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Research Article

An Examination of the Relationship between Aggression and Sociometric Popularity in Preschool Children

Okul Öncesi Çocuklarda Saldırganlık ve Sosyometrik Popülerlik Arasındaki İlişkinin İncelenmesi

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Abstract

Purpose: Aggression *is an increasingly prevalent behavioral problem today. Studies show that aggression can harm children's social relationships, increasing their likelihood of exposure to peer violence and rejection by their peers. Aggressive children are more likely to inflict violence on their peers and are more likely to be exposed to their violence. This study aimed to determine the linear and curvilinear relationships between sociometric popularity and aggression in children.* ***Method:*** The *study group consisted of 420 children aged 5-6 years. Relationships between variables were analyzed using correlation. The effects of gender on aggression and popularity in girls and boys were tested using an independent samples t-test. Then, linear regression analysis and second-order regression analysis were performed, respectively, to determine the effects between the variables.* ***Findings:*** Aggression *scores were found to be higher in boys, while sociometric popularity scores were higher in girls. A significant and negative relationship was observed between popularity scores and aggression scores for both girls and boys. For girls, the linear effect of sociometric popularity on aggression is statistically significant, indicating that aggression levels increase as peer preference decreases. Curvilinear effects are not significant for girls. For boys, both linear and curvilinear effects of popularity on aggression are statistically significant. The linear effect showed that low peer preference was associated with high aggression levels. Curvilinear effects showed that aggression levels increased in boys at both low and high levels of peer preference.* ***Conclusion:*** The *research findings can shed light on the dynamics of peer group structures and offer valuable guidance for early intervention strategies.*

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Öz

Amaç: *Saldırganlık günümüzde gittikçe artan ve yaygınlaşan bir davranış sorunudur. Saldırganlığın çocukların sosyal ilişkilerine zarar verebileceğini, akran şiddetine maruz kalma ve akranları tarafından reddedilme olasılığını artırdığı gösterilmektedir. Saldırgan çocuklar akranlarına karşı şiddet uygulamakta ve onların şiddetine daha fazla maruz kalmaktadır. Bu çalışma, çocuklarda sosyometrik popülerlik ve saldırganlık arasındaki doğrusal ve eğrisel ilişkileri belirlemeyi amaçlamıştır.* ***Yöntem:*** *Çalışma grubu 5-6 yaş arası 420 çocuktan oluşmaktadır. Değişkenler arasındaki ilişkiler korelasyon kullanılarak analiz edildi. Kız ve erkek çocuklarda saldırganlık ve popülerlik üzerindeki cinsiyet etkileri bağımsız örneklem t-testi kullanılarak test edildi. Daha sonra, değişkenler arasındaki etkileri belirlemek için sırasıyla doğrusal regresyon analizi (Adım 1) ve ikinci dereceden regresyon analizi (Adım 2) gerçekleştirildi.* ***Bulgular:*** *Saldırganlık puanlarının erkeklerde, sosyometrik popülerlik puanlarının ise kızlarda daha yüksek olduğu bulunmuştur. Hem kızlar hem de erkekler için popülerlik puanları ile aldırganlık puanları arasında anlamlı ve negative bir ilişki gözlenmiştir. Kızlar için, sosyometrik popülerliğin saldırganlık üzerindeki doğrusal etkisi istatistiksel olarak anlamlıdır ve bu da akran tercihi azaldıkça saldırganlık düzeylerinin arttığını göstermektedir. Eğrisel etkiler kızlar için anlamlı değildir. Erkekler için, popülerliğin saldırganlık üzerindeki hem doğrusal hem de eğrisel etkileri istatistiksel olarak anlamlıdır. Doğrusal etki, düşük akran tercihinin yüksek saldırganlık düzeyleriyle ilişkili olduğunu göstermiştir. Eğrisel etkiler ise saldırganlık düzeylerinin erkeklerde hem düşük hem de yüksek akran tercihi düzeylerinde arttığını göstermektedir.* ***Sonuç:*** *Araştırma sonuçları, erken çocukluk döneminde saldırganlık ve sosyometrik popülerlik arasındaki ilişkiyi araştırmakla, akran grubu yapılarının dinamiklerine ışık tutabilir ve erken müdahale stratejileri için değerli bir rehberlik sunabilir.*

Introduction

Aggression is one of the behavioural difficulties frequently observed among pre-school children and can significantly influence their processes of social adjustment as well as their relationships with peers. It is generally defined as a range of behaviours intended to inflict physical or psychological harm on another individual (Naverro et al., 2022). Aggression in early childhood settings may appear as physical actions such as hitting and pushing. Relational aggression is another form of aggressive behaviour and refers to actions intended to damage peer relationships or exclude others from social groups (Nærde et al., 2014; Ostrov et al., 2018). Research suggests that aggression during the pre-school years is linked to several adverse social outcomes. Such outcomes include peer rejection, greater exposure to peer bullying, and challenges in developing positive relationships with peers (Ersan, 2020; Khoury-Kassabri et al., 2020; L'Ecuyer et al., 2021). In addition, a recent meta-analysis reviewing 61 studies on children and adolescents analysed data from 45.966 participants aged between 3 and 18 years. The findings indicated a significant positive relationship between peer rejection and various forms of aggression (Yue & Zhang, 2023).

The theoretical basis of this study rests on Social Learning Theory, Social Information Processing Theory, and Hawley's Dominance Theory. The Social Learning Theory suggests that children learn social behaviours, including aggressive actions, through observing interactions within their peer groups and by recognizing the outcomes of these behaviours, such as reinforcement or punishment (Bandura, 1977). From this viewpoint, children may imitate aggressive behaviours they witness among their peers and may later display similar behaviours depending on whether these actions appear to be rewarded or discouraged. On the other hand, Crick and Dodge's Social Information Processing Theory proposes that experiences of peer rejection can influence the way children interpret social cues. For instance, an ambiguous action such as a push may be perceived as intentionally hostile. Such interpretations can lead children to respond with reactive aggression. This cognitive bias, therefore, plays a role in facilitating the emergence of reactive aggressive behaviour (Crick & Dodge, 1994). The curvilinear relationship (increased aggression at both high and low popularity levels) observed particularly in boys has been explained using Hawley's Dominance Theory (Hawley, 1999). According to this theory, some children with high popularity may use coercive and aggressive strategies, in addition to prosocial behaviors, to maintain their position in the social hierarchy and access to resources.

During the early years, peer relationships play a crucial role in ensuring healthy and complete individual development. Peer relationships are defined as the interactions between children of the same or similar age group (Pepler & Craig, 1998). These relationships serve as a context in which children can acquire and experience new knowledge, skills, and behaviours (Reitz et al., 2014; Wang et al., 2021). Within peer environments, children begin to form relationships with others of the same age and gradually learn to manage their own emotions in a more controlled manner (van Lier & Deater-Deckard, 2016). And by adapting to the social cues and behaviours of their peer groups, children develop social competence (Falla et al., 2023; Saraçho, 2017; Wallat & Green, 2019). During early childhood, young children typically find themselves in groups with others who are similar to them. The efforts to join a group and to remain part of it are reflected in each child's behaviour. Therefore, group dynamics and the processes involved in group formation are subject to ongoing change within existing relationships (Gifford-Smith & Brownell, 2003).

Peer sociometric status is considered an important indicator in understanding children's positions within a group and the quality of their relationships with their peers. Peer sociometric status can be used as an indicator of children's sociometric popularity within their peer group and reflects the quality of their experiences with peers. Two concepts of popularity are discussed: the perceived popularity and sociometric (Borch et al., 2011; Kuryluk et al., 2011; Peklaj & Pečjak, 2020). Sociometric popularity (SP), which is the focus of this article, is an indicator of social preference, whereas perceived popularity (identification of popular children) is a measure of social reputation and influence within the peer group (Cillessen & Mayeux, 2004).

Popularity is associated with peer acceptance or likeability (van den Berg et al., 2020), and these individuals hold a high status and a more central position within the group (Katerkamp & Horn, 2025; McDonalds & Asher, 2018). A child in a group is considered popular when the majority of their peers like them, which indicates that they receive a large number of positive sociometric nominations (Košir, 2013). Popular children enjoy positive relationships with peers who support their development and social skills. Compared to disliked children, popular children display behaviours aimed at seeking knowledge and interest, and they offer more effective solutions for managing conflict, initiating, and maintaining interactions (Diesendruck & Ben-Eliyahu, 2006). Children who are liked by their peers are more social and cooperative than other children, solve social problems more successfully, support their peers (Horn et al., 2024; Peklaj & Pečjak, 2020), and exhibit more prosocial behaviour (Engelmann et al., 2019; Lenz & Paulus, 2021). Children rejected by their peers tend to display more negative or fewer positive behaviours than others. Such children may exhibit high levels of aggression, low levels of socialization, and deficiencies in cognitive abilities (Cillessen & Bukowski, 2018; Koivusaarı, 2004). Peer rejection predicts lower self-regulation, and in turn, poor self-regulation increases peer exclusion (Stenseng et al., 2015). Being accepted by peers is considered a good indicator of social adjustment (Schneider, 2016), and peer rejection is seen as both a correlate of other problems (e.g., aggression) and a predictor of future maladjustment (Heinze et al., 2015; Shin et al., 2016).

Among individual differences, gender is a variable that influences peer relationships in the early years of life. The effect of a person's gender on peer relationships is particularly evident in aggressive behaviours. Gender differences in aggression tendencies have been observed even in children under the age of two (van Adrichem et al., 2019). The literature identifies gender as an important differentiating factor in the trajectories of relational and physical aggression (Fite & Pederson, 2018). The frequency and type of aggressive behaviour vary between boys and girls. A substantial body of literature indicates that boys are more aggressive than girls (Björkvist, 2017; Ersöz & Arcagök, 2024; Piotrowski, 2017; Rozzagyah et al., 2021; Swift et al., 2023; Doğan & Alabay, 2024). Moreover, gender differences are also reflected in the type of aggression. Accordingly, boys tend to display more physical aggression, whereas girls tend to exhibit relational aggression (Perhamus & Ostrov, 2023). Some studies report sex differences, with girls more popular than boys (von Grunigen et al., 2010; Yavuzer & Karataş, 2021).

In the literature, most of the studies examining the relationship between aggression and sociometric popularity were conducted on school-age children and adolescents (Kuryluk et al., 2011; Yavuzer & Karataş, 2021; Walcott et al., 2008). However, no study has been identified that specifically examines the relationship between sociometric popularity and aggression among pre-school children. In addition, the majority of existing research has addressed this association as a linear relationship, while possible curvilinear patterns between aggression and sociometric popularity have rarely been explored. Peer relationships formed during early childhood are considered

highly influential for children's social adjustment and their later developmental outcomes (Ostrov, 2008; Rubin et al., 2006). Therefore, exploring how aggression relates to sociometric popularity during the pre-school years may help provide a deeper understanding of the developmental mechanisms that shape children's peer interactions. Research also suggests that during the pre-school period, children's peer relationships begin to diversify, and relational dynamics such as acceptance or rejection within peer groups, as well as the emergence of social status differences, become increasingly visible (Gülay, 2011). In this context, investigating the association between aggression and sociometric popularity during early childhood may shed light on the dynamics of peer group structures and offer valuable guidance for early intervention strategies. Guided by this theoretical and empirical background, the present study seeks to examine the association between aggression and sociometric popularity among pre-school children. In line with this general objective, the specific aims of the study are defined as follows:

H_1: Aggression and sociometric popularity scores among preschool children differ significantly by gender.

H_{1a}: Boys have significantly higher aggression scores than girls.

H_{1b}: Girls have significantly higher sociometric popularity scores than boys.

H_2: Among girls, there are significant relationships between sociometric popularity and aggression.

H_{2a}: Sociometric popularity has a significant linear effect on aggression among girls.

H_{2b}: Sociometric popularity has a significant curvilinear effect on aggression among girls.

H_3: Among boys, there are significant relationships between sociometric popularity and aggression.

H_{3a}: Sociometric popularity has a significant linear effect on aggression among boys.

H_{3b}: Sociometric popularity has a significant curvilinear effect on aggression among boys.

Methodology

Research Design

The research was designed within a relational and quantitative model. The relational design model aims to examine the relationship between two or more variables. The main

purpose of this model is to determine whether there is a relationship between the variables and, if so, the direction and strength of that relationship (Creswell, 2014).

Participants

The study group consists of 420 children attending preschools in Niğde province and under the jurisdiction of the Provincial Directorate of National Education during the 2024-2025 academic year. Among the children included in the study, 208 (49%) were boys and 212 (51%) were girls. When selecting the schools for participation, factors such as socioeconomic status, availability of resources, accessibility, and time constraints were considered. The study was conducted in 6 preschools selected using a random sampling method, taking these criteria into account. All participants were children aged five to six years. The children participating in the study showed typical developmental characteristics.

Instruments

Information Form

This form includes details about the gender and age of the participating children.

Ladd and Profilet Child Behaviour Scale

Ladd and Profilet Child Behaviour Scale (Ladd & Profilet, 1996) is an assessment tool designed to determine peer relationships of preschool children based on teacher evaluations. The scale consists of six subdimensions (aggression, prosocial behaviours, asocial behaviours, fear and anxiety toward peers, peer rejection, and hyperactivity) and a total of 44 items. In this study, the aggression subscale of the instrument was utilized. The scale items are rated according to the responses “Never”, “Sometimes”, and “Always”. In studies conducted for the adaptation of the scale into Turkish, the internal consistency coefficient of the aggression subscale was found to be 0.87 (Gülay, 2008). In this study, the aggression subscale’s Cronbach’s Alpha Coefficient was 0.87.

Sociometry

Sociometry is defined as the numerical determination of who is accepted or rejected within a group (Demir-Şad, 2007). The literature review revealed that two different methods have been used to identify popular children. In some studies, sociometric popularity is determined by subtracting the least liked score from the most liked score (Borch et al., 2011; Coie et al., 1982; Kuryluk et al., 2011). In some studies, in the field, instead of this method, social status has been used to identify children based on social preference and social impact scores (Coie et al., 1982; Dunn et al., 2007; Pulido et al., 2010; Ummunel, 2007). In the present study, the first method mentioned above was used to determine sociometric popularity. In the study, children were asked to name the three classmates they liked the most and the three they liked the least (“Who are the three

friends you like most in the class?" and "Who are the three friends you like least in the class?"). After the measurement was completed, the raw scores of the children were converted to z-scores within their own classrooms. Subsequently, each child's popularity score was calculated by subtracting their Disliking score from their Liking score (Coie et al., 1982). This method has also been tested in studies conducted with primary and secondary school students in Türkiye (Demir & Kaya, 2008; Oral, 2007; Yavuzer, 2013; Yavuzer & Karataş, 2021).

Procedure

Before the data collection process began, the purpose and procedures of the study were explained in detail to the participating teachers, and the inclusion criteria were clearly outlined. The children included in the study were informed about the research, and they were asked to either sign or create a drawing to indicate their assent to participate. Participating children provided their assent through written consent or artistic expression. They were informed that if they experienced any discomfort during the study, they could withdraw at any time without providing any justification. The aggression subscale of the Ladd and Profilet Child Behavior Scale used in the study was filled in separately for each child (all children in the class) by classroom teachers. Sociometric measurement questions were asked individually to each child, and their responses were recorded by the researchers. After the measurement was completed, the raw scores of the children were converted to z-scores within their own classrooms. Throughout the process, the children's verbal and behavioural reactions were carefully monitored. No child disrupted or withdrew early from the data collection process. The administration of the scale took approximately 10 minutes per child. All data were collected over a six-week period.

Research Ethics

Necessary legal permissions and official research approval were obtained from the Niğde Ömer Halisdemir University Ethics Committee (Decision No:2022/04-29) to collect research data.

Data Analysis

In this study, data homogeneity was first assessed. The skewness values ranged from -0.10 to 1.62 and the kurtosis values ranged from -0.47 to 1.73 across variables. The skewness and kurtosis coefficients within ±2 indicate that the data do not substantially deviate from normality (Tabachnick & Fidell, 2013). All variables fell within these acceptable limits, confirming that the sample exhibited a normal distribution. Relationships between variables were analyzed using correlation. The effects of gender on aggression and popularity in girls and boys were tested using an independent samples t-test. Subsequently, to determine the effects among variables, the linear regression analysis (Step 1) and the quadratic regression analysis (Step 2) were conducted

sequentially. In the study, the Durbin-Watson statistic was 2.08, the tolerance value was 1.00 and the Variance Inflation Factor (VIF) was 1.00.

Findings

This section presents the findings related to the examination of aggression and sociometric popularity scores by gender, the correlation relationships among variables, and the curvilinear and linear trends between sociometric popularity (predictor variable) and aggression (dependent variable).

Preliminary Analyses: Gender Differences

First, gender differences in aggression and SP were analyzed. The results are shown in Table 1.

Table 1. *Gender Differences in Aggression and SP*

	M ± SD Girls (N=212)	M ± SD Boys (N= 208)	$F_{(1-418)}$	p	Eta-Squared (η^2)
Aggression	0.96 ± 1.85	1.80 ± 2.16	18.29	0.00**	0.04
Sociometric Popularity	0.18 ± 0.92	-0.09 ± 0.92	9.82	0.02*	0.02

**p< 0.05, **p< 0.001*

As shown in Table 1, young children's aggression ($F_{(1-418)} = 18.29$, $p<0.001$) and popularity ($F_{(1-418)} = 9.82$, $p < 0.05$) scores differ according to gender. According to this finding, it can be stated that boys have higher aggression scores compared to girls, while girls have higher sociometric popularity scores compared to boys.

Based on the preliminary analysis determining the effect of gender on aggression and sociometric popularity, correlation analyses were conducted separately for girls and boys. The correlational relationships among the variables are presented in Table 2.

Table 2. *Correlation Coefficients between Variables*

Aggression	Gender	r
SP	Girls	-.16*(.02*)
	Boys	-.17*(.01*)

**p<0.05*

According to Table 2, a significant negative correlation was found between girls' SP and their aggression scores ($r= -0.16$, $p < 0.05$). According to the same table, a significant negative correlation was also observed between boys' SP and their aggression scores ($r = -0.17$, $p < 0.05$).

Linear and Curvilinear Associations between Aggression and Popularity

The results of the linear (Step 1) and quadratic (Step 2) analyses explaining the relationship between SP and aggression for girls and boys are presented in Table 3.

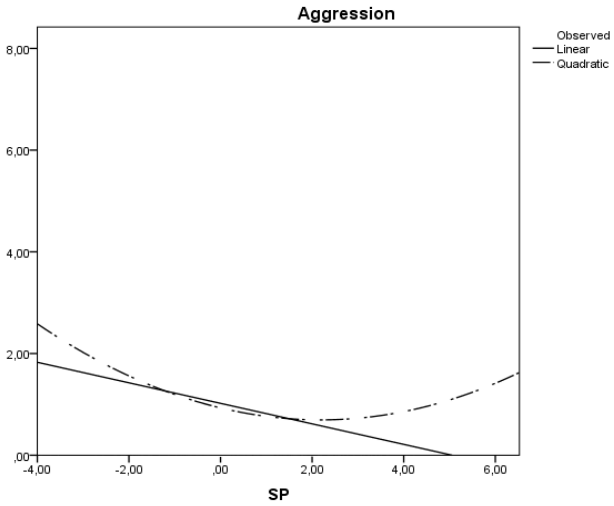
Table 3. *Results of Linear and Quadratic Regression Analyses for Variables*

		Aggression					
		R	R^2	F	β	t	p
For girls	Step1 (Linear) Sociometric Popularity	0.15	0.02	5.13	-0.31	-2.26	0.02*
	Step 2 (quadratic) Sociometric Popularity	0.17	0.03	3.10	-0.33	-2.39	0.30
For boys	Step 1 (Linear) Sociometric Popularity	0.16	0.03	5.92	-0.39	-2.43	0.01**
	Step 2 (Quadratic) Sociometric Popularity	0.23	0.06	6.02	-0.32	-1.98	0.00***

**p< .05, **p< .01, ***p< .001*

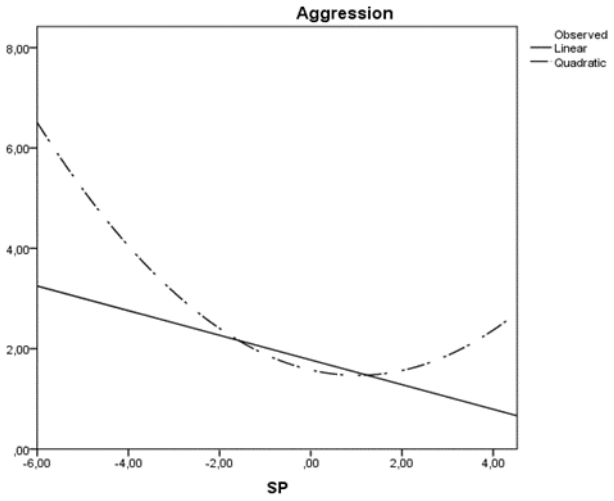
According to Table 3, the linear effect of SP on aggression is negative and statistically significant for girls. For girls, the linear effects indicate that aggression levels are high when peer preference is low. Sociometric popularity explains 2% of the variance in aggression levels (R^2 = 0.02). The curvilinear effect of sociometric popularity on aggression was not found to be statistically significant for girls (Table 3, Figure 1).

Figure 1. *Quadratic and linear trends between aggression and sociometric popularity (girls)*



Also, as seen in Table 3, the linear effect of sociometric popularity on aggression is negative and statistically significant for boys. For boys, low peer preference is associated with high levels of aggression. For boys, sociometric popularity explains 3% of the variance in aggression levels (R^2 = 0.03). Regarding curvilinear effects in boys, the negative and statistically significant β indicates that aggression levels increase both at low and high levels of peer preference (Figure 2).

Figure 2. *Quadratic and linear trends between aggression and sociometric popularity (boys)*



Accordingly, both low and high peer preference increase children's aggression levels. Based on the table values for the quadratic (Step 2) regression analysis, sociometric popularity explains 6% of the variance in aggression levels (R^2 = 0.06).

Discussion

This study aimed to determine the curvilinear and linear relationships between sociometric popularity and aggression in young children. A significant negative relationship was observed between the popularity scores and the aggression scores for both girls and boys. For girls, the linear effect of sociometric popularity on aggression was statistically significant, indicating that as the peer preference decreased, the aggression levels increased. The curvilinear effects were not significant for girls. For boys, both the linear and curvilinear effects of popularity on aggression were statistically significant. The linear effect showed that low peer preference was associated with high levels of aggression. The curvilinear effects indicated that the aggression levels increased for boys both at low and high levels of peer preference.

In this study examining both linear and curvilinear trends between aggression and SP in pre-school children, a preliminary analysis was conducted to determine whether the research variables differed according to gender. The analysis revealed that boys' mean aggression scores were higher than those of girls, while girls' mean SP scores were higher than those of boys. This finding aligns with previous studies indicating that boys exhibit higher levels of aggression compared to girls (Björkvist, 2017; Doğan & Alabay, 2024; Piotrowski, 2017; Rozzagyah et al., 2021), while girls demonstrate higher levels of sociometric popularity than boys (Kuryluk et al., 2011; von Grunigen et al., 2010; Yavuzer, 2013; Yavuzer & Karataş, 2021). In a study examining the relationship among gender, social status, and social behaviours in young children, Walker (2004) found that boys used more aggressive and harmful strategies than girls when resolving conflicts within their peer groups. In traditional parenting, children are raised according to behavioural patterns and cultural values related to gender roles (Sayın, 2007). While boys are

expected to be strong, active, and assertive, girls are encouraged to be compliant, obedient, kind, and self-sacrificing (Köseler, 2009; Yörükoğlu, 2004). Behaviours such as dynamism, being active, and being dominant are more tolerated in boys than in girls. Therefore, such a perspective shaped by gender may influence the way and frequency with which children express aggressive behaviours.

In the literature, popularity in young children is associated with being cooperative, exhibiting prosocial behaviour, and showing low levels of aggression (Cillessen & Rose, 2005; Engelmann et al., 2019; Lenz & Paulus, 2021). Research has shown that popular children in peer groups possess high levels of leadership and communication skills (Diesendruck & Ben-Eliyahu, 2006; Slaughter et al., 2002). Murphy and Faulkner (2006) examined the effects of gender and social status differences on the communication of popular and unpopular children aged 4 to 7, finding that popular girls exhibited more cautious approaches to conflicts compared to their unpopular peers. Additionally, findings indicate that popular girls are more likely to help their peers in difficult situations and adhere to rules. In the mentioned study, no differences were found between popular and unpopular boys in terms of communication skills. In conclusion, girls were reported to be more successful in communication than boys. Additionally, numerous studies have shown that girls exhibit more positive behaviours toward their peers than boys and, in this context, are perceived as more sincere and supportive by their peers (Gülay, 2011; Kumru et al., 2004; Walker, 2005). Gülay's (2011) study revealed that girls had higher mean scores on prosocial behaviour compared to boys, while Benzies et al. (2009) documented that girl exhibited behaviours such as sharing belongings, cooperating, and consoling peers in distress more frequently than boys. Considering all these findings, it is understandable that girls have lower aggression scores and higher sociometric popularity scores compared to boys.

In this study, due to differences in aggression and sociometric popularity scores by gender, correlational relationships were tested separately for girls and boys. The analysis revealed a significant negative relationship between sociometric popularity and aggression in both girls and boys. In line with the significant relationships identified, separate regression analyses were conducted for each group. The analysis for girls indicates that linear trends show higher levels of aggression among girls who are less preferred by their peers. Curvilinear relationships were not found to be significant for girls. Peer acceptance is an indicator of the degree to which a child is liked or disliked by their peer group (Ladd et al., 1997). Children who are accepted by their peers exhibit fewer behavioural problems and have more friends. Children who are liked by their peers are characterized as those who exhibit fun, cooperative behaviours and are invited to participate in games (Horn et al., 2024; Peklaj & Pečjak, 2020). Children learn social behaviour, including aggressive behavior, by observing peer groups and the consequences (reinforcement or punishment) of these behaviors (Bandura, 1977). Rejected children are the most frequently studied group, regarding aggressive behavior, hyperactivity, social rules violation, and general disruptive behavior (Rubin et al., 2006).

Sabato and Kogut (2021) found that children who are rejected by their peers are less likely to engage in positive social behaviours during group activities. Walker (2004) observed that children who avoided cooperative play and exhibited aggressive and disruptive behaviours experienced higher levels of rejection compared to other children. These behaviour problems are a strong predictor of social rejection (Gifford-Smith & Brownell, 2003). Various studies have shown that peer rejection can lead to behavioural problems such as bullying and aggression in children (Erol & Gülay Ogelman, 2020; Godleski et al., 2015; Helgeland & Lund, 2017; Kim, 2018; Kraft & Mayeux, 2018; Wang et al., 2019). Developmentally, aggressive behaviours are frequently observed in both girls and boys during the preschool period (Adams, 2008). The literature stated that rejection may cause different behavioural patterns in boys and girls. Wood et al. (2002) showed no relationship between overt aggression and rejection for girls. They determined that peer rejection may lead to greater maladjustment in girls. Accordingly, being disfavored by peers may not be solely related to overt aggression (externalizing behaviours) for girls. This suggests that girls who are not preferred by their peers may use different negative behavioural patterns in their interactions.

The regression analysis results for boys indicate that sociometric popularity has a negative linear effect on aggression. Aggression appears to have an effect on popularity in this study. However, given that numerous variables influence popularity (Cillessen & Mayeux, 2000; Hawley, 2003), the magnitude of this effect seems limited. Nevertheless, aggression emerges as a salient and attention-grabbing factor that can contribute to popularity across many populations, particularly among younger age groups. The linear effects indicate that as peer preference decreases, aggression levels increase in boys. Popular children are those who experience low levels of rejection and high levels of acceptance by their peers. Research shows that children who are preferred by their peers tend to be more social, cooperative, and exhibit lower levels of aggression (Cillessen & Rose, 2005; Koivusaari, 2004), whereas children who are disliked by their peers display aggressive and disruptive behaviours (Farina & Belacci, 2022; Flanders et al., 2009; Wang et al., 2019). Conversely, peer rejection can play a direct and causal role in increasing a child's aggressive behaviour. As a triggering stimulus, peer social rejection is hypothesized to lead children to respond with increased reactive and proactive aggressive behaviours (Dodge & Coie, 1987). The study found that the curvilinear effects were significant in boys, and levels of aggression increased at both low and high peer preference levels (Figure 2). In other words, for boys, not only being disliked or unpreferred by peers but also being liked or preferred by peers can lead to increased aggression. Similarly, in a study conducted with 7th-grade students, Walcott, Upton et al. (2008) found that aggression was associated with both low and high sociometric popularity. Similarly, researchers Stormshak et al. (1999) reported a positive correlation between peer preference and aggression in classrooms where aggression was considered normal for boys. Carney and Merrell (2001) showed that popular aggressive bullies enjoyed being with other popular children and did not experience significant social problems due to their aggression. This suggests that the acceptability of aggressive

behaviours may vary as a function of group norms. Stormshak et al. (1999) propose that children evaluate aggressive behaviour in light of the social norms of their peer group, and as aggressive behaviours become accepted within the group, peer rejection is less likely to occur in response to such behaviours. Thus, in groups where aggression/bullying is dominant, aggressive children can be identified as more popular compared to their non-aggressive peers. Conversely, in groups of non-aggressive children, non-aggressive children may be evaluated as more popular (Rodkin & Hodges, 2003). Additionally, there are dynamics formed among popular children within peer groups themselves. Highly preferred children may tend to exclude peers they perceive as rivals by exerting psychological pressure on others to maintain their boundaries within the group. In contrast, unpopular children may establish close relationships with children known to be popular, thereby exhibiting a favourable peer profile (Demir, 2006). Additionally, children who are rejected by their peers may use aggression as a way to gain popularity and attract attention (Boivin, 2005). So, aggression may serve to provide the child with a more prominent social status rather than leading to peer rejection. It is argued that popular children can gain recognition or social visibility within the group not only through aggression but also through positive social behaviour. Research suggests that popularity can be associated with both prosocial and negative characteristics. Studies have identified that peer groups include children who are socially competent, popular, and possess prosocial behaviours, as well as those with high levels of aggression (Hawley, 2003; Hawley, 2014; Rodkin et al., 2000). This indicates that aggressive children can also be popular in terms of recognition (Gülay, 2010). In addition, according to Hawley's Dominance Theory, some children who hold high levels of popularity may employ not only prosocial behaviours but also coercive or aggressive strategies in order to preserve their status within the social hierarchy and maintain access to valued resources (Hawley, 1999). On the other hand, rejected children may be aggressive or shy, or they may be victims exposed to aggressive behaviours (Camodeca et al., 2015; Pulido et al., 2010). In the literature, it is reported that boys exhibit more aggression than girls and that boys are more frequently exposed to peer bullying than girls (Hay et al., 2004; Gillies-Rezo & Bosacki, 2003; Stubbs-Richardson et al., 2018). Numerous studies have revealed that exposure to peer violence can lead to behavioural problems such as exclusion, rejection, bullying, anxiety, shyness, and aggression (Christina et al., 2021; Gülay Ogelman & Erten Sarıkaya, 2016; Ziv, 2012). Therefore, as children are exposed to peer violence, they may exhibit aggressive behaviours toward others, which can lead to rejection by their peers (Farina & Belacci, 2022; Wang et al., 2019).

Conclusion and Recommendations

The study has some limitations. First, the research was conducted with children attending pre-school education institutions in a province in the Central Anatolia Region of Türkiye. It is believed that it would be beneficial to conduct future studies with children from different regions. Although the generalizability of the findings is limited, the study can contribute to understanding the nature of aggression in early childhood and aid in taking

necessary preventive measures. A second limitation relates to the study's duration of six weeks and the immediate evaluation of the results thereafter. Therefore, there is a need for longitudinal studies to provide more evidence on social behaviour strategies related to peer aggression and to better understand the effects of these variables on the behaviours of preschool children. Additionally, future research should evaluate the effectiveness of reducing peer violence by promoting education, emotional, and social evidence-based policies and programs. Moreover, studies focusing on other personal and contextual characteristics that may help us understand the developmental dynamics of aggression and victimization behaviours in preschool children can be planned. Aggressive and violent behaviours are undesirable actions that affect the school climate. Being rejected or not preferred by the peer group can directly increase the likelihood of children engaging in antisocial activities. This can create a stress factor for developmentally vulnerable children, leading to increased adjustment and behavioural problems. Therefore, preschool educators should be encouraged to implement activities that provide opportunities for interaction, such as communication or emotion-based play, to support positive emotional and social harmony between children and teachers (Zych & Llorent, 2020). Additionally, through collaboration between teachers and families, potential harmful effects that may lead to gender-based discrimination and cause excessive differences in shaping children's social behaviours should be brought to light.

Ethical Approval

This study was conducted in accordance with ethical publication principles, and ethical approval was obtained from the Niğde Ömer Halisdemir University Ethics Committee prior to data collection. The general rules for all planned studies with human participants comply with the scientific ethical standards of the institutional and national research commission and the Helsinki declaration (1964) and subsequent amendments or ethical standards in terms of comparability.

Author Contributions

Belgin Liman: Conceptualisation, Theoretical Background, Methodology, Data Analysis, Data Visualisation, Writing, Review and Editing

Nihal Akalın: Conceptualisation, Theoretical Background, Data Collection, Writing, Review and Editing

Conflict of Interest

The authors declare no conflict of interest.

Artificial Intelligence Usage Statement

Artificial intelligence tools were not used in this study.

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