



## SELF-REGULATION PREDICTS YOUNG CHILDREN'S PEER RELATIONS

Seda SARAÇ

Assist.Prof.Dr., Bahçeşehir University, İstanbul, Turkey

ORCID: <https://orcid.org/0000-0002-3899-6670>

[seda.sarac@es.bau.edu.tr](mailto:seda.sarac@es.bau.edu.tr)

Tuğba ABANOZ

Ph.D., Bahçeşehir Schools, İstanbul, Turkey

ORCID: <https://orcid.org/0000-0001-8905-4002>

[tugbabaskent@gmail.com](mailto:tugbabaskent@gmail.com)

Hülya GÜLAY OGELMAN

Prof.Dr., Sinop University, Sinop, Turkey

ORCID: <https://orcid.org/0000-0002-4245-0208>

[ogelman@sinop.edu.tr](mailto:ogelman@sinop.edu.tr)

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### Abstract

The aim of the study is to examine the predictive effect of self-regulation on peer relations. Data were collected from 3486 children. Of the study sample, 1736 were girls (49.9%) and 1747 were boys (50.1%). All the children were from high SES families and attending private preschools in 10 cities in Turkey. The results showed that all peer relations variables were statistically significantly correlated with self-regulation skills of the children. Simple linear regressions analyses showed that self-regulation was statistically significant predictor of all peer relation variables (prosocial behaviours, aggressive behaviours, asocial behaviours, exclusion by peers, hyperactivity-distractibility, and fear-anxiety). Self-regulation explains the greatest variation in hyperactivity-distractibility of the children (15%) and the least variation in asocial behaviour (3%). This study shows that self-regulation in early childhood may lead to problems in peer relations. Problems with peers have long-term effects on children's development and mental health. This finding underlines the importance of promoting self-regulation skills in early years.

**Keywords:** Self-regulation, peer relations, young children.

### INTRODUCTION

Self-regulation, in the broadest sense, is defined as the ability of individuals to monitor and manage their attention, cognition, emotions and behaviours in order to achieve a goal and / or meet the cognitive and social expectations in a particular situation (Claussen et al., 2021; Perry, Calkins, Dollar, Keane, & Shanahan, 2018; Berger, Kofman, Livneh, & Henik, 2007). Every child is born with the capacity to self-regulate and the motivation for self-regulation (Bronson, 2000). Many researchers recognized self-regulation as the cornerstone of early childhood development (Eisenberg, Smith, Sadovsky & Spinrad, 2004; Gillespie & Siebel, 2006; Shonkoff & Phillips 2000). Self-regulation skills, like other skills, begin to develop gradually from birth. Children first begin to control their physical body and behaviour, and then learn to regulate their emotions over time. Regulation of cognitive activities emerges as the last stage in the development of self-regulation (Bodrova & Leong, 2007). Around the age of three, children become increasingly independent in regulating their emotional, behavioural and mental processes, with the support of cognitive and language development. According to Vygotsky (1962), language development, at the age of three, accelerates the development of children in regulating their own behaviour, thoughts and emotions. Although self-regulation skills reach a level that can be observed by the age of four, their development



continues (Posner & Rothbart, 2000). Similarly, studies on the neurobiology of self-regulation show that many important developmental changes related to the development of self-regulation occur in the early childhood (Blair, 2002; Blair & Raver, 2015). According to Kopp (1982, 1989), early childhood is a period of rapid and remarkable achievements in the development of self-regulatory skills. During this period, the children become more independent and enters a period in which they can effectively regulate their own emotions, behaviours and cognitive activities

Self-regulation is a multidimensional construct (Boekaerts, Maes, & Karoly, 2005). It comprises three executive functions, namely; attentional control, inhibitory control and working memory. (Diamond, 2016; McClelland, & Cameron, 2012; Zelazo, Müller, Frye, & Marcovitch, 2003). These three concepts are the functions of the prefrontal cortex, which is the slowest growing part of the brain. Attentional control is an important domain in self-regulation (Rueda, Posner & Rothbart, 2004) and refers to the capacity of an individual to choose what to pay attention and what to ignore (Ruff & Rothbart, 1996; Wass, Scerif, & Johnson, 2012). Inhibitory control involves goal-directed suppressing an impulsive, dominant response to a goal (Cuevas, Rajan, & Bryant, 2018). Working memory involves keeping the information in mind for a period of time while synchronously processing the information (Baddeley, 2003).

In the first 5-6 years of life, significant improvements occur in executive functions, thus self regulation, that have a great impact on the further development of the child. The socio-emotional development of children is also closely related to the development of self-regulation skills. Self-regulation skills enable children to control their emotional expressions and therefore to establish increasingly more complex relationships with others within the framework of social rules. In addition, within the socio-emotional context, self-regulation includes the ability to adapt to changing situations, prevent inappropriate behaviours in a particular situation, and prioritize socially accepted behaviours (Whitebread & Basilio, 2012). The first years of life are also a period in which important developments are recorded in terms of peer relations. Young children acquire rich experiences in terms of peer relations and gain various competencies in this regard (Gülay Ogelman, 2020). This increase in the intensity of relationships requires children to have stronger self-regulation skills. Self-regulation skills contribute to the increase in children's ability to manage a variety of demands in social relationships and lay the groundwork for developing positive social behaviour standards that children will use in future peer interactions (Calkins, 2007). Problems such as inability to control impulses in early childhood, and inability to regulate behaviours according to social demands are associated with behavioural problems in later years (Calkins, 1994; Robson, Allen & Howard, 2020; Rubin, Burgess, Dwyer, & Hastings, 2003; Shaw, Bell, & Gilliom, 2000). Disruptions in children's ability to manage arousal and behavioural impulses, for example, can often lead to aggressiveness and opposition to adults' requests (Crockenberg & Litman, 1990; Kuczynski, Kochanska, Radke-Yarrow, & Girmius-Brown, 1987). Children who lose control of their behaviours and emotions when their wishes or desires are inhibited by adults, may likewise have difficulties in dealing with frustration in peer relations (Denham, Bassett, & Zinsser, 2012).

The first studies on self-regulation skills and development in early childhood began in the 1980s (Kopp, 1982, 1989). However, studies on children's self-regulation skills in Turkey started to increase as from the 2010s (e.g. Aksoy & Yarı, 2017; Aydın & Ulutaş, 2017; Erol & İvrendi, 2018; Ertürk Kara & Gönen 2015; Fındık Tanrıbuyurdu & Güler Yıldız 2014; Güler Yıldız, Kara, Fındık Tanrıbuyurdu, & Gönen, 2014; Tanrıbuyurdu, 2012; Yağmurlu & Altan, 2010;). Accordingly, the number of studies conducted with Turkish children in the literature is quite scarce. Moreover, there is no study on the relationship between peer relations and self-regulation. In this regard, studies on self-regulation skills of Turkish children and their predictive effect on peer relations are necessary and important. This study will also shed more light on the relation between self-regulation and peer relations of young children; therefore can contribute to international literature.



Hence, the aim of the study is to examine the predictive effect of self-regulation on peer relations. The research problems are as follows;

1. Does self-regulation levels of children predict statistically significantly children's level of prosocial behaviours?
2. Does self-regulation levels of children predict statistically significantly children's level of aggression with peers?
3. Does self-regulation levels of children predict statistically significantly children's level of asocial behaviours?
4. Does self-regulation levels of children predict statistically significantly children's level of exclusion by peers?
5. Does self-regulation levels of children predict statistically significantly children's level of hyperactivity-distractibility?
6. Does self-regulation levels of children predict statistically significantly children's level of fear-anxiety?

## METHOD

### Participants

The data used in this study were obtained from teachers' reports, which is one of the most reliable sources for evaluating children's skills (Lambert et al., 2014; Saraç & Karakelle, 2012; Verhulst et al., 1994). Data were collected for 3486 children. Of the study sample, 1736 were girls (49.9%) and 1747 were boys (50.1%). All the children were from high SES families and attending private preschools in 10 cities in Turkey. Children's age ranged from 48 to 82 months ( $M = 65.957$ ,  $SD = 7.146$ ). All of the children were normally developing children. Children with developmental problems were not included in the study.

### Materials

#### Self Regulation Skills Scale for 4-6 Years Old Children (Teacher Form)

Self-Regulation Skills Scale for Children aged 4-6 (Teacher Form) was developed by İvrendi and Erol (2018) to determine the self-regulation skills of 4-6 year old children based on teacher report. The 22 item-scale contains three subscales: Attention (nine items), Working Memory (five items) and Inhibitory Control (eight items). The items are formulated into statements so teachers could respond on a five-point scale (1= never; 5=always). Scale scores can be calculated separately for each sub-dimension, as well as the total self-regulation score. In this study, the total self-regulation score was used. Cronbach's Alpha for the original scale was .94. In this study, the Cronbach's Alpha coefficient of the scale was calculated as .954. Higher scores indicate higher levels of self-regulation.

#### The Child Behavior Scale

The Child Behaviour Scale is a scale developed by Ladd and Profilet (1996) to assess children's relationships with their peers at preschool environment. Turkish adaptation of the scale was carried out by Gülay (2008) and validated for children aged 5-6. In another study Gülay Ogelman et al., (2015) validated the scale for 4 year olds. Teachers respond on 3-point Likert-type scale (0= doesn't apply, 1= sometimes apply and 2= most often apply). The 44-item scale consists of six subscales; namely, Aggression towards peers (seven items), Prosocial Behaviour (ten items), Asocial Behaviour (seven items), Exclusion by Peers (seven items), Hyperactivity-Distractibility (four items) and Fear-Anxiety (nine items). Total score cannot be obtained from the scale. Separate scores are calculated for each sub-dimension. The total scores obtained from the subscales denote how often the behaviour represented by that scale was performed. For each subscale higher scores indicate higher levels of behaviour represented by that scale. The Cronbach's Alphas for the subscales were .89, .92, .87, .94,



.88 and .77, respectively. In this study, the Cronbach's Alpha coefficients for the subscales were calculated as .71, .89, .83, .82, .78 and .75, respectively.

### Procedure

Two hundred twenty teachers from 42 private preschools filled in both scales. The forms were sent to the teachers by e-mail. They were asked to rate only students they had known for at least 6 months. After completion, they sent the forms back via email.

### Data analysis

The data of the study were analysed using the SPSS 21.0 software package for statistical analysis. Pearson Product Moment Correlation coefficients were calculated for the relationship between children's self-regulation skills and peer relations variables. Simple linear regression analyses were performed for the predictive effect of self-regulation on peer relation variables.

## RESULTS

### Preliminary Analysis

Descriptive statistics and correlations among study variables are presented in Table 1. All the peer relation variables were statistically significantly correlated with self-regulation skills of the children.

**Table 1.** Descriptive statistics and correlations coefficients regarding self-regulation and peer relation variables

	n	Mean	Std.Dev.	r	p
Self regulation	3486	94.868	12.740	-	-
Prosocial behaviour	3486	13.229	5.441	.271	.000
Aggressive behaviour	3486	1.644	2.124	-.255	.000
Asocial behaviour	3486	2.086	2.527	-.157	.000
Exclusion by Peers	3486	1.748	2.746	-.133	.000
Hyperactivity-Distractibility	3486	1.534	1.915	-.392	.000
Fear-Anxiety	3486	2.292	2.667	-.309	.000

### Simple Linear Regression Analyses

Series of simple linear regression analyses were conducted to see the predictive effect of self-regulation on peer relations. The results are presented in Table 2.

**Table 2.** Results of simple linear regression analyses on predictive effect of self-regulation on peer relations of children.

	R	R <sup>2</sup>	F	Std. E	B	t	p
Prosocial behaviour	.271	.074	276.386	.007	.271	16.625	.000
Aggressive behaviour	.255	.065	242.350	.003	-.255	-15.568	.000
Asocial behaviour	.157	.025	88.386	.003	.271	16.625	.000
Exclusion by peers	.133	.018	62.885	.004	-.133	-7.930	.000
Hyperactivity-Distractibility	.392	.153	613.346	.002	-.393	-25.127	.000
Fear- Anxiety	.309	.095	367.263	.003	-.309	-19.164	.000

Simple linear regressions analyses showed that self-regulation was statistically significant predictor of all peer relation variables. Self-regulation explained 7% variation in prosocial behaviour ( $R=.271$ ,  $R^2=.074$ ,  $F=276.386$ ,  $p<.000$ ), 7% variation in aggressive behaviour ( $R=.255$ ,  $R^2=0.065$ ,  $F=242.350$ ,  $p<.000$ ), 3% variation in asocial behaviour ( $R=.157$ ,  $R^2=.025$ ,  $F=88.386$ ,  $p<.000$ ), 2% variation in exclusion by peers ( $R=.133$ ,  $R^2=.018$ ,  $F=62.885$ ,  $p<.000$ ), 15% variation in hyperactivity-distractibility ( $R=.392$ ,  $R^2=.153$ ,  $F=613.346$ ,  $p<.000$ ) and 10% variation in fear-anxiety ( $R=.309$ ,  $R^2=.095$ ,  $F=367.263$ ,  $p<.000$ ).



## DISCUSSION and CONCLUSION

This study was conducted to examine the predictive effect of self-regulation skills of young children on peer relations. A positive and significant relationship was found between young children's self-regulation levels and prosocial behaviours. The results also demonstrated that there is a significant negative relationship between self-regulation levels and aggressive, asocial behaviours, exclusion by peers, hyperactivity-distractibility and fear-anxiety levels. Additionally, self-regulation skills significantly predicted each peer relation variables. Among all peer relation variables, self-regulation explains the greatest variation in hyperactivity-distractibility level of the children (15%). This result supports Barkley (2001, 2004), who argues that hyperactivity and distractibility are mainly caused by children's self-regulation problems and that even Attention Deficit Hyperactivity Disorder is basically a self-regulation disorder. This result is also in line with the results of the Ros and Graziano (2019) as well as Graziano, Landis, Maharaj, Ros-Demarize, Hart, and Garcia (2019) studies.

Young children with higher levels of self-regulation skills show higher levels of prosocial behaviour towards their peers. Children with low self-regulation skills can be aggressive, fearful-anxious, hyperactive-distractible, and exhibit asocial behaviour in peer relations. Additionally, they may be excluded by peers. Several other studies also support the findings of this research. In a study conducted by Ramani, Brownell, & Campbell (2010), 435 children between the ages 3 to 4, researchers found that children with better impulse control were more adaptable and friendly, showed less challenging attitudes towards adults exhibited positive behaviours towards their peers. They, also, participate more in play with their peers and exhibited less negative behaviours during play. Several researchers (Eisenberg, Guthrie, Fabes, Shepard, Losoya, & Murphy, 2000; Fabes, Eisenberg, Jones, Smith, Guthrie, & Poulin, 1999) stated that self-regulation could be related to social competence in peer relationships in early childhood and middle childhood. Children with higher levels of self-regulation may act less impulsively when they experience problems in peer relationships and may display accommodating and relaxed attitudes. Similarly, children who have problems with self-regulation may show impulsive, opposing, incompatible attitudes towards their peers. Hughes, White, Sharpen and Dunn (2000) stated that one of the reasons for the negative peer relationships of young children may be problems related to behavioural regulation. Some authors (Duckworth & Kern, 2011; Moffitt et al., 2011) asserted that high levels of self-regulation might increase social competence. Similarly, Reebye (2005) suggested that impulse control might underlie aggressive behaviour. In their study with Turkish 5 year-olds, Gulay Ogelman and Fetihi (2021) showed, that young children's levels of coping with peer pressure, aggression and social preferences could be predicted by their emotion regulation strategies. In a laboratory study, Calkins, Gill, Johnson and Smith (1999) also found that toddlers' negative emotionality levels were positively associated with peer conflicts. Researchers (Blair & Razza, 2007; Eisenberg et al., 2004; Olson, Lopez-Duran, Lunkenheimer, Chang and Sameroff, (2011) also found a negative relation between self-regulation and aggression, and a positive relation between self-regulation and social competence.

The development of self-regulation skills in early childhood is generally considered as early signs of life success in later years (Montroy, Bowles, Skibbe, McClelland, & Morrison, 2016; Piotrowski, Lapierre, & Linebarger, 2013). Early childhood years are the most critical times to support children's self-regulation skills (Blair, 2002; Perry, 2019). Self-regulation problems in early childhood, if not intervened, appear as serious problems like risk-taking, relationship problems, health, employment problems and poor decision making in adolescence and adulthood. (Butler, 2004; Moffitt et al. 2011). Many studies have proven that self-regulation can be improved with intervention in early childhood. For example Flook, Goldberg, Pinger and Davidson (2015) reported that children's self-regulation could be increased with mindfulness-based interventions. In another study with Israeli children, Dan (2016) showed that self-regulation skills of children could be developed with an intervention focusing solely on children's self-regulation skills.



In line with the literature and the findings of this research, it can be said that young children's self-regulation skills are an important factor in healthy peer relationships. Self-regulation can support children in maintaining successful peer relationships. Problems that may occur in self-regulation can also lead to various problems in peer relationships. Peer relations have an important place in the happiness and academic life of children. Thus, supporting self-regulation with interventions in preschool settings will enhance children's peer relations as well and have long-term benefits.

## Conclusion, Limitations and Recommendations

The results of this study are notable in terms of revealing the importance of self-regulation skills in peer relations. Young children's capacities for self-regulation are reflected in their peer relations. Therefore, teachers should focus on developing young children's self-regulation skills. Activities supporting self-regulation skills should be an important part of everyday practices of teachers. Children with problems in self-regulation should be supported. It is important that teachers and parents collaborate and take initiative in developing children's self-regulation skills. This is one of the first studies with a large sample in Turkey. However, more studies are needed to better understand self-regulation development of Turkish children. Self-regulation skills of Turkish children should be examined in relation with other social, emotional and academic variables and long-term effects of self-regulation skills of preschool children should also be studied. The interaction of peer relationships with self-regulation should also be considered in line with different evaluation methods such as sociometry.

## Limitations of the study

Caution should be taken when interpreting the findings. Although data for this study were obtained from a large sample from 10 different cities in Turkey, all the children were from high SES families. On this regard, it is not possible to generalize the results to the children from different socio-economic backgrounds. Considering the relationship between socio-economic status and children's self-regulation skills (Nesbitt, Baker-Ward & Willoughby, 2013; Størksen, Ellingsen, Wanless, & McClelland, 2015; Sarsour, Sheridan, Jutte, Nuru-Jeter, Hinshaw, & Boyce, 2011), it is important to conduct further studies with children from families of different socio-economic levels.

Another limitation of the study is the peer relations variables discussed. In this study, only aggression, prosocial behaviour, asocial behaviour, exclusion by peers, hyperactivity-distractibility and fear-anxiety were discussed as variables of peer relations. Other peer relation variables such as victimization, sociometric status and friendship quality should be also examined in further studies.

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