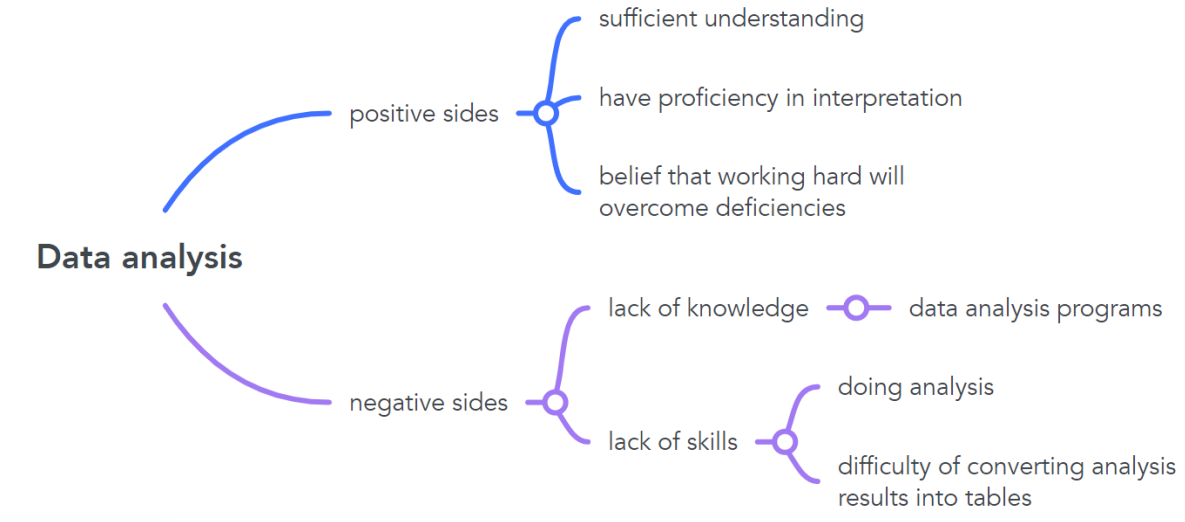
S7. I think that I use the computer programs I may need well but I am not very assertive in this regard. I don't use research tracking programs such as Mendeley, Researchgate, or academic word processing programs such as Endnote.

S9. I've never used the mentioned word processing programs. I have a hard time doing statistical analysis. I don't think that I am adequate in putting into practice what I know theoretically.

VIEWS ON DATA ANALYSIS SELF-EFFICACY

In Figure 9, Master's students' views on self-efficacy in data analysis are presented.

Figure 9. *Views on Data Analysis*



According to Figure 9, Master's students' views on self-efficacy in data analysis were grouped under two categories, positive and negative. On the positive side, most of the students f(4) believed that working hard will overcome shortcomings. Some of them f(2) believed they had sufficient understanding and proficiency in interpretation. On the negative side, most of them f(8) believed they lacked knowledge and a significant majority f(5) thought they lacked skills. They stated that they felt inadequate in doing analysis and had difficulty converting analysis results into tables. Some of the Master's students' views on the aforementioned theme are given below:

S2. I am a research consumer. Even though I am incapable of doing analysis, I can understand and interpret the results.

S4. I just started learning data analysis.

S7. I haven't done any work in this sense yet, but I think I'm good at interpreting statistical data on some simple subjects.

S9. I understand and interpret the results fine, but I don't think I can do the analysis part.

S10. I've difficulties in the analysis part, I may have difficulties in using statistical programs and converting the data into tables but I don't have any trouble understanding it.

VIEWS ON ACADEMIC SOCIALIZATION SELF-EFFICACY

Master's students' views on self-efficacy in academic socialization were grouped into categories such as views on participation in symposiums, congresses, workshop events, and concerns, and views on communication with faculty members and thesis advisors.

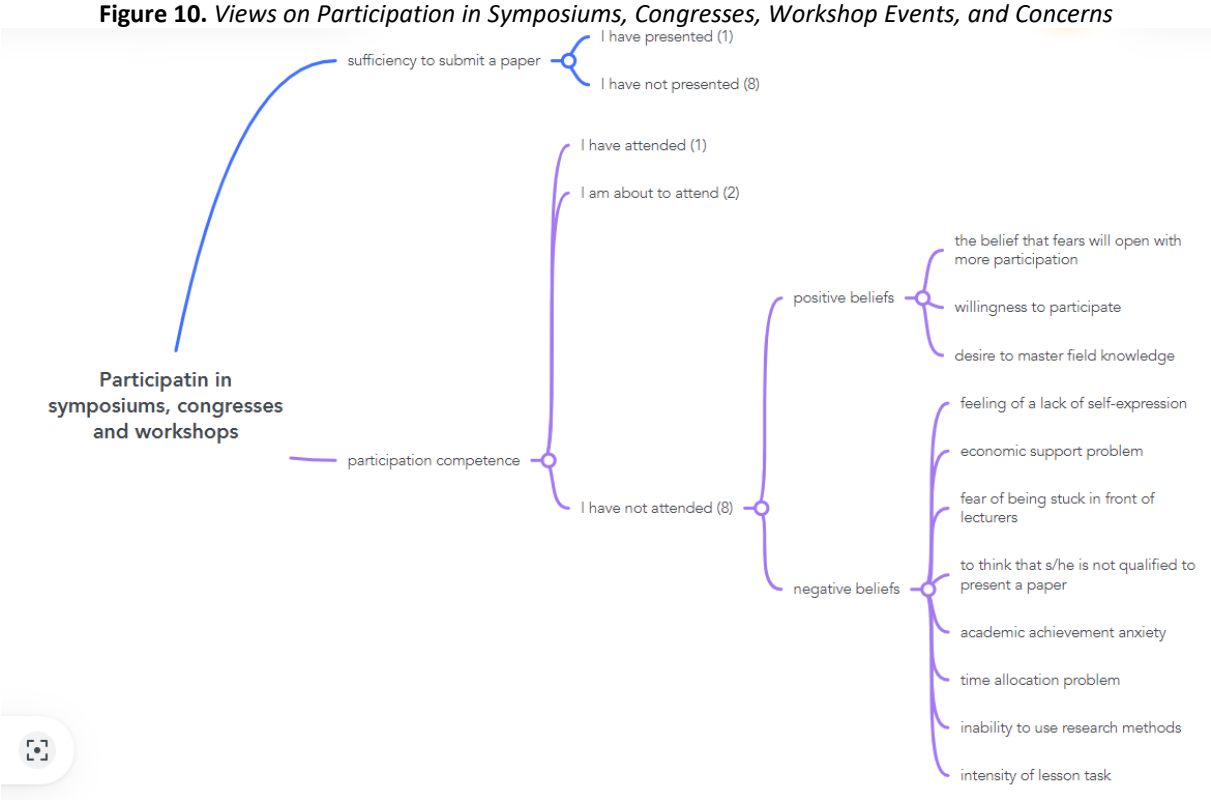
Table 4. *Sub-categories of Views on Academic Socialization Self-efficacy*

Views on academic socialization self-efficacy	Views on the participation in symposiums, congresses, workshop events, and concerns
	Views on the communication with faculty members and thesis advisors

VIEWS ON PARTICIPATION IN SYMPOSIUMS, CONGRESSES, WORKSHOP EVENTS, AND CONCERNS

In Figure 10, Master's students' views on participation in symposiums, congresses, workshop events, and concerns are presented.

Figure 10. *Views on Participation in Symposiums, Congresses, Workshop Events, and Concerns*



According to Figure 10, the majority of Master's students did not present a paper at a symposium, congress, or workshop. Only a limited number of students (3) stated that they presented papers. In addition, the majority of the students expressed that they did not participate in a symposium, congress, or workshop, and in this context, they believed that they would be more competent when they improve their knowledge related to the field. They were willing to participate in these events and believed that they would gain further knowledge related to the field by attending them. However, they stated that they had negative beliefs about participation in these events due to problems such as not having economic support, worries about their presentation performance would be low, worries about being stuck in front of faculty members listening to them, not having the competence to present a paper, anxiety about academic success, problems with time management,

inability to use research methods, and the intensity of their course tasks. Some of the Master's students' views on the aforementioned theme are given below:

S1: I haven't attended any congresses or symposiums until now. In the coming months, I'll attend two congresses and present papers. I am nervous about presenting a paper and I'm afraid of being stuck in front of academics who are experts in their fields but I think that this fear can be overcome by attending congresses.

S2: I didn't go because I couldn't spare enough time.

S3: The symposiums I attended as a listener are quite a lot, but there is no event I attended to present a paper, I would like to participate, but I think that I don't have enough economic support. Not being able to have academic success and the probability of facing this in the future worry me.

S4: I didn't submit a paper. I participate in activities that interest me professionally but it is very difficult to find economic support for high-cost events such as congresses.

S5: I can participate. I can say that I was more active in terms of participating in such events during my undergraduate years. I had three poster presentations at four congresses I attended, one of which was oral. This year, however, I worked my fingers to the bone doing the course tasks. There are symposiums and congress events that I'll attend soon.

VIEWS ON COMMUNICATION WITH FACULTY MEMBERS AND THESIS ADVISORS

In Figure 11, Master's students' views on communication with faculty members and thesis advisors are presented.

Figure 11. *Views on Communication With Faculty Members and Thesis Advisors*

According to Figure 11, the majority of the students (6) found the communication originating from them with the faculty members and thesis advisors adequate. Regarding communication originating from faculty members, the majority of the students (5) found the communication of faculty members adequate, whereas some found it inadequate (3) and partially inadequate (1). The insincere

behaviors of the faculty members, difficulty to get along with them, their personal characteristics, and the communication problems caused by them are the reasons cited by the students for faculty members' inadequacy. Positive thoughts such as sincerity, unlimited communication time, helpful behaviors, and reconciliation despite being in different fields are mentioned for communication originating from thesis advisors. Some of the Master's students' views on the aforementioned theme are given below:

S1: I still keep in touch with the staff members I took lessons from in my undergraduate years academically and socially. I can communicate with my thesis advisor in a very positive and healthy way about my academic studies.

S2: Since I didn't come to the thesis stage, I can only talk about my communication with the staff members I took lessons from. I haven't had any problems so far and they all try to help as much as they can. In short, I can say that I find the communication adequate.

S4: I didn't have any trouble communicating. Even though we are from different professional groups, I think we can meet on common ground.

S5: There are moments when I fail to communicate with some of the staff members I took courses from, and I don't associate this with myself. Personality traits directly affect the communication process.

VIEWS ON OTHER FACTORS AFFECTING ACADEMIC SELF-EFFICACY

In Figure 12, views on other factors affecting academic self-efficacy are presented.

Figure 12. *Views on Other Factors Affecting Academic Self-efficacy*

According to Figure 12, Master's students' views on other factors affecting academic self-efficacy were grouped under two categories, positive and negative. On the positive side, the majority of the students emphasized the most the detailed research stages f(5) and the lack of self-regulation f(5). Some of them f(3) mentioned changes in personal life such as health and familial problems and environmental factors, while some of them f(3) mentioned lack of time management, some of them f(4) mentioned the effects of some academicians who ignore student development. Also, some of them talked about the effect of bad communication with the faculty members on motivation for courses. Additionally, students mentioned work-life fatigue as the competition of confreres f(4), distance problem between the city of the university and the city that the student lives f(2), positive contributions of work life will be seen after graduation f(3), courses to be on the same hours as work hours that disability for getting permission for attendance to courses. On the positive side, they listed making good friendships in a classroom with few people f(6), academicians trying to find solutions to problems f(2), competition f(3), glorifying words of people in a social environment f(1), disallow the negative effects of external environment f(1). Some of the Master's students' views on the aforementioned theme are given below:

S1. Changes in my life caused me not to spare time because I can only focus on one thing in nature. I lack self-regulation and discipline.

S3. Positive things affecting my academic efficacy are establishing good friendships in a class atmosphere with a small number of people and becoming like a family, certain academicians trying to find solutions to problems, and people's words in my social circle honoring me. The negative effects are the things some academicians do only for the sake of improving themselves, acting without caring about the student and not empathizing with them.

S4. In my undergraduate years, we only worked for the coming business life. But we were never shown different fields of study. I think individuals who can help science should be encouraged. Not only for future professions but also potential students who can read an article and evaluate a data table should graduate. Can a nursing or midwifery student read the data sheet of an academic study right now? I think the answer to this question is our shortcomings. Students should have the opportunity to make experiments and observations in the practice rooms.

S5. The bad communication of some faculty members, which you cannot understand the reason behind, can disrupt your motivation for the lesson. The tiredness of work life can sometimes break the desire.

S7. My biggest obstacle during my graduate education was working. This was the most challenging and negative factor for me.

S8. The competitive environment has always affected me positively. I can only affect myself negatively. I don't experience any negativity caused by someone else.

S10. Going to a school in another city for graduate education can be tiring and troublesome. It restricts time management for collaborative work. Positive contributions to work-life will be seen after graduation. However, the fact that the classes are within work hours can cause stress such as making it difficult to attend classes, getting permission from work, etc.

DISCUSSION, CONCLUSION, AND IMPLICATIONS

As a result of the analyzes made for the first research question, in terms of Master's students' self-efficacy in academic writing, it was concluded that the work discipline was the most effective, that they were adequate in preparing homework and they were meticulous, but they were inadequate in preparing projects, articles, books and book chapters. Despite their stated inadequacies, students believed that they need to improve themselves by reading and were aware of the need for sharing.

They had the desire and effort to write in this context. In addition, students had anxiety about writing a thesis. The study results showed that the education they received on thesis writing was inadequate, and their prior knowledge and readiness level on this subject is low. According to Bandura (1996), academic self-efficacy is a belief. It is the belief in one's ability to regulate and execute the action plans necessary to achieve the given learning objectives. The results of many studies revealed that there is a relationship between academic self-efficacy and academic achievement/academic performance (Zimmerman & Bandura, 1994; Chemers, Hu & Garcia, 2001) and that academic self-efficacy is even a good predictor of academic achievement (Ferla, Valcke, & Cai, 2001). 2009). Chemers, Hu, and Garcia (2001) determined that academic self-efficacy is also related to coping perceptions such as difficulty and threat assessments. In other words, those with high academic self-efficacy cope with difficulties more easily and overcome them. According to the results of the present study, the Master's students participating in the study were experiencing some problems with academic writing. Despite these problems, it was also revealed that the students believed in the work discipline and thought that they would be more successful by making more effort. In this context, the participants had academic self-efficacy and believed that they can solve the problems they encounter with their own efforts.

Within the scope of the second study question, it was concluded that Master's students mostly experienced inadequacy in research methods and techniques. In this context, students were indecisive about which method and technique they will choose, they found their existing knowledge level low, they felt inexperienced, and they needed to do more research. There are studies in the literature supporting this result of the present study. In his study, Aslan (2010) determined that the Master's students doing their graduate degrees in the Turkish education program saw themselves as inadequate mostly in terms of research methods and techniques. Khozaie et al. (2015) stated that Master's students lacked knowledge about research methodology. Kan and Gedik (2016) also determined that the participants who did Master's thesis had problems especially in writing the main sections of the thesis. The present study and the studies mentioned above put forth that Master's students have problems in writing the method section. The writing of the method section is important in terms of academic writing. However, there are problems in producing qualified academic writing at the graduate level. Nolan and Rocco (2009) also considered the difficulty in academic writing at the professional level to be a national problem facing American higher education.

As a result of the analyzes made for the third research question, it was concluded that Master's students felt inadequate in using the terminology related to the field during data collection. In this context, they felt inadequate in reading and understanding the articles written in foreign languages. In addition, according to the students' views, they were adequate in using Microsoft Office programs, especially Word, but they were inadequate in academic tracking programs, academic writing programs, and data analysis programs. They emphasized that they were adequate in accessing and reviewing data in Turkish, but they were inadequate in foreign language searches. There are similar research results in the related literature. Kotamjani, Samad, and Fahimirad (2018) determined that the areas where graduate students have the most difficulty in academic writing are literature review, writing the introduction section, and identifying the gaps in the research. Aslan (2010) revealed that most of the graduate students (including Ph.D. students) who participated in the study did not consider themselves adequate in a foreign language and could not use international resources sufficiently. Phakiti and Li (2011) determined that graduate students whose second language was English and who were studying in Australia had problems in academic reading and writing and synthesizing information. Kan and Gedik (2016) also revealed that the participants who wrote their master's thesis could not use foreign resources enough. Similarly, Almatarneh, Rashid, and Yunus (2018) put forth that Jordanian graduate students studying at Malaysian universities could not create critical discussions and ideas in a foreign language (English) and had problems finding international resources. In the globalizing world, knowing a foreign language has become a necessity, not an extra characteristic. The importance of knowing/using a foreign language is an undeniable reality, especially for the academic community. In

the graduate theses/dissertations/articles, it is necessary to use international literature in all the steps starting from the literature review to the discussion section, the last section of the study.

Within the scope of the fourth study question, it was concluded that the Master's students considered themselves quite inadequate in data analysis. Students associated this with a lack of skills and stated that they had difficulty in converting the analysis results into tables. However, they also believed that they would overcome this situation by working hard. Aslan (2010) also determined in his study that Master's students considered themselves inadequate in data analysis programs. Similarly, Yu (2020) revealed that inadequate research skills and limited expertise can cause a lack of confidence. Graduate students need to be adequate in data analysis. One of the sections that they should pay the most attention to in the theses they will write is the data analysis section. Errors in data analysis will cast a shadow over the reliability of the research.

As a result of the analyzes made for the fifth research question, it was concluded that Master's students thought that they are adequate in academic communication with the faculty members and their thesis advisors. They stated that the academic communication originating from the thesis advisors was adequate, but the communication originating from the other staff members whom they took courses from was inadequate. In their study, Arabacı and Smart (2013) determined a finding contrary to the findings of the present study. They determined that the majority of the participating Master's students had communication problems with their advisors. Similarly, Matin and Khan (2017) revealed that students had inadequate and irregular meetings with their advisors. There are many studies in the literature on the importance of the advisor-student relationship. Khozaei et al. (2015) stated that the behavior of advisors and their relationship with their students is important. In their study, they determined that advisors who do not trust their students' abilities and make ambiguous or harsh comments negatively affect students' work. They also argued that mutual trust between advisors and students plays an important role in the completion of a Ph.D. dissertation. McCallin and Nayar (2012) stated that advisors have an important role in the education of students. Likewise, Gill and Burnard (2008) expressed that effective advising can significantly affect the quality and eventual success or failure of the doctorate. These studies show that effective communication between the advisor and the student has a very important place in the education of graduate students.

Within the scope of the sixth study question, it was concluded that Master's students' academic self-efficacy was negatively affected because of research stages being too detailed and students having low self-control. In addition, health, family problems, changes in personal life, environmental factors, and inadequacy in time management also affect students' academic self-efficacy. Other individual factors were work fatigue, the distance between the university and where the student lived, and getting permission from work to participate in classes and to keep up with studies. Furthermore, there were some factors affecting Master's students' academic self-efficacy stemming from the academicians. They were listed as ignoring student development, having negative communication, and not being able to motivate the student in the class. The fact that the fruits of graduate education will be seen after a long time also affected students' self-efficacy negatively. Despite these, they stated that academic self-efficacy is positively affected by the interaction of qualified students, problem-solving academics, good competition, the presence of positive tendencies in the social environment, and the ability to ignore the negative effects of the external environment. According to this result of the research, many factors affect the academic self-efficacy of graduate students. We can classify these factors as internal and external factors. In his study, Satıcı (2013) determined that academic self-efficacy levels of individuals increase as academic achievement, academic motivation, and academic locus of control increase, but academic self-efficacy levels of individuals decrease as the level of academic external locus of control increases. In their study, Dinther, Dochy, and Segers (2011) state that self-regulation and goal setting are components of students' academic self-efficacy. Khozaei et al. (2015) stated that the negative attitudes of the counselors negatively affect the students' work. According to the results in the literature and this research, graduate students can increase their self-

efficacy by keeping internal factors under control. Students with increased self-efficacy can focus on their academic success without being dependent on external factors. This will increase their academic achievement.

AUTHOR CONTRIBUTION

- The first author has made substantial contributions to conception and design, acquisition of data, or analysis and interpretation of data. The contribution percentage of the first author to the article is 60%.

-The second author have been involved in drafting the manuscript or revising it critically for important intellectual content. The contribution percentage of the second author to the article is 40%.

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COVID-19 in Pictures of Preschoolers

Hande Güngör, Assistant Prof., Pamukkale University, hgungor@pau.edu.tr
0000-0002-3016-1775

Hülya Gülay Ogelman, Sinop University, ogelman@sinop.edu.tr
0000-0002-4245-0208

Mehmet Yapıcı, Amasya University, myapici69@gmail.com
0000-0002-8442-9239

Gülbin Zeren Nalinci, Amasya University, gulbinzeren72@gmail.com
0000-0001-6873-4551

Hatice Erten Sarıkaya, Ministry of National Education, hatice_0417@hotmail.com
0000-0003-0367-6607

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Abstract

This study, it is aimed to determine the COVID-19 perceptions of 39-72 months old children attending preschool through the pictures they draw. The research was carried out with the document analysis technique, one of the qualitative research methods. The study group of the research consists of 49 children aged between 39 and 72 months who attend preschool in Denizli city center. Research data were collected from the pictures drawn by children in preschool about COVID-19. In the study, the children were also asked to describe what they drew in the picture. The expressions of the children describing their pictures were recorded by the researcher. In the results of the research, it is seen that the COVID-19 drawings in the pictures are quite similar to the images that can often be found in the press. It was determined that the children included concepts related to COVID-19 (mask, distance, cleaning, etc.) in their pictures. Children reflected their aspirations with colors due to the deprivation they experienced during the COVID-19 period. According to the results of the research, it was determined that girls use more optimistic elements in their paintings than boys.

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INTRODUCTION

The coronavirus disease (COVID-19), which emerged in Wuhan, China, in December 2019, affected many countries in the world quickly and was declared a pandemic by the World Health Organization in March 2020 (WHO, 2020). COVID-19 (Turken and Köse, 2020), which spread through droplets, has spread to more than 200 countries to date and caused the death of approximately five hundred million people (CNN, 2022). Country governments worldwide have taken various measures and imposed sanctions to prevent the spread of the disease and reduce deaths. These practices still differ according to the course of the disease, but they continue. COVID-19 has been an important issue on Turkey's agenda since March 2020, when the first case appeared. In Turkey, as in many other countries, practices have been implemented in which schools are closed and going out is restricted unless necessary to control this process. Although researches show that these practices are effective in reducing the number of COVID-19 transmission in various countries (Salama, 2020), this new lifestyle, which is formed by precautions, brings many negative effects that affect societies. When the studies in the literature are examined, it is seen that the changes in lifestyle since the existence of COVID-19 have caused negative effects such as panic disorder, irritability, anxiety, depression, sleep, and nutrition disorders in individuals (Bozkurt, Zeybek, and Aşkın, 2020; Huang and Zhao, 2020; Karataş, 2020; Shah et al., 2021).

When the literature is examined, although the rate of transmission of COVID-19 to children is not as high as that of adults (Bhuiyan et al., 2021), studies are indicating that school closures, curfews, practices requiring restrictions in outdoor activities can cause changes in children short-term behavior that may occur in children and can last a lifetime. (Akın Işık, Bora Güneş & Kaya, 2022; Akoğlu & Karaaslan, 2020; Arslan Dikme & Gültekin, 2021; Garcia de Avila et al. 2020; Gelir & Düzen, 2021; Imran, Zeshan & Pervaiz, 2020; Jiao et al. 2020; Ok, Torun & Yazıcı, 2021; Vasileva, Alisic & De Young, 2021). Akın Işık, Bora Güneş and Kaya (2022) stated that the pandemic process and social isolation caused problems in the psychological, emotional, behavioral, social, and academic lives of children. Imran, Zeshan, and Pervaiz, (2020) state that in situations such as pandemics, preschool children commonly display some behaviors that are not compatible with their age and developmental level, such as reluctance, and difficulty concentrating on the game, desire to use a bottle, thumb sucking. Vasileva, Alisic, and De Young (2021) stated that they observed COVID-19 in the speeches, plays, and drawings of preschool children in their research and that this process causes anxiety in children's increased arousal, vigilance, avoidance, and attachment-seeking behaviors. In preventing these undesirable situations that may occur in children, the support provided by the parents and teachers near the child has an important role. It is important to determine how children perceive the COVID-19 process so that parents and teachers know how to support children. One of the methods used in the literature to determine the perceptions of young children is children's drawings. Since Plato and Aristotle in Ancient Greece, philosophers and psychologists have expressed communication using symbols as a human skill (Deacon, 1997). In the first years of life, children with less verbal expression than adults can express their experiences, perceptions, feelings, thoughts, and observations with the pictures they draw (Cameron et al., 2020; Deguara and Nutbrown 2018). In the studies conducted in the literature, it is stated that the pictures drawn by children are an efficient way to understand their inner world. Einarsdottir, Dockett, and Perry (2009) define children's drawings as "holding a mirror to their minds" or "opening new doors to the child's world." Artistic evaluations made in early childhood can form a perspective on children's feelings and thoughts. Children's drawings can be a means of communication in evaluating children whose language skills are not sufficiently developed or who are reluctant to verbally express their feelings and thoughts. In assessments based on pictures, it is also important to interview the child about the picture he made and ensure that they talk about their own pictures (Cameron et al., 2020; Rodari, 2007). When the drawn pictures are taken orally, they can be used to determine children's anxiety (Cameron et al., 2020).

In the literature, there are studies evaluating children's drawings (Ahi, Cingi, & Kıldan, 2016; Alabay & Demirbaş, 2017; Buldu, 2006; Civek & Çakmak, 2019; Dağlıoğlu, 2011; Türkkan, 2004). When the studies are examined, it is seen that the concept of scientists (Buldu, 2006), family perceptions (Akgün & Ergül, 2015), school perceptions (Civek & Çakmak, 2019; Yüksel et al., 2016), teacher (Ahi, Cingi, & Kıldan, 2016; Dağlıoğlu, 2011) and principal (Alabay & Demirbaş, 2017) perceptions were determined with the pictures drawn by pre-school children. These studies, in which children's drawings are evaluated in the literature, show that the pictures drawn by children in early childhood provide various information directly or indirectly from children. For this reason, in this study, children's pictures were used to evaluate the perceptions of pre-school children about COVID-19.

Yüksel Usta and Gökcan (2020), in their research evaluating COVID-19 from the eyes of children and their mothers, used children's pictures to determine children's perceptions of COVID-19. According to the results of the study conducted with 11 children aged six years, it is stated that children have negative feelings about COVID-19, they are most affected by social isolation in this process, the sources of information about the process are mostly media together with their parents, and they are aware of the terminology used about COVID-19. Among the research results, it is stated that children are hopeful about the end of the Pandemic. Bray and colleagues (2021), in their study with children aged 7-12 from six different countries, evaluated children's drawings to determine their knowledge, understanding of COVID-19, and their thoughts on measures taken to reduce transmission. In the research results, while it was stated that the children understood how the virus spreads and how to reduce the transmission, it was also stated that the children indicated the actions necessary to protect their families and the wider society in their pictures.

In the literature review, it is seen that the number of studies evaluating the pictures of pre-school children on the perception of COVID-19 is limited. However, identifying children's perceptions of COVID-19 is essential to understanding children and providing them with the right support. In this context, it is considered important to increase the number of studies to determine children's perceptions of COVID-19.

This research aimed to determine the COVID-19 perceptions of 40-72 months old children attending a preschool through the pictures they draw.

1- What are the general characteristics of children's drawings according to the linear developmental stage of the children (Drawing stage and pre-schematic stage)?

2- What are the qualities of the COVID-19-themed pictures of girls in the doodle phase?

3- What are the qualities of COVID-19-themed pictures of girls in the pre-schematic period?

4- What are the qualities of the COVID-19-themed pictures of boys in the doodle phase?

5- What are the qualities of COVID-19-themed pictures of boys in the pre-schematic period?

METHOD

RESEARCH MODEL

The research aims to ascertain how COVID-19 is reflected in the pictures of pre-school children. Document analysis, one of the qualitative research methods, was used in the research. Document analysis includes the analysis of materials containing information about the situation or situations that need to be investigated (Yıldırım & Şimşek, 2013). In the document analysis method, which is also defined as documentary scanning or observation, the researcher finds the sources for the purpose, collects the required information, and makes arrangements (Çepni, 2014).

STUDY GROUP

The population of the research consisted of kindergartens affiliated with the Ministry of National Education in Denizli. In qualitative research, the researcher's aim is not to generalize the results but to examine the problem in depth. In qualitative research, the sample can be determined in different ways in accordance with the purpose of the research. Criterion sampling was used in the sample selection of the study. In criterion sampling, the study group is determined purposefully by the researcher, and objects, events or documents that meet the necessary criteria for determining the sample situation are sampled (Creswell, 2017). The purpose of the criterion sampling method is to carry out the study on all cases that meet the criteria previously created by the researcher (Yıldırım & Şimşek, 2013). This study aimed to examine the pictures of pre-school children in terms of COVID-19. Two criteria were determined in the pictures to be examined. The first criterion is that the pictures are drawn by children up to 72 months at the most. The second criterion is that children reflected COVID-19 in their pictures. From this point of view, the study group consisted of 49 children (27 girls and 22 boys) aged between 39 and 72 months who attended a pre-school in Denizli city center to meet the criteria and be easily accessible. All children participating in the study show normal development. According to the teachers' opinions, it was determined that the children showed normal development.

In pre-school education institutions where the children in the study group of the research attend, the online process was started from time to time by taking into account the number of cases in the country, and face-to-face education was continued by applying measures such as the obligation to wear masks, keeping the distance, hygiene, and not using the playing materials, except for the curfews applied throughout the country in the 2020-2021 spring period.

DATA COLLECTION

Ethics Committee permission was sought before the research process started. Parental consent was obtained for the participating children to participate in the study. After the necessary permissions were obtained, the research data were collected from the pictures drawn by the children participating in the research in the preschool they attend, in May 2021. Practices were done with the children in daily education flows, which included an art activity to be held after an active activity. At the beginning of the activity, each child was presented with A4 size drawing paper and 12 colored crayons, spent time with the children, and was asked to draw a picture by giving instructions such as "Children, have you heard of COVID? What comes to mind when you think of COVID? Let's paint together about COVID, what you're going through in COVID." No time limit was applied during the drawing process. Each child drew their picture at the time they wanted, and these times were noted by the researcher. After the drawing was completed, the same researcher asked the child to describe what he had drawn in the picture. The children who did not want to tell were not forced, and the researcher recorded the words of those who wanted to tell (Children who did not want to tell were not forced, what those who wanted to tell were written down and recorded by the researcher.). The completion time of the drawings varied between 5 and 20 minutes, depending on the child's month, speed, and interest in drawing. All data were completed within ten days.

ANALYSIS OF DATA

In this study, the "descriptive analysis" technique (Yıldırım & Şimşek, 2013) was used to evaluate the data obtained. In this context, the following method was followed for data analysis in the study:

1. Children's pictures of COVID-19 are grouped and numbered in terms of gender and linear developmental stage. Children's pictures were arranged in themes and sub-themes, and frequency values were calculated and expressed in tables.

2. Validity and reliability phase: In the study, all the research processes were explained step by step, and their validity was ensured. The data obtained to determine the reliability in the formation of the themes were compared by the researcher and an expert, and the percentage of agreement was

checked. According to Yıldırım and Şimşek (2013); When the percentage of agreement in the reliability calculation is 70%, the percentage of reliability is considered to have been reached. Reliability calculation of the study was determined using Miles and Huberman's (1994), Percent Agreement Formula [P = (Na / Na + Nd) x 100] (P: Percent Agreement, Na: Amount of Agreement, Nd: Amount of Discord). The "agreement percentage" of the study was found to be 94%.

3. The pictures drawn by the children were examined according to their gender, linear developmental stage, the colors they used, whether they included certain elements, symmetry, and proportions, and were interpreted and discussed within the framework of the information in the literature.

RESULTS

In this study, how pre-school children describe COVID-19 is evaluated through the pictures drawn by the children. The general characteristics of the children's drawings that make up the study group are given in Table 1 below.

Table 1. *General Characteristics of Children's Pictures that Make Up the Study Group*

Linear Developmental Stage of Children	Gender	Those Who Have Composition, Harmony, Ratio/Proportion and Symmetry in Their Pictures	Those Who Include All Elements of Mask, Distance, and Cleanliness in their Pictures	Those Who Include Masks In Their Pictures	Those Who Include Distance In Their Pictures	Those Who Include Cleanliness In Their Pictures
Scribbling Phase (2-4 Ages)	7 Girls	6 Girls	5 Girls	7 Girls	5 Girls	5 Girls
	6 Boys	2 Boys	3 Boys	5 Boys	5 Boys	----
Pre-Schematictic Period (4-7 Years)	15 Girls	8 Girls	5 Girls	10 Girls	7 Girls	5 Girls
	21 Boys	2 Boys	4 Boys	15 Boys	14 Boys	4 Boys

The study group consists of, in terms of linear development, 13 (7 girls, 6 boys) in the scribbling stage and 36 (15 girls, 21 boys) in the pre-schematic stage, a total of 49 (27 girls, 22 boys) children in the pre-school period. It is seen that 37 (76%) children in the study group draw COVID 19 closely resembling the drawing in Image 3, which is widely depicted in mass media (Image 1 and Image 2). This alone may be enough to say that COVID -19 has taken a central place in children's lives.

Image 1. *Picture of a Girl (52 Months)*

"My father always wears a mask when he goes to work and the Coronas in the sky cannot come to him. "

Image 2. *Picture of a Boy (54 Months)*

" I think trees protect us from Corona."

When we look at Table 1, It is seen that there are composition, harmony (balance of color use), ratio/proportion, and symmetry qualities in the pictures of 8 children (6 girls, 2 boys) in the scribbling stage and 10 children (8 girls, 2 boys) in the pre-schematic stage.

In the flow of daily life, the most pronounced COVID discourse in mass media, official and informal discourses is the mask, distance, and cleanliness. In this context, there are 17 (35%) children, 8 in the scribbling period and 9 in the pre-schematic period, whose pictures include all the elements of the mask, distance, and cleanliness. At a first superficial glance at this ratio, it is not compatible with the rate of including the Covid-19 drawing above (76%). However, when the mask, distance, and cleanliness elements are examined separately, it is seen that different meanings emerge between the lines. The appearance of COVID-19 drawing as an embodied object in the mass media allows children to draw COVID-19 cognitively, emotionally, and physically. Similarly, it is seen that the mask, which is a tangible object, is easily included in the pictures (76%) as a drawing. The fact that both the mask and the COVID-19 drawing are at the same rate (76%) is consistent and significant in this respect.

Although the concepts of distance and cleanliness are abstract concepts in terms of cognitive and emotional development levels of children; they gave the concept of distance in children's drawings in such a way that objects and subjects do not touch each other; On another hand, it can be said that they embodied the concept of cleanliness by describing them with a piece of cloth in subjects' hands or near them. In this context, the ratio of those who give the concept of distance in their pictures is 63%, and those who give the concept of cleanliness is 29%. In this context, it can be said that the concepts of distance and cleanliness, which have concrete counterparts in social life, are successfully given in the pictures (considering the age characteristics). Although it is thought that this situation can be easily reflected in the drawing since it is experienced in a period when the whole world is closed to houses, because children are in the pre-operational period in terms of cognitive development, it allows them to be seen as a success for children.

Image 3. *https://www.klimik.org.tr/koronavirus/covid-19-salgininda-ulkelere-gore-olgu-sayilari/ 20.08.2021*

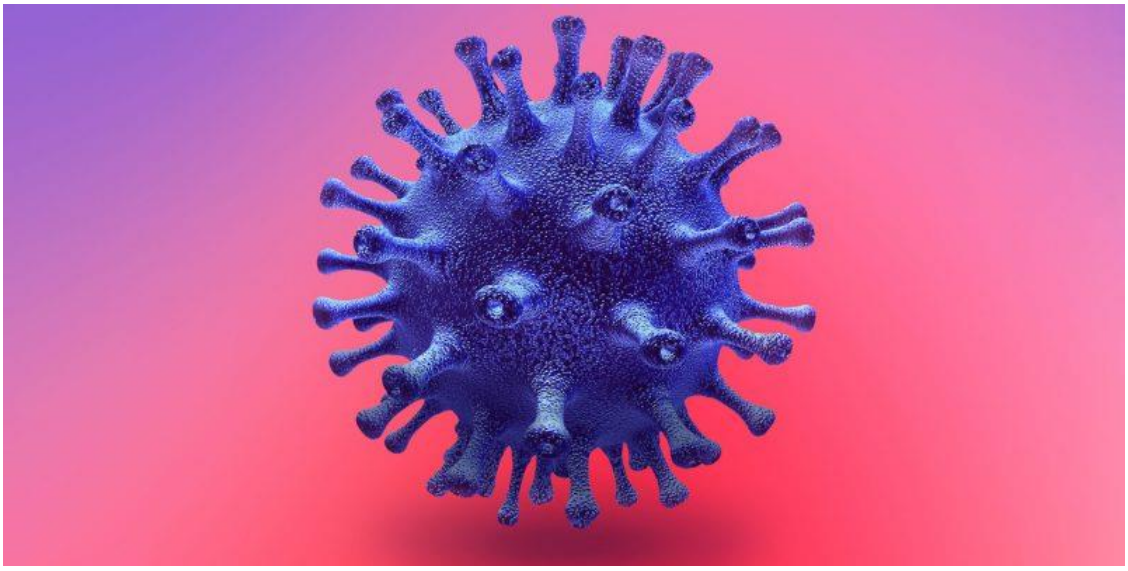


Table 2. *Characteristics of Covid-19 Themed Pictures of Girls in the Scribbling Phase*

Picture No	Age (as months)	Linear Development Level	Composition	Color Usage (Harmony)	The ratio in the Picture	Symmetry in the Picture
Picture 1	40	Appropriate to Scribble Phase Level	Present	Primary and Secondary Colors	Present	Present
Picture 2	46	Appropriate to Scribble Phase Level	Present	Primary and Secondary Colors	Present	Present
Picture 3	41	Appropriate to Scribble Phase Level	Present	Primary and Secondary Colors	Present	Present
Picture 4	44	Appropriate to Scribble Phase Level	Present	Primary and Secondary Colors	Present	Present
Picture 5	46	Appropriate to Scribble Phase Level	Present	Primary and Secondary Colors	Present	Present
Picture 6	39	Appropriate to Scribble Phase Level	Present	Primary and Secondary Colors	Present	Present
Picture 7	39	Appropriate to Scribble Phase Level	Absent	Primary and Secondary Colors	Absent	Absent

When we consider the COVID-19 themed pictures of girls in the scribbling stage in Table 2 as a whole, it is seen that the children are between 39-46 months of age. All children have a level-appropriate development in terms of linear development. It is seen that all children use at least one primary and secondary colour in their pictures, there is a composition in the pictures except for one child, and there is proportion and symmetry in the pictures except for one child. It is seen that all of the children use blue as the main colour and green as the secondary colour. It can be argued that blue was used as a longing for freedom and green as a longing for nature due to the effect of being closed at home during the Pandemic.

The pictures of 4 children, one boy and one girl, from the scribbling phase, and 2 children, one boy and one girl, from the pre-schematic stage, were evaluated in detail. Selected pictures were selected from among those with all the qualities such as composition, ratio/proportion, harmony.

Image 4. *Picture of a Girl in the Scribble Phase (41 Months)*

"Masks protect from Corona."

The scribbling period is when the hand/eye coordination is not yet completed, the drawings are not directed to any particular object or thought, and the drawing is not named or defined by the child (Collado, 1999). When we look at the picture of the girl in the scribble period in Image 4 above, in terms of surface use, it can be said that the child uses the surface of the picture freely and proportionally and that it is a composition rather than chaos in the lines.

In terms of color use, it is seen that the child has a wide range of colors and uses colors boldly. It should be considered natural to see that there is no gender discrimination in human drawings, as expected from that age. It can be said that the ratio-proportion in drawings is quite successful considering the age period and the characteristics of the population. It can be said that the phenomenon of the mask and distance is quite evident in the picture. The drawing of the COVID-19 image, smaller than the masks, is remarkable in terms of the meaning and value attached to the mask. In addition, the fact that the mask is drawn like a rainbow can be considered both as an aesthetic emphasis on masks of varicolorsurs and as a reference to the reliability of the mask. The clarity of the picture can be interpreted as cleanliness. The absence of a single unnecessary line and the absence of any drawings that will create a mess in empty spaces also strengthen this idea.

Table 3. *Characteristics of COVID-19-Themed Pictures of Girls in the Pre-Schematictic Period*

Picture No	Age (as Months)	Linear Development Level	Composition	Color Usage (Harmony)	The ratio in the Picture	Symmetry in the Picture
Picture 1	55	Below the Level of Pre-Schematictic Period	Absent	One color (Secondary color)	Absent	Absent
Picture 2	58	Below the Level of Pre-Schematictic Period	Absent	One color (Secondary color)	Absent	Absent
Picture 3	72	Below the Level of Pre-Schematictic Period	Absent	One color (Secondary color)	Absent	Absent
Picture 4	50	Appropriate Level to Pre-Schematictic Period	Present	Primary and Secondary Colors	Absent	Absent
Picture 5	49	Appropriate Level to Pre-Schematictic Period	Present	Primary and Secondary Colors	Present	Present
Picture 6	63	Below the Level of Pre-Schematictic Period	Absent	Primary and Secondary Colors	Present	Present
Picture 7	62	Appropriate Level to Pre-Schematictic Period	Present	Primary and Secondary Colors	Present	Present
Picture 8	59	Appropriate Level to Pre-Schematictic Period	Present	Primary and Secondary Colors	Present	Present
Picture 9	57	Appropriate Level to Pre-Schematictic Period	Present	Primary and Secondary Colors	Present	Present
Picture 10	60	Appropriate Level to Pre-Schematictic Period	Present	Primary and Secondary Colors	Present	Present
Picture 11	53	Appropriate Level to Pre-Schematictic Period	Present	Primary and Secondary Colors	Present	Present
Picture 12	66	Appropriate Level to Pre-Schematictic Period	Present	Primary and Secondary Colors	Absent	Absent
Picture 13	56	Below the Level of Pre-Schematictic Period	Absent	Primary and Secondary Colors	Absent	Absent
Picture 14	54	Appropriate Level to Pre-Schematictic Period	Present	Primary and Secondary Colors	Present	Present
Resim 15	52	Appropriate Level to Pre-Schematictic Period	Present	Primary and Secondary Colors	Present	Present

When we consider the COVID-19-themed pictures of girls in the pre-schematic period in Table 3 as a whole, it is seen that the children are between 49-72 months of age. It is seen that five children

have a development below the level in terms of linear development, and 10 children have a development appropriate to the level. It is seen that three children use one color (secondary color; two blue and one green), and the remaining 12 children use at least one primary and secondary color in their pictures. It is seen that there are compositions in the pictures except for five children, and there is proportion and symmetry in the pictures, except for six children. It is seen that all of the children use blue as the main color and green as the secondary ccolor It can be argued that blue was used as the longing for freedom, and green as the longing for nature, due to the effect of being closed at home during the Pandemic.

Image 5. *Pre-Schematictic Period Girl (60 Months)*

"Greens Coronavirus. I want to go to the sea, I want to go to my friend's house, I can't."

According to Lowenfeld, the child in this period begins to explore the relationships between pictures, thinking, and reality (Malchiodi, 1998). The picture of the pre-schematic period girl above gives a very satisfying image regarding the proportional use of the surface and the vivid use of colors. The absence of people in the picture can be interpreted as a sign of closure during the pandemic period, and the vitality of the flower tree drawings emphasizes the revival of nature in the days of closure. Intense blue in the lower corner of the picture, which gives the image of rain and water, represents cleanliness and protection from the virus. The green images, which show a dense distribution in the picture, represent COVID-19. Although remarkably, the mask is not included in the picture, it is thought that the brown drawing on the intense blue was put to depict the tomb.

Table 4. *Characteristics of COVID-19 Themed Paintings of Boys in the Scribble Phase*

Picture No	Age (as month)	Linear Development Level	Composition	Color Usage (Harmony)	Ratio in Picture	Symmetry in the Picture
Picture 1	48	Appropriate Level to Scribble Phase	Present	Primary and Secondary Colors	Present	Present
Picture 2	42	Appropriate Level to Scribble Phase	Present	Primary and Secondary Colors	Present	Present
Picture 3	42	Appropriate Level to Scribble Phase	Present	Primary and Secondary Colors	Absent	Absent
Picture 4	43	Appropriate Level to Scribble Phase	Present	Primary and Secondary Colors	Absent	Absent
Picture 5	48	Appropriate Level to Scribble Phase	Absent	One color (Secondary color)	Absent	Absent
Picture 6	47	Appropriate Level to Scribble Phase	Absent	One color (Secondary color)	Absent	Absent

When we consider the COVID-19-themed pictures of boys in the scribbling stage in Table 4 as a whole, it is seen that the children are between 42-48 months of age. All children have a level-appropriate development in terms of linear development. It is seen that four children use at least one primary and secondary color in their pictures, and two children prefer one color, one green, and one blue. It is seen that there are compositions in the pictures, except for two children, and there is no ratio/proportion and symmetry in the pictures, except two children. It is seen that four of the children use blue as the primary color and green as the secondary color. It can be said that blue is used as the longing for freedom and green as the longing for nature due to the effect of being closed at home during the pandemic process.

Image 6. *Boy at the Scribble Stage (42 Months)*

"I held hands with my friends, there are four fish and sand in the sea, and the corona is not here."

When we consider the picture of the scribble period boy in Image 6 above, in terms of surface usage, it can be said that the child uses the surface of the picture freely and proportionally, and although there is a confusion in the lines, it has a composition in terms of characteristics belong to his period.

In terms of color use, it can be said that the child's color spectrum consists of age-appropriate primary and secondary colors. In human drawings, as expected from that age, gender determination has not been made yet, and the disproportion of the limbs should be considered natural. It can be said that the ratio in the drawings is successful considering the age period and the characteristics of the population. It can be said that the mask distance phenomenon is not emphasized quite clearly in the picture. It is seen that people are in contact with each other. The clarity of the picture and the absence of an unnecessary single line can be interpreted in terms of cleanliness.

Table 5. *Characteristics of COVID-19 Themed Pictures of Boys in the Pre-Schematictic Period*

Picture No	Age (As Months)	Linear Development Level	Composition	Color Usage (Harmony)	The ratio in the Picture	Symmetry in the Picture
Picture 1	50	Below the Pre-Schematic Period Level	Absent	Primary and Secondary Colors	Absent	Absent
Picture 2	56	Appropriate Level to Pre-Schematic Period	Absent	Primary and Secondary Colors	Absent	Absent
Picture 3	54	Appropriate Level to Pre-Schematic Period	Present	Primary and Secondary Colors	Present	Present
Picture 4	65	Appropriate Level to Pre-Schematic Period	Absent	Primary and Secondary Colors	Absent	Absent
Picture 5	59	Below the Pre-Schematic Period Level	Absent	Primary and Secondary Colors	Absent	Absent
Picture 6	62	Below the Pre-Schematic Period Level	Absent	Primary and Secondary Colors	Absent	Absent
Picture 7	60	Appropriate Level to Pre-Schematic Period	Present	Primary and Secondary Colors	Absent	Absent
Picture 8	60	Appropriate Level to Pre-Schematic Period	Present	Primary and Secondary Colors	Absent	Absent
Picture 9	52	Appropriate Level to Pre-Schematic Period	Present	Primary and Secondary Colors	Absent	Absent
Picture 10	54	Appropriate Level to Pre-Schematic Period	Present	Primary and Secondary Colors	Present	Present
Picture 11	49	Appropriate Level to Pre-Schematic Period	Present	Primary and Secondary Colors	Absent	Absent
Picture 12	50	Below the Pre-Schematic Period Level	Absent	Primary and Secondary Colors	Absent	Absent
Picture 13	52	Below the Pre-Schematic Period Level	Absent	Primary and Secondary Colors	Absent	Absent
Picture14	68	Below the Pre-Schematic Period Level	Absent	One colour (Secondary colour)	Absent	Absent
Picture 15	65	Below the Pre-Schematic Period Level	Absent	One colour (Secondary colour)	Absent	Absent
Picture 16	63	Below the Pre-Schematic Period Level	Absent	One colour (Secondary colour)	Absent	Absent
Picture 17	63	Below the Pre-Schematic Period Level	Absent	One colour (Secondary colour)	Absent	Absent
Picture 18	55	Below the Pre-Schematic Period Level	Absent	One colour (Secondary colour)	Absent	Absent
Picture 19	55	Below the Pre-Schematic Period Level	Absent	One colour (Secondary colour)	Absent	Absent
Picture 20	54	Below the Pre-Schematic Period Level	Absent	One colour (Secondary colour)	Absent	Absent
Picture 21	54	Below the Pre-Schematic Period Level	Absent	One colour (Secondary colour)	Absent	Absent

When we consider the COVID-19 themed pictures of boys in the pre-schematic period in Table 5 as a whole, it is seen that the children are between 49-68 months of age. It is seen that thirteen children have a development that is below the level in terms of linear development, and 8 children have a level-appropriate development. It is seen that eight children used one color (3 blue, 3 green, and 2 purple), and the remaining 13 children used at least one primary and secondary color in their pictures. It is seen that there is no composition in the pictures except for five children, there is no ratio/proportion in the pictures except for two children, and the pictures are not symmetrical except for 2 children. It is seen that all of the children use blue as the main color and the majority of the children use green as a secondary color. It can be argued that blue was used as a longing for freedom, and green as a longing for nature, due to the effect of being closed at home during the epidemic.

Image 7. *Boy at the Pre-Schematic Period (54 Months)*

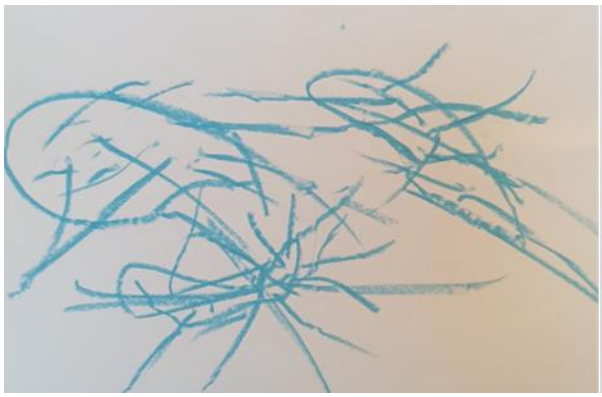
The picture of the boy from the pre-schematic period above constitutes a composition with the feature of using the surface proportionally. The absence of people in the picture can be interpreted as a sign of closure during the pandemic period, the drawing of a tree can be interpreted as a longing for the outside, and the black spot as death. It can be said that the fact that the masks are drawn quite large compared to the other objects in the picture is important in terms of indicating the importance of protection from the virus. It can be argued that the scattered red objects surrounding the picture are cleaning cloths in terms of cleaning emphasis. The vividness of the use of color gives the picture an optimistic atmosphere.

GENERAL EVALUATION OF THE PICTURES

When all children's pictures are evaluated in general, the following judgments can be made: Ten girls create an optimistic impression with their pictures by using vivid colors, smiling faces, sun, and clouds. The picture of the remaining 12 girls is chaotic, and the drawings seem pointless. It can be said that the use of color that creates noise and pollution creates a pessimistic and unhappy impression in these pictures, supported by the intense COVID image drawing that covers almost the whole picture. When we look at the pictures that currently we have, it can be argued that girls are not seriously adversely affected by COVID-19 due to the influence of the cultural child-rearing system (such as doing the housework). However, it is thought that all children should benefit from preventive guidance services to eliminate possible negative experiences that will be transferred to the future.

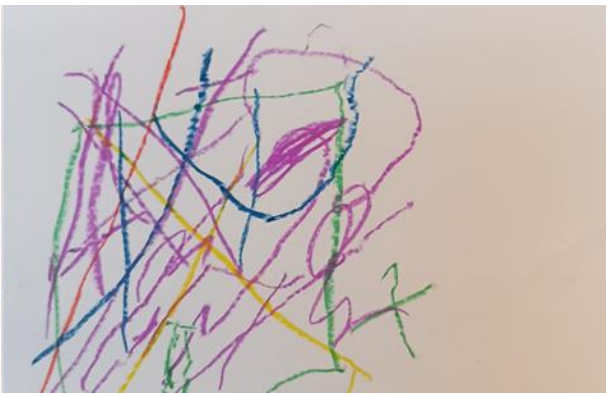
The five boys give an optimistic impression with their pictures by using vibrant colors, smiling faces, and images of nature. The picture of the remaining 22 boys is chaotic (i.e, image 8 and image 9), containing only the image of COVID, which causes an aimless, pessimistic and unhappy impression.

Image 8. *Picture of a Boy (54 Months*)



"I drew Coronavirus and tiny atoms"

Image 9. *Picture of a Boy (50 Months)*



"I drew the Coronas. "

When we look at the pictures that we currently have, it can be argued that boys are severely affected by COVID-19 due to the influence of the cultural child-rearing system (such as being out of the house and intensified by physical activities). Due to the functioning of a male-dominated social structure, it is thought that this situation will play an important role in increasing psycho/social problems in the future.

DISCUSSION AND CONCLUSION

According to the findings of this research on how COVID-19 is reflected in the pictures of pre-school children, it has been revealed that the drawings in the pictures are quite similar to the images that can be seen frequently in the press. There are studies on many issues related to children, such as how young children are affected by the COVID 19 process in different ways, their adaptation to the pandemic process, their psychosocial needs, and health conditions (Idoiaga et al., 2020; Ratten, 2020). UNICEF (2021) stated that children are affected differently by COVID 19 with the direct transmission of the virus, the short-term socio-economic impacts of measures to stop the epidemic, and the delay in implementing the Sustainable Development Goals. Although there are many studies on the subject, very few studies reveal children's perceptions of COVID 19 based on their pictures (Bray et al., 2021). The results of this research are important because of the scarcity of studies on the subject.

It is seen that children's pictures about COVID-19 include masks, distance, and cleaning elements. Mask, distance, and cleaning are the first concepts that come to mind when COVID-19 is mentioned (T. R. Ministry of Health, 2021). This situation can be interpreted as that children know the COVID -19 process. It can be thought that children learn the basic concepts about COVID -19 from visuals such as banners and posters, from mass media such as television, and from the guidance of their families and teachers. As a matter of fact, Remley (2021), who has studies on the subject, gave advice to families and caregivers about being a model for wearing masks for children during the COVID -19 process, explaining the purpose of this protection, staying at home, and emphasizing the importance of distance. In line with the findings of this study, it can be thought that children receive appropriate guidance from their parents and teachers.

It is seen that the majority of the children participating in the study use blue as the primary color and green as the secondary color. It can be argued that blue was used as the longing for freedom, and green as the longing for nature, due to the effect of being closed at home during the epidemic. Pascal

and Bertram (2021), in their research in England, Scotland, and New Zealand, examined the wants and needs of young children in the COVID -19 process through Frobel-style storytelling techniques and children's storytelling. According to the study's findings, children stated that they missed their daily life routines, friends, playing games, and being outdoors during the pandemic period. Regarding the meaning of colors in children's pictures, Ramazan and Öveç (2017) stated that one color can be preferred in negative emotions, especially black color is preferred. In this study, children used two vivid colors. Therefore, it can be thought that children have an optimistic point of view during the COVID -19 process.

When all children's pictures are evaluated in general, the following elements can be suggested: Ten girls create an optimistic impression with images such as vivid colors, smiling faces, sun, and clouds in their pictures. The picture of the remaining 12 girls is chaotic, and the drawings seem pointless. It can be said that the use of color that creates noise and pollution creates a pessimistic and unhappy impression in these pictures, supported by the intense COVID image drawing that covers almost the whole picture. When we look at the pictures that we currently have, with the influence of the cultural child-rearing system of the girls (such as doing the housework), the five boys create an optimistic impression with their pictures, with the use of vivid colors, smiling faces and images of nature. The picture of the remaining 22 boys is chaotic, containing only the image of COVID, which causes a purposeless, pessimistic, and unhappy impression. Studies (Benner & Mistry, 2020; Elder, Johnson & Crosnoe, 2003) show that socio-historical events such as natural disasters, socio-economic disasters, and epidemics can significantly affect human development. As a matter of fact, it is stated that past epidemic diseases such as SARS and H1N1 can increase depression, anxiety, and post-traumatic stress disorder in children (Green et al., 2018; Sprang & Silman, 2013). As can be seen, the findings of this study can show parallelism with the findings of previous studies expressing the negative effects of epidemics or disasters on children. In general, within the scope of the research, it can be said that preschool children included concepts related to the subject in their COVID-19-themed pictures, they reflected their longings through colors due to their divestment during the pandemic process, and girls had more optimistic elements than boys in their pictures, boys are more negatively affected by the COVID process compared to their girl's peers. Some studies on the subject show that children may be worried about COVID-19 (Garcia de Avila et al., 2020; Idoiaga et al., 2020). The difference between girls and boys can be explained by how psychological resilience can differ according to gender. Balaban Dağal and Bayındır (2018), in their study in which they examined the psychological resilience of 775 pre-school children, found a significant difference in favor of girls. In addition, in terms of child-rearing attitude, it can be thought that raising girls with a domestic structure and boys with a perspective that allows them to be outside and concentrate on physical activities may also affect the perceptions of girls and boys during the COVID-19 process. In the literature, studies can be found in which mothers and fathers can show gender differences in child-rearing. For example, in a study conducted by Ayçiçeği Dinn and Sunar (2017), it was determined that while mothers applied more rigid control towards their daughters, fathers showed more rigid control and acceptance and less psychological control to their daughters compared to their sons. Therefore, it is thought that child-rearing attitudes, which may vary according to the gender of children, may have led to differences between genders in coping with the difficult conditions in the COVID-19 process. The study findings conducted by Yüksek Usta and Gökcan (2020) in Kütahya partially overlap with this research. Yüksek Usta and Gökcan (2020), as a result of their studies in which they interviewed mothers and conducted document analysis of children's pictures, stated that children had negative feelings about the virus, they were most affected by social isolation in the process, they were mostly informed from the media as well as parents, they were aware of the terminology related to the epidemic, and they are hopeful about the end of the process. In terms of both genders, it is important to provide guidance services to children to overcome the pandemic disease process in a healthy way and to ensure that the effects are not long-term and have negative reflections (Çaykuş and Mutlu Çaykuş, 2020). Bray et al. (2021), in their research on the subject conducted in six countries with 128 children aged 7-12, revealed that children could understand how

the virus spreads in their pictures and show that their priority is to protect themselves their families, and the community. As can be seen, it has been revealed that young children have information about COVID-19 and reflect this information on their pictures. It is seen that there may be differences according to cultures as well as the difference between genders between pictures related to COVID-19. That is, while a study conducted in Brazil (Garcia de Avila et al., 2020) determined a high level of anxiety in children's pictures, a similar study conducted in Spain (Idoiaga et al., 2020) found that sadness and restrictions were reflected in children's pictures. From this point of view, it can be said that individual and social variables such as gender and culture can affect children's perception of events and situations, and this situation can create differentiation in pictures.

Symbolic representations are among the most complex human abilities that give information to share meaning, gain new information about the world, and understand other people's perspectives (Callaghan, 2020). Through his pictures, the child tells about his perceptions, feelings, understanding of beauty, dreams, designs, sorrows, disappointments, wishes, fears, loved ones, dislikes, nightmares, and positive or negative effects (Nalinci & Yapıcı, 2020). In this research, it is seen that children's pictures can provide important information about the perception of children about the COVID-19 process in different dimensions such as content and color. Therefore, it is important to examine children's drawings in studies on the subject. It should not be forgotten how safe information can be provided by the child as a source of information about himself by revealing children's perspectives, thoughts, and perceptions, not only about COVID-19 but also on different subjects. In line with the limitations of this research, studies can be conducted in which young children's perceptions of the "new normal" are revealed through pictures. In addition, longitudinal studies can be planned based on children's pictures. Thus, it will be possible to monitor children's perceptions and feelings about a subject/situation in the long term. Pre-school teachers should be informed about the importance and characteristics of children's drawings, both during undergraduate education and through in-service training.

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AUTHOR CONTRIBUTIONS

-The first and second authors have been involved in drafting the manuscript and revising it critically for importance.
- Necessary permissions for the research were obtained by the first author.
-The second author, the third author, and the fourth author have made substantial contributions to the conception and design, analysis, and interpretation of data.
-The fifth author has made substantial contributions to the acquisition of data.

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Do Ostracised Teachers Exhibit Deviant Behaviours? Examining the Relationship Between Organizational Ostracism and Organizational Deviance*

Bünyamin Ağalday, Assist. Prof. Dr., Mardin Artuklu University, bunyaminagalday@artuklu.edu.tr
0000-0003-0128-5055

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Abstract

This research aimed to examine the relationship between organizational ostracism and organizational deviance according to teachers' perceptions. The research employed a correlational design. The study sample consisted of 261 primary school teachers working in Turkish schools. The data were analyzed via multiple linear regression analysis. The findings showed that teachers experienced a low level of organizational ostracism and organizational deviance at schools. In addition, organizational ostracism predicted organizational deviance in individual, organizational and ethical dimensions, but the level of this prediction was low. The study discussed some implications for researchers and practitioners, emphasizing the role of ostracism in teachers' displaying organizational deviance behaviours. For instance, to prevent organizational deviance behaviours in schools, ostracism should be stopped, or its negative effects should be reduced. Also, importance should be given to developing cooperation and relationship networks among teachers, and communication channels should be kept open.

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INTRODUCTION

Humankind is a social being. Hence, they seek solid social bonds with other people. Establishing social ties encourages people to belong to a group. The need for belonging is a basic need, and people have a widespread motivation to develop and maintain a minimal amount of lasting, positive, and essential interpersonal relationships (Baumeister & Leary, 1995). In an organizational environment, relationships between people can be damaged over time due to various reasons. This situation may lead to negative consequences such as being ignored or neglected by some organization members. In organizations, this negative situation, expressed as ostracism (Williams, 1997), is a common phenomenon (Fox & Stallworth, 2005).

As educational organizations, there is also ostracism in schools. In the study conducted by Eickholt and Goodboy (2017), it was found that approximately one-third of teachers were exposed to various levels of ostracism in schools. Another study (Husrevsahi, 2021) revealed that teachers were excluded for various reasons. Ostracised individuals in the organizational environment may experience psychological consequences such as sadness and pain (Ferris et al., 2008). Ostracism in the workplace can also harm organizational effectiveness because it can reduce employees' citizenship behaviour (Ferris et al., 2015), workplace commitment (Hitlan et al., 2006), and job satisfaction (Ferris et al., 2008) can benefit the organization. In addition to its personal effects, ostracism may negatively affect the organization's dynamics and performance (Jones et al., 2009). Teachers' perceptions of ostracism can lead to some negative consequences that may disrupt the educational processes in schools. In the research of Erdemli and Kurum (2019), it was concluded that ostracism harms the organizational atmosphere in schools, causes teachers to decrease their sense of belonging, and even leads to conflicts within the school. In addition, research findings show that ostracised teachers may experience burnout (Naz et al., 2017; Sulea et al., 2012), low job satisfaction (Eickholt & Goodboy, 2017), and low performance (Fatima et al., 2019). Considering the harmful effects of ostracism, which is accepted as a form of workplace bullying (Einarsen et al., 2009), on teachers and schools, teachers' reactions to ostracism have gained importance.

Employees who experience a perception of ostracism may think negatively about those who ostracise them by experiencing negative emotions (Williams, 2007) and exhibit some undesirable behaviours such as aggression and harm to the organization (Robinson et al., 2013). Consequently, ostracised employees may exhibit organizational deviance behaviours (Ferris et al., 2008). Contrary to organizational norms, deviant behaviours are initiated by employees and have significant adverse effects at individual and organizational levels (Bennett & Robinson, 2000). Also, ostracism harms employees. From this point of view, teachers who are ostracised in schools may exhibit organizational deviance behaviour. This situation can harm all school stakeholders because organizational deviance behaviour threatens the existence of an organization and its members (Robinson & Bennett, 1995). Therefore, it is important to prevent or reduce the display of organizational deviance behaviours in schools. In this context, examining the factors that may cause teachers to exhibit organizational deviance reinforces this study's importance. Indeed, some research findings (Ferris et al., 2008; Jahanzeb & Fatima, 2017) show that deviant behaviours are related to ostracised experiences of employees. However, these studies were conducted in non-educational organizations. It remains unclear whether teachers perceive ostracism in educational institutions causes them to exhibit organizational deviance behaviours. In this context, this research is essential in terms of filling the gap in the literature. In addition, it has been observed that studies examining ostracism in educational organizations mainly focus on students (Ogurlu, 2015; Çeliköz & Türkan, 2017). There are also studies focusing on the ostracism of teachers. However, the studies focus on organizational ostracism's effects (Eickholt & Goodboy, 2017; Erdemli & Kurum, 2019; Husrevsahi, 2021; Yılmaz & Akgün, 2019) is limited. Considering the serious adverse effects of organizational ostracism on teachers, more systematic studies are needed on the impact of organizational ostracism in schools. For all that, no study has been

conducted between organizational ostracism and organizational deviance based on teacher perceptions in the literature. The current study also aims to fill this gap in the literature. Therefore, this study examined the relationship between organizational ostracism and organizational deviance based on teachers' perceptions. For this purpose, the research questions were:

RQ1. What is the level of teachers' organizational ostracism perceptions?

RQ2. What is the level of teachers' organizational deviance perceptions?

RQ3. Are teachers' perceptions of organizational ostracism a significant predictor of their perceptions of organizational deviance?

CONTEXT OF THE RESEARCH: EDUCATIONAL SYSTEM IN TURKEY

Before clarifying the theoretical framework in this study, we present contextual information about the education system in Turkey. This study was conducted in Turkey, a central education system (Erdem et al., 2011). All regulations regarding the education system are made by the Ministry of National Education (MoNE). This situation creates a hierarchical relationship between the MoNE and the local education actors. This type of relationship causes problems in the effective implementation of education policies and makes it difficult to quickly solve the problems encountered at the local level. A similar hierarchical structure is also reflected in schools. This structure in question may also be related to the high power distance in Turkey, which has a rich culture. Power distance is related to how power-based inequality in societies is acceptable (Hofstede, 2001). Therefore, this situation shows that the power in schools is not equally distributed between school administrators and teachers. The hierarchical structure in organizations causes employees to experience exclusion (Robinson et al., 2013). This situation negatively affects the stakeholders of the school. The most important of these stakeholders is undoubtedly the teachers. In addition to the problems they experience due to the hierarchical structure, teachers are passive implementers of the education program prepared by the MoNE. In this sense, teachers are deprived of their professional autonomy. Teachers' autonomy-based education policies can support teachers' goal orientations together (Ertem et al., 2021). Existing negativities may pave the way for an environment where teachers can feel worthless and excluded. It is important to examine the perceived ostracism of teachers in countries such as Turkey, where education is centralized and hierarchical. However, it is also essential to explore the adverse effects of ostracism on teachers. However, these effects will be examined in Turkey, a collectivist culture, carrying the study to a different point. On the one hand, the risk of ostracism of teachers in schools with a large power distance and hierarchical structure; on the other hand, teachers with a collectivist understanding tend to belong to the group. Considering the way the education system is managed and the cultural characteristics of Turkey, this study examines whether the perception of ostracism of teachers is effective in displaying deviant behavior.

CONCEPTUAL FRAMEWORK

This section will first elaborate on the theoretical foundations of organizational ostracism and organizational deviance. We then examine the relationships among the variables.

ORGANIZATIONAL OSTRACISM

Organizational ostracism is defined in this study as "the extent of one's perception of being ignored or ostracized by others in a workplace" (Ferris et al., 2008, p.1348). Although there are different terms for ostracism in the literature, such as *social exclusion*, *ostracism*, and *social rejection*, it is claimed that they point to the same phenomenon (Ferris et al., 2008) and are often used interchangeably by researchers (Williams, 2007). In this study, we will not distinguish between the stated concepts, but the idea of ostracism will be used because it is considered more inclusive. The Sociometer Theory constitutes a vital basis when the theoretical background of organizational ostracism is examined. The basic principle of the theory is that "the self-esteem system monitors the quality of an individual's actual and potential relationships the sense that other people regard their

relationships with the individual as valuable, important, and close" (Leary & Baumeister, 2000, p.11). The theory argues that self-esteem is an aspect affected by our social connections and explains the changes caused by the threat of ostracism in the context of the need for belonging (Leary et al., 1995). Therefore, belonging is the most important theoretical basis for the current research. In addition to the Sociometer Theory, *cognitive deconstruction and self-regulation impairment,* and *ostracism models are the theories underpinning* the study. In the model of cognitive deconstruction and self-regulation impairment (Baumeister et al., 2005), it is stated that one of the reasons for the existence of self-regulation is establishing social relationships and maintaining these relationships. Ostracism will lead to self-regulation impairment in the individual. The model of ostracism (Williams, 1997), on the other hand, proposes a comprehensive model regarding *the cause and types of ostracism, threatened needs, and responses to ostracism*. The section on responses to ostracism in the relevant model was considered in the current study.

Organizational ostracism has been discussed in different dimensions in the literature (Abaslı & Özdemir, 2019; Ferris et al., 2008; Hitlan & Noel, 2009). As the current study focuses on ostracism in educational organizations, the dimensions addressed by Abaslı and Özdemir (2019), used in this research, will be explained. In the mentioned study, organizational ostracism consists of *slight* and *isolate* dimensions. While *slight* is seen as ignoring teachers by their colleagues, contacting them only in case of necessity, and neglecting them, *isolate* refers to teachers being left alone at school by avoiding them.

ORGANIZATIONAL DEVIANCE

The theoretical background of organizational deviance can be based on three approaches. First, according to the *Misbehaviours Approach in Organizations* (Vardi & Wiener, 1996, p.153), misbehaviour in the organization has been defined as "any intentional action by members of organizations that defies and violets shared organizational norms and expectations and/or core societal values, norms and standards of proper conduct." The misbehaviours in question are classified as *behaviours that benefit themselves, benefit the organization, and intend to damage and be destructive*. Second, in the *Counterproductive Work Behaviours Approach* (Gruys & Sackett, 2003, p.30), counterproductive work behaviours are explained as "any intentional behaviour on the part of an organization member viewed by the organization as contrary to its legitimate interests." Counterproductive work behaviours are "*theft and related behavior, destruction of property, misuse of information, misuse of time and resources, unsafe behavior, poor attendance, poor quality work, alcohol use, drug use, inappropriate verbal actions, and inappropriate physical actions"* (p.30). The last approach, *Deviant Workplace Behaviors* (Robinson & Bennett, 1995, p.556), defines organizational deviance, definition we adopted in the current study, as "voluntary behavior that violates significant organizational norms and in so doing threatens the well-being of an organization, its members, or both" (Robinson & Bennett, 1995, p.556).

This research conceptualized organizational deviance around three main factors (Girgin Köse & Aksu, 2013; Robinson & Bennett, 1995). The first factor, *individual* or *interpersonal deviance* is related to behaviours that directly harm other individuals in the organization. The second one, *organizational deviance* defines deviant behaviours as directly harming the organization. In the last factor, behaviours that violate organizational norms and laws are considered *unethical deviance*.

ORGANIZATIONAL OSTRACISM AND ORGANIZATIONAL DEVIANCE

Ostracism threatens the need for self-esteem, control, and meaningful existence (Williams, 1997) as well as the need for belonging. Deviance behaviour may conclude to reclaim psychological conditions, especially when the need for control is threatened (Williams, 2007). Employees exposed to ostracism may resort to deviance behaviour to reduce the negative emotions they will experience. To escape the source of social pain shared by ostracism, employees may choose to slow down their work or reduce their contribution to the organization (Spector & Fox, 2002). On the other hand,

members of the organization may prefer to engage in deviance to regain control due to ostracism (Whitman et al., 2014). It has also been found that ostracism leads to more aggressive reactions in unexpected situations and thus creates a self-esteem threat (Wesselmann et al., 2010) that can be understood as a threat to the person's identity (Thau et al., 2007). To eliminate the threat in question, employees may exhibit deviant behaviours. Considering the context of the current research, teachers exposed to ostracism may exhibit deviant behaviours.

METHOD

RESEARCH DESIGN

A quantitative method-based correlational design was employed in this research to examine the relationship between teachers' perceptions of organizational ostracism and organizational deviance.

SAMPLE

The population of the research consists of 602 teachers in primary schools. The study sample consisted of 261 teachers in 24 primary schools in a southeast Turkey province in 2019-2020. The selected region was determined according to the convenience sampling method (Etikan et al., 2016), while the schools and teachers were determined using the simple random sampling method (Fraenkel et al., 2012). The suitability of the selected region is that it is geographically close. On the other hand, we accessed all teachers' names and then randomly chose them when selecting teachers. 38.69% of the teachers are female, 61.31% are male, 60.15% are married, 39.85% are single, 1.91% are associate degrees, 91.57% are undergraduate, and 6.51% are postgraduate.

INSTRUMENTS

ORGANIZATIONAL OSTRACISM SCALE

In this study, the "Organizational Ostracism Scale (OOS)" developed by Abaslı and Özdemir (2019) was used. The scale's construct validity was evaluated by exploratory (EFA) and confirmatory (CFA) factor analyses. The scale has 14 items and consists of isolate and slight dimensions. Sample items from the scale include "employees in this work do not care about me" for the slight dimension and "employees in this workplace do not greet me" for the isolate dimension. This 5-point Likert-type scale was answered on a rating scale from 1 ("totally disagree") to 5 ("totally agree"). The total variance explained was determined as 70%. In this study, the goodness of fit indices for the first level CFA made for the OOS are as follows: $\chi 2/df = 2.93$, GFI= .91, CFI= .92, RMSEA= .06. Indices show that the scale's construct validity is high (Schermelleh-Engel et al., 2003). In this study, the Cronbach's Alpha coefficients range between .86 and .97. Accordingly, Cronbach's Alpha coefficients are within acceptable limits (George & Mallery, 2003).

ORGANIZATIONAL DEVIANCE SCALE IN SCHOOLS

In this study, the "Organizational Deviance Scale in Schools (ODSS)" developed by Girgin Köse and Aksu (2013) was used. The scale has 20 items and consists of individual, organizational and ethical dimensions. Sample items from the scale include "school staff act without a plan" for the individual dimension, "school staff violates school rules" for the organizational dimension, and "school staff use drugs" for the ethical dimension. This 5-point Likert-type scale was answered on a rating scale from 1 ("totally disagree") to 5 ("totally agree"). The total variance explained was 65.57%. In this study, the goodness of fit indices for the first level CFA made for the ODSS are as follows: $\chi 2/df = 3.71$, GFI = .81, CFI = .92, RMSEA = .06. In the study, the Cronbach's Alpha coefficients range between .90 and .95. Therefore, the findings are valid and reliable.

DATA COLLECTION

The research was deemed ethically appropriate by the Ethics Committee of Mardin Artuklu University, Turkey, issued with 2020/01-1. School principals and teachers were informed in the schools where the research would be conducted. Surveys were given to the teachers at the school who volunteered to participate in the study. The teachers' identity was protected at all times, and informed consent was obtained from them. It was ensured that the school principal was not present when they filled out the forms to reflect their views entirely. The researcher collected survey forms. Three hundred and ten teachers agreed to participate in the research. Two hundred sixty-one scale forms were evaluated by removing those filled incorrectly or incompletely from the returned forms.

DATA ANALYSIS

SPSS software was used in the analysis of the data. The study calculated the mean and standard deviation to measure teachers' perceptions of organizational ostracism and organizational deviance. The skewness and kurtosis coefficients of the data set were examined to determine the tests to analyze the data obtained from the scales. The skewness coefficients of the OOS are between 1.70 and 2.88; kurtosis coefficients vary between 1.81 and 2.82. The skewness coefficients of ODSS are between .90 and 1.76; kurtosis coefficients vary between -.18 and 2.14. These values indicate that the data show a distribution close to normal (Kline, 2011). Confirmatory factor analyses regarding the measurement tools used in the study were carried out with AMOS software. Multiple linear regression analyses were applied to determine the predictive power of organizational ostracism on organizational deviance. According to the coefficients of Pearson correlation analysis, the multicollinearity issue was not observed between independent variable dimensions (see Table 1).

RESULTS

Descriptive statistics and correlation coefficients between organizational ostracism and organizational deviance are presented in Table 1.

Table 1. *Results of Pearson Correlation Analysis regarding the Dimensions of Organizational Ostracism and Organizational Deviance*

Variable	*Mean*	*SD*	*IS*	*SL*	*OO*	*IND*	*ORG*	*ETH*	*OD*
IS	1.31	.48	1						
SL	1.33	.55	.77*	1					
OO	1.33	.51	.74*	.78*	1				
IND	1.78	.90	.17*	.20*	.20*	1			
ORG	1.82	.88	.24*	.24*	.25*	.71*	1		
ETH	1.31	.53	.25*	.23*	.25*	.57*	.67*	1	
OD	1.61	.67	.26*	.26*	.26*	.86	.76*	.72*	1

IS: Isolate, SL: Slight, OO: Organizational Ostracism, IND: Individual, ORG: Organizational, ETH: Ethical, OD: Organizational Deviance, *$p < .01$

As may be understood from Table 1, teachers' perceptions of organizational ostracism and organizational deviance are low (*slight* (M = 1.31; SD = .48), *isolate* (M = 1.33; SD = .55), *individual* (M = 1.78; SD = .90), *organizational* (M = 1.82; SD = .88), *ethical* (M = 1.31; SD = .53)). Negative and low-level relationships were revealed between the dimensions of organizational ostracism and the dimensions of organizational deviance. Accordingly, as teachers' perceptions of organizational ostracism increase, their perceptions of organizational deviance might also increase. Multiple linear regression analysis was performed to determine the predictive power of the *individual*, *organizational* and *ethical* dimensions of organizational deviance by dimensions of organizational ostracism. Dimensions of organizational ostracism are considered independent variables, and each dimension of organizational

ostracism is regarded as a dependent variable. The multiple linear regression analysis results regarding the prediction of individual deviance dimension by organizational ostracism dimensions are presented in Table 2.

Table 2. *Results of the Multiple Linear Regression Analysis regarding the Prediction of Individual Deviance Dimension by Organizational Ostracism*

(Dependent variable = Individual deviance)					
Variable	*B*	*SE*	*β*	*t*	*p*
Constant	1.34	.15		8.45	.00*
Isolate	.01	.23	.01	.01	.99
Slight	.33	.20	.20	1.61	.10

R = .20; R^2 = .03; F = 5.55; p = .00; *p < .01

Given in Table 2, it was observed that organizational ostracism displayed a significant relationship (R = .20; R^2 = .03) with the individual deviance dimension (F = 5.55; p < .01). Ostracism dimensions explain 3% of the change in teachers' perceptions of individual deviance. The order of importance of predictor variables on teachers' perceptions of individual deviance is slight (β = .20) and isolate (β = .01). However, when these variables are considered separately, they are not a significant predictor of individual deviance (p > .01). The analysis results related to the prediction of organizational deviance dimension by organizational ostracism dimensions are presented in Table 3.

Table 3. *Results of the Multiple Linear Regression Analysis regarding the Prediction of Organizational Deviance Dimension by Organizational Ostracism*

(Dependent variable = Organizational deviance)					
Variable	*B*	*SE*	*β*	*t*	*p*
Constant	1.21	.15		7.96	.00*
Isolate	.25	.22	.14	1.12	.26
Slight	.20	.20	.12	1.00	.31

R = .25; R^2 = .05; F = 9.07; p = .00; *p < .01

As may be understood from Table 3, analysis results showed that organizational ostracism displayed a significant relationship (R = .25; R^2 = .05) with organizational deviance dimension (F = 9.07; p < .01). Dimensions of ostracism explain 5% of the change in teachers' perceptions of organizational deviance. The order of importance of predictor variables on teachers' perceptions of individual deviance is isolate (β = .14) and slight (β = .12). These variables are not a significant predictor of organizational deviance (p > .01). The analysis results regarding the prediction of the dimension of ethical deviance by the dimensions of organizational ostracism are presented in Table 4.

Table 4. *Results of the Multiple Linear Regression Analysis regarding the Prediction of Ethical Deviance Dimension by Organizational Ostracism*

(Dependent variable = Ethical deviance)					
Variable	*B*	*SE*	*β*	*t*	*p*
Constant	.94	.09		10.09	.00*
Isolate	.21	.13	.19	1.54	.12
Slight	.06	.12	.06	.54	.58

R = .25; R^2 = .05; F = 9.01; p = .00; *p < .01

As seen in Table 4, organizational ostracism had a significant relationship (R = .25; R^2 = .05) with teachers' ethical deviance (F = 5.55; p < .01). Together, the two variables explain 5% of the change in teachers' perceptions of ethical deviance. The order of importance of predictor variables on teachers' perceptions of individual deviance is isolate (β = .19) and slight (β = .06). However, isolate, and slight are not significant predictors of ethical deviance (p > .01).

DISCUSSION

This research deals with the relationship between organizational ostracism and organizational deviance. After interpreting the study's key findings in light of the relevant literature, some limitations have to be explained. According to the results obtained from the first research question, teachers' perceptions of organizational ostracism are low. Based on these findings, teachers' perceived ostracism by their colleagues is low. This implies that teachers are slightly ignored or neglected by their colleagues. The present result seems to be consistent with the findings of other quantitative studies (Eickholt & Goodboy, 2017; Fatima et al., 2019; Halis & Demirel, 2018; Kandemir & Nartgün, 2022; Yılmaz & Akgün, 2019) regarding teachers' perception of ostracism. In the mentioned studies, it was observed that the perception levels of teachers regarding organizational ostracism were low. However, in a qualitative study conducted by Erdemli and Kurum (2019), it was concluded that there might be ostracism among employees at schools and that teachers are either ostracised by each other or ostracised by the school administrators. The research conducted by Uslukaya and Demirtaş (2020) with the qualitative method has also shown that teachers experience a perception of exclusion in schools. The related study reported that school exclusion occurs in ignoring, ignoring ideas, not being included in the group, and not communicating. Reaching different results about ostracism in schools can be explained by using different methods in studies. Experiencing different levels of ostracism in schools is an expected finding because there are employees with varying characteristics in many respects in schools. A study reported that school administrators display discriminatory behaviours based on teachers' gender, age, religion, political opinion, relations with administration, race and ethnic origin, performance, and personality traits (Polat & Hicyilmaz, 2017). Besides, the study conducted by Akcan et al. (2017) indicated that unions are an essential trigger of discriminatory behavior in schools. These discriminatory behaviours can also be seen as ostracism. This ostracism may occur based on the differences in unions, ideologies, and personal characteristics (Erdemli & Kurum, 2019). The low perception of exclusion in this study can be explained because exclusion may occur unintentionally. Because although exclusion is harmful, it can happen without any malicious intent (Williams, 1997). Hence, teachers may not have felt that they were ostracised.

On the other hand, studies conducted in non-educational organizations have shown that employees have a high rate of ostracism in the workplace. Fox and Stallworth (2005) found that 66% of employees were ignored by their colleagues or ostracised from the group. In another study, more than 70% of employees felt ostracised in the workplace (Yan et al., 2014). Different findings that have been obtained in various organizations can be explained by the fact that educational organizations have a different structure than other organizations as an open and social system (Hoy & Miskel, 2010). Schools are a social network with open system characteristics, consisting of input, process, output, feedback, and environmental elements. Closed systems are systems that do not interact with their external environment. In comparison, open systems are in constant interaction with their external environment. Therefore, since schools are open systems, they are dynamic with their environment. In this context, minor ostracism in open systems can be considered an expected situation.

According to the findings obtained from the second research question, teachers' perceptions of organizational deviance are low. It is understood that teachers exhibit organizational deviance behaviours at a very low level, such as making irresponsible decisions, acting unplanned, gossiping about colleagues, and coming to school late without permission. In other words, teachers rarely display behaviours that violate or damage school norms. A possible explanation for this result is that schools

are formal organizations, and therefore, such deviant behaviour will be punished so that it will be less visible. The low level of these organizational deviance behaviours, which can be considered a potential threat to the school's functioning, was deemed important. Because organizational deviance behaviours might have adverse effects on teachers' perceptions. A study conducted by Malisetty (2016) showed that organizational deviance reduces employees' job satisfaction and performance. Therefore, it is crucial for the efficiency of the school that teachers exhibit deviant behaviors at a low level. The present finding coincides with other quantitative studies conducted in schools (Aksu, 2016; Argon & Ekinci, 2016; Erturk & Zıblım, 2020). In the previous studies, teachers' perceptions of organizational deviance are low. However, the findings obtained from the qualitative research conducted by Türkkaş Anasız and Iliman Püsküllüoğlu (2017) showed that teachers exhibit deviant behaviours at individual and organizational levels. Conducting the study with a qualitative method may have revealed the existence of organizational deviance behaviours in schools more clearly. The research method mentioned above can explain the presence of low perception of deviance in the current study. The finding obtained in the second research question cannot be justified because teachers avoid deviant behaviors only because of fear of punishment. Teachers' positive attitudes towards their profession may also have been effective in obtaining the present finding. At this point, the commitment of teachers comes to the fore. Teachers who see teaching only as a profession may show deviant behavior when faced with negativity. However, teachers who adopt teaching as a lifestyle may prefer to avoid deviant behaviors that can harm themselves and the school, regardless of their working conditions. Because such teachers see their commitment as a part of their professional identity and define themselves as dedicated to their profession (Elliot & Crosswell, 2001). In this context, commitment may have motivated teachers and made them less likely to exhibit organizational deviance behaviors.

In the third research question analysis, the isolate and slight dimensions explain 3% of the change in teachers' perception of individual deviance and 5% of the change in organizational and ethical deviance dimensions. The research findings appear to be consistent with the current research. In a study conducted by Jahanzeb and Fatima (2017) with employees in the service sector, it was seen that employees' perceptions of ostracism played an essential role in their deviance. In another study focusing on the outcomes caused by ostracism (Ferris et al., 2008), a moderate relationship was found between ostracism and deviance in the workplace. On the other hand, findings obtained from studies examining the relationship between ostracism and counterproductive work behaviour (Hitlan & Noel, 2009; Yan et al., 2014) also seem to be consistent with the findings obtained from this study. Counterproductive work behaviour is defined as the deliberate actions of a team member, such as organizational deviance, that are a threat and destructive to an organization or its employees (Bennett & Robinson, 2000). Ostracised employees become more prone to destructive behaviour by exhibiting counterproductive work behaviour (Twenge et al., 2001).

Although it is seen that ostracism predicts organizational deviance in studies conducted in non-educational organizations summarized above, it is striking that its predictive power is not as low as in the current study. These results can be explained in different ways. The first possible explanation is that the studies were conducted in institutions with different dynamics than educational institutions. The second possible explanation may be related to the collectivist nature of the country where the research was conducted. Collectivism tends to belong to group identity (Hofstede, 2001). Farh and Cheng (2000) found that eastern people exhibit collectivistic behaviours. Therefore, although teachers experience the perception of ostracism, their tendency to behave in harmony with the group shows that they may exhibit organizational deviance behaviours at a lower level. In addition, teachers who have accepted group norms as organizational norms can display behaviours in harmony with the group. In the study of Fatima et al. (2019), ostracised teachers did not engage in counterproductive work behaviours with the expectation of being included in the group again in the first place due to their collectivistic culture. However, it was found that as ostracism became systematic, teachers

tended to exhibit counterproductive work behaviours such as withdrawal and decrease in performance. Another explanation is that teachers may have a very low level of ostracism and deviance perception. It is understood that low ostracism perceptions have a negligible effect on the change in perception of deviance. However, even a deficient perception of ostracism was sufficient for teachers to exhibit organizational deviance behaviours.

Ostracised teachers are expected to exhibit organizational deviance behaviours as some of their essential needs such as "*belonging*, *self-esteem*, *control*, *meaningful existence*" (Williams, 1997) will be threatened. Because deviance behaviour may result as an attempt to recover psychological needs threatened by ostracism, especially when the need for control is threatened (Williams, 2007). However, other factors can trigger deviance behaviour. For example, Eickholt and Goodboy (2017) research revealed that ostracised teachers' job satisfaction and organizational commitment may decrease. Thus, it shows that even a low level of ostracism can create an unsatisfactory school environment and negative attitude towards school. When belonging is threatened, teachers can exhibit deviant behavior to achieve that need. Teachers whose commitment is low by being ostracised will not see themselves as a part of the school. In addition, it will be difficult for teachers who cannot feel tied to the school to continue their profession effectively. Teachers may even tend to slow down work or avoid educational responsibilities. In the conducted study (Türkkaş Anasız & Iliman Püsküllüoğlu, 2017), it was determined that teachers exhibit organizational deviance behaviour by taking long breaks and excusing absenteeism. These organizational deviance behaviours are more likely to be displayed by teachers with lower levels of commitment. Because, in the conducted study (Argon & Ekinci, 2016), it was seen that teachers with a low level of commitment might exhibit more deviant behaviour. The presence of deviant behaviour will damage all stakeholders of the school, especially the students.

On the other hand, the teacher, whose belonging to the school decreases because of being ostracised, may remain silent against ostracism. Indeed, Fatima et al. (2017) revealed a positive correlation between teachers' perceptions of ostracism and team member silence. Teachers' isolation or slight by their colleagues may cause them to feel worthless (Williams, 2009). This may result in a decrease in the teacher's self-esteem over time. When the need for self-esteem is threatened, it is natural for teachers to exhibit organizational deviance behaviour. The teacher who thinks s/he is not valuable may have thought of staying silent over time. Being silent against ostracism can also be described as behaviour against the norms of the organization because the teacher who remains silent actually exhibits withdrawal behaviour. In Turkey, which is managed by a central system, teachers cannot change the schools they work at whenever they want. To work in another school, they have to work for a certain period at their school. Therefore, the teacher who could not leave the school where he was ostracised may have preferred to remain silent. The teacher may have also liked to avoid the pain of ostracism by withdrawing (Williams, 2007). It is suggested that employees may choose to slow down their work or reduce their contribution to the organization to avoid pain (Spector & Fox, 2002). Therefore, the ostracised teachers may be alienated from the profession over time, decreasing their performance. In another study supporting this argument (Erdemli & Kurum, 2019), teachers who perceived ostracism stated that they were unhappy, alienated from their profession, and lost their motivation.

Teachers' motivation is affected by their psychological relationship with their colleagues (Ryan & Deci, 2000). The research finding (Yakut & Yakut, 2018) indicates a negative correlation between teachers' organizational ostracism and psychological well-being perceptions. A teacher who cannot communicate actively with colleagues because of being ostracised will not feel psychologically well. The conducted research (Spector & Fox, 2002) showed that negative emotions trigger organizational deviance behaviour. Therefore, the teacher who feels bad because of being ostracised may exhibit organizational deviance behaviours. On the other hand, the ostracised teachers can distance themself from their colleagues because they will not feel well. Thus, it may also be the case that s/he hides

information from her colleagues. In the conducted study (Zhao et al., 2016), it was observed that as organizational ostracism increases, employees tend to hide information from each other. In this context, the ostracised teachers' hiding information can be considered behavior against the school's norms.

Apart from the negative psychological consequences of ostracism, there is another negative consequence such as burnout. Research findings showed that there might be an increase in burnout perceptions of ostracised teachers (e.g., Naz et al., 2017; Sulea et al., 2012). Teachers who are ignored or neglected may not receive sufficient social support from their colleagues. Teachers spend most of their time in the classroom. This situation may suggest that teachers will communicate less with their colleagues, and therefore the support they will get from their colleagues will not be important. The stressful nature of teaching (Pillay et al., 2005) and the stressful working environment created by ostracism make the support to teachers important. Fatima et al. (2019) found that organizational ostracism can increase counterproductive work behaviour through stress. Therefore, teachers who experience a perception of ostracism may exhibit more organizational deviance behaviour by experiencing stress. Therefore, reducing stress can make ostracised teachers exhibit less organizational deviance behaviour. In this context, teachers may need support to experience less stress. Research findings also confirm this situation. Halis and Demirel (2016) found a negative correlation between social support and organizational ostracism in their study with teachers. Therefore, teachers who may experience burnout due to ostracism are likely to exhibit organizational deviance behaviours as they are deprived of peer support. According to the finding of a study supporting this explanation (Chen et al., 2016), it was observed that the less supported the employees, the more organizational deviance behaviours they displayed.

CONCLUSION AND IMPLICATIONS

This study provided some evidence that teachers, albeit very low, are ostracised by their colleagues in schools and, as a result, exhibit organizational deviance behaviours. Although the obtained results show that organizational ostracism is not an important predictor of organizational deviance, even a low level of ostracism triggers teachers to exhibit organizational deviance behaviours. In this context, some implications have been presented for practitioners. To prevent organizational deviance behaviours in schools, first of all, ostracism should be stopped, or its negative effects should be reduced. School administrations have important responsibilities for this. In countries with a collectivist culture, such as Turkey, employees care about having a family atmosphere in the workplace. School principals should create a supportive and trust-based school culture (Tłuściak-Deliowska et al., 2017). In this direction, the school principals should develop cooperation and relationship networks, and communication channels should be kept open among teachers. Social activities should be emphasized in order to strengthen the communication among teachers. In addition, administrators can approach teachers like a parent to create a family atmosphere in the school and deal with their problems in both their professional and private lives. Thanks to the friendly atmosphere in the school, teachers' perception of ostracism can be prevented. The necessary democratic environment should be created to resolve disputes among teachers by discussing instead of "sweeping them under the carpet." School administrators can significantly prevent ostracism with the implications listed above. However, when ostracism occurs, it must first be determined who is ostracised and why. Administrators should contribute to solving problems by holding a mediatory position among teachers. Teachers who perceive ostracism should be given social support to get rid of the psychological pain they experience. The study is the first to investigate the effect of organizational ostracism on organizational deviance based on teachers' perceptions. In this context, it has been concluded that organizational ostracism has a weak impact on the management of teachers' organizational deviance behaviour, which is a potential threat to the school.

This study also has some limitations. Since organizational ostracism has a low explanatory level on organizational deviance, it is understood that there may be other organizational variables affecting organizational deviance. Researchers can research the relationship between different organizational variables and organizational deviance. In addition, a model can be put forward by structural equation modeling using variables such as "*belonging*, *self-esteem*, *control*, *meaningful existence*, *and social support,"* which have the potential to mediate the effect of organizational ostracism on organizational deviance. The study addressed the relationship between organizational ostracism and organizational deviance, but the reasons for teachers' perception of ostracism were not investigated. For this reason, future studies should conduct a qualitative study focusing on the reasons for teachers' ostracism and in this direction involving both teachers and school administrators. Another limitation of the study is that it was conducted only in primary schools. In this respect, future research may be done with a larger sample group of other education levels. The fourth limitation is that only the perception of ostracism experienced by teachers caused by their colleagues was examined. Therefore, future research may focus on the consequences of ostracism of teachers caused by the school administration. The fifth limitation is related to where the data are collected. Research should be done with a more extensive data set with the participation of other provinces. The study did not include personal variables in teachers' perceptions of ostracism and deviance as a final limitation. Future studies should investigate whether there is a difference between teachers' perceptions of ostracism and deviance according to personal variables such as gender, marital status, and educational status.

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A Study of Developing an Achievement Test for Identifying Primary School Students at Risk of Mathematics Learning Disability*

Tunahan Filiz, Lecturer, Bayburt University, tunahanfiliz@bayburt.edu.tr
0000-0002-3149-8783

Gönül Güneş, Assoc. Prof. Dr., Trabzon University, gmgunes@trabzon.edu.tr
0000-003-3223-8163

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Abstract

This study aims to develop a valid and reliable achievement test to identify students with mathematics learning difficulties (dyscalculia) and at-risk students. In addition, a test to measure third-grade primary students' success in learning natural numbers and operations with natural numbers sub learning areas is aimed to be developed. Critical learning outcomes were determined for students with a risk of learning disabilities in mathematics and 47 questions were created in line with these outcomes. The questions were evaluated by presenting them, along with the expert evaluation form, to three experts from. The test was administered to 171 students attending. Then, both the item difficulty and item discrimination indices were calculated as part of the item analysis, and accordingly, 21 questions were included in the main test. The KR-20 reliability coefficient of the test was calculated as 0.93, and the Spearman-Brown value for the split halves was calculated as 0.86.

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* This study was presented as a summary paper at the 5th International Symposium of Turkish Computer and Mathematics Education (TURCOMAT-5). In addition, the test was used as a data collection tool in the first author's doctoral thesis to identify primary school students at risk of MLD.

INTRODUCTION

The renewed Turkish national curriculum urges that the curriculum should help individuals to integrate their knowledge, skill and behavior competencies (Ministry of National Education, 2018). Students need personal, academic, social and business competencies at the national and international level. One of these competencies is mathematical competency. Mathematical competency is the individual's having a mathematical way of thinking in finding solutions to the problems s/he encounters in daily life. In order for this competency to emerge, the teaching process must comprise knowledge and activities built on a solid arithmetic skill. The mathematics education given in schools aims to raise individuals who can use mathematics in daily life, who have advanced mathematical literacy skills, who can do research and work systematically, who can find solutions to the problems they encounter, and who are aware of their own learning processes (Ministry of National Education, 2018).

Although mathematics has an important place in daily life, it also has an important place in academic and business career. However, many students struggle in learning mathematics in schools. National and international assessment reports and research have found that approximately 5% of school-age children cannot meet the basic skills in mathematics (Geary, 2017). This rate varies between 6% and 14%, depending on the country (Mutlu, 2020). When appropriate support is not provided for students who have disabilities in learning mathematics, they face problems both at school and in daily life (Koç & Korkmaz, 2020). Studies show that the disabilities experienced in the acquisition of numbers and operations with natural numbers lead to negative situations in school and professional life (Güzel-Özmen, 2019; Kucian & von Aster, 2015).

The learning outcomes related to numbers and operations with natural numbers have an important place in the Elementary Mathematics curriculum. Third-grade numbers and operations with numbers have a ratio of 46% in the third grade's national curriculum. The outcomes related to the numbers and operations with numbers constitute approximately half of all learning outcomes (Ministry of National Education, 2018). Establishing solid foundations for number perception is viewed as an important step for learning success in mathematics. In addition, individuals who cannot develop the perception of number in the early stages of their life have a risk of failing at mathematics later on (Witzel & Little, 2016). Primary school students are required to understand natural numbers and operations with natural numbers until the fourth grade (NMAP [National Mathematics Advisory Panel], 2008). However, the numbers and operations learning domain is the basis for teaching other domains (Tuna & Serin, 2019) because the subjects have a close relationship with each other and form a sequential structure (Baykul, 2015; Altun, 2015).

Learning disability is defined as a disability of neurological origin that prevents the learning and use of reading, writing, and mathematical calculations (Bender, 2016). In general, learning disability is examined under three sub-titles as reading (dyslexia), writing (dysgraphia), and mathematics learning disability (dyscalculia) (American Psychological Association [APA], 2013). Dyscalculia, known as mathematics learning disability, refers to students who have difficulties understanding numbers and mathematical calculations and have problems in mental mathematical calculations and problem solving (APA, 2013). MLD risk group students who are not diagnosed for various reasons but have a math learning disability are also regarded as having a math learning disability (Aunio, 2021). MLD risk group students refer to students who have difficulties in the concept of numbers, comparison of numbers, place value, and basic arithmetic operations (Olkun, 2015).

Students with mathematics learning disabilities have been reported to experience problems in basic arithmetic skills (Butterworth & Yeo, 2004). Further, such students are known to have disabilities in counting, calculating, learning and remembering arithmetic operations and have disabilities in rhythmic counting (Butterworth et al., 2011). Reviewing the studies on the characteristics of students with mathematics learning disabilities, reveals that students have problems in basic number skills (Morsanyi et al., 2018), fluent calculation (Estévez-Pérez et al., 2019), calculation with multi-digit

numbers (Cowan & Powell, 2014), and estimation/mental processing and mathematical reasoning (Karagiannakis, 2016). Students experiencing disabilities in learning mathematics have problems particularly in basic arithmetic skills such as the concept of number, counting, comparison, digit and place value, and calculation (Eissa, 2018; Kelly, 2020).

Identifying students who have mathematics learning disabilities in early years is crucial (Nelson & Powell, 2018) because it negatively affects the student's future performance and if not intervened early, it may cause the student to lag behind his/her peers (Kelly, 2020). Students who have disabilities in learning mathematics and are at risk fall behind their peers as their grade levels progress, and the gap between them gradually widens (Bender, 2016). Early diagnosis and effective instructional interventions are needed to prevent such a negative outcome (Mutlu, 2020). If early and effective intervention programs are not implemented for students with mathematics learning disabilities, these students may encounter disabilities in the future. Effective interventions can only be created by revealing individual characteristics, strengths and weaknesses. It may be to the benefit of the students to determine the issues that students experience inadequacy through evaluations by teachers and to create intervention programs.

Demonstrating the current success status of students can be a guide for teachers in the learning and teaching activities. It can reveal the current achievement levels of the students with the standard achievement tests with proven validity and reliability. With the data to be obtained from these tests, teachers and researchers can have information about the effectiveness of the learning-teaching process and the disabilities that their students experience. These data can support teachers in their instructional planning. Achievement tests suitable for grade levels are needed to objectively reveal student progress in the learning-teaching process and to identify students who need additional intervention. Research on mathematics education reports an urgent need for measurement tools to determine students' level of success (Olkun, 2015; Taşlıbeyaz, 2021).

Assessment and evaluation, which constitutes an important dimension of the teaching process, has a critical role in both determining the current learning levels of students and forming the basis for future learning (Balcı, 2019). Evaluation, which is one of the important elements of the learning-teaching process, determines the level at which the subjects are learned and the targeted learning objectives are achieved. Measurement and evaluation is critical to define the readiness level of students, to see the learning deficiencies of low-achieving students and to decide about the effectiveness of the teaching process (Gönen et al., 2011). Identifying students' strengths and weaknesses with formal and informal assessment tools is recommended to develop effective instructional interventions for students at risk with mathematics learning disabilities (Dowker, 2016). With the standardized tests, the learning status of students who have disabilities can be revealed. By screening large groups of students with valid and reliable standardized tests, struggling students and students who need stronger support are identified (Kelly, 2020).

There is not found standard assessment tool to identify students with mathematics learning disabilities. Studies conducted to identify students who have learning disabilities report that various assessment tools have been used to identify them and multiple assessment tools should be used to do so (Uygun, 2020). Formal (achievement tests, inventories, intelligence tests, and neuropsychological tests) and informal (program-based evaluation, criterion-dependent evaluation, interview, observation, error analysis and checklist) evaluation tools are used together to identify students with mathematics learning disabilities (Uygun, 2020). In addition, there are some other diagnostic tools developed and implemented by countries and researchers. Among these tools are the inconsistency model (Durmaz, 2020; Olkun, 2015), which considers the inconsistency between the individual's ability and achievement scores, and the intervention response model, which allows early identification and support of students with disabilities (Polat & Akkaya, 2020; Witzel & Little, 2016). Finally, computer-based diagnostic tools (Butterworth, 2012), exclusive and inclusive criteria (Mutlu, 2016), Multi-Filter Model (Mutlu & Akgün, 2017), AIDEK that can be used by teachers who comply with national norms

(candidate selection, examination, exclusion, elimination and decision making), and TIZ (Enriched for Turkey) models have been developed by researchers (Durmaz, 2020). There is also a checklist (ÖGBA) developed to identify students in the risk group for learning disabilities (Taşlıbeyaz, 2021).

An analysis of the test development studies on primary school students' mathematics achievement reveals that these studies have been conducted at different grade levels and learning domains, focusing on natural numbers (Hellstrand et al., 2020; Ersoy & Bayraktar, 2018; Yılmaz & Yılmaz, 2021), operations with natural numbers, fractions, and measurement. When the international literature is examined, it is stated that the studies conducted to measure the mathematics achievement of primary school students (1-4th grades) are limited (Pandra & Mardapi, 2017). These studies have focused on scale (McCarney & House, 2018; Coleman et al., 2010), checklist (Chan et al., 2004), questionnaire (Willcutt et al., 2011), inventory (Hammill & Bryant, 1998), and screening test (Geary et al., 2009). It was concluded that whereas some diagnostic tools for reading disability have been developed (Kargın et al., 2015; Melekoğlu et al., 2019), few studies have specifically focused on mathematics learning disability (Taşlıbeyaz, 2021).

While some studies report results about several assessment tools that have been developed to identify students who have learning disabilities and are at risk, further research is needed (Olkun, 2015; Taşlıbeyaz, 2021). Reviewing the achievement test development studies conducted in Turkey, it is clear that the number of studies that measure student achievement in primary school mathematics education by reporting on the validity and reliability of these measurements is limited (Balcı, 2019). The existing studies have not been updated in line with the 2018 mathematics curriculum and are not directly related to mathematics learning disabilities. The use of intelligence tests alone in diagnosing students with learning difficulties in Turkey (Olkun, 2015) may lead to misdiagnosis (Özmen, 2015). Misdiagnosis can be prevented by using achievement tests and other informal assessment tools together with IQ tests. In addition, there is no direct test development study for learning numbers and operations with numbers for students with learning disabilities in mathematics. There is a need for standard measurement tools with validity and reliability calculations to identify students at risk for math learning disabilities at an early age and to plan the necessary support education (Özmen, 2015). The lack of a validated and reliable standard achievement test considering the 2018 curriculum for students in the risk group for mathematics learning disability constitutes the problem situation of the current study.

In view of the literature and problems presented, some factors make this study important. As the first factor, this study may help identify students who are early age at risk for mathematics disabilities, thus enable offering them the necessary instructional support. With the support activities offered, it is possible to eliminate the learning gaps of the students and to continue their education without falling behind their peers. With the developed numbers and operations mathematics achievement test, the deficiencies of the at-risk students regarding the natural numbers and operations can be determined and necessary support practices can be carried out. This study can be used to determine the disabilities experienced by students who have a risk of learning disabilities in mathematics. This study is also important in that it can be used as a guide for both teachers and researchers in preparing compensation and support education programs to overcome these disabilities. In addition, it can provide accurate information to classroom teachers and school counselors in pre-diagnosis screening. Thus, students who need detailed assessment can be identified. Lastly, this study is important in that it is the first standardized achievement test developed for primary school students with a risk of mathematics learning disability, considering the 2018 mathematics educational program.

This study aims to develop a valid and reliable achievement test to identify students with mathematics learning difficulties (dyscalculia) and at-risk students. In addition, a test to measure third-grade primary students' success in learning natural numbers and operations with natural numbers sub learning areas is aimed to be developed.

METHOD

RESEARCH DESIGN

This study aims to develop a valid and reliable achievement test to identify students with mathematics learning difficulties (dyscalculia) and at-risk students. For this purpose, a standard achievement test was developed in which validity and reliability calculations were made through different question types (multiple choice, matching, filling in the blanks, open-ended) considering the number and operations learning domain achievements for the third-grade primary school mathematics course.

POPULATION AND SAMPLE

This study was approved by Trabzon University Scientific Research and Publication Ethics Committee (Social and Human Sciences) with a protocol number of 81614018-000-E.525 on December 1, 2020. The population of this research consists of third-year primary school students studying in the province of Bayburt, located in northeast Turkey. On the other hand, the study sample includes 171 students selected among the students attending the third year of primary school in Bayburt by a simple random sampling method. The sample group voluntarily participant in the research. The data were collected from in the third grade students who had achieved the outcomes in the natural numbers and operations learning domain, in the spring period of the 2020-2021 school year.

DATA COLLECTION

The data were collected by the Numbers and Operations Mathematics Achievement Test (SIMBAT), which was developed by the researchers for natural numbers and operations gains with natural numbers. The data were obtained from the 38-item piloting of the test. Preparing the test for actual implementation is detailed below in the test development process section. There are some key points to consider in developing a valid and reliable achievement test. There are different opinions in the literature regarding test development processes (Adıgüzel, 2016; Fraenkel et al., 2018; Turgut & Baykul, 2015). The classical and modern test development approach by Crocker and Algina (2006) is used to shape the test development process steps for this study. The process steps are described in detail below.

DETERMINING THE RESEARCH PURPOSE AND LITERATURE REVIEW

The aim was to develop a reliable and valid achievement test to measure the success of elementary school third class students in the domain of natural numbers and operations with natural numbers and to support the identification of students with mathematics learning disability risk group. The review of the related literature revealed that no achievement test had been developed for which validity and reliability analyses had been performed to identify students with mathematics learning disability risk group, and that such a test was needed. Students with mathematical disabilities or in the risk group are known to have problems in basic arithmetic skills (numbers and operations with numbers) and need support (Butterworth et al., 2011; Morsanyi et al., 2018). In extension, the numbers and operations learning domain constitutes the basis for learning advanced mathematics. Based on these two reasons and the literature review, an achievement test for natural numbers and operations with natural numbers was developed. With the developed achievement test, the students at risk of learning disabilities in mathematics can be identified, a contribution to the literature can be made, and the curriculum can be shaped by taking into account the subjects that the students have difficulty with.

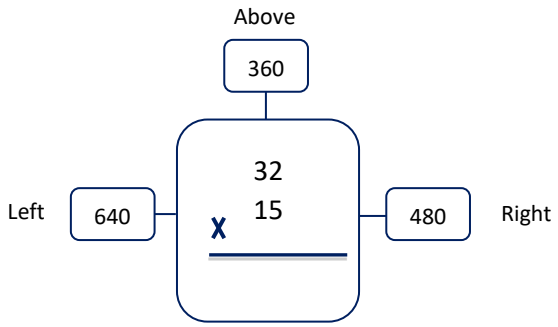
TABLE OF SPECIFICATION

First of all, for students who have disabilities in learning mathematics and who are at risk, critical acquisitions for the learning of natural numbers and operations with natural numbers were determined by reviewing the national curriculum and based on related literature (Ministry of National Education, 2018). Identified outcomes are the main outcomes that students with mathematics learning disabilities experience disabilities with. Then, a table of specification for critical outcomes and question items was created. Moreover, an expert who has done studies on the table of specifications, the concept of numbers, and the gains of operation with natural numbers gave an expert opinion regarding the tests developed. The creation of this table is important in ensuring the content validity of the developed achievement test.

ITEM POOL (QUESTION FORMATION)

In line with the determined critical outcomes, questions were formed by taking into account the symptoms of students with mathematics disabilities and those at risk. At least two different questions were prepared for each of the determined learning outcomes. The questions were composed of 47 questions in the types of open-ended, matching, short-answer and multiple-choice items. Sample question types for numbers and operation with numbers sub-learning areas are presented below.

Table 1. *Sample Question Types Based on Learning Outcomes*

Learning Outcomes	*Sample Questions*
"Reads and writes three-digit natural numbers."	**In the boxes below, write the pronunciation of the numbers whose spellings are given and the spellings of the numbers whose pronunciations are given in the blanks?** 305: ..... 490: ..... 648: ..... 741: ..... Two hundred five: ..... Three hundred eighty: ..... Nine hundred fifty-six: ..... One hundred forty-seven: .....
"Multiplies a two-digit natural number by a two-digit natural number at most, a three-digit natural number by a one-digit natural number at most."	 **In which direction box should Aysen write the result of the multiplication operation?** A) Above B) Right C) Left

The test was supported with other question types, considering the probability that multiple-choice tests could be answered by chance (Atılgan, 2009). In addition, the subjects that students who have disabilities in learning mathematics and who are at risk have disabilities can be revealed with different types of questions. The questions, together with the table of specification, were presented to the experts.

OBTAINING EXPERT OPINIONS AND CONTENT VALIDITY ANALYSIS

In light of the expert opinions, it was determined whether the items were qualified to measure the behavior to be measured, whether they were intelligible, and whether the items were suitable to the developmental characteristics of the students. The created items were evaluated by presenting them to an expert from the fields of primary education, mathematics education, and assessment, together with the expert evaluation form prepared by the researcher. The internal consistency was calculated using the Miles and Huberman formula, in line with the expert opinions. The reliability coefficient obtained by dividing the number of experts who reached a consensus to the number of experts who gave their opinions was calculated as 0.92. In the coding check, which gives internal consistency, the inter-coder (inter-rater) agreement is expected to be above 0.80 (Patton, 2014). Since this value is quite high, it can be argued that the expert evaluation is reliable. Obtaining expert opinions is considered important in ensuring the content validity of the test. Based on the expert evaluations, the test was finalized to include 38 items and was ready for the piloting. After expert opinion, five items were removed, and it did not affect the content validity of the test. Within the scope of the test, there are questions about all the measured gains.

PILOTING

The piloting was carried out in three separate elementary schools in the center of Bayburt in the spring term of the 2020-2021 school year. The piloting application was administered to the students attending the third year by the researcher in four days. It was carried out in two stages as numbers (19 questions) and operations with numbers (19 questions). After the first test was distributed, students were given sufficient time to answer and the students took a break before the second test. As in the first test, students were expected to answer all of the questions in the second test. The minutes of completion of the test were determined for all students who took the test. In order to identify students with mathematics learning disability risk group, a time was determined (40 minutes) by considering the completion time of the majority (mode) test. In addition, there are findings that the processing speed of students with mathematics learning disabilities is slow (Kelly, 2020). Having a time limit on the test can make it easier to identify students with mathematics learning disability risk group. As the schools continued with fewer students in classes (by splitting a regular classroom to reduce size), the tests were administered to half of the class in one day and the other half in one day, in two days, which was repeated for the other classes. The exams were held under the supervision of the researcher. The expert opinions were used for the implementation of the test. The high number of questions and the pandemic necessitated such an action. The mathematics achievement test was administered to 171 students in total. The views on the number of students to be selected for the piloting vary. When there are 30 or more items in the test, it may be sufficient to reach a sample of two or three times the number of items (Seçer, 2018). Thus, the number of students who were to take the test was kept as high as possible. After the pilot study, no changes were made to the items. Since, in the item analysis, the difficulty and discrimination indexes were among the desired values, the items were left as they were.

ITEM ANALYSIS

The item analyses of the test were carried out in accordance with the answers given to the questions in the test. In this sense, the item discrimination index (r) and item difficulty index (p) of each item were determined. First, answer papers belonging to 171 students were scored. Then the answer sheets are sorted from the highest score to the lowest. Later, the most successful and least successful 27% upper (n=46) and lower (n=46) groups were identified. As part of the item analysis, the item discrimination indices were examined first. For each of the questions in the pilot application, those with distinctiveness indices greater than 0.30 and, if any, greater than 0.40 were determined. The item discrimination index, which is expressed as the power to distinguish between students who

know the answer to the item and those who do not, takes a value between -1 and +1. The related literature states that this value should be 0.30 and above (Atılgan, 2009).

When there is more than one item with sufficient discrimination index for a behavior, in the second stage, items with high discrimination index are selected, taking into account the mathematics learning disability risk group students, and items of medium and easy difficulty are selected. The item difficulty index is the rate at which an item is answered correctly or the rate of those who answer the item correctly. It indicates whether the item is an easy or difficult item and takes a value between 0 and +1. It is recommended that this ratio be between 0.20 and 0.80 for achievement tests (Christensen et al., 2014) and that the questions be of medium difficulty (0.40-0.60). In this study, the classification by Hasançebi, Terzi, and Küçük (2020) was used in the item difficulty indices classification. In this sense, the items are classified as follows: 0.29 and below are "difficult"; between 0.30 and 0.49 are "moderate difficulty; between 0.50 and 0.69 are "easy"; and above 0.70 are "very easy".

Considering that students with mathematics learning disabilities have disabilities in performing even simple arithmetic operations, the items with easy difficulty is thought to be effective in determining the students at risk. In fact, those students have difficulty performing basic arithmetic operations and cannot perform simple arithmetic operations (Witzel & Little, 2016). In addition, using a few easy items as the first questions is expected to increase the motivation of the students in taking the test. Based on the item analysis, an achievement test consisting of 21 questions was developed for the natural numbers and operations with natural numbers sub-learning domains. For each acquisition to be measured, more than one question was written. The questions with the most appropriate discrimination and difficulty index were used in the test. To include one question for each gain in the test is considered; therefore, content validity was ensured.

DATA ANALYSIS

In the analysis of the data, SPSS 22 program was used. For each question in the test, the coding was performed so that the correct answer was one (1) and an incorrect answer was zero (0). For all question types in the test, correct ones were coded as one (1), and incorrect ones were coded as zero (0). The total number of questions prepared for the piloting is 38. Therefore, the highest score a student can get from the test is 38, and the lowest score is zero. First of all, the item analyses, and then the reliability analyses were performed by using the SPSS. During the item analysis, the scores the students got from the test were arranged from high score to low score. Then, the lower and upper groups of 27% were formed. Item discrimination and difficulty indexes of the questions were calculated. Finally, the reliability analysis of the test was performed by calculating the KR-20 reliability coefficient and split-half reliability.

FINDINGS

In this section, the findings related to the achievement test developed to measure the success of primary school third-grade students in learning natural numbers and operations with natural numbers and to support the identification of students who are in the risk group for learning disabilities in mathematics are presented. Below, the critical outcomes, item and reliability analyses determined respectively for the validity and reliability of the test are presented in detail.

RESULTS REGARDING THE VALIDITY OF THE TEST

The results on the content and construct validity of the test are presented. First, the data respecting the table of specification for content validity are shared. The results related to the determined critical outcomes, the sub-learning domain to which they belong, and the distribution of these outcomes to the questions are presented in Table 2.

Table 2. *Distribution of Learning Outcomes to Items*

Sub-learning Areas	*Learning Outcomes*	*Item no.*
Natural Numbers	"Reads and writes three-digit natural numbers."	1, 2.1, 2.2
	"Beginning with any number within 1000, it counts forward rhythmically by ones, tens, and hundreds." "Counts forward by sixes, sevens, eights, and nines within 100 rhythmically.	3, 4, 5
	"Determines the digit names of three-digit natural numbers and the digit values of the numbers in their digits."	6, 7
	"Rounds the natural numbers with the three-digits to the nearest ten or hundred."	8.1, 8.2, 9, 10
	"Compares a maximum of five natural numbers less than 1000 and orders them using symbols."	11.1, 11.2, 11.3
	"Expands and forms a pattern of numbers whose difference is constant."	12, 13
	"Comprehend odd and even natural numbers." "Examines the sums of odd and even natural numbers on the model, expresses whether their sum is odd or even."	14, 15
Addition with Natural Numbers	"At most three-digit numbers, he/she does the addition with and without carry." "Solves problems that require addition with natural numbers."	16, 17
	"In doing addition with three natural numbers, changing the order in which numbers are added to each other indicates that it did not change the result."	**18*, 19***
	"In an addition problem, he/she finds the addend that is not given."	20, 21, 22
Subtraction with Natural Numbers	"Performs subtraction that requires decimal and does not require decimal."	23, 24
	"Mentally can subtract two digits of multiples of 10's from two-digit numbers, and two-digits natural numbers of multiples of 10's from three-digits of 100's."	**25*, 26***
	"Solves problems that require addition and subtraction with natural numbers."	27, 28
Multiplication with Natural Numbers	"Explains the fold meaning of multiplication."	**29*, 30***
	"Creates the multiplication table."	31, 32
	"Multiplies a two-digit natural number by a two-digit natural number at most, a three-digit natural number by a one-digit natural number at most."	33, 34
	"Can Use short-cut for multiplication by 10 and 100."	**35*, 36***
	"Solves problems that require two operations, one of which is multiplication."	37, 38
Division with Natural Numbers	"Divides two-digit natural numbers by one-digit natural numbers." "Recognizes the relationship between the divider, the divisor, the quotient, and the remainder in division."	39, 40
	"Can use short-cut to divide a two-digit natural number with the first digit is 0, to a two-digit numbers of 10s."	**41***
	"Solves problems that require two operations, one of which is division."	42, 43

Note: The test, which consisted of 47 items with its sub-items before expert opinion, was reduced to 38 items after expert opinion. Items written in bold and marked with (*) were excluded from the test.

Table 2 shows the key learning outcomes, sub-learning areas and the number of questions prepared for mathematics learning disability risk group students. The critical outcomes were determined in light of the expert opinions. 47 items prepared in line with critical outcomes were prepared for the piloting with 38 items after expert opinions. Experts stated that five gains and nine questions related to these gains could be given through other gains and their questions. Therefore, five gains and nine questions were removed from the test. Thus, the gains and questions marked in

bold were removed from the test. At least two questions were prepared for each learning outcome. Some questions are observed to consist of sub-items. The questions in the sub-items were also considered as a separate question, and analyzed. With the item analyses conducted after the piloting, a total of 21 questions, 11 questions from the natural numbers test and 10 questions from the natural numbers operations test, were included in the original test.

Secondly, both the item discrimination index and item difficulty index were calculated as part of the item analysis. While the item difficulty index takes a value between 0 and 1, if the calculated value is close to zero, the problem can be interpreted as difficult, and if it is close to one, the problem can be interpreted as easy. The item discrimination index can be expressed as the degree to which the item distinguishes students who know the answer from those who do not. The item discrimination index ranges from -1 to +1. As the calculated value approaches zero, the discriminative power of the item of the students in the upper and lower groups is low, and as it approaches one, the discrimination of the students in the upper and lower groups is considered high. Discrimination values higher than 0.40 demonstrate a highly distinctive test. The data on item difficulty index and discrimination indices are presented in Table 3.

Table 3. *Data on Item Difficulty and Discrimination Indexes*

Natural Numbers					*Operations with Natural Numbers*				
Item					*Item*				
Item no.	Difficulty index (p_j)		*Discrimination index (r_{jx})*		*Item no.*	*Difficulty index (p_j)*		*Discrimination index (r_{jx})*	
1	0.77	Very easy	0.45	Very good	16	0.85	Very easy	0.28	Can be used with correction
2.1.	0.69	Easy	0.50	Very good	17	0.82	Very easy	0.26	Can be used with correction
2.2.	0.72	Very easy	0.54	Very good	20	0.79	Very easy	0.36	Can be included in the test
3	0.91	Very easy	0.17	Not included in the test	21	0.79	Very easy	0.41	Very good
4	0.70	Easy	0.58	Very good	22	0.52	Easy	0.82	Very good
5	0.76	Very easy	0.47	Very good	23	0.61	Easy	0.76	Very good
6	0.57	Easy	0.80	Very good	24	0.76	Very easy	0.39	Can be included in the test
7	0.72	Very easy	0.54	Very good	27	0.72	Very easy	0.54	Very good
8.1.	0.53	Easy	0.89	Very good	28	0.63	Easy	0.73	Very good
8.2.	0.50	Easy	0.95	Very good	31	0.64	Easy	0.63	Very good
9	0.61	Easy	0.63	Very good	32	0.67	Easy	0.65	Very good
10	0.69	Easy	0.56	Very good	33	0.58	Easy	0.82	Very good
11.1.	0.70	Easy	0.50	Very good	34	0.65	Easy	0.65	Very good
11.2.	0.69	Easy	0.47	Very good	37	0.54	Easy	0.86	Very good
11.3.	0.36	Medium difficulty	0.65	Very good	38	0.58	Easy	0.78	Very good
12	0.61	Easy	0.71	Very good	39	0.56	Easy	0.69	Very good
13	0.67	Easy	0.60	Very good	40	0.58	Easy	0.82	Very good
14	0.47	Medium difficulty	0.82	Very good	42	0.58	Easy	0.73	Very good
15	0.60	Easy	0.73	Very good	43	0.61	Easy	0.76	Very good

Looking at Table 3, the distribution of the item difficulty and discrimination indexes related to the numbers and operations with numbers test and the questions included in the main test can be observed. When the item discrimination indexes are examined, it can be stated that the discrimination of the questions is generally very good. In addition, there are 2 items that can be included in the test with correction, 2 items that can be included in the test with no corrections or minor corrections, and 1 item that should not be included in the test. The distinctiveness index of the test ranges from 0.17 to 0.95. While the average item discrimination index of the numbers test was 0.60, the average of the operations with numbers test was 0.62.

When the item difficulty indexes of the questions in the test are examined, the questions are generally observed to consist of easy (f=27) and very easy (f=11) questions. Item difficulty indexes in achievement tests are expected to be around 0.50. The item difficulty index of the test ranges from 0.26 to 0.91. The mean item difficulty was calculated as 0.65 in both the numbers test and the operations with numbers test. Considering these calculations and ideal values, the questions that were easy and highly distinctive were included in the test for students in the risk group for learning disabilities in mathematics.

Considering the characteristics of students in the risk group for learning disabilities in mathematics, the questions to be included in the test were determined according to the item analysis. Then, the test statistics of the items included in the test were calculated. The test statistics of the items selected for the final test are presented in Table 4.

Table 4. *Item Statistics for Items Included in the Final Test*

Pilot Test	*Final Test*	*Difficulty Index*	*Item Variance*	*Item Standard Deviation*	*Discrimination Index*	*Item Reliability Coefficient*
Item no.	*Item no.*	(p_j)	$s_j^2 = p_j.q_j$	$s_j = \sqrt{p_j.q_j}$	(r_{jx})	$r_j = s_j.r_{jx}$
2.1.	1	0.70	0.21	0.45	0.50	0.22
2.2.	2	0.72	0.20	0.44	0.54	0.23
4	3	0.70	0.21	0.45	0.58	0.26
6	4	0.57	0.24	0.48	0.80	0.38
8.1.	5	0.53	0.24	0.48	0.89	0.42
8.2.	6	0.50	0.25	0.50	0.95	0.47
11.1.	7	0.70	0.21	0.45	0.50	0.22
11.2.	8	0.69	0.21	0.45	0.47	0.21
11.3.	9	0.36	0.23	0.47	0.65	0.30
12	10	0.61	0.23	0.47	0.71	0.33
15	11	0.60	0.24	0.48	0.73	0.35
17	12	0.82	0.14	0.37	0.26	0.09
20	13	0.79	0.16	0.40	0.36	0.14
22	14	0.52	0.24	0.48	0.82	0.39
23	15	0.61	0.23	0.47	0.76	0.35
27	16	0.72	0.20	0.44	0.54	0.23
32	17	0.67	0.22	0.46	0.65	0.29
34	18	0.65	0.22	0.46	0.65	0.29
37	19	0.54	0.24	0.48	0.86	0.41
39	20	0.56	0.24	0.48	0.69	0.33
42	21	0.58	0.24	0.48	0.73	0.35
Total		13.14	4.60	9.64	13.64	6.26

When Table 4 is examined, the item statistics of each item included in the test are seen. When the data of the item difficulty index, which shows the difficulty or ease of the problem, are examined, it can be seen that it ranges between 0.36 and 0.82, and is close to medium difficulty in general. The average item difficulty index of the items selected for the main test was calculated as 0.62. The items are expected to distinguish between students who know the answer and those who do not know it in terms of the construct measured. The discrimination values of the items selected for the test are observed to vary between 0.26 and 0.95. The mean item discrimination value was calculated as 0.64.

The variance and standard deviation values calculated depending on the item difficulty index can be expressed as the power to distinguish between individuals in terms of the construct measured. Items with large variance and standard deviation values were selected for the test to distinguish students in the risk group for learning disabilities in mathematics from their peers with normal development in terms of the measured outcome. In other words, relatively easy items with an item difficulty value between 0.40 and 0.70 were preferred. It is observed that the item variance values vary between 0.14 and 0.24, and the total variance value is 4.60. The standard deviation values are between 0.37 and 0.50. Item reliability coefficient calculated according to item discrimination and standard deviation values is expected to be high. The higher the item reliability, the higher the reliability of the test. The reliability coefficients of the items vary between 0.09 and 0.47.

RESULTS REGARDING THE RELIABILITY OF THE TEST

The reliability of the measurement tool is obtained by calculating the consistency between the scores obtained in different time periods on the same test and the consistency between the answers received (Büyüköztürk, 2015), and thus, the reliability coefficient, also known as the correlation coefficient, is calculated. The correlation coefficient, which provides knowledge about the degree and direction of the relationship between two variables, takes values between -1 and +1. The desired value for the reliability coefficient is positive and quite high (Özçelik, 2013). Cronbach's Alpha (α) and Kuder Richardson-20 (KR-20) methods are frequently used to calculate the internal consistency coefficient between test scores (Turgut & Baykul, 2015). The KR-20 method is used when the test items consist of two options as “yes-no” and “true-false”. KR-20 was calculated as the reliability coefficient because the difficulty levels of the questions in the test showed a heterogeneous distribution and were coded with two options (true (1) – false (0)). The fact that the calculated KR-20 internal consistency coefficient is above 0.70 indicates that the measurement tool is reliable (Büyüköztürk, 2015). The reliability coefficient for the test (KR-20) was calculated as 0.93. If the reliability coefficient obtained from the measurement tool is between 0.60 and 0.80, the measurement tool can be interpreted as reliable, and if it is between 0.80 and 1.0. the measurement tool is highly reliable (Kayış, 2018). Considering the calculated reliability coefficient, it can be stated that the developed SIMBAT is a highly reliable measurement tool.

In addition, the split-half reliability of the test was calculated. The consistency between test scores is revealed with the reliability of the two halves, also known as split-half (Büyüköztürk, 2015). The reliability of the test is calculated by the correlation coefficient between the two halves. The Spearman-Brown coefficient is presented as the reliability coefficient (Kayış, 2018). The test was divided into two halves and split-half reliability was calculated. The internal consistency coefficient (KR-20) of the test and the split-half reliability analysis are presented in Table 5.

Table 5. *Reliability Analysis of the Test*

Reliability Statistics			
KR-20 (Internal consistency coefficient)			0.93
	First Half	Value	.899
		Items (N)	19[a]
	Second Half	Value	.895
		Items (N)	19[b]
	Total Items (N)		38
Correlation Between Forms			.757
Spearman-Brown Coefficient			.862

a. Items: 1, 2.1, 2.2, 3, 4, 5, 6, 7, 8.1, 8.2, 9, 10, 11.1, 11.2, 11.3, 12, 13, 14, 15.

b. Items : 16, 17, 20, 21, 22, 23, 24, 27, 28, 31, 32, 33, 34, 37, 38, 39, 40, 42, 43.

In Table 5, both the KR-20 internal consistency coefficient and the correlation coefficient values for the two halves are presented. The KR-20 internal consistency coefficient was calculated as 0.93. When the reliability analysis results of the two halves were examined, the correlation coefficient between the forms was calculated as 0.75 and the Spearman-Brown Coefficient as 0.86. The correlation coefficient between forms indicates that the forms belonging to the two halves of the test are compatible. Therefore, it can be stated that the reliability coefficient is high and the test is quite reliable. As a result of the reliability analysis, both the KR-20 internal consistency coefficient and the correlation coefficients related to the split-half reliability show that the test is very reliable.

DISCUSSION, CONCLUSION AND IMPLICATIONS

In this study, an achievement test was developed that can be used to measure the success of primary school third grade students in the natural numbers and operations with natural numbers learning domain, and to determine the students in the risk group for learning disabilities in mathematics for the stated domains. The validity and reliability study of the developed achievement test was carried out by taking into account the characteristics of students at risk for math learning and the critical outcomes they had difficulty with. As a result, it was determined that the numbers and operations mathematics achievement test (SIMBAT) is a reliable and valid measurement tool. By examining the content and construct validity of the test, it was concluded that the test is valid. In addition, based on the KR-20 and split-half reliability calculations, it was concluded that the test is reliable. The prepared table of specifications, the item analyses performed, the calculated item statistics, the calculated internal consistency coefficient and the split-half reliability reveal that the test is valid and reliable.

SIMBAT was developed by taking into account the natural numbers and operations with natural numbers learning outcomes in the third grade primary school mathematics course. The developed test is an easy-to-apply and easy-to-grade test that can be used by teachers and researchers to identify and support students in the risk group for learning disabilities in mathematics. Early detection of mathematics learning disabilities and providing necessary support education are important to ensure that students at risk of having disabilities in learning mathematics are not left behind and continue their education (Kelly, 2020; Nelson & Powell, 2018). Considering that students in the risk group for learning disabilities in mathematics have problems in basic arithmetic skills (Butterworth & Yeo, 2004; Kelly, 2020), first of all, their learning disabilities for natural numbers and operations with natural numbers can be identified and addressed. In addition, considering that the learning domain of numbers and operations is the basis for other domains, students who have disabilities should be supported in the domain of numbers and operations learning.

It was determined that the numbers and operations mathematics achievement test (SIMBAT) is a reliable and valid achievement test that can be used to identify students in the risk group for learning disabilities in mathematics. Standardized tests can be used to identify students in the risk group for learning disabilities in mathematics, but they are not sufficient on their own (Kelly, 2020; Khalik, 2014; Olkun, 2015). Normally developing students may also score low on basic arithmetic skills (Butterworth, 2016). Therefore, the scores obtained on the achievement test alone are not sufficient to determine mathematics learning disabilities. Academic success of students cannot be measured and evaluated using a single method (Ministry of National Education, 2018). In the evaluation of students with learning disabilities, formal assessment tools should be combined with informal assessment tools, and thus, multiple tools should be used (Kelly, 2020). Because students with learning disabilities show different characteristics, they are a difficult group to diagnose. The research literature confirms that a detailed and accurate diagnosis is a tool used for an effective instructional intervention (Ashlock, 2015).

By screening large-scale student groups with standardized achievement tests, students who fail and need comprehensive support are identified (Kelly, 2020). Students can be determined by taking expert opinions on the results of the administered standard achievement test and determining a standard with statistical calculations. Students at risk of learning disabilities in mathematics can be identified through the cut-off scores determined. The related literature reports that standard-setting studies are carried out either in test-centered or student-centered way. In the test-centered method, experts determine the level that corresponds to a performance standard by reviewing test items. In the student-centered method, some statistical calculations (median, arithmetic mean, regression) are performed, and expert opinions are taken into account. In the current study, a cut-off score was created by using the test-centered approach and taking expert opinions in accordance with the purpose and context. The students in the lower 25% are at risk of learning disabilities in mathematics. Parallel findings have been reported in different other research (Lewis & Fisher, 2016; Dennis et al., 2015). In addition, the rate of students with mathematics learning disabilities among all students has been reported to vary between 3% and 8% (Geary, 2017). In studies conducted to determine the prevalence of mathematics learning disability in different countries, this rate varies between 6% and 14% (Mutlu, 2020). The result found in the current study is similar to the studies conducted to identify students at risk. In addition, considering that formal evaluation will be supported by informal evaluation, the number of students to be included in the formal evaluation can be kept large. Also, students with normal development can also get low scores in achievement tests. Therefore, keeping the cut-off score lower can provide an accurate identification of students at risk of learning disabilities in mathematics. Since different cut-off points are used in different studies, a standard can be determined in line with the opinions of experts and teachers depending on the research purpose.

The third grade is considered as the critical year for students in the risk group for learning disabilities in mathematics (Fletcher et al., 2006) because arithmetic skills become more complex for students in this period. Identifying the disabilities experienced by third graders forms the basis for the support activities to be carried out. With the developed mathematics achievement test, it will be possible to identify the subjects that students have difficulty with and to carry out necessary support activities. The developed SIMBAT can be used by researchers to identify students in the risk group for learning disabilities in mathematics as participants, as well as for follow-up after effective instructional interventions. Furthermore, the developed mathematics achievement test can be given to a higher grade to identify students at risk who fall behind. In addition, teachers play an active role in monitoring and evaluating students' progress and the effectiveness of teaching (Kelly, 2020). It can also be used by primary school teachers in the monitoring and evaluation of third-grade students. By monitoring and evaluation, the disabilities experienced by these students can be determined and the necessary support activities can be carried out. Considering the results of the research, the following suggestions are made to researchers and practitioners.

SIMBAT is a standard achievement test that can be used in the evaluation of third-grade students, which includes only the outcomes of the third grade of primary school. Given the importance of early diagnosis, a test can be developed that can be used in the evaluation of all primary school students. This study is limited to 171 students in three primary schools located in the center of Bayburt. For more generalizable results, a similar study can be conducted by including a higher number of students from other regions and schools. By using the test (SIMBAT), the relationship between the academic achievement of students at risk of learning disabilities in mathematics and various variables can be examined.

Primary school teachers can make a multiple assessment by using informal assessment tools (in-class assessment) together with standard achievement tests while identifying students at risk of learning disabilities in mathematics. By using SIMBAT to screen students with a risk of learning disabilities in mathematics, effective instructional interventions can be developed especially for the subjects they experience difficulty with.

AUTHOR CONTRIBUTION

First author has been involved in drafting the manuscript, and have made substantial contributions to conception and design, or acquisition of data, or analysis and interpretation of data. The second author has been involved in drafting the manuscript or revising it critically for important intellectual content. He was also involved in the process of analyzing and interpreting the data.

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Research Article

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Effectiveness of Augmented Reality-Based Applications on Liquid Measurement Theme in Mathematics Course: An Experimental Study

Azmi Türkan, Dr., Siirt University, azmiturkan@gmail.com
0000-0003-2546-5122

Hakan Çetin, Dr., Siirt University, hakancetin90@gmail.com
0000-0002-3740-5445

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Abstract

This research examines augmented reality-based applications prepared for primary school third grade students concerning academic achievement and anxiety in a mathematics course. A quasi-experimental design, one of the experimental research designs, with a pretest-posttest control group was preferred in this study. The research group of the research consisted of 26 students attending grade 3 in a school in Siirt during the 2020-2021 academic year. Participants were determined as two different groups, 13 of which were experimental and 13 of which were control groups. In the research, AR-based applications were designed for various gains aimed at the "Liquid measurement" theme in the mathematics course, and these applications were presented to the students through the tablet. These applications were conducted during five weeks, including pre and post-test. Research data were collected through data sets obtained from achievement test and anxiety scale that were carried out before and after the application. Findings of the research indicate that there is a significant difference between the experimental and control groups in favor of the experimental group. It was found that augmented reality-based applications increased the academic achievement of the experimental group students and reduced their anxiety levels concerning the mathematics lesson.

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INTRODUCTION

Mathematics is one of the important branches of science that contributes to the development of science and technology. Mathematics is not just dealing with daily life problems but also helps individuals develop their creativity and imagination; in addition, strengthening their intuition, making them think logically while generating new ideas, and gaining the ability to solve challenging problems are some of the benefits that mathematics provides to individuals (Kusmaryono, 2014; Khan, 2015). Starting from primary school age, students need to master some basic subjects in mathematics, which have a significant role in the development and transformation of civilizations. Understanding these essential topics will help individuals understand higher-level mathematical concepts that they will encounter in the future. For this reason, mathematics education is underlined in the curriculum and education agenda, as it helps further learning and is essential in daily life (Milton, et al., 2007; Kelanang & Zakaria, 2012; Kusmaryono, 2014).

Students are terrified of mathematics, which has such an important place in daily and academic life, and this fear drags them to mistakes. One of the biggest reasons for this fear is that they believe in some stereotypes from the past. Some of these stereotypes are such as that mathematics is very difficult by its nature and that it is not possible to have information about all of it even if desired, that success in mathematics can be achieved with hereditary abilities rather than effort, that mathematics is a field specific to men and that it is not possible for women to be successful even if they wanted to be (Ernest, 2005). These stereotypes acquired through hidden educational programs negatively affect students' attitudes towards mathematics, reduce their academic achievement, and cause them to feel anxious about mathematics (Yenilmez, et al., 2004; Ernest, 2005).

Mathematics anxiety is generally defined as a feeling of tension, worry, and fear related to math performance (Lyons & Beilock, 2012). The mathematics performance of individuals with math anxiety is poor due to their anxiety and fear. (Mutlu & Söylemez, 2018). Maloney & Beilock (2012) state that a certain amount of anxiety and stress in primary education can increase performance, and an increase in this amount will negatively affect performance. It is also stated that this anxiety, which starts in primary school years, increases parallel with the following educational levels (Jackson & Leffingwell, 1999; Cited in Istikomah & Wahyuni, 2018). Studies in the literature indicate that many elementary school students are suffering from mathematics anxiety (Taşdemir, 2015; Tatlı, et al., 2016; Mutlu et al., 2017), and this situation indirectly affects academic achievement negatively (İlhan & Sünkür, 2013; Zhang, Zhao, & Kong, 2019).

Considering the contributions it provides to individuals, in order to raise students who are successful in mathematics, who have a positive attitude towards the course and are free from anxiety, it is necessary to take measures to eliminate the existing judgments about this subject area and to teach the courses using more entertaining methods that will keep students away from anxiety. In order to reduce students' math anxiety, it is necessary to eliminate these problems of teachers who have math anxiety. It is stated that teachers with mathematics anxiety only teach the courses by adhering to the course materials, and therefore they cause students to acquire only basic skills and keep discussion activities at a very superficial level. In addition, it was stated that these teachers had fewer skills in applying different strategies in mathematics education (Chopin, 2011; Swars, et al., 2007). It should be noted that meaningful learning experiences can be achieved in fun environments where creativity allows students to participate actively (Mulwa, 2015).

It is thought that one of the ways to make students stay away from this stress and anxiety and become more willing to the mathematics course is to benefit from technological resources. Some studies in the literature confirm these assumptions (Sun & Pyzdrowski, 2009; Barry, 2017; Chen, 2019). However, when the methods adopted by teachers in teaching mathematics are examined, it is evident that technology is not much involved in this process. Aktepe, et al., (2015) stated in their research that the methods mostly used by teachers in mathematics teaching are direct instruction technique,

question-answer, and problem-solving methods, while the least used methods are drama, group teaching, and project making. Topçu, et al., (2014) stated in their study with pre-service teachers that the use of technology-based educational games would be beneficial in teaching mathematics, but added that they did not feel adequately equipped for the application.

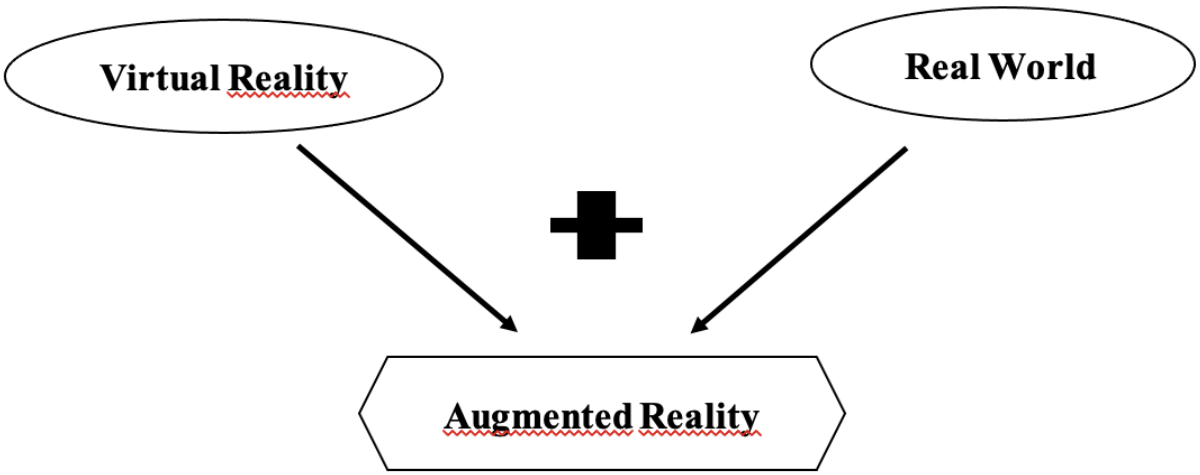
The use of technology-based activities that can excite students more in the abstract and difficult to understand mathematics subjects increases academic success and facilitates mathematics teaching (Cheung & Slavin, 2013). Significantly, the fact that unique contents for each student can be design by using technology and that the program prepared afterward is determined by considering the student data obtained in this process helps students learn mathematics at their own pace. In order to realize these advantages and increase students' mathematics achievement, many schools have started to allocate a large amount of their spending to educational technologies (Kitchen & Beck, 2016). Due to the fact that inclusion of technology into learning environments brings many positive results, this study examines the effect of AR-based applications on the anxiety and achievements of third grade students regarding mathematics courses.

LITERATURE REVIEW

AUGMENTED REALITY

Augmented reality (AR) is defined as transferring virtual objects enriched with visuals created in computer environments to the real-world environment (Chen et al., 2019). Intelligent imaging technology, 3D recording technology and intelligent interaction technology are defined as the core technologies that form the source of AR (Chen et al., 2019). In order for an application to be AR-based, it must provide three essential features. These are; bringing together natural and virtual objects in real environments, being interactive and real-time applications, and harmonizing virtual and real objects (Azuma et al, 2001). Although AR and virtual reality (VR) seem like similar concepts, they have different structures. While the difference between actual and simulated universes can be explained to individuals in AR environments, such a thing is impossible in VR environments (Shoaib & Jaffry, 2015). VR applications are about entering an artificial environment created in a computer environment rather than in the natural universe, which helps individuals gain some psychological and sensory experiences (Bohil, et al., 2009). The nature of the relationship between AR and VR is presented below with a simple illustration.

Figure 1. *The simple relationship between AR and VR*



(Adapted from Shoaib & Jaffry, 2015).

In Figure 1, it is evident that the virtual and real universe come together to form the AR environment.

USE OF AUGMENTED REALITY IN EDUCATION

Today, technological tools and applications have begun to be used in medicine and engineering, from scientific research to art activities. Augmented reality-based applications have also taken their place in this process, which is constantly in rapid change, and has begun to be used in many areas (Yılmaz & Göktaş, 2018; Chen, 2019; Kapur, 2019). One of the areas where augmented reality technologies are used is the field of education. Yuen, Yaoyuneyong, and Johnson (2011) stated that five of the most critical augmented reality-based technologies used in educational applications are AR-based books, AR games, discovery-based learning, object modeling, and skills training. Among these technologies, it is stated that AR-based books and games have a structure that excites students and educators and offers students interactive experiences (Kraut & Jeknic, 2015; Sural, 2018). It is stated that the discovery-based learning process will help students to see historical places as if they are reasoned, thus strengthen their knowledge of history (Efstathiou, et al. , 2017). In terms of skill exercises, AR technologies allow individuals to easily do experiments that are unlikely to be done in real life or lead to high costs, even if they can be done without much cost. Students argue that it is difficult to understand because there are too many abstract concepts, especially in courses such as science, and that visualization should be increased to achieve a deeper understanding. On the other hand, the cost of applications and experiments will be reduced (Saidin, et al., 2015). In object modeling, it is thought that individuals can transfer any object that they are curious about to the AR environment, it enables them to have detailed information about the object's physical properties and interact with the object. This convenience provided by AR technologies can allow individuals to understand the concepts they encounter more efficiently, especially in courses where abstract concepts such as science and mathematics are abundant. Research shows that AR-based applications are effective methods for concretizing abstract concepts (Sayed, et al., 2011; Özdemir, 2017; Tulgar, 2019). When the studies in geometry are examined, it is observed that the students who interact with the objects created in the virtual environment through AR-based applications are more encouraged about the course (Liarokapis, et al., 2002).

MATHEMATICS ANXIETY

Almost all people give different emotional reactions to everyday situations, such as fear or anxiety, in the normal course of life. However, in some people, these reactions can reach dimensions that are more severe, do not decrease over time, and negatively affect daily life. This situation is expressed as anxiety (Bamber & Schneider, 2016; The National Institute of Mental Health, 2016). The concept of anxiety is generally defined as the reaction of people to any threat or danger. When people feel anxiety or perceive any danger, they have thoughts about harm and this causes individuals to be physiologically or psychologically alarmed (Moss, 2002). Anxiety disorder is expressed as the most common or frequently occurring mental disorder (Adwas et al., 2019). Individuals can experience anxiety about many things. Especially in the early stages of school age, individuals may experience a general anxiety about lessons that are difficult to understand. Mathematics can be defined one of these courses (Tooke & Leonard, 1998).

Mathematics anxiety is a problem that can negatively affect children's academic achievement and their prospects for employment in the future (Ramirez et al., 2016). Individuals whose anxiety levels increase when they encounter mathematical stimuli are in a more disadvantageous situation compared to other individuals in the exams they take, and this negatively affects their performance in the exam (Lebens et al., 2011). The most dominant feature of individuals with math anxiety is to avoid math. Individuals exhibiting avoidance behavior in situations related to mathematics may have fewer opportunities to improve their mathematics skills. This attitude of individuals causes them to enter a vicious circle at the point of experiencing difficulties in mathematics. In order to eliminate this vicious circle, it is necessary to take measures to prevent the occurrence of math anxiety in individuals at an early age (Ashcraft & Moore, 2009; Dowker et al., 2016).

MATHEMATICS ANXIETY AND TECHNOLOGY

Mathematics anxiety is defined as panic, feeling helpless, paralyzed and not feeling mentally ready when individuals need to solve any mathematical problem (Tobias & Weissbrod, 1980; Cited in Mitchell, 2018). The basic characteristics of individuals' math anxiety; avoidance, lack of perseverance, rigidity and resistance to change (Kulkin, 2016).

Mathematics anxiety, which is defined as an emotional factor in the related literature, is stated as one of the biggest obstacles to students' liking mathematics (Shen, 2009). This makes it necessary to see math anxiety as a problem to be overcome. Overcoming this anxiety is seen as an important recipe for students to be successful in mathematics and to pave the way for their development (Bolaer, 2008). When some of the studies conducted to eliminate mathematics anxiety are examined, it is seen that many researchers suggest different methods (Burton, 1984; Stuart, 2000; Geist, 2010; Hellum-Alexander, 2010; Alkan, 2013). Technology-based education is also one of the methods that helps to eliminate math anxiety (Sun & Pyzdrowski, 2009; Istikomah & Sakinah, 2013; Soewardini et al., 2019; Wangid et al., 2020).

THE SIGNIFICANCE AND PURPOSE OF THIS STUDY

With the constant advancement of technology, some changes occur in learning environments. The primary purpose of learning environments in our age is to enable individuals to access information and to adapt to technological developments that will enable them to use this information (Seferoğlu, 2009). It is stated that augmented reality-based environments offer enriched learning environments that will facilitate access to information for students (Dunleavy & Dede, 2014). From this point of view, it is assumed that using AR-based technologies in educational environments will provide positive results in gaining many skills. Various studies in the literature indicate that AR-based applications increase the academic success and motivation of individuals (Diegmann, et al., 2015; Cheng & Tsai, 2016; Tobar-Munoz, et al., 2017; Sırakaya & Çakmak, 2018; Wahyu, et al., 2020; Danaei, et al., 2020) and provide more interactive learning environments (Cheng, 2017; Arvanitaki & Zaranis, 2020).

It is stated that especially in subject areas such as mathematics, which contain a lot of abstract concepts and where visualization is thought to be more than other subject areas, it increases students' interest and understanding levels provides more successful results compared to traditional methods (Demitriadou, et al., 2019; Arvanitaki & Zaranis, 2020) and increases spatial thinking skills and mathematics achievement (Amir, et al., 2020). The thought that mathematics anxiety would not be high at primary school level has led to limited research in this area (Mutlu & Söylemez, 2018). However, it is thought that identifying and eliminating the problems that students have with mathematics at the primary school level will contribute to the training of successful students with positive attitude towards mathematics in the future.

In the light of the above information, it is seen that AR supports concretizing the abstract concepts in the mathematics course and gaining a positive attitude towards mathematics. However, it has been observed that the number of researches on AR at primary school 3rd grade level is low in Turkey. With this study, it is aimed to fill this gap in the literature.

Since it is known that many students have mathematics anxiety and therefore experience various problems (Harari, et al., 2013), this study aims to determine what kind of effects augmented reality-based applications have on primary school third grade students' math anxiety and academic achievement. For this purpose, answers to the following questions were sought:

1. Do AR applications affect the math course success of third grade students?
2. Do AR applications affect third grade students’ math anxiety level?

METHOD

RESEARCH DESIGN

An experimental research design was conducted in this study to examine the effects of augmented reality-based applications on math anxiety and academic achievement levels of third grade students. In experimental designs, experimental and control groups are determined, intervention is applied to the experimental group, the lesson is routinely taught with the control group and the outputs are compared (Creswell, 2012; Karasar, 2007; Ocak, 2019). The purpose of these procedures is to identify the effect of the intervention program on the process (Punch, 2013). Experimental research is one of the most widespread methods in educational research in terms of presenting new information to the literature (Cook et al., 2008). In this study, a quasi-experimental design, one of the experimental research designs, with a pretest-posttest control group was preferred. In educational researches where new designs are applied, school administrators often do not allow the determination of random groups (Büyüköztürk et al., 2011).

Table 1. *Experimental design steps*

Group	*Pre-test*	*Intervention*	*Post-test*
Experiment	Math Achievement Test Math Anxiety Scale	Math syllabus of augmented reality-based activities	Math Achievement Test Math Anxiety Scale
Control	Math Achievement Test Math Anxiety Scale	Routine syllabus	Math Achievement Test Math Anxiety Scale

SAMPLE

The research participant group consists of 26 students attending the third grade of a primary school in the Southeastern Anatolia Region. Participants were determined as two different groups, 13 of which were experimental and 13 of which were control groups. The distribution of the participants by gender in the context of groups is presented on Table 2.

Table 2. *Research participant group*

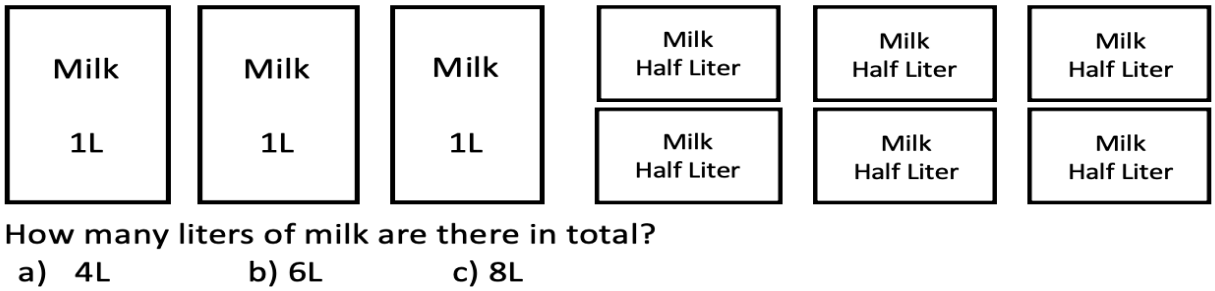
Group	*Female*	*Male*	*Total*
Experiment	7	6	13
Control	6	7	13
Total	13	13	26

The fact that schools were usually closed during the pandemic made the data collection process very difficult. Such difficulties hinder the efficient progress of research. For this reason, the convenience sampling method was used to obtain qualified data within the scope of the research. The convenience sampling method is a preferred method for obtaining economic, practical, and fast data (Yıldırım & Şimşek, 2011). The research was carried out with primary school third grade students because AR-based applications were made using tablets. During the application, the tablets were left under the control of the students. In this process, it was thought that holding the tablet throughout the application process might cause fatigue in lower class levels. Such a decision was taken because it was thought that the tablet camera had to see the data matrix in the whole process. Otherwise, the application would disappear from the screen, cause distraction on the students, and indirectly affect the learning process. Another reason for studying with the 3rd grade in the research is that the attention span of the students is important in such applications. (John and Flavell, 1985; Cited in Cicekci and Sadik, 2019). 3rd grade students were preferred as it was thought that attention would be easily distracted at lower grade levels (Ozdamli & Karagozlu, 2018; Karagozlu, 2021).

DATA COLLECTION

Mathematic course success of the participants and their anxiety concerning the mathematics course was examined in this study. In order to identify the mathematics course success of the participants, an achievement test was developed under the guidance of the course teacher, mathematics field specialist, classroom teaching field specialist, measurement and evaluation field specialist, and the table of specifications for the course. The mathematics achievement test consisted of 10 items obtained from the acquisitions determined within the scope of the "Liquid Measurement" theme. While the highest score that can be obtained from this test was "10", the lowest score is "0". All of the items related to the mathematics achievement test consisted of three options, one of which was correct answer and two distractors. In Figure 2, there is a sample question about the mathematics achievement test. The KR-20 value for the achievement test was determined as ,852.

Figure 2. *An example question of the achievement test*



"Mathematics Anxiety Scale," developed by Mutlu and Söylemez (2018), was used to identify the anxiety level of the participants concerning the mathematics course. The mathematics anxiety scale shows a structure with three factors in total. These factors are "Avoidance-Worrying", "Positive Emotion Towards Mathematics", and "Attitude Towards Mathematics". The scale consists of 13 items in total. In addition, the scale is in a 3-point Likert type consisting of "disagree", "undecided" and "agree" antecedents. The item load values of the scale are between .513 and .765. The general Cronbach's Alpha reliability value of the scale is .747. Confirmatory factor analysis indices for the scale, X^2/sd=3.74; RMSEA=.08; RMR=.04; GFI=.92; CFI=.93; NFI=.90; NNFI=.91 and AGFI=.89.

RESEARCH EXPERIMENTAL PROCESS

The experimental process of the research consists of four steps. These four steps are; preparation, development of program, application, and evaluation.

PREPARATION

At this stage of the research, a needs analysis was conducted so as to determine the general expectations of the teachers and students from the mathematics course and to identify what should be done to meet these expectations. The needs analysis process was carried out in an environment where teachers and students were together. At the stage of determining the needs of the students, teachers stated that the mathematics courses are very abstract, and the connection with daily life is generally not established. Teachers also stated that such situations estrange students from mathematics, and this causes them to experience anxiety in mathematics courses. They stated that this situation had reached further dimensions during the pandemic process. It would be beneficial to give abstract courses, such as mathematics, that are connected with daily life by supporting students in eliminating this negativity.

DEVELOPMENT OF THE PROGRAM

As a result of the students' suggestions and the needs analysis, it was determined that it would be appropriate to design technology-supported AR-based mathematics courses to eliminate the anxiety experienced by the students in mathematics courses and the low success that results from this anxiety. In this process, AR-based activities were prepared for the achievements in the theme of "Liquid Measurement" using the Unity program. These prepared activities were transferred to the tablet via the Xcode program, and the activities were made to become three-dimensional by using data matrix papers. Considering the course acquisitions, a five-week math syllabus was designed for the determined learning outcomes of the "Liquid measurement" theme in the mathematics course. During the design process of the courses, information was constantly exchanged with a program development specialist, a classroom teaching specialist, a mathematics education specialist, and an expert with research experience in AR.

IMPLEMENTATION

Before applying the developed five-week mathematics program to the experimental group, an orientation course covering information about the introduction, course content, application pre-tests, and augmented reality was given. After the orientation week, a four-week program including students' views on the practices was implemented. A tablet was used for students in the applications process. Meanwhile, the teaching of the courses with the control group continued student-centered but without benefiting from technological educational material. No augmented reality application was used for the control group students. Information on the details of the five-week program for the experimental group is presented in Table 3.

Table 3. *The details of the five-week program*

Weeks	*Theme*	*Acquisition*	*Activities*	*Product*
1.week	Pre-test, the introduction of augmented reality-based applications,			
2.week	Liquid Measurement	Makes measurements in liters or half-liter units by explaining the necessity of standard liquid measuring tools and units.	Displaying tools such as measuring glass in augmenter reality environment	Able to give various examples of liquid measurement tools used in daily life
3.week	Liquid Measurement	Estimates the amount of liquid in a container in liters and half-liter units and checks the accuracy of the estimation by measuring	AR-based activities related to liters and half-liters	Able to explain how many half liters a 5 liters bucket consist of
4.week	Liquid Measurement	Solves problems with liters	Liter-related problem-solving in AR-based environments	Developed visualization skills can help in problem-solving process
5.week	Post-test, evaluation of the applications by students,			

Below are some examples of AR-based applications designed to examine the effects on academic achievement and anxiety during the implementation process.

Figure 3. *AR example*

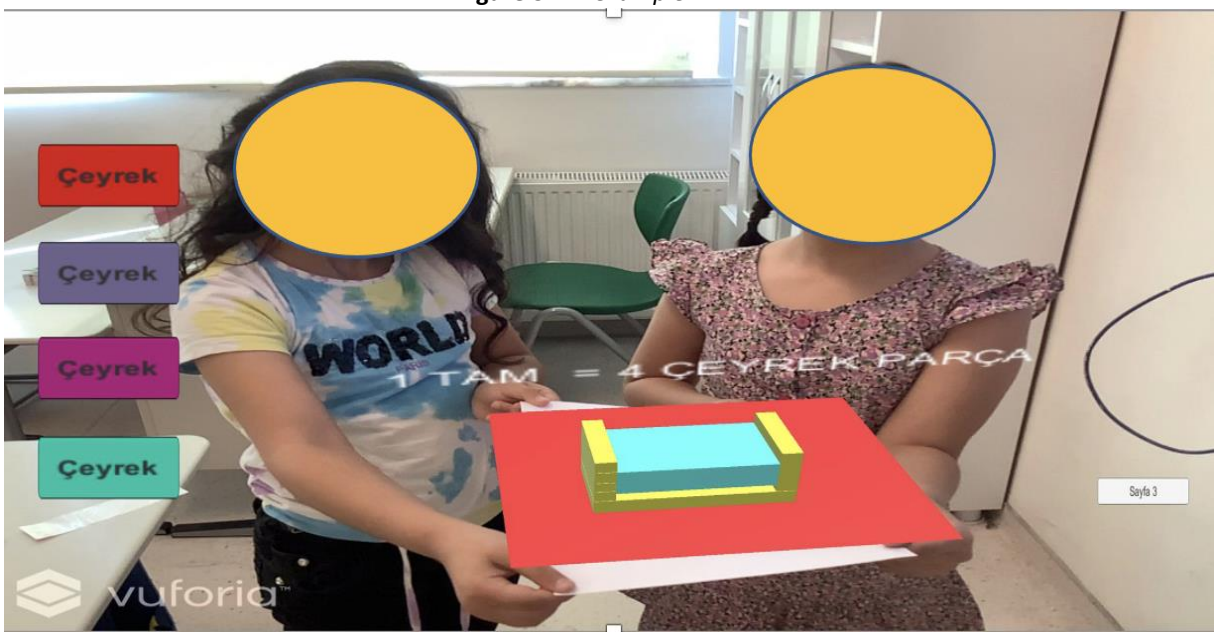


Figure 3 shows an augmented reality-based application example prepared to explain that the four quadrants form a whole.

Figure 4. *AR example*

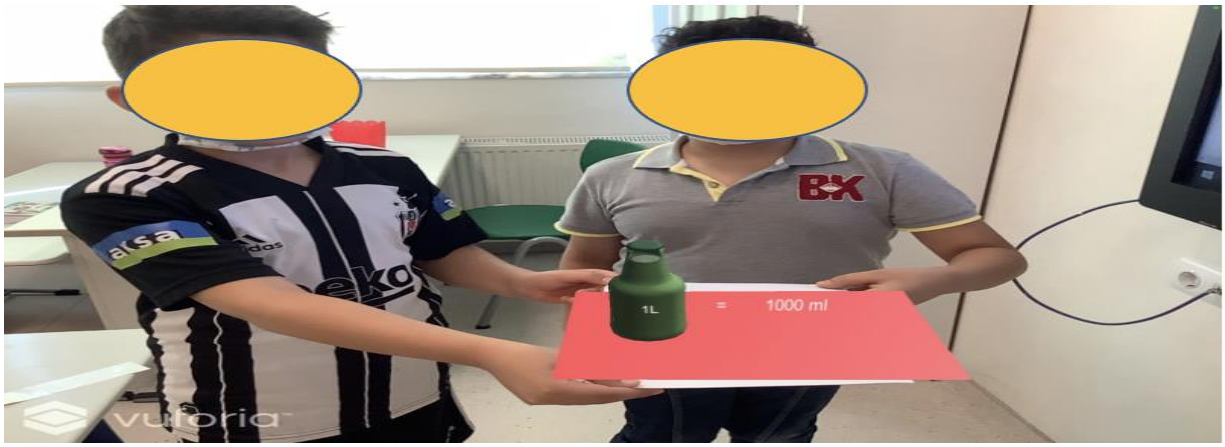


Figure 4 shows an augmented reality-based application designed to show that a liter and 1000 milliliters have the same measure.

Figure 5. *AR example*

Figure 5 shows the augmented reality-based application prepared to see the difference between the measurement tools used to measure liquids and other measurement tools.

Figure 6. *AR example*

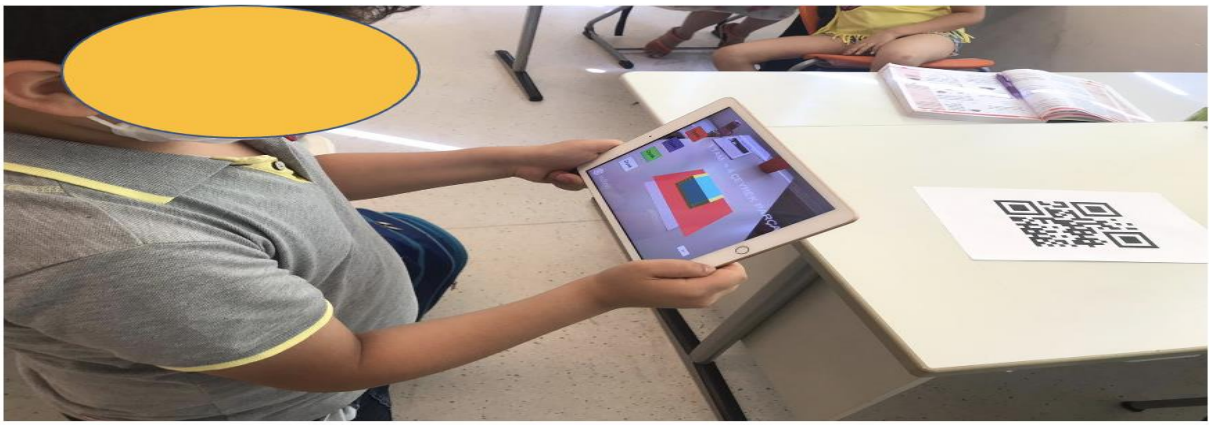


Figure 6 also shows augmented reality-based application examples prepared for the concepts of whole, half and quarter.

EVALUATION

At this stage, after the five-week program in which the application was carried out, the opinions of the students about the augmented reality-based mathematics courses were taken. In addition, within the scope of this course, post-test applications were included. Pre-test and post-tests were applied to the students in the control group, and the courses were delivered routinely within five weeks.

DATA ANALYSIS

SPSS 20 program was preferred for the analysis of the obtained data. Shapiro-Wilk normality test, one of the normality tests, was used to determine the data method. In data sets with less than 50 participants, the normal distribution is determined by the Shapiro-Wilk Test (Büyüköztürk, 2011). Since the number of participants was 26, the Shapiro-Wilk Test was applied. Normality values were found to be p<,05 on the basis of tests. According to these results, the data do not show normal distribution.

According to analyze the pre-test mathematics achievement scores and pre-test anxiety scores do not show a normal distribution. The Mann Whitney-U test, one of the non-parametric tests, was conducted for data analysis. Lower scores correspond to lower rank in Mann Whitney-U tests. On the other hand, higher scores correspond to higher ranks (Siegel, 1956; Van Der Berg, 2021). Firstly, pre-test mathematics achievement and anxiety scores were compared in the data analysis process based on control and experimental groups. The main reason for making this comparison is to determine whether there is a difference between the pre-test scores of the experimental and control groups or not. The Mann-Whitney U-test results regarding the comparison between the experimental and control groups' achievement and anxiety pre-test scores based on groups are given in Table 4. Test Analyze Programs (TAP) was used to calculate the achievement test Kr-20 score

Table 4. *The differentiation status of math achievement and anxiety pre-test scores based on experimental and control groups*

Test	*Group*	*n*	*Mean Rank*	*U*	*p*
Achievement	Experiment	13	10,92	118,00	,091
	Control	13	16,08		
Anxiety	Experiment	13	10,69	121,00	,064
	Control	13	16,31		

According to Table 4, no significant difference was found between the experimental and control groups in mathematics achievement pre-test scores, U=118,00, p>,05. In addition, there was no significant difference between the experimental and control groups concerning math anxiety pre-test scores, U=121,00, p>,05. In other words, mathematics achievement and anxiety pre-test scores did not differ based on groups. Since there was no difference between the pre-test scores, the difference between the post-test achievement and anxiety scores of the participants and the pre-test scores will be compared, and this difference will give a meaningful result. In this context, the statistical results of the difference between the pre-test and post-test scores for the experimental and control groups were determined by the Mann-Whitney U-test.

FINDINGS

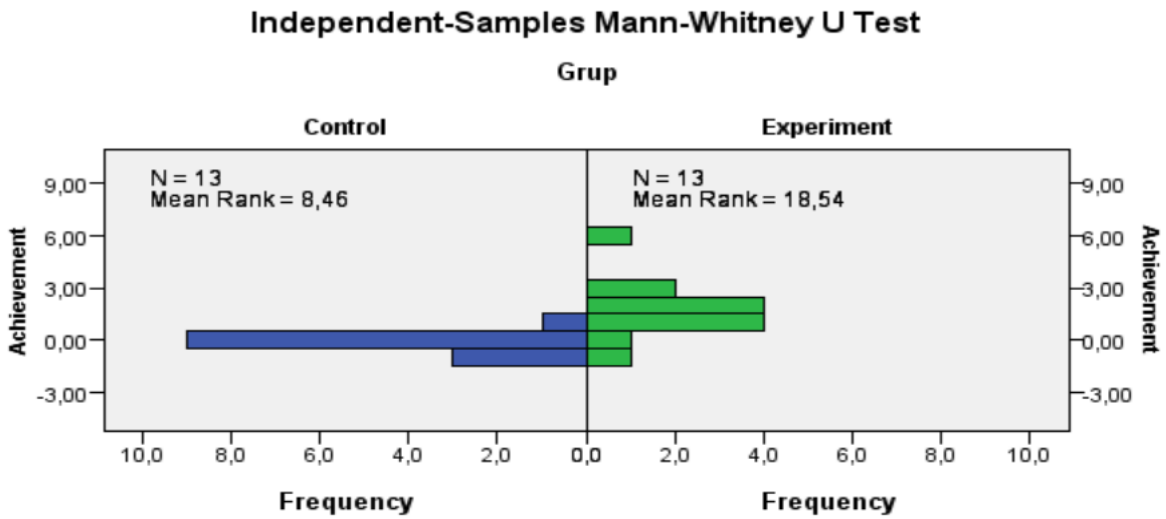
Do AR applications affect the math course success of third grade students?

The Mann Whitney U-test, which was conducted to identify augmented reality-based mathematics course on students' mathematics academic achievement is given in Table 5 and Figure 7. Table 5 and Figure 7 show the mean rank, U score, and p significance value of the experimental and control groups of participants. In addition, the arithmetic mean($\bar{x}$) and standard deviations(Sd) of the scores between the post-test achievement scores and the pre-test success scores of the experimental and control groups are given in the table.

Table 5. *Differentiation of mathematics achievement scores based on experimental and control groups*

Group	*n*	*$\bar{x}$*	*Sd*	*Mean Rank*	*U*	*p*
Experiment	13	1,77	1,69	18,54	19,00	,00
Control	13	,15	,55	8,46		

Figure 7. *Differentiation of mathematics achievement scores*



When Table 5 and Figure 7 is examined, the mean rank of experimental group's mathematics achievement was 18.54, while the mean rank of control group's mathematics achievement was 8.46. It was determined that the difference between the groups differed statistically in favor of the experimental group, U=19,00, p<,05. In other words, it was observed that mathematics courses designed according to augmented reality increased mathematics achievement compared to courses not designed according to AR.

Do AR applications affect third grade students' math anxiety level?

The Mann Whitney U-test, which was conducted to determine augmented reality-designed mathematics course on students' mathematics anxiety is shown in Table 6 and Figure 8,9,10,11. In Table 6, the mean rank, U score, and p significance value of the experimental and control groups of the participants are given based on dimensions and total score. In addition, the arithmetic mean($\bar{x}$) and standard deviations(Sd) of the scores between the post-test achievement scores and the pre-test success scores of the experimental and control groups are given in the table.

Table 6. *Mann Whitney U test results*

Sub-dimensions	*Group*	*$\bar{x}$*	*Sd*	*n*	*Mean Rank*	*U*	*p*
Avoidance- Worrying	Experiment	,38	1,04	13	15,54	58,00	,19
	Control	-,08	,40	13	11,46		
Positive Emotion towards Mathematics	Experiment	-75	,26	13	7,00	169,00	,00
	Control	,00	,16	13	20,00		
Attitude Towards Mathematics	Experiment	-,42	,53	13	10,15	128,00	,03
	Control	-,01	,26	13	16,85		
Total	Experiment	-,30	,35	13	10,12	128,00	,02
	Control	-,02	,24	13	16,88		

Figure 8. *Avoidance-Worrying sub-dimension results*

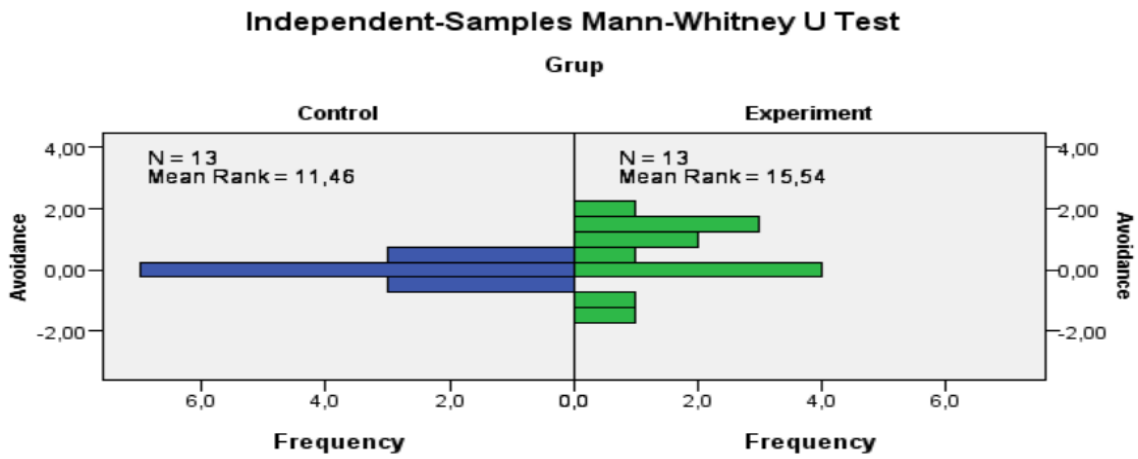


Figure 9. *Positive emotion towards mathematics sub-dimension results.*

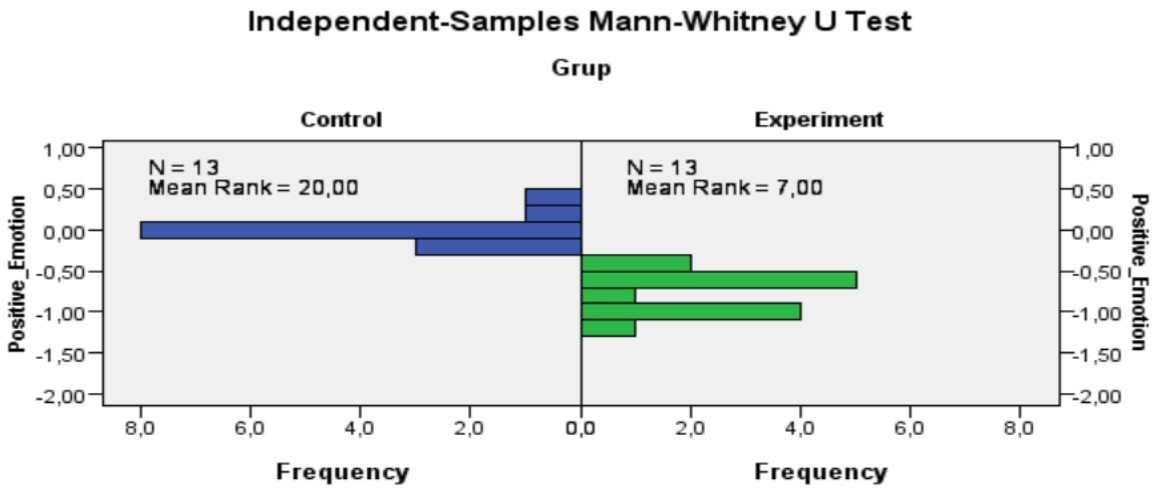


Figure 10. *Attitude towards mathematics sub-dimension results.*

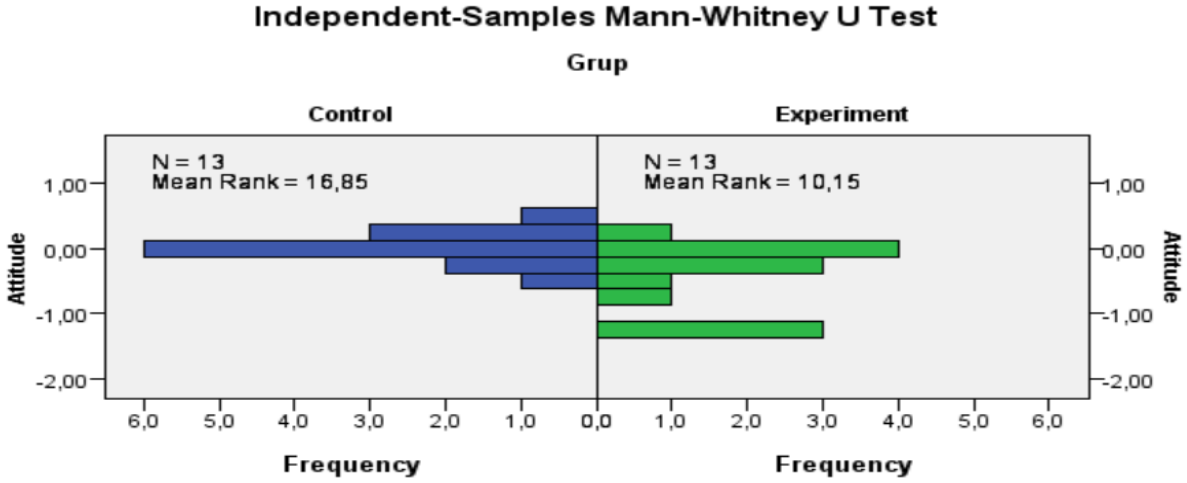
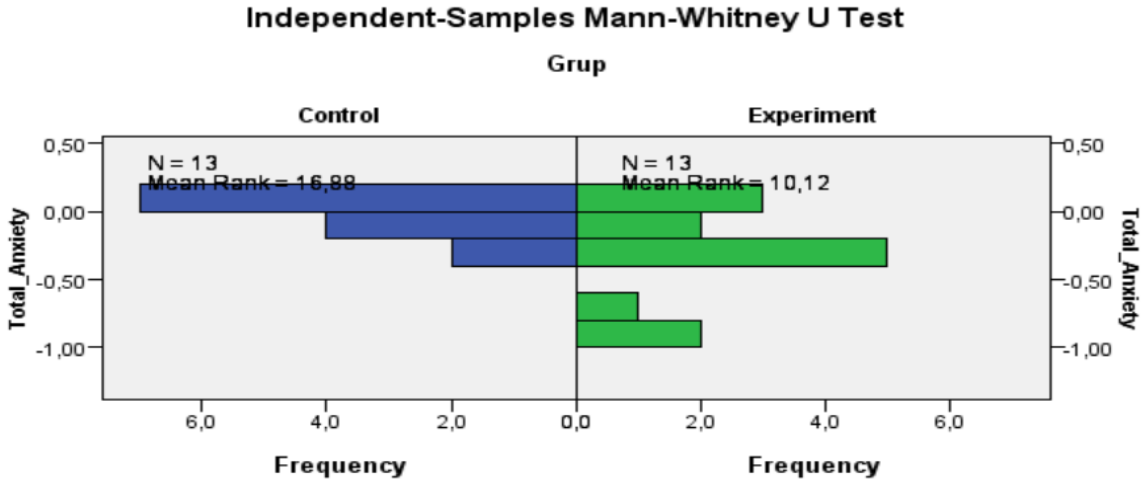


Figure 11. *Total mathematics anxiety results.*



It is evident on Table 6 that the effect of augmented reality-based mathematics courses on students' mathematics anxiety was examined based on dimensions. According to the avoidance and worrying sub-dimension, while the mean rank of the experimental group was 15,54, the mean rank of the control group was determined as 11.46 for the mathematics course. It was determined that the difference between the groups was not statistically significant, U=58,00, p>,05. (Table 6 and Figure 8). In other words, it is understood that mathematics courses designed with augmented reality applications do not affect students in the dimension of avoidance-worrying.

When Table 6 and Figure 9 are examined, the mean rank of the mathematics courses designed with augmented reality applications in the dimension of positive emotion about mathematics was 7,00 in the experimental group, while it was 20,00 in the control group. While the items in this dimension were coded, the items were reverse coded to calculate the total score of the positive scale. The difference in scores between the groups was statistically significant in favor of the experimental group, U=169,00, p<,05. In other words, augmented reality applications enabled students to form a positive view of mathematics. In addition, in the dimension of attitudes towards mathematics, the mean rank of the experimental group was 10,15, while it was 16,85 in the control group. This difference was statistically positive in favor of the experimental group, U= 128,00, p<,05. (Table 6 and Figure 10). In other words, students' negative attitudes towards mathematics decreased with augmented reality

applications. In addition, it was determined that the total mathematics anxiety scores were 10,12 in the experimental group and 16,88 in the control group. This difference was statistically significant in favor of the experimental group, U=128,00, p<,05. (Table 6 and Figure 11). In other words, augmented reality-based applications generally have an effect that reduces students' math anxiety.

DISCUSSION, CONCLUSION AND SUGGESTIONS

This research examines whether or not the applications prepared in AR-based environments for mathematics courses affect primary school 3rd-grade students' anxiety and academic achievement in mathematics. In the research, a quasi-experimental design with a pre-test post-test control group was used. For this purpose, AR-based applications were conducted on the students in the experimental group for the achievements under the theme of "Liquid Measurement" in the mathematics course. On the other hand, the students in the control group studied the course usually. When the research results are examined, it is evident that the mathematics achievement of the experimental group students who were trained with AR-based applications was higher than the control group students who were not trained with AR-based applications. It is thought that this difference between the groups in terms of academic achievement is due to the advantages of AR-based applications such as helping students to concretize abstract concepts (Olim & Nisi, 2020) and increasing the sense of reality (Carmigniani & Furht, 2011), improving spatial thinking skills (Papakostas et al., 2021) and increasing attention span (Bos et al., 2019).

According to the studies in the literature, AR-based applications are effective for method in concretizing abstract concepts (Sırakaya & Seferoğlu, 2016; Özdemir, 2017; Sirakaya & Sirakaya, 2018; Tulgar, 2019). Kose, et al., (2013) underlined that with AR-based applications, students could be provided with appropriate environments that will enable them to understand the concepts related to the courses with the help of three-dimensional models, and it will be possible for students to observe the concepts instead of visualizing them directly. It is believed that the use of AR-based applications in mathematics education will improve academic success, since it has a significant place in concretization, developing mathematical thinking skills, giving meaning to mathematical concepts, and increasing problem-solving skills in mathematics education (Dündar, et al., 2012; Temel, et al., 2015; Yılmaz & Argun, 2018)

Various researchers state that spatial thinking skills, which is another advantage in increasing students' mathematics achievement, can be improved with AR-based applications (Carrera & Asensio, 2016; George, et al., 2019; İbili et al., 2019). Having spatial thinking skills in mathematics is considered necessary in terms of increasing the academic success of students, helping them find unique solutions to problems and contributing to the increase of their learning experience (Messner, 2003; Cited in Toptaş, et al., 2012; Frank, 2005; Taylor & Hutton, 2013). For this reason, it is thought that academic success can be increased by using AR-based applications in mathematics teaching. This research supports this hypothesis.

Another essential factor in mathematics achievement is the attention span of the students to the course. Various researchers state that the attention span of students can be increased with AR-based applications (Özdamlı & Karagözlü, 2018; Bos et al., 2019; Karagözlü, 2021). It is assumed that the use of AR-based applications in mathematics teaching will contribute to the prolongation of attention spans and increase in mathematics achievement since students' having longer attention spans in the mathematics learning process ensures higher mathematics achievement (McClelland, et al., 2013). This research supports this hypothesis.

When the results of the study on the mathematics anxiety dimension were examined, it was observed that there was no significant difference between the experimental and control groups in terms of avoidance and worrying, and there was a significant difference in favor of the experimental group students concerning the dimensions of positive emotion towards mathematics and attitudes towards mathematics. As a result of the applications, when compared with the control group, it was observed that the students in the experimental group experienced less anxiety towards the mathematics course; they started to have positive feelings towards the mathematics course, and their attitudes towards the mathematics course changed positively. It is thought that this difference between the groups in terms of mathematics anxiety is because AR-based applications increase the level of motivation and help create a collaborative learning environment with applications that can be done together.

There are many studies in the literature based on the view that AR-based applications increase the level of motivation (Di Serio, et al., 2013; Mat-jizat, Jaafar & Yahaya, 2017; Khan, et al., 2019; Muhammad, et al., 2021). Considering that individuals with a high level of motivation are doubtful to experience anxiety about any course (Sheu, 2017; Ahmetovic, et al., 2020), it is possible to increase students' motivation levels for the course and to indirectly minimize their anxiety levels by using AR-based applications in mathematics education. When the results of this research were examined, it was observed that the experimental group students developed more positive attitudes towards mathematics, had positive emotions, and generally decreased their anxiety levels through AR-based applications.

One of the 21st century skills is cooperative learning (Johnson & Johnson, 2014). Studies have determined that cooperative learning environments reduce anxiety in students (Suwantarathip & Wichadee, 2010; Toyama & Mori, 2017; Fatimah, 2019). Considering that AR-based applications encourage students to learn collaboratively (Kaufmann, 2003; Klopfer, et al., 2005; Martin-Gutierrez, et al., 2014; Phon, et al., 2014), it is believed that the level of anxiety towards mathematics can be reduced through AR-based applications. The results obtained from this study support this hypothesis.

Because of its abstract structure and the stereotypes existing in society, the mathematics course is seen as a feared and anxious course with a low percentage of academic achievement of many students. It is thought that there is a need to develop activities that will attract students' attention, excite them and increase their interest and motivation in the course in order to get rid of these anxieties and increase their academic success. In this research, AR-based applications were used to reduce students' anxiety about mathematics and increase their academic success. In this process, AR-based activities were prepared for the achievements in the theme of "Liquid Measurement" using the Unity program. These prepared activities were transferred to the tablet via the Xcode program, and the activities were made to become three-dimensional by using data matrix papers. These applications were presented to the students in the experimental group for five weeks. In order to determine the effectiveness of the research, students in the experimental and control groups were given an achievement test for mathematics and an anxiety scale for mathematics. When the research results were examined, it was evident that the academic achievement of the experimental group students was higher than the control group students and their math anxiety decreased. In other words, in this study, it was emphasized that AR-based mathematics courses increased student academic achievement and reduced mathematics anxiety compared to routine mathematics courses.

The applications in this research were prepared by considering a theme in the 3rd-grade primary school mathematics course and the acquisitions. This research was conducted on the mathematics anxiety and academic achievement of 3rd grade students. Apart from this research, researches on

attitude towards mathematics lesson can be done. In addition, the findings are limited to the AR-based applications developed within the scope of this research.

In this research, marked augmented reality technology was conducted because a data matrix was used. It is thought that the preparation of markerless augmented reality-based activities with virtual objects intertwined with the natural world will increase the students' motivation, and learning that is obtained in this way will be permanent. Anxiety and failure of students towards any lesson in the first stages of primary education may cause them to approach this lesson with prejudice in the future. For this reason, to prevent such prejudices of students, it is recommended to teach AR-based courses to concretize abstract concepts in the first stages of primary education. With this respect, various training can be given to teachers to use AR-based applications effectively in the courses.

AUTHOR CONTRIBUTION

The first and second authors contributed equally to the current research with all part of article such as design data collection, data analysis and revision.

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PSYCHO-EDUCATIONAL RESEARCH REVIEWS

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