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Self-Regulation Skills and Peer Preferences in Preschool Children

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Abstract
The preschool period is recognized as a crucial phase for fostering the social development of children. Self-regulation during the developmental period contributes to management skills in social contexts and thus helps establish positive standards of behavior for peer relationships. Effective interventions can improve self-regulation skills. The main purpose of this study is to detect the predictive impact of self-regulation skills on peer relationships in preschool children. The participants consisted of 165 children of Turkish extraction (between the ages of 5 and 6). 81 of them were girls, and 84 were boys. The Self-Regulation Skills Scale for Children aged 4-6 (Teacher Form) and the sociometry technique based on peer nomination were utilized. The study results asserted that young children's self-regulation variables (inhibitory control, attention, and working memory) influenced their levels of being positively and significantly liked by peers. Moreover, young children's self-regulation variables (inhibitory control, attention, and working memory) affected their levels of being negatively and significantly disliked by peers. Also, inhibitory control, attention, and working memory significantly predicted the levels of social preference.

Keywords: Preschool, Self-regulation skills, Sociometry, Peer relations

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Introduction

Recently, there has been growing attention to the prominence of self-regulation (S-R) in the development, learning, and social relations of individuals. It is described as a phenomenon that starts at birth and develops into adulthood, gaining significance at every stage of an individual's life (McCabe et al., 2004; McClelland & Cameron, 2012). Self-regulation refers to controlling and managing one's wishes, thoughts, emotions, and behaviors; conforming to norms in social relationships; and focusing and maintaining attention (Bauer & Baumeister, 2011; Koole et al., 2011; Posner & Rothbart, 2009). Self-regulation, which has a multifaceted structure associated with both positive and negative adjustment, includes working memory, attention, and inhibitory control (Astarlar, 2019; McClelland & Cameron, 2012; Skibbe et al., 2011). Inhibitory control, which involves the regulation of behaviors, refers to one's ability to suppress impulses to attain goals (Cuevas et al., 2018; Posner & Rothbart, 2000). This structure is important for emotional, social, and cognitive development (Watson & Bell, 2013). It, particularly during early childhood, assumes a crucial role in controlling the magnitude of emotions such as sadness, joy, fear, and anger (Carlson & Wang, 2007; Whitebread & Basilio, 2012). Executive attention, one of the executive functions that contribute to S-R, refers to regulating and maintaining attention levels and ignoring distracting or irrelevant stimuli (Ruff & Rothbart, 1996; cited in Harris et al., 2007). Social interaction relies on the ability to coordinate attention with another individual; such an ability develops with adult partners over the last half of the first year of life (Butterworth, 2001; Striano & Rochat, 1999). Working memory, on the other hand, is the ability to store information and transform it when necessary (Baddeley, 2012; Storbeck & Maswood, 2016). Researchers report that working memory begins to develop at around four years of age (Baddeley & Hitch, 2007; Öztürk et al., 2009) and continues to develop during adolescence, making rapid progress after the age of six years (Gathercole et al., 2004). Self-regulation is considered the building block of early childhood development (Eisenberg et al., 2004; Gillespie & Siebel, 2006; Shonkoff & Phillips, 2000). In preschool years, inhibitory control contributes to cognitive skills by allowing for the flexible use of working memory and attention (Diamond, 2013). Several studies have revealed that the effects of these mechanisms on children's behaviors play a major role in academic success, emotion management, and social interaction during early childhood (Anderson, 2002; Blair & Raver, 2015; McClelland & Cameron, 2012; McClelland et al., 2019).

The childhood years are a period during which important developments take place in terms of peer relationships. Peer relationships are characterized as interactions among individuals who share similar characteristics, age, developmental level, and social context (Özokçu, 2018). Such relationships encompass both positive aspects, such as peer acceptance, being liked, and having playmates, as well as negative psychosocial behaviors like rejection, dislike, and experiencing bullying (Çiçekoğlu et al., 2019). Investigations indicate that children accepted by their peers tend to exhibit social, altruistic, cooperative, sensitive, and adaptable behaviors (McDonald & Rubin, 2017). There appears to be a likelihood that prosocial behaviors result from successful peer interactions and relationships (Wang et al., 2021). Conversely, children not preferred by their peers are more likely to exhibit aggressive and disruptive behaviors, particularly towards their peers, as well as tendencies towards shyness, social anxiety, and introversion (LaFreniere & Dumas, 2003; McDonald & Rubin, 2017).

The age range of 4-6 years in peer relationships represents a period of rapid growth and development, during which children demonstrate the ability to join and engage in peer groups (Guralnick et al., 2006). Children's interactions with their peers in the preschool years provide them with various competencies and rich experiences (Gülay Ogelman, 2018). It supports the acquisition of new skills, knowledge, and behaviors with its functions such as modeling, sharing, and being a valuable source of information. (Bukowski et al., 2018; Erwin, 2000). Thanks to the social contexts and norms they offer, they contribute to all developmental areas of children, especially to their self-regulation skills. It is reported that the play skills children exhibit when playing with their peers, which is considered an important social context in preschool, are associated with their S-R levels; children with higher levels of self-regulation tend to show greater play skills (Adak Özdemir & Budak, 2019; Aksoy & Yaralı, 2017; Yurdakul, Beyazıt & Bütün Ayhan, 2021). Murray et al. (2015) indicate that the ability to delay gratification and regulate behaviors according to goals and rules facilitates positive social behaviors such as sharing and cooperative play. Furthermore, effortful control and positive emotionality assist young children in establishing play relationships, and over the course of the year, peers within play groups exhibit similarities in these traits (Neal, Durbin, Gornik, & Lo, 2017). The structure of play, with its capacity to foster strong relationships among children, can provide rich experiences related to examples of behaviors they like and dislike (Cederborg, 2021).

Within the developmental trajectory, self-regulation contributes to the management skills in social interactions, thereby aiding in the establishment of positive behavioral standards in children's peer relationships. The ability to regulate behavior is associated with positive peer relationships (Ramani et al., 2010). For instance, children with

better behavior regulation may experience greater peer acceptance and sociability while experiencing fewer peer conflicts and bullying. This is because this skill enables children to recall rules in peer or classroom contexts and inhibit inappropriate behaviors (Fabes et al., 2009; Hernández et al., 2017; Holmes et al., 2016; Williford et al., 2013). Thus, Robson et al. (2020) found that self-regulation at age 4 is positively associated with social competence and negatively associated with peer bullying in the first grade. Conversely, as children are accepted and liked by their peers, their impulses to engage socially with peers also increase. Researchers such as Hamaidi et al. (2021) report that interaction with peers is associated with emotion regulation, suggesting that children with higher emotion regulation skills are more likely to engage with peers due to their greater ability to cope with negative emotions. Additionally, various studies link successful peer interaction skills with prosocial behaviors (López-Pérez & Pacella, 2021; Wang et al., 2021). Peer relationships during the preschool years are likely to affect the short- and long-term social and emotional adjustment of children (Ladd et al., 1996). Positive relationships with peers can positively affect children's self-perception, social competence, and psychological well-being in the short term (Wentzel, 2017). Nevertheless, problems in peer relations during this period may lead to anxiety, withdrawal, peer rejection, and depression in years to come (Beyazıt, 2019; Coie, 1990; Emre et al., 2020). A large number of studies have demonstrated that relationships with peers in preschool are predictive of later academic and psychosocial functions and are associated with externalizing difficulties such as antisocial behaviors and aggression (Gifford-Smith & Brownell, 2003; Green et al., 2008; Gülay Ogelman, 2021; Levine & Munsch, 2014).

Self-regulation and peer relationships in young children are seen as variables that are likely to influence one another in the short and long run. If developed and supported during childhood, self-regulation skills will positively affect children's peer relationships. Determining the levels of self-regulation in the early years will provide timely and considerable support to children who have problems with their peers, and this might even prevent problems before they arise. There are a few studies in Turkey investigating to what extent the self-regulation skills of young children are disliked and liked by peers. The main aim, therefore, is to detect the predictive power of self-regulation skills on peer relationships in preschool children. This study seeks to address the following questions:

1. Do S-R skills (inhibitory control, attention, and working memory) of preschool children predict being liked by peers in a statistically significant manner?
2. Do S-R skills (inhibitory control, attention, and working memory) of preschool children predict being disliked by peers in a statistically significant manner?
3. Do S-R skills (inhibitory control, attention, and working memory) of preschool children predict social preference level in a statistically significant manner?

Method

Research Model

The study was designed using a correlational survey design. The selection of the sample group for the study was based on the method of random sampling.

Participants

The participants consist of 165 Turkish children (5–6 years old). While 84 of them were boys (51.0%), 81 were girls (49.0%). The average age of the participant children is 5 years and 7 months. While forming the sample group, kindergarten classes of 5 primary schools and 3 independent kindergartens are determined among the primary schools and independent kindergartens located in Niğde by using the randomized sampling method.

Data Collection Tools

Self-Regulation Skills Scale for Children Aged 4–6 (Teacher Form)

The scale was developed by İvrendi and Erol (2018) to detect the S-R skills of children aged 4-6 years. It consists of 22 items and three subscales: inhibitory control (eight items), attention (nine items), and working memory (five items). Items are formulated as statements that are to be rated on a 5-point Likert-type scale (1 never, 5 always). It is a scale based on teacher evaluation. Scores can be calculated for each subscale and can be summed to provide a total score for S-R. Higher scores indicate greater self-regulation skills. Cronbach's alphas for subscales were found to be .91, .91, and .87 respectively. The Cronbach Alpha coefficients for subscales were .92, .94, and .95, respectively.

Sociometry

The "Sociometric Technique" for preschool children developed by Marshall and McCandless (1957) was selected for use in the present study (McCandless & Marshall, 1957; cited in Gulay Ogelman, 2019). Children can make choices according to criteria such as my best friend(s), my least favorite friend(s), and my friend(s) whom I like or dislike to play with. In our study, children are asked to state their most and least favorite friend(s) in the classroom. They answered two questions: "What are the names of your three best friends?" and "What are the names of your three least favorite friends?" Following the interviews, popularity scores were calculated for each child. Names were scored in the order in which they were said (i.e., 3, 2, and 1 points for the first, middle, and last names, respectively). The points were summed up to get the total popularity and unpopularity scores.

Procedure

A specialized personnel applied the sociometry technique based on peer nomination at different times to all children in the classroom. Teachers filled out the Self-Regulation Skills Scale for Children aged 4-6 (Teacher Form) for each child.

Data Analyses

The data were analyzed using the SPSS 24.0 software. The values of Kurtosis and Skewness were computed to test the normality of the data set. It was seen that the distribution had values ranging between -1,5 and +1,5 and indicated no significant deviation from normality (Tabachnick & Fidell, 2013). Pearson product moment correlation coefficients were calculated for the relationship between children's S-R skills and liked and disliked by their peer and social preference variables. Linear regression analysis was conducted to detect the predictive impacts of S-R variables on peer relationships.

Findings

Table 1. Correlation and descriptive statistics between the variables S-R and being liked by peers

	1	2	3	X	SD
1.Being liked by peers	-	-	-	.386	1.190
S-R skills subscales					
2. Inhibitory control	.300*	-	-	32.727	5.00
3. Attention	.364*	.610*	-	36.072	6.395
4. Working memory	.379*	.614*	.724*	21.630	3.280

*$p < .001$

As shown in Table 1, a statistically significant positive correlation existed between the self-regulation variables (inhibitory control r=.300, attention r=.364, working memory r=.379, p<.001) and being liked by peers. That is, as children's self-regulation scores increase or decrease, their level of preference by their peers also increases or decreases.

Table 2. Linear regression analysis regarding S-R variables in children and their level of liking by their peers

S-R skills subscales	Being liked by peers						
	R	R2	F	Std.Error	β	t	p
Inhibitory control	.300	.090	16.129	.018	.071	4.016	.000*
Attention	.364	.132	24.863	.014	.068	4.986	.000*
Working memory	.379	.143	27.285	.026	.137	5.223	.000*

*$p < .001$

When examining Table 2, self-regulation variables (inhibitory control (R=.300, R^2=.10, F=16.129, p<.000), attention (R=.364, R^2=.132, F=24.863, p<.000), and working memory (R=.379, R^2=.143, F=27.285, p<.000) significantly predicted levels of being liked by peers.

Table 3. Correlation and descriptive statistics between the variables S-R and being disliked by peers

	1	2	3	X	SD
1. Being disliked by peers				.299	1.308
S-R skills subscales	-	-	-		
2. Inhibitory control	.296*	-	-	32.727	5.008
3. Attention	-.421*	.610*	-	36.072	6.395
4. Working memory	-.309*	.614*	.724*	21.630	3.280

$p < .001$

When examining Table 3, it is evident that there exists a significant negative relationship between self-regulation variables and levels of peer non-preference (inhibitory control: r = -.296, attention: r = -.421, working memory: r = -.309, p < .001). Thus, it can be inferred that as scores in inhibitory control, attention, and working memory increase or decrease, the level of non-preference from peers increases or decreases.

Table 4. Linear regression analysis regarding S-R variables in children and levels of being disliked by peers

S-R skills subscales	Being disliked by peers						
	R	R2	F	Std. Error	β	t	p
Inhibitory control	.296	.088	15.676	.020	-.077	-3.959	.000*
Attention	.421	.177	35.117	.015	-.086	-5.926	.000*
Working memory	.309	.096	17.253	.030	-.123	-4.154	.000*

$p < .001$

When examining Table 4, self-regulation variables inhibitory control (R=.296, R^2=.09, F=15.676, p<.000), attention (R=.421, R^2=.18, F=35.117, p<.000), and working memory (R=.309, R^2=.10, F=17.253, p<.000) significantly predict levels of being disliked by peers in 5–6 year-old children.

Table 5. Correlation and descriptive statistics between the variables S-R and social preference

	1	2	3	X	SD
1. Social preference	-	-	-	.086	2.233
S-R skills subscales					
2. Inhibitory control	.334*	-	-	32.727	5.008
3. Attention	.441*	.610*	-	36.072	6.395
4. Working memory	.383*	.614*	.724*	21.630	3.280

$p < .001$

When examining Table 5, a statistically significant positive correlation existed between the self-regulation variables (inhibitory control r=.334, attention r=.441, working memory r=.383, p<.001) and social preference levels. Self-regulation variables (inhibitory control (R=.334, R^2=.111, F= 20.399, p<.000), attention (R=.441, R^2=.194, F=39.267, p<.000), and working memory (R=.383, R^2=.15, F=28.042, p<.000) significantly predicted the levels of social preference (Table 6).

Table 6. Linear regression analysis regarding S-R variables in children and levels of social preference

Self-regulation skills subscales	Social preference						
	R	R2	F	Std. Error	β	t	p
Inhibitory control	.334	.111	20.399	.033	.149	4.516	.000*
Attention	.441	.194	39.267	.025	.154	6.266	.000*
Working memory	.383	.147	28.042	.049	.261	5.296	.000*

*$p < .001$.

Results and Discussion

Young children's self-regulation variables (inhibitory control, attention, and working memory) influence their levels of being liked by peers. Preschool children's inhibitory control, attention, and working memory increased; their levels were preferred by their peers. Young children's self-regulation variables (inhibitory control, attention, and working memory) might be less preferred by their peers. Preschool children's inhibitory control, attention,

and working memory increased, and their levels of being disliked by peers decreased. Also, the inhibitory control, attention, and working memory of young children significantly predict their social preference levels.

Our results indicate that children's self-regulation skills may affect peer relationships overall and in terms of variables. This might suggest that self-regulation has significant effects on peer relationships. Saraç et al. (2021) found that self-regulation and its dimensions significantly predict all peer-relationship variables (prosocial behaviors, asocial behaviors, aggressive behaviors, hyperactivity-distraction, exclusion by peers, and fear-anxiety) in 48- to 82-month-old children. Gülay Ogelman and Fetih (2021) reported that children's emotional regulation strategies have a predictive effect on dealing with social preferences, peer pressure, and aggression levels. In a study, 24-month-old children were observed in a series of laboratory procedures, and it was found that negative affectivity is significantly related to conflict with peers (Calkins et al., 1999). By contributing to control skills in social relations, self-regulation paves the way for the formation of positive behavior standards in peer interactions (Calkins, 2007; Robson et al., 2020; Rubin et al., 2003; Shaw et al., 2000). It is argued that a high level of self-regulation can improve social competence. (Duckworth & Kern, 2011; Moffitt et al., 2011; Robson et al., 2020). Children with high-level self-regulation competence can control themselves emotionally and behaviorally, delay their wishes, and exhibit active, social, sharing, and relaxed attitudes during interactions with their peers in both social and academic environments. They tend to act less impulsively when faced with problems in peer relationships and may exhibit more conciliatory and relaxed attitudes. In this way, they can increase peer sharing and improve their relationships with their peers. A study conducted on a sample of 3–4-year-old children found that children who can better control their impulses are more compatible and friendly, show positive behaviors towards their peers, and do not engage in rebellious or defiant behaviors toward adults (Ramani et al., 2010). Similarly, Vasseleu et al. (2021) reported that children with better self-regulation skills are more successful in tasks requiring attention, and they can exert a lot of effort in challenging tasks and show more social behaviors such as taking a turn and sharing toys. It is argued that emotion regulation strategies, social skills, and play behaviors are important skills that might affect popularity among peers (Keane & Calkins, 2004). Berg et al. (2015) found that children who are popular in their peer group have positive social skills such as cooperation and teamwork compared to unpopular children. It is reported that lower self-regulation skills in preschool children are negatively correlated (Beyazıt, 2019) with behavioral problems, social dissatisfaction, and withdrawal (Emre et al., 2020). Problems with behavioral regulation may cause problems in peer relationships in young children (Hughes et al., 2000). Aggressive behaviors are likely to have a negative impact on positive social changes and dynamics (McComas et al., 2005). A number of studies on children revealed that aggressive behaviors are associated with rejection by peers, while gentle and friendly behaviors are associated with peer acceptance (Ladd & Burgess, 1999; Johnson et al., 2000; McDonald & Rubin, 2017; Snyder et al., 2004). Similarly, Huh et al. (2003) found a high correlation between the problem behaviors of children and to which they are preferred by their peers. In their study, Erol and Gülay Ogelman (2020) reported that the level of popularity is lower in children with aggressive behaviors as evaluated by both teachers and peers. In other words, children who are less preferred by their peers tend to show more externalizing behavior than those with higher peer preferences (Bukowski & Hoza, 1989). Similar results were obtained in studies conducted across different cultures. For example, some studies carried out in the USA showed that children with high levels of negative emotionality (neuroticism) and low self-regulation were identified as those who are most prone to externalization problems or low social competence (Eisenberg, Fabes, Guthrie et al., 1996). In addition, a series of studies have found that children with poor S-R skills tend to have behavioral problems and are less successful in peer relationships (Eisenberg et al., 2001; Eisenberg et al., 2004; Tozduman Yaralı & Güngör Aytar, 2017). It is underscored that peer acceptance fosters a child's self-worth (Patterson Mallin, 2003), and it is a protective factor in their development (Hay, 2006; Schrepferman et al., 2006). An increased level of self-regulation skills in preschool influences children's self-perception positively, and children's ability to manage and regulate their thoughts, feelings, and behaviors enables them to develop a positive attitude towards themselves (Tuzcuoğlu et al., 2019). Children and adolescents who can control their impulses and reflect on their actions are more successful in making friends and developing good relationships with others. They can develop less conflicting and more harmonious relationships with their families and friends (Bandy & Moore, 2010; Baumeister et al., 2007). When young children are liked by their peers and have regular and positive relationships with them, they feel more comfortable and happier in school, and this makes it easier for them to enjoy school. It is stated that children who are accepted and liked by their peers are more successful in adapting to school (Johnson et al., 2000), feel more willing to participate in school activities, and take a more positive attitude toward school (Aydoğdu, 2022; Bossaert et al., 2011; Ladd & Burgess, 2001; Lakhani et al., 2017). Problems in peer relations negatively affect children's classroom participation (Ladd et al., 1999) and may cause emotional problems such as attention deficit, shyness, anxiety (Ladd & Burgess, 2001), adjustment problems (Buhs et al., 2006), social dissatisfaction, avoidance of peer interaction, and loneliness (Cassidy & Asher, 1992; Ladd et al., 1997). It is reported that a link exists between early peer relationships and

adolescent psychological adjustment (Shin et al., 2016). Not being preferred by their peers in preschool may result in depression, dropping out of school, substance abuse, delinquency, social anxiety, and antisocial behaviors in the long run (Hay, 2006; Hay et al., 2004; Polenski, 2001; Reijntjes et al., 2006; Shin et al., 2016; Smith et al., 2005). Such findings suggest that individual differences in both self-regulation and adverse affectivity jointly contribute to the quality of social functioning (Eisenberg et al., 2000; Eisenberg et al., 2010).

Conclusion and Recommendations

Preschool represents an important early environment and an optimal time for the development of social skills and peer relationships (Johnson et al., 2000; Han, 2012). As emphasized by Howes and Matheson (1992), cognitive and emotional skills have a central role in the peer relationships of young children. Therefore, it is important to identify children who are less preferred by their peers, have poor self-regulation skills, and suffer from externalizing and internalizing behavior problems at an early age so that problematic behavior patterns do not persist throughout their lives (Blair, 2002). Self-regulation problems in the first years of life can manifest themselves as serious problems such as risk-taking, relationships, well-being, employment problems, and poor decision-making during adolescence and adulthood (Moffitt et al., 2011). Several studies have shown that self-regulation can be improved through interventions in early childhood (Dan, 2016; Flook et al., 2015). Early interventions can help prevent future social challenges for children. Planned and effective self-regulation strategies implemented by teachers may help children achieve psychological well-being and improve their social behavior. In this regard, plans need to be made to improve the self-regulation skills of young children, especially in kindergartens. Preschool professionals should include activities that support young children's self-regulation skills in their daily programs. Parents, as well as teachers, have a key role in the formation of children's behavioral orientations. Not only the behavioral orientation of young children but also their level of competence is influenced by family factors. Parents should be included in these activities, and children with self-regulation problems should be supported by school-family cooperation. Moreover, the results have implications for developing positive self-regulation strategies not only for teachers but also for parents.

Exploring the positive self-regulation strategies of parents can provide insights into the benefits of a strength-based approach to children's positive emotions. Parents and teachers who develop children's positive emotions may also be supporting their self-regulation, which has long-lasting impacts on children's emotional and social outcomes in the future. This is a research study that examined children's self-regulation skills and peer relationships in the preschool period. Longitudinal studies are needed to explore the impact of self-regulation skills on peer relationships in the preschool period.

Ethical Approval

We declare that the study has no unethical problems, and ethics committee approval was obtained from Nigde Omer Halisdemir University, Nıgde (Place: Nigde Omer Halisdemir University, Date: 28.04.2022, Number: 2022/05-52).

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