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Teachers' Epistemological Beliefs and Lifelong Learning Tendencies: A Correlational Study

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Abstract

The aim of this research is to examine the correlation between teachers' epistemological beliefs and lifelong learning tendencies. The research was carried out according to the quantitative method and was designed in the correlational survey model. The sample of the study consisted of 284 teachers teaching in a district of Bursa in the spring term of the 2020-2021 academic year and selected according to the simple random sampling method, one of the probability sampling types. Data were obtained with the "Epistemological Belief Scale" and the "Lifelong Learning Tendency Scale". The data were analyzed with the SPSS v.22 software package. During the analysis process, the descriptive statistical values of the data were examined; Pearson correlation and multiple linear regression analyses were performed. It has been determined that the highest mean score of the teachers in the sub-dimensions of epistemological beliefs is in Belief that Learning Depends on Effort, and that their highest mean score in the sub-dimensions of lifelong learning tendencies is in Openness to Improvement. A moderate and positive significant correlation has been found between "Belief that Learning Depends on Effort", one of the sub-dimensions of epistemological beliefs, and both the "Willingness to Learn" and "Openness to Improvement" sub-dimensions of lifelong learning tendencies, at the highest level. Thus, it is suggested that teachers should be supported to improve their epistemological beliefs and, accordingly, to improve themselves more through lifelong learning.

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INTRODUCTION

Philosophy is concerned with trying to answer the reason for the existence of man in the universe he is in, with various researches. Therefore, philosophy can be characterized as a process of seeking knowledge through various methods. However, it is not enough just to wonder, think, ask questions and seek answers to them. In addition to these processes, it is also important to present systematic explanations for these issues. As Cevizci (2015) stated, philosophy expresses the systematic and questioning way of thinking about the nature of existence, the nature of knowledge and the way of sustaining life. Philosophy consists of three main components or branches, namely metaphysics, epistemology and axiology (Yazıcı, 2016). It can be said that epistemology stands out among these three branches of philosophy. According to many philosophers, epistemology is a source for the other branches of philosophy (Cevizci, 2015). Looking at the root word of epistemology, it is understood that epistemology is formed by the combination of the Greek words "episteme" and “logos” (Baç, 2011, p. 21). In Greek, the word “episteme” means “knowledge”, while the word “logos” means “examination” or “science”. In this context, it is possible to define epistemology as “examination of knowledge” (Özemre, 2011, p. 221). Moser (2018, p.21) defines epistemology as “the study of the nature of knowledge and justification”. In summary, it can be said that epistemology refers to inquiries about what knowledge is and which sources it is fed from (Arslan, 2017). On the other hand, belief expresses the acceptance by individuals about the events they have experienced throughout their lives, other individuals and the phenomena they encounter (Nespor, 1987). In this direction, as Hofer (2001) also states, epistemological belief refers to individuals’ beliefs about what knowledge means, how it is structured, and its source.

When the developmental stages of epistemological beliefs are examined, it is understood that they first emerged in a structure consisting of one dimension. In other words, epistemological belief studies initially focused on the nature and quality of knowledge. Afterwards, epistemological beliefs began to be examined and designed in a multidimensional structure (Hofer, 2000; Hofer & Pintrich, 1997; Schommer-Aikins, 2004). One of the multidimensional epistemological beliefs models belongs to Schommer (1990). In this model, not only the nature of knowledge is emphasized, but also the nature of knowing, that is, learning. According to the model, individuals who believe that knowledge is unchangeable and that learning depends on ability have naïve epistemological beliefs, while individuals who believe that knowledge is relative and that learning depends on the learner’s effort have sophisticated epistemological beliefs (Schommer, 1993). According to Gutek (2006), epistemology is important for teachers in terms of preparing lesson plans and implementing the curriculum. In this respect, it can be said that teachers’ epistemological perspectives are important for the learning-teaching process. As a matter of fact, epistemological beliefs are related to many factors such as teaching styles (Soleimani, 2020), teaching understandings (Tezci, Erdener & Atıcı, 2016), learning approaches (Phan, 2008), learning attitudes (Altay, 2021), educational philosophy trends (Aytaç & Uyangör, 2020), mathematical thinking skills (Rott, 2021) and academic success (Lonka, Ketonen & Vermunt, 2021) in the learning-teaching process. Furthermore, the epistemological perspectives of individuals stand out as a variable that can affect the improvement of lifelong learning skills as well as the learning-teaching processes at school (Kanadlı & Akay, 2019).

Modern social structures have brought lifelong learning to the agenda, as well as concepts such as “education for all”, “adult education”, and “continuous education” related to the understanding of continuing education (Boyadjieva & Petkova, 2005). Resulting from the globalizing economy and various social changes, lifelong learning (Czeglédi & Juhász, 2013) emerged as a new trend and broad policy in the late 1960s and early 1970s (Field, 2001). Lifelong learning has also become important in terms of both promoting learning and adapting to the changing market demands of countries in the life cycle (Gudănescu & Cristea, 2009). The emergence of the concept of lifelong education, on the other hand, points to the improvements in social life in societies that have

experienced modernization recently and requires that the changes experienced in this process become permanent (Boyadjieva & Petkova, 2005).

The purpose of lifelong learning can be expressed as people's continuous acquisition of knowledge and skills in their daily lives and making it a culture. Therefore, although learning is not limited to educational institutions, it needs to be protected and renewed (Gudănescu & Cristea, 2009). Lifelong learning that occurs with lifelong education can be realized through many different activities such as individuals participating in workshops, being a member of professional organizations, participating in various training courses, and learning through informal and non-formal education (Fitzpatrick & Smith, 2007; Frackowiak, 2017; Tamme, 2018). For example, for students, learning and these self-education activities do not end with graduation; on the contrary, thanks to lifelong learning, they come across various career paths and achieve various gains for an active labor market (Czeglédi & Juhász, 2013). It is considered important for teachers to follow a certain sequence and cycle in the lifelong learning process, which is an important element for their continuous professional improvement (Wolde, 2021). As a matter of fact, in the teacher education improvement program prepared in Finland by Lavonen, Mahlamäki-Kultanen, Vahtivuori-Hänninen and Mikkola (2020), three strategic competency goals were determined for teachers' pre-service, in-service and continuous life-long professional learning. These are listed as a broad and solid knowledge base, competences for generating new ideas and educational innovations, and competences for teachers to improve their own expertise alongside their school.

Teachers need to use various active learning methods such as personal reading, action research and reflection, which empower and liberate them in their professional improvement process (Wolde, 2021). For example, Lizačić and Bačlija-Sušić (2020) state that preschool teachers contribute to both their professional improvement and lifelong learning by actively participating in the musical and creative activities of their students in the lessons. However, in this process, objective evaluation of teachers' motivation and quality is considered as an important need for lifelong learning (Panev & Barakoska, 2015). Furthermore, it is important for senior teachers to plan classroom observations in schools correctly in order to transform schools into a learning organization structure, to help teachers improve their knowledge and skills by providing various guidance services through these observations, and to support their professional improvement (Krajnc & Valenčič-Zuljan, 2014).

It is possible to say that beliefs are the basis of the decisions that individuals take throughout their lives and the practices they carry out in this direction (Nespor, 1987; Pajares, 1992). Epistemological beliefs, which constitute the acceptance by individuals about the nature of knowledge and knowing (Schommer, 1990), have a central role in influencing their perspectives on the concepts of learning and teaching (Hofer & Pintrich, 1997). In this respect, the epistemological beliefs of individuals shape many variables of the learning-teaching process (Green & Hood, 2013). Individuals with sophisticated epistemological beliefs have critical, creative and scientific thinking skills (Demir & Akınoğlu, 2010). In this respect, it is possible to say that individuals who believe that knowledge is relative, that is, that it can change over time, can be open to change and willing to learn. On the other hand, it can be said that individuals who believe that knowledge is certain and unchangeable are more resistant to change and to learning new knowledge. In summary, the theoretical framework provides clues that the epistemological beliefs of individuals can affect their perspectives on lifelong learning.

When the relevant literature is examined, the limited number of studies examining the correlation between epistemological beliefs and lifelong learning (Bath & Smith, 2009) reveals that there is a need to examine the correlation between these two variables with further studies. In this respect, it is thought that this study will contribute to the related literature. In addition, examining the correlation between teachers' epistemological beliefs and lifelong learning tendencies can provide important information to policy makers. The COVID-19 pandemic process has required the

continuation of the learning-teaching process with distance education tools (Munoz-Najar, Gilberto Sanzana, Hasan, Cobo Romani, Azevedo & Akmal; Reimers, Schleicher, Saavedra & Tuominen, 2020). In this process, it has been understood how important it is for teachers to master the use of technological tools. In this context, it is possible to say that teachers who improve themselves integrate into the distance education process more quickly. As a matter of fact, although there is no other research on this subject in the literature, Aytaç's (2021) study found that teachers with a high perception of lifelong learning have higher motivation to acquire and use digital technologies. In this respect, examining the correlation between teachers' epistemological perspectives and their tendencies towards lifelong learning can be a guide for policy makers who design in-service training programs. In conclusion, the aim of this study is to examine the correlation between teachers' epistemological beliefs and their lifelong learning tendencies. In this context, answers to the following questions have been sought:

1. What is the level of teachers' epistemological beliefs and lifelong learning tendencies?
2. Is there a significant correlation between teachers' epistemological beliefs and lifelong learning tendencies?
3. Do teachers' epistemological beliefs significantly predict their lifelong learning tendencies?

METHOD

RESEARCH MODEL

In this study, the correlational survey model has been preferred because the aim has been to examine the relationship between teachers' epistemological beliefs and lifelong learning tendencies. "A correlational study seeks to ascertain relationships between two or more variables. Simply put, it examines whether an increase or decrease in one variable corresponds to an increase or decrease in another variable" (Tan, 2014, p. 269). In this context, the present study investigates whether the increase or decrease in teachers' epistemological beliefs corresponds to an increase or decrease in their lifelong learning tendencies.

SAMPLE

The sample of the research consists of 284 teachers teaching in a district of the Bursa province of Turkey in the spring semester of the 2020-2021 academic year. There are a total of 780 teachers working in the district where this sample group was selected. In the process of determining the research sample, .95 as the confidence level and .05 as the sampling error were taken into consideration. Based on these values, 284 teachers in the sample group are sufficient for the sample size to be drawn from the population (Yazıcıoğlu & Erdoğan, 2004). The simple random sampling method, which is one of the probability sampling types, has been preferred in the selection of the sample. This type of sampling is preferred when every individual in the current population or samples of a certain size have an equal chance of being included in the sample group to be selected (West, 2016). In this context, the demographic characteristics of the teachers participating in the research are as follows: 195 of the teachers are female and 89 are male. The professional seniority of 61 of the teachers is between 0-5 years, while 72 of them have between 6-10 years, 43 of them have between 11-15 years, 43 of them have between 16-20 years and 65 of them have 21 or more years of professional seniority. In addition, 105 of the teachers work in primary school, 113 teachers work in secondary schools and 66 teachers work in high schools.

DATA COLLECTION TOOLS

Epistemological Belief Scale (EBS): The Epistemological Belief Scale used in the study was developed by Schommer (1990) and adapted into Turkish by Deryakulu and Büyüköztürk (2002). As a result of the validity analyses, a scale consisting of three sub-dimensions and 35 items was revealed. The sub-dimension of the scale called *Belief that Learning Depends on Effort* consists of 18 items, the

sub-dimension called *Belief that Learning Depends on Ability* consists of 8 items, and the sub-dimension called *Belief that There is One Truth* consists of 9 items. The total variance explained by the scale was determined as 28.09%. As a result of the reliability analysis, Cronbach's alpha values were determined as .83, .62, and .59 in order of sub-dimensions. Afterwards, the validity and reliability study of this scale was carried out by Aydın, Selçuk, Çakmak, and İlğan (2017). As a result of the analyses carried out, it was determined that the 35-item structure of the scale was also suitable. On the other hand, as a result of the analysis, it was determined that the scale turned into a more reliable and valid structure after some items were removed from the scale. In this respect, it was emphasized that the 23- and 29-item forms of the scale could also be used. In this context, since the number of items is low, it was decided to use the shortened form of the scale with 23 items in order to facilitate implementation. Evaluation of the scale is carried out in terms of the sub-dimensions. *The Belief that Learning Depends on Effort* sub-dimension is reverse coded, while the other two dimensions are positively coded. However, in this study, as Eren (2006) did in his study, a different path has been followed and the sub-dimension of *Belief that Learning Depends on Effort* has also been positively coded. In the interpretation of the dimensions of the scale, a method suitable for this process has been followed. Therefore, high scores from sub-dimensions indicate high belief in that sub-dimension, and low scores indicate low belief in that sub-dimension (İlhan, Demir & Arslan, 2013). In addition, as a result of the reliability analyses carried out within the scope of this research, Cronbach alpha values have been determined as .81 for the "Belief that Learning Depends on Effort" sub-dimension, .85 for the "Belief that Learning Depends on Ability" sub-dimension, and .77 for the "Belief that There is One Truth" sub-dimension. The Cronbach's alpha values show that the scale is within acceptable ranges (Özdamar, 2016).

Lifelong Learning Trends Scale (LLLTS): The Lifelong Learning Trends Scale used in the research was developed by Gür-Erdoğan and Arslan (2015). The sample of the study consisted of 1644 students studying at the faculty of education of a university. The first part of the study was the literature study. As a result, the item pool was formed in line with the opinion of 7 experts, and 49 items constituted the draft scale. As a result of the analysis, a scale consisting of two sub-dimensions and 17 items emerged. The sub-dimension of the scale called *Willingness to Learn* consists of 11 items, and the sub-dimension called *Openness to Improvement* consists of 6 items. As a result of the criterion validity analysis, a high level of positive correlation was found. The total variance explained by the scale was determined as 43.44%. As a result of the reliability analysis, Cronbach's alpha values were determined as .86 for the whole scale and .82 for both dimensions. The test-retest reliability of the scale was determined as .76. In addition, as a result of the reliability analyses carried out within the scope of this research, the Cronbach alpha values have been determined as .86 for the "Willingness to Learn" sub-dimension, .82 for the "Openness to Improvement" sub-dimension, and .89 for the whole scale. The Cronbach's alpha values show that the scale is within acceptable ranges (Özdamar, 2016).

DATA COLLECTION AND ANALYSIS

The data of the study were collected at the beginning of March 2021. First of all, the necessary permission was obtained from the researchers who developed the scales to be used in the research. After that, the data began to be collected. After the data were collected, they were coded into the SPSS program in the computer environment. As such, 292 data were coded into the relevant statistical program. As a result of the extreme value analysis, three items of data were excluded from the scope of the research. In the next step, the normality assumptions of the data were examined. In this context, the kurtosis and skewness values of the data obtained from the sub-dimensions of the scales used in the research were examined. As a result of the examination, it was determined that the kurtosis and skewness values of the data were between -1 and +1. Moreover, it was determined that the descriptive statistics values were close to each other. Accordingly, it was assumed that the data were normally distributed. In this context, it was decided to use parametric tests in the analysis

of the data. Therefore, descriptive statistics, Pearson correlation analysis and multiple linear regression analysis were used in the analysis of the data (Büyüköztürk, 2007). Mahalanobis distances were checked to examine the presence of multivariate outliers among the data. Accordingly, five items of data were excluded from the scope of the research. In this context, it can be said that the data comply with the multivariate variability assumptions. As a result, the analyses continued with 284 data. In the Pearson correlation analysis, values below .30 were accepted as "low", values between .30-.69 as "moderate", and values above .70 as "high" correlation (Çokluk, Şekercioğlu & Büyüköztürk, 2014). In the evaluation of the arithmetic means, 1.00-1.79 was accepted as "very low", between 1.80-2.59 as "low", between 2.60-3.39 as "medium", between 3.40-4.19 as "high" and between 4.20-5.00 as "very high".

FINDINGS

In this section, the findings obtained from the analysis of the data related to the research questions are given under sub-headings, respectively.

DESCRIPTIVE STATISTICS RELATED TO VARIABLES

Under this sub-heading, descriptive statistics related to the teachers' epistemological beliefs and lifelong learning tendencies are included. Findings in this context are presented in Table 1 below.

Table 1. *Descriptive Statistics Related to Variables*

Scales	*Sub-Dimensions*	*N*	*Mean (M)*	*Mode*	*Standart Deviation (SD)*	*Kurtosis*	*Skewness*
Epistemological Belief Scale	(1) Belief that Learning Depends on Effort	284	4.38	4.90	0.45	-.62	-.19
	(2) Belief that Learning Depends on Ability	284	2.02	2.00	0.70	.67	.33
	(3) Belief that There is One Truth	284	2.39	2.00	0.89	.33	-.64
Lifelong Learning Trends Scale	(1) Willingness to Learn	284	4.48	5.00	0.42	-.85	.27
	(2) Openness to Improvement	284	4.51	5.00	0.49	-.82	.11

In Table 1 above, descriptive statistics related to the variables are given. Accordingly, within the scope of the Epistemological Belief Scale, the highest mean score belongs to the Belief that Learning Depends on Effort sub-dimension (M= 4.38, SD= 0.45). This is followed by the Belief that There is One Truth sub-dimension (M= 2.39, SD= 0.89) and the Belief that Learning Depends on Ability sub-dimension (M= 2.02, SD=0.70). Within the scope of the Lifelong Learning Trends Scale, the highest mean score belongs to the Openness to Improvement sub-dimension (M= 4.51 SD= 0.49). This is followed by the Willingness to Learn sub-dimension (M= 4.48, SD= 0.42). In addition, it is seen that the kurtosis and skewness values are between -1 and +1. According to Morgan, Leech, Gloeckner and Barrett (2004), data within these value ranges show normal distribution. In addition, since it is seen that descriptive statistical values such as mean, median and mode do not diverge too far from each other, it can be said that the data show a normal distribution (Büyüköztürk, 2010).

CORRELATIONS BETWEEN VARIABLES

Under this subheading, Pearson correlation analysis findings regarding the correlation between teachers' epistemological beliefs and lifelong learning tendencies are included. Values in this context are presented in Table 2 below.

Table 2. *Pearson Correlation Analysis Findings for the Correlations between Variables*

Sub-Dimensions	*Belief that Learning Depends on Effort*	*Belief that Learning Depends on Ability*	*Belief that There is One Truth*
Willingness to Learn	.375**	-.332**	-.020*
Openness to Improvement	.358**	-.224**	-.095*

*p>.05, **p<.01

The Pearson correlation analysis findings showing the correlations between the variables are given in Table 2 above. According to the table, there is a positive, moderate and significant correlation (r= .375, p<.01) between the Willingness to Learn and the Belief that Learning Depends on Effort sub-dimensions but there is a negative, moderate and significant correlation (r= .-.332, p<.01) between the Willingness to Learn and the Belief that Learning Depends on Ability sub-dimensions. On the other hand, there is no significant correlation (r= -.020, p>.05) between the Willingness to Learn and Belief that There is One Truth sub-dimensions. There is a positive, moderate and significant correlation (r= .358, p<.01) between the Openness to Improvement and the Belief that Learning Depends on Effort sub-dimensions but there is a negative, low and significant correlation (r= .-.224, p<.01) between the Openness to Improvement and the Belief that Learning Depends on Ability sub-dimensions. On the other hand, there is no significant correlation (r= -.095, p>.05) between the Openness to Improvement and the Belief that There is One Truth sub-dimensions.

PREDICTIVE RELATIONSHIPS BETWEEN VARIABLES

Under this subheading, the predictive levels of teachers' epistemological beliefs on their lifelong learning tendencies have been examined. The findings of the multiple linear regression analysis regarding the predictive levels of Epistemological Beliefs on the Willingness to Learn sub-dimension are presented in Table 3 below.

Table 3. *Findings Regarding the Prediction of the Willingness to Learn Dimension*

Variable	*B*	*Standart Error*	*β*	*t*	*p*	*Zero-order*	*Partial*
Constant	3.420	.245		13.949	.000		
Belief that Learning Depends on Effort	.295	.050	.317	5.883	.000	.375	.332
Belief that Learning Depends on Ability	-.197	.036	-.327	-5.494	.000	-.332	-.312
Belief that There is One Truth	.068	.028	.143	2.457	.015	-.020	.145
R= .474	R^2= .224	$F_{(3-280)}$= 27.010	p= .000				

In Table 3 above, the findings of the multiple linear regression analysis regarding to what extent Epistemological Beliefs predict the Willingness to Learn sub-dimension are given. As can be seen from the table, all dimensions of Epistemological Beliefs together have a moderate and

significant correlation with the sub-dimension of Willingness to Learn (R= .474, R^2= .224). Epistemological Beliefs explain 22.4% of the variance regarding the Willingness to Learn sub-dimension. When the standardized regression coefficients are examined, the relative importance of the predictive variables on the Willingness to Learn dimension is respectively: Belief that Learning Depends on Ability (β= -.327, p<.01), Belief that Learning Depends on Effort (β= .317, p<.01) and Belief that There is One Truth (β= .143, p<.05). The regression equation is as follows:

Willingness to Learn= (0.295 x Belief that Learning Depends on Effort) + (-0.197 x Belief that Learning Depends on Ability) + (0.068 x Belief that There is One Truth)

The findings of the multiple linear regression analysis regarding the predictive levels of Epistemological Beliefs on the Openness to Improvement sub-dimension are presented in Table 4 below.

Table 4. *Findings Regarding the Prediction of the Openness to Improvement Dimension*

Variable	*B*	*Standart Error*	*β*	*t*	*p*	*Zero-order*	*Partial*
Constant	3.195	.298		10.722	.000		
Belief that Learning Depends on Effort	.352	,061	.325	5.772	.000	.358	.326
Belief that Learning Depends on Ability	-.107	.044	-.153	-2.452	.015	-.224	-.145
Belief that There is One Truth	-.003	.034	-.006	-.099	.921	-.095	-.006
R= .389	R^2= .151	$F_{(3-280)}$= 16.607	p= .000				

In Table 4 above, the findings of the multiple linear regression analysis regarding to what extent Epistemological Beliefs predict the Openness to Improvement sub-dimension are given. As can be seen from the table, all dimensions of Epistemological Beliefs together have a moderate and significant correlation with the sub-dimension of Openness to Improvement (R= .389, R^2= .151). Epistemological beliefs explain 15.1% of the variance regarding the Openness to Improvement sub-dimension. When the standardized regression coefficients are examined, the relative importance of the predictive variables on the Openness to Improvement dimension is respectively: Belief that Learning Depends on Effort (β= .325, p<.01), Belief that Learning Depends on Ability (β= -.153, p<.01) and Belief that There is One Truth (β= -.006, p>.05). The regression equation is as follows:

Openness to Improvement= (0.352 x Belief that Learning Depends on Effort) + (-0.107 x Belief that Learning Depends on Ability) + (-0.003 x Belief that There is One Truth)

DISCUSSION, CONCLUSION AND RECOMMENDATIONS

The aim of this study has been to examine the correlation between teachers' epistemological beliefs and lifelong learning tendencies. In this section, the findings are discussed according to the order of the research questions and suggestions are given in line with the conclusions obtained. In this context, firstly, the conclusions and discussions on the descriptive statistical findings related to the variables are included. Secondly, the conclusions and discussions about the correlations between the variables are included. Thirdly, the conclusions and discussions on the predictive status between the variables are included.

Firstly, within the scope of the first question of the research, the level of teachers' epistemological beliefs have been examined. Accordingly, it has been determined that the highest mean score among the epistemological belief sub-dimensions belonged to the "Belief that Learning Depends on Effort", followed by the "Belief that There is One Truth", and then the "Belief that Learning Depends on Ability" sub-dimensions. In this context, it is possible to say that teachers' beliefs that learning depends on effort are at a *very high* level, while their beliefs that knowledge is unchangeable and learning depends on ability are at a *low* level. In other words, teachers have sophisticated epistemological perspectives about the idea that learning depends on effort. From this point of view, it can be said that teachers believe that knowledge can change over time, that it has a relative structure, and that acquiring knowledge depends on the effort of the learner rather than innate abilities. The reason for this can be explained by paradigm changes. The concept of genetic epistemology put forward by Piaget (1984) and the theses of Kuhn (2018) on the structure of scientific changes have brought about paradigm changes about the nature of knowledge. In this direction, the epistemological view that knowledge is relative and can change according to time and place has come to the fore. It was inevitable that this epistemological change would also affect the epistemological perspectives of teachers, who are at the center of the learning-teaching process and are responsible for fostering knowledge in the learner. Similar results have been obtained with studies in the literature (Baydar, 2020; Chai, Khine & Teo, 2006; Chan, 2004, 2008; Chan & Elliott, 2004; Gürkan & Kahraman, 2020; Lee, Zhang, Song & Huang, 2013; Whitaker, 2020; Yalçın & Yıldız, 2020). However, in a limited number of studies (Chan & Elliott, 2000; Saeed, Reza & Momene, 2014), it has been found that participants have naïve epistemological beliefs. It can be said that this difference is due to cultural factors.

Secondly, within the scope of the first question of the research, the level of teachers' lifelong learning tendencies have been examined. Accordingly, it has been determined that the "Openness to Improvement" sub-dimension has the highest mean score among the sub-dimensions of lifelong learning tendencies. In addition, both the "Openness to Improvement" sub-dimension and the "Willingness to Learn" sub-dimension have *very high* mean scores. In this context, it can be said that teachers are willing to improve themselves professionally and learn new knowledge. The reason for this can be explained by the conditions of the current era. The rapid improvement of technology has affected many areas of human life. One of these areas is undoubtedly education. In this direction, the use of technological tools in education has been accelerated. It can be said that the importance of the use of technological tools in education has further increased, especially during the COVID-19 pandemic process. In this context, teachers may have attended various online courses or seminars on the use of technological tools in education and acquired up-to-date knowledge. In other words, the conditions of the current age may have encouraged teachers to improve themselves. This situation may have affected teachers' lifelong learning tendencies in a positive way. Similar results have been obtained in studies conducted in the related literature (Akyol, 2014; Ayaz, 2016; Bath & Smith, 2009; Gökyer, 2019; İzci & Özden, 2020; Kozikoğlu & Altınova, 2018; Tanatar & Alpaydın, 2019; Yılmaz, 2016). However, it has been determined that teachers' lifelong learning tendencies are not at a high level in a limited number of studies (Ekşioğlu, Tarhan & Çetin-Gündüz, 2017; Gökyer & Karakaya-Cirit, 2018). As a result, when the research studies are evaluated as a whole, it is possible to say that the results of the current research are compatible with the literature and that the lifelong learning tendencies of teachers are at a high level.

Within the scope of the second question of the research, analyses have been carried out on the correlation between teachers' epistemological beliefs and lifelong learning tendencies. According to the results of the Pearson correlation analysis, a moderately positive and significant correlation has been found between the "Willingness to Learn" sub-dimension of lifelong learning tendencies and the "Belief that Learning Depends on Effort" sub-dimension of epistemological beliefs. However, a moderately negative and significant correlation has been found between the same sub-dimension

of lifelong learning tendencies and the "Belief that Learning Depends on Ability" sub-dimension of epistemological beliefs. On the other hand, no significant correlation has been found between the "Willingness to Learn" sub-dimension of lifelong learning tendencies and the "Belief that There is One Truth" sub-dimension of epistemological beliefs. After the analyses, a moderately positive and significant correlation has been found between the "Openness to Improvement" sub-dimension of lifelong learning tendencies and the "Belief that Learning Depends on Effort" sub-dimension of epistemological beliefs. However, a low-level, negative and significant correlation has been found between the same sub-dimension of lifelong learning tendencies and the "Belief that Learning Depends on Ability" sub-dimension of epistemological beliefs. On the other hand, no significant correlation has been found between the "Openness to Improvement" sub-dimension of lifelong learning tendencies and the "Belief that There is One Truth" sub-dimension of epistemological beliefs. In this context, it is possible to say that as teachers' beliefs about the relativeness of knowledge increase, they become more willing to learn and more open to improvement. In addition, as teachers' belief that learning depends on innate abilities increases, their willingness to learn and their tendency to be open to improvement decrease. It can be said that these results coincide with the research results of Bath and Smith (2009).

Within the scope of the third question of the research, multiple linear regression analyses have been applied. In this context, it has been determined that epistemological beliefs significantly predict "Willingness to Learn", one of the sub-dimensions of lifelong learning tendencies. In addition, the "Belief that Learning Depends on Effort" and the "Belief that There is One Truth" sub-dimensions of epistemological beliefs positively predict the "Willingness to Learn" sub-dimension of lifelong learning tendencies. On the other hand, the "Belief that Learning Depends on Ability" sub-dimension of epistemological beliefs predicts the "Willingness to Learn" sub-dimension of lifelong learning negatively. Secondly, it has been determined that epistemological beliefs significantly predict "Openness to Improvement", one of the sub-dimensions of lifelong learning tendencies. In addition, the "Belief that Learning Depends on Effort" sub-dimension of epistemological beliefs positively predicts the "Openness to Improvement" sub-dimension of lifelong learning tendencies, whereas the "Belief that Learning Depends on Ability" sub-dimension of epistemological beliefs negatively predicts the "Openness to Improvement" sub-dimension of lifelong learning tendencies. On the other hand, the "Belief that There is One Truth" sub-dimension of epistemological beliefs does not significantly predict the "Openness to Improvement" sub-dimension of lifelong learning tendencies. In this context, it can be said that teachers who believe that knowledge is relative and that learning depends on effort are willing to learn new knowledge and are open to improvement. On the other hand, it can be said that teachers who believe that learning depends on innate abilities are not willing to learn new knowledge and are not open to improvement. These results can be explained by the theoretical basis of the concept of epistemological belief and the results of epistemological belief research. According to Schommer (1990), individuals who believe that knowledge is relative have sophisticated epistemological beliefs. Conversely, individuals who believe that learning depends on innate abilities and that knowledge is unchangeable have naïve epistemological beliefs. According to Schommer-Aikins and Hutter's (2002) research results, individuals with sophisticated epistemological beliefs care about the opinions of individuals who have different perspectives from their own and change their thoughts when necessary. Bacanlı-Kurt (2010) found in her research that individuals who believe that learning does not depend on effort are resistant to change. In other words, individuals with naïve epistemological beliefs do not have a structure that is open to learning new knowledge and improving themselves. According to Demir and Akınoğlu (2010), individuals with sophisticated epistemological beliefs have critical, creative and scientific thinking skills. In other words, individuals with sophisticated epistemological beliefs tend to learn and adopt new knowledge. In this respect, it is possible to say that individuals who believe that knowledge is relative, and that it can change over time, can be open to change and willing to learn. On the other hand, it can be said that individuals who believe that knowledge is certain and unchangeable are

more resistant to change and to learning new knowledge. These results are in line with the research results of Bath and Smith (2009). However, the fact that the "Belief that There is One Truth" sub-dimension of epistemological beliefs positively predicts the "Willingness to Learn" sub-dimension of lifelong learning tendencies constitutes an interesting result of the present study. From a theoretical point of view, an individual who believes that knowledge is unchanging and certain is not expected to be willing to learn, because, as Schommer-Aikins (2002) states, individuals who have naïve epistemological beliefs, that is, those who believe in the immutability and certainty of knowledge, prefer to refer to the memorized knowledge presented to them rather than researching it thoroughly by thinking deeply about a subject. On the other hand, although a positive prediction has been found between the "Belief that There is One Truth" and the "Willingness to Learn" sub-dimensions in the current study, it should be taken into account that the coefficient of prediction is relatively low. Nevertheless, it is possible to say that it is important to review this correlation with further studies.

In conclusion, the results of this research have revealed that teachers have sophisticated epistemological beliefs and a high level of lifelong learning tendencies. Another prominent result of the research is the effect of teachers' epistemological beliefs on their lifelong learning tendencies. In this direction, it has been determined that teachers' perspectives on the nature of knowledge and acquiring knowledge have an important place in understanding their lifelong learning tendencies. Therefore, it is possible to say that teachers who have sophisticated epistemological beliefs are more open to self-improvement and willing to learn throughout their lives. These results provide important information to policy makers in designing in-service training programs. In this direction, programs can be designed to improve teachers' epistemological beliefs within the scope of in-service training. As a matter of fact, many studies in the literature (Brownlee, Purdie & Boulton-Lewis, 2001; Hong & Lin, 2010; Kienheues, Bromme & Stahl, 2010) have revealed that individuals' epistemological beliefs can be developed. In-service training activities are carried out in a very short period of time, and not in the long term. In this respect, experts who design in-service training programs can design an "epistemological improvement program" by carefully examining the research conducted by Howard, McGee, Schwartz, and Purcell (2000). In the mentioned study, a 4-week program aimed at the improvement of teachers' epistemological beliefs was prepared and positive results were obtained. On the other hand, considering that the studies examining the correlation between epistemological beliefs and lifelong learning tendencies are limited, it can be said that this study draws attention to the correlation between these two variables. In this respect, it can be said that the research is also a guide for researchers working in the related field. In this study, it has been determined that the "Belief that There is One Truth" sub-dimension of epistemological beliefs positively predicts the "Willingness to Learn" sub-dimension of lifelong learning tendencies, albeit at a low level. When this situation is examined from a theoretical point of view, it can be said that this is an unexpected result. This indicates that more research is needed to examine the correlation between these variables. In addition to correlational studies, this subject can also be examined with mixed method studies in order to provide a more in-depth analysis. Teachers should be aware of epistemology so that their lifelong learning tendencies can be high.

AUTHORS' CONTRIBUTIONS

- The first author contributed to the drafting of the article, writing the introduction, and collecting and analyzing the data.
- The second author contributed to the drafting of the article, writing the introduction, analyzing the data and writing the findings section.
- The third author contributed to the drafting of the article, writing the discussion, conclusion and recommendations sections, and the final approval of the version to be published.

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