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The Mediating Role of Self-Regulation Skills in the Relationship Between Social Skills and Problem Behaviors in the Early Childhood Period

Fulya Ezmeci, Assist. Prof. Dr., Erzincan Binali Yildirim University, fulya.ezmeci@gmail.com
0000-0002-3950-1780

Nurbanu Parpucu, Res. Assist. Dr., Anadolu University, nurbanuparpucu@anadolu.edu.tr
0000-0002-4544-3927

Berrin Akman, Prof. Dr., Hacettepe University, berrin.akman@gmail.com
0000-0001-5668-4382

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Abstract

The aim of this study is to examine the direct and indirect relationships between problem behaviors, social skills, and self-regulation skills of children in early childhood period. In this context, the mediating role of self-regulation skills between problem behavior and social skills was investigated. The relational research model, one of the quantitative research designs, was used in this study. The study group consisted of 104 children between the age of 66-72 months enrolled to any preschool program. The obtained data from the study were analyzed with the PROCESS macro and direct and indirect path coefficients in the regression models were subjected to the bootstrap analysis. As a result of the study, it was seen that the social skills and the self-regulation skills of children negatively predicted the problem behaviors. In addition, when the self-regulation skills were included in the model, it was concluded that the self-regulation skills were a partial mediator variable.

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INTRODUCTION

The classroom environment in early childhood is seen as one of the important factors affecting children's learning. It was observed that children learn better in a positive and supportive learning environment (Dorman, Aldridge, & Fraser, 2006). In order for the learning process to be carried out in the classroom environment effectively, problem behaviors of children must be controlled (Carr & Durand, 1985). Problem behaviors are generally defined as any behavior that prevents individuals from functioning effectively in society and endangers their own safety or that of their peers (Carr & Durand, 1985). Studies have shown that problem behaviors are seen not only in adolescence and beyond, but also in the early childhood period that includes children between the age of zero to six". (Basten et al., 2016; Bulotsky-Shearer, 2020; McDermott, 2022; Studts & van Zyl, 2013). Problem behaviors negatively affect peer and teacher-child relationships (Miller et al., 2004). Preschool children who exhibit emotional and behavioral problems receive less education and less positive feedback from their teachers, while their peer-mediated learning experiences are also reduced (Graziano et al., 2015; Vitiello et al., 2012; Williford et al., 2017). However, it was observed that more than half of preschool children with problem behaviors continued those problem behaviors in their later school life (Gardner & Shaw, 2008). Research has also proven that problem behaviors seen in early childhood can lead to delinquency, violence, and depression in adolescence and adulthood (Bornstein et al., 2010; Liu, 2004). For this reason, it is thought that it is important to take precautions to prevent problem behaviors in early childhood. Although intervention programs to prevent problem behaviors were found effective in the literature, it was stated that they have important limitations, such as the occurrence of the behavior only due to the presence of the adult in the environment and requiring too much practitioner time (Otten, 2003). For this reason, it was emphasized that the responsibility of controlling the behaviors should be developed with strategies that leave children to decide themselves. At this point, it can be said that developing social skills and self-regulation skills can also be effective in preventing the emergence of problem behaviors.

THE RELATIONSHIP BETWEEN SOCIAL SKILLS AND PROBLEM BEHAVIORS

In early childhood, social skills include "the ability to manage emotions appropriately, to establish closeness, to empathize and to be a good team member" (Wilson & Sabee, 2003). It was observed that children with advanced social skills can exhibit behaviors in accordance with the rules in social life (Ziv, 2013). Social skills can be defined as avoiding inappropriate behaviors in social situations and displaying acceptable behaviors in society (Gresham & Elliot, 1990; Mathur & Rutherford, 1996). In addition, social skills are described as "the ability of the individual to properly express his positive and negative thoughts and feelings without losing social support in interpersonal communication" (Sergin & Giverts, 2003, p. 136). A child with social skills would not show problem behaviors or violence, adapting to society more easily (Matson & Ollendick, 1988). It is known that providing children with social skills by teachers in early childhood is important for preventing children's problem behaviors (Nakatsubo et al., 2021).

It was observed that children with poor social skills behave in rude and upsetting ways toward their friends; therefore, they have low peer acceptance and may demonstrate physical violence (Matson & Ollendick, 1988). Similarly, it was revealed that preschool children who display problem behaviors in the classroom have lower levels of social interactions and develop negative relationships with their teachers and peers (Bulotsky-Shearer et al., 2010; Vitiello et al., 2012; Williford et al., 2017). Studies in the literature showed that there is a significant negative relationship between problem behaviors and social skills (Aykır & Çiftçi-Tekinarslan, 2012; Gültekin Akduman et al., 2015).

THE RELATIONSHIP BETWEEN SELF-REGULATION SKILLS AND PROBLEM BEHAVIORS

Self-regulation can be described as the process of self-regulation of children's cognition, motivation, emotions, and behavior in order to create a response to environmental stimuli in

accordance with the context (Cameron Ponitz et al., 2008; Pintrich, 2000). It was revealed that self-regulation skills acquired in early childhood are necessary for self-control in later years (Blair, 2002; Florez, 2011; Kochanska et al., 2008; McClelland et al., 2013). It was observed that children with improved self-regulation skills establish better teacher and peer relationships (Dobbs & Arnold, 2009; Downer et al., 2010; Miller et al., 2004; Williford et al., 2017), and their adjustment to school is better than that of other children (Calkins & Williford, 2009; Gablinske, 2014). Considering that children who have positive relationships with their teachers have higher motivation to obey classroom rules (Shafer, 2015), it can be said that self-regulation skills can be effective on problem behaviors. In previous studies, it was seen that children with low self-regulation skills exhibited a large number of problem behaviors such as tantrums, aggression, impulsivity, and opposition, with negative interactions that disrupted the learning environment (Denham et al., 2012; Eisenberg et al., 2001; Fabes et al., 1999; Hill et al., 2006; McCabe & Brooks-Gunn, 2007). Learning processes of children with problem behaviors were negatively affected by exclusion from the classroom by teachers (Pianta et al., 1995) and peer rejection (Arnold et al., 1999). For this reason, by providing children with self-regulation skills, regardless of the environment or people, children will be able to control themselves in the face of the problems they encounter, review their responses, and display the right behaviors. It is thought that this will decrease the problem behaviors experienced in the classroom.

In the literature, there are studies showing the relationship between social skills and self-regulation skills (Dobbs & Arnold, 2009; Downer et al., 2010; Miller et al., 2004; Williford et al., 2017) and between self-regulation and problem behaviors (Denham et al., 2012; Eisenberg). In addition, studies revealed that there was a relationship between social skills and problem behavior (Aykır & Çiftçi-Tekinarslan, 2012; Bulotsky-Shearer et al., 2010; Gültekin Akduman et al., 2015; Matson & Ollendick, 1988; Nakatsubo et al., 2021; Vitiello et al., 2012; Williford et al., 2017). However, there was no study that examined the relationship among these variables in a single study. In addition, although the relationship between social skills and problem behavior is emphasized in the literature, there are no studies examining the mediating role of self-regulation skills in this relationship.

Considering these points, this study aimed to examine the direct and indirect relationships between problematic behaviors, social skills, and self-regulation skills. In this context, the mediating role of children's self-regulation skills between problem behaviors and social skills was investigated. In line with this general purpose, the sub-problems of the research were determined as follows:

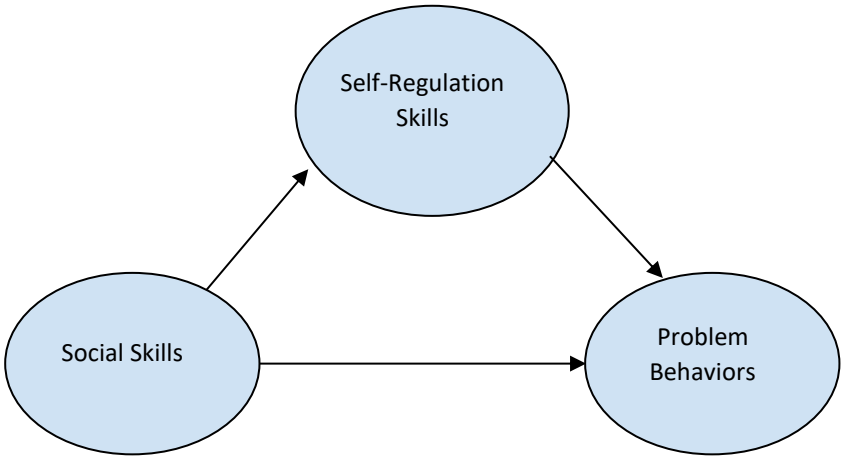
1. Do social skills predict problem behaviors?
2. Do self-regulation skills predict problem behaviors?
3. Do social skills predict problem behaviors of children with the mediating role of self-regulation skills?

METHOD

RESEARCH DESIGN

This research is a relational study that examines the relationships between children's social skills, self-regulation skills, and problem behaviors. Social skills are the independent variable of the research, self-regulation skills are the mediator variable, and problem behaviors are the dependent variable. Relational research model aims to determine the presence and/or degree of co-variance between two or more variables (Fraenkel & Wallen, 2009; Karasar, 2005). According to the model, children's problem behavior, social skills and self-regulation skills were examined to determine the presence and/or degree of change. The model for this research is presented in Figure 1 below.

Figure 1. *Predicted Problem Behavior Model*



PARTICIPANTS

The working group of the study consisted of 104 children between the ages of 60 and 72 months enrolled in independent preschools and kindergartens in primary schools in Turkey. The schools were selected by random sampling. Of the participating children, 48.08% were girls and 51.92% were boys.

While 19.23% of the mothers were in the age range of 25-35 years, 46.15% were in the age range of 36-45 and 34.62% were in the age range of 46-55. Furthermore, 11.54% of the mothers were middle school graduates, 19.23% were high school graduates, 55.77% had undergraduate degrees, and 13.46% had graduate degrees. While 11.54% of the fathers were in the age range of 25-35 years, 55.77% were in the age range of 36-45 and 32.69% were in the age range of 46-55. Furthermore, 7.69% of fathers were middle school graduates, 24.04% were high school graduates, 50.96% had undergraduate degrees, and 17.31% had graduate degrees.

The demographic information belong to the participant was presented below.

Table 1. *Demographic Features of Children in the Study Groups*

Feature	*Group*	*n*
Gender of Children	Girl	50
	Boy	54
Mothers' Age	25-35	20
	36-45	48
	46-55	36
Mothers' Education Level	Middle School Graduates	12
	High School Graduates	20
	Undergraduate Degrees	58
	Graduate Degrees	14
Fathers' Age	26-35	12
	36-45	58
	46-55	34
Fathers' Education Level	Middle School Graduates	8
	High School Graduates	26
	Undergraduate Degrees	53
	Graduate Degrees	17

DATA COLLECTION TOOLS

PRESCHOOL SELF-REGULATION ASSESSMENT (PSRA)

This scale was developed by Smith-Donald et al. (2007) as a performance-based assessment. Applied individually for each child, the scale takes approximately 15-20 minutes to complete. There

are 9 tasks in the first part of the scale to evaluate the self-regulation performance of children. In the second part of the scale, evaluation is performed based on applicator-child interactions. There is an applicator evaluation form with which the emotions, attention levels, and behaviors of the child are evaluated. According to the factor analysis results of the scale, consisting of 17 items, this measurement tool explains 53.4% of the variance (Smith-Donald et al., 2007). The Turkish adaptation of the scale was performed by Fındık Tanrıbuyurdu and Güler Yıldız (2014) with 233 children aged 48-72 months. The Cronbach alpha coefficient (α) calculated for the reliability of the scale was .83 and the Spearman-Brown correlation coefficient for test-retest reliability was .86. This result showed that the scale makes a consistent assessment. In addition, the variance explained was 52% of the total variance (Fındık Tanrıbuyurdu & Güler Yıldız, 2014). As a result of the analysis performed for the data collected in the present study, the Cronbach alpha coefficient (α) of the scale was determined to be .82.

PRESCHOOL AND KINDERGARTEN BEHAVIOR SCALE

This scale was developed by Kenneth W. Merrel in 1995 to measure social skills and problem behaviors of 3- to 6-year-old children. The scale was revised in 2003 and the norm study was conducted with 3,317 children (Merrel, 2003). The scale is based on teachers' opinions and filled out by the teachers for children. The scale consists of two independent scales: the Social Skills and Problem Behavior Scales. The Turkish adaptation of the scale was performed by Alisinanoğlu and Özbey (2009). The Cronbach alpha coefficient of the Social Skills Scale, which consists of 23 items, is .93, while the Cronbach alpha coefficient of the Problem Behavior Scale, which includes 27 items, is .96. Higher total scores reflect higher social skills and more problem behaviors of the children, respectively. As a result of the analysis performed for the data collected in the present study, the Cronbach alpha coefficient (α) of the Social Skills scale was determined to be .89 and the Cronbach alpha coefficient (α) of the Problem Behavior Scale was determined to be .92.

DATA ANALYSIS

The PROCESS macro, developed by Andrew F. Hayes (www.afhayes.com) and integrated with SPSS software, was used in this study to examine the factors that predict children's problem behaviors through the mediation model. Using the least squares method in regression analysis, this additional software can calculate path coefficients, standard errors, t- and p-values, and bootstrap confidence intervals of all variables (independent, intermediary, and dependent) in a research model (Hayes, 2013; Hayes & Rockwood, 2017; Hayes et al., 2017). In this respect, it is stated that PROCESS, like all structural equation modeling software programs, can be used for path analysis and many regression equations can be easily modeled by researchers (Hayes, 2013; Hayes et al., 2017).

After ensuring the normality and homogeneity assumptions required for parametric tests, the prerequisites for regression analysis were examined. For the regression analysis the sample size is decided with the formula of n>50+8m (Tabachnick & Fidell, 2013). In this study the number of the variables is 3 (m=3) and based on this calculation the sample size (104 > 50 + 8*3) is acceptable. In addition, Stevens (1996) states that for a reliable equation in the field of social sciences, at least 15 participants per predictor are needed. There are 52 participants for each predictor for this study so the prerequisite required for regression analysis was met.Therefore, the number of the particicipant is sufficient for the analysis.

In addition, the prerequisites for linearity, covariance, and residual independence were checked and it was concluded that these assumptions were met. It was seen that there was no multi collinearity between the independent variables of social skills and self-regulation skills ($r = .72$, $p < .05$) and there was no singularity. Two extreme values were excluded from the study by examining values for the dependent and independent variables (Tabachnick & Fidell, 2013). In addition, when the tolerance and variance inflation factor (VIF) values (tolerance (.82) > .2, VIF (2.075) < 10) were examined from the data, it was concluded that there was no multiple correlation between the independent variables (Pallant, 2015).

In this study, the effect of self-regulation skills as a mediator variable was evaluated using the bootstrapping confidence interval technique, which is a stronger technique than the Sobel test (Hayes, 2013; Zhao et al., 2010). Mediation is considered to be significant when both bootstrap lower level (BootLLCI) and upper level (BootULCI) values at the 95% confidence interval of the mediator variables are below or above zero (Hayes, 2013; Zhao et al., 2010). In the mediation test proposed by Baron and Kenny (1986), the main condition is that the independent variable has a significant effect on the dependent variable. In addition, the mediating role is described as "partial mediation, full mediation, or no mediation" (Baron & Kenny, 1986).

ETHICAL PERMISSION

Ethical permission was obtained for the article with the decision of Hacettepe University Senate Ethics Committee dated 16.01.2018 and numbered 35853172-43-315.

RESULTS

The mediating role of children's self-regulation skills between problem behaviors and social skills was investigated by PROCESS Macro developed by Preacher and Hayes (2008). In the analysis, a regression model was formed and the direct and indirect effects of social skills and self-regulation skills on problem behaviors were identified, as presented in Table 2.

Table 2. *Regression analysis results for Direct and Indirect Effects of Social Skills and Self-Regulation Skills on Problem Behaviors*

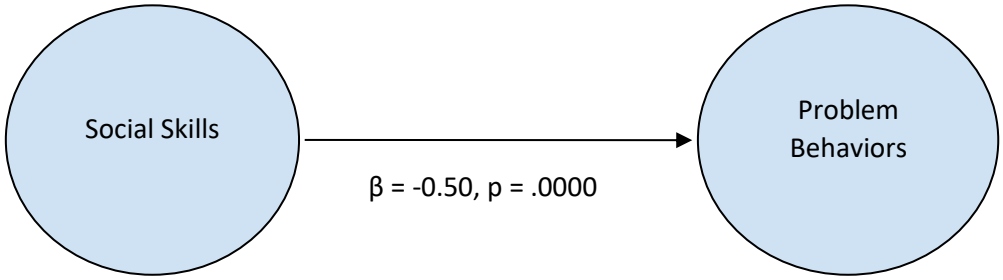
Model 1	*Self-regulation skills (M)*			*Problem behaviors (Y)*		
	β	*Se*	*t*	*β*	*Se*	*t*
Social skills (X)	.34	.03	10.47*	-.50	.06	-7.58*
Self-regulation skills (M)	-	-	-	-.70	.18	-3.71*
Constant	11.04	1.79	6.16*	45.56	4.00	11.37*
	R^2 = .51; F = 109.67; p = .00			R^2 = .43; F = 39.24; p = .00		
Bootstrapping results for indirect effects			*β*	*Boot SE*	*BootLLCI*	*BootULCI*
Indirect effect			-.24	.08	-.41	-.09

Se = Standard error coefficient
*p < .01; LLCI = lower level at 95% confidence interval; ULCI = upper level at 95% confidence interval; bootstrap sample size = 5000

FIRST FINDING: SOCIAL SKILLS PREDICT PROBLEM BEHAVIORS

When self-regulation skills were not included in the model in Table 2, it was seen that children's social skills significantly negatively predicted problem behaviors (β = -.50; t = -7.58; p < .05). The path diagram is presented in Figure 2.

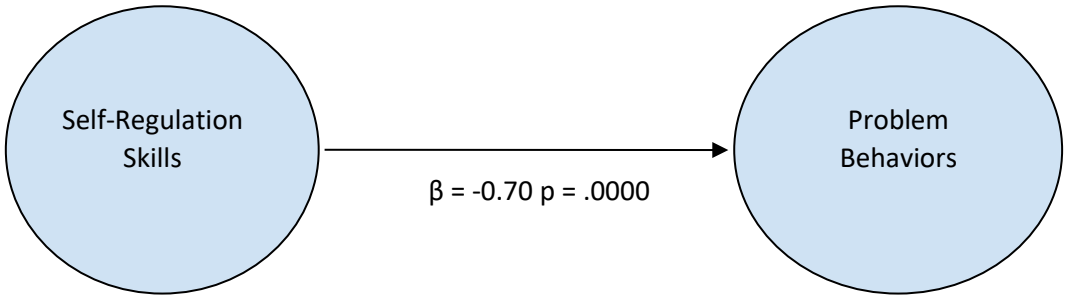
Figure 2. *The Path Diagram Between Social Skills and Problem Behaviors*



SECOND FINDING: SELF-REGULATION SKILLS PREDICT PROBLEM BEHAVIORS

As seen in Table 2, self-regulation skills significantly predict problem behaviors in a negative way (β = -.70; t = -3.71; p < .05). The path diagram is given in Figure 3.

Figure 3. *Path Diagram Between Self-Regulation Skills and Problem Behaviors*

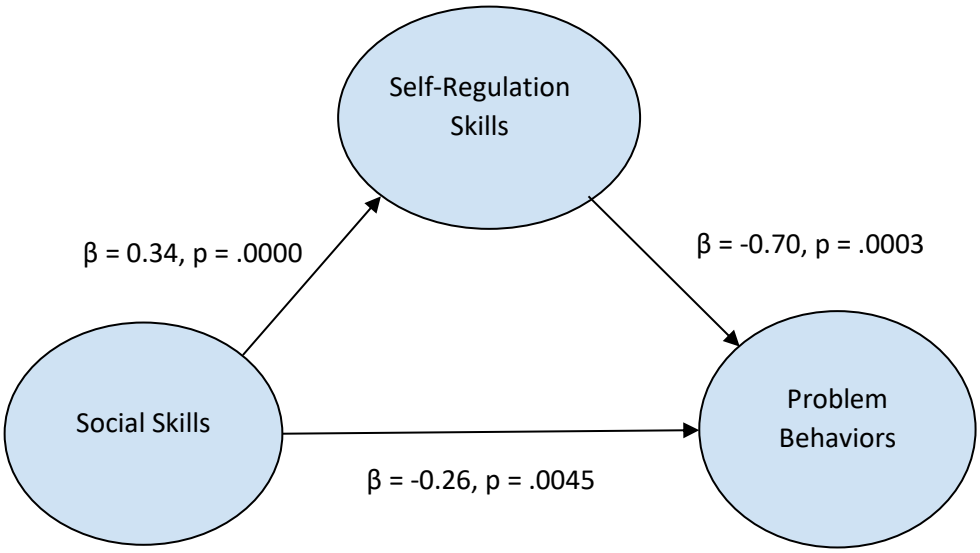


THIRD FINDING: MEDIATING EFFECT OF SELF-REGULATION SKILLS BETWEEN CHILDREN'S SOCIAL SKILLS AND PROBLEM BEHAVIORS

When self-regulation skills were taken as the mediator variable of the model, it was seen that although social skills significantly predicted problem behaviors in a negative way, the path coefficient between social skills and problem behaviors decreased (β = -.50 < β = -.26). This result revealed that self-regulation skills constitute the mediator variable of the model. When the indirect effect of the mediator variable in the model was examined, it was found that the 95% confidence interval BootLLCI of self-regulation was -.41 and BootULCI was -.09. Since there was no zero between the lower (BootLLCI) and upper (BootULCI) level values, it was determined that self-regulation skills have a significant mediating role in this model. Based on mediation effects as explained by Baron and Kenny (1986), when self-regulation skills were not included in the model, the p-value between social skills and problem behaviors was .0000, while this p-value was .0045 when self-regulation skills were added to the model as the mediator variable.

In this case, self-regulation skills had a partial mediating effect between social behaviors and problem behaviors because the significance value did not disappear completely but did decrease. The path diagram for the mediating effect of self-regulation skills is shown in Figure 4.

Figure 4. *Path Diagram Among Social Skills, Self-Regulation Skills, and Problem Behaviors*



DISCUSSION, CONCLUSION AND IMPLICATIONS

In this study, the mediating role of self-regulation skills in the relationship between social skills and problematic behaviors was examined. As a result, it was found that social skills and self-regulation skills statistically significantly predicted problem behaviors in the negative direction. It was also revealed that self-regulation skills have a mediating role between social skills and problem behaviors. When the effects of mediation were examined, it was found that self-regulation skills had a partial mediating effect. According to these results, self-regulation skills have an important role in the effect of social skills on problem behaviors.

The results obtained from this study showed the existence of a significantly negative relationship between the social skills of preschool children and their problem behaviors. Gresham and Elliot (1990) emphasized that social skills and problem behaviors are not independent of each other and they are two opposite versions of a common skill. Many studies in the literature have revealed that social skills are related to problem behaviors (Aykır & Çiftçi-Tekinarslan, 2012; Bulotsky-Shearer et al., 2010; Erkul & Sönmez, 2020; Gültekin Akduman et al., 2013; Vitiello et al., 2012 ; Williford et al., 2017). In addition, studies showed that programs designed to support social skills increase the social skills of children as well as reducing aggressive behaviors (Doh et al., 2003; Kim et al., 2011; Lee & Kim, 2004). In this context, it can be said that the literature supports the relationship between social skills and problem behaviors determined in the current study.

There is a significant negative correlation between self-regulation skills and problem behaviors. While explaining the theoretical relationship between these variables, studies in the literature have also examined the relationship between the sub-dimensions of the skills and found a negative relationship between these variables (Bater & Jordan, 2017; Dennis et al., 2007; Eisenberg et al., 2001; Erkan & Sop, 2018; Lemery et al., 2002; Murray & Kochanska, 2002; Tozduman Yaralı & Güngör Aytar, 2017; White et al., 2013). Experimental studies have also shown that as children's self-regulation skills improve, problem behaviors decrease (Barnett et al., 2008; Diamond & Lee 2011; Ezmeci, 2019; Pears, Kim, & Fisher, 2012; Raver et al., 2011). All these results are similar to the present research results. Children can achieve attention control, prevent impulsive reactions, delay gratification, cooperate with their peers, and perform purposeful behaviors thanks to their self-regulation skills (Bierman et al., 2008). In addition, thanks to attention skills as one of the sub-dimensions of self-regulation skills, children choose important information for themselves in the classroom, listen to the teacher among

stimuli from multiple sources, and remain attentive (Tominey & McClelland, 2011). Therefore, it is assumed that children with these skills will show far fewer problem behaviors.

The results of the present study showed that when self-regulation skills were included in the analysis, they significantly mediated the effect of social skills on problem behaviors. Erkan and Sop (2018) examined direct and indirect relationships between parental attitudes, behavioral problems in children, children's self-regulation skills, and school readiness. In the results of that study, attention-impulse control skills among the children's self-regulation skills had an integrative mediating role between the children's anxious/tearful behavior and school readiness. There was also an indirect mediating role of self-regulation between their belligerent/aggressive and excessively active/careless behaviors and their school readiness. Montroy et al. (2014), as a result of mediation analysis of a structural equation model, revealed that children's social skills and problem behaviors are a part of behavioral self-regulation skills in the development of early literacy.

In the literature, the relationship of social skills with problem behaviors has been discussed in many studies, but the effect of self-regulation skills on problem behaviors has been discussed in very few. Hence, studies examining the effect of self-regulation skills on problem behaviors are needed. In this study, it was found that self-regulation skills had an important mediating effect on the relationship between children's social skills and problem behaviors. In future studies, the mediating role of the sub-dimensions of self-regulation skills in problem behaviors can be examined. In addition, different variables other than self-regulation can be included in future studies, and research can be designed to create a structural equation model to explain problem behavior.

AUTHOR CONTRIBUTION

First Author: Conceptualization, Methodology, Software, Validation, Formal Analysis, Investigation, Resources, Data Curation, Writing – Original Draft
Second Author: Conceptualization, Methodology, Software, Validation, Formal Analysis, Resources, Data Curation, Writing – Original Draft
Third Author: Supervision, Writing – Review & Editing

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