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Final Thesis

Awareness matters: Moderating effects of self-perception of popularity on the association between perceived popularity and relational aggression.

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Abstract

There is a growing body of research emphasizing the positive association between perceived popularity and relational aggression. The present study examines the moderating effect of self-perceived popularity on this association, using an adolescent sample (N = 642) in middle schools across the Netherlands. Data was collected using questionnaires including self-reports and peer-nominations. Self-perception of popularity was found to moderate the association between perceived popularity and relational aggression. The highest levels of relational aggression were observed in highly popular adolescents aware of their peer status, the lowest levels of relational aggression were found in adolescents unaware of their low peer status, emphasizing that awareness matters.

Introduction

Adolescence is a period characterized by change; not only are youths rapidly developing on physical and emotional levels, they also have to deal with shifts in schools, teachers and classmates. This is where popularity gains an important role in the lives of adolescents. Both longitudinal and cross-sectional research has shown that the prioritization of popularity by youths increases during childhood and peaks in early adolescence (Cillessen & Borch, 2006; Lafontana & Cillessen, 2010). Although being popular can help adolescents achieve social and personal goals (Dyches & Mayeux, 2015; Ojanen & Findley-Van Nostrand, 2014) and can protect them from peer victimization (De Bruyn, Cillessen, & Wissink, 2009; Prinstein & Cillessen, 2003), there is a downside to this phenomenon; being popular, prioritizing popularity, and in particular the combination of the two, predicts higher levels of relational aggression (Cillessen, Mayeux, Ha, de Bruyn, & Lafontana, 2014).

Even though a growing number of studies show a positive association between perceived popularity and relational aggression (Cillessen & Borch, 2006; Cillessen & Mayeux, 2004; Mayeux & Cillessen, 2008), more information is required in order to improve the understanding of this positive association; is this association the same for everyone or does it vary depending on either contextual or individual characteristics? As adolescence is the period where the importance of popularity increases, and adolescents prioritize high peer status more, it can be assumed that youths become more aware of their own popularity (LaFontana & Cillessen, 2002). Recent findings showing that self-perception of popularity indeed influences the association between perceived popularity and relational aggression (Mayeux & Cillessen, 2008), support this assumption. Therefore, the extent to which adolescents are aware of their own popularity should be taken into account in the clarification of this association. The objective of this study is to provide more insight into the complex relation between popularity and relational aggression, by examining whether self-perception of popularity moderates the association between perceived popularity and relational aggression, using an adolescent sample. We expect to find that adolescents who are popular and know it - or wrongly think that they are popular - show more relational aggression than those who do not perceive themselves as popular.

Popularity and relational aggression

Perceived popularity is characterized by dominant behaviour and has a positive effect on relational aggression (Cillessen & Mayeux, 2004; Farmer & Rodkin, 1996; Mayeux & Cillessen, 2008; Rose, Swenson, & Waller, 2004). Within a peer group, perceived popular adolescents can be some of the most aggressive members (Rodkin, Farmer, Pearl, & Van Acker, 2000; Rose et al., 2004) and relational aggression escalates with increases in peer status (Faris & Felmlee, 2011).

Also, adolescents who care more about popularity are more likely to become aggressive (Faris & Ennett, 2012). Attaining and maintaining this peer status involves some degree of hostile behaviour (Faris & Felmlee, 2011). Therefore, relational aggressive behaviour could be used as status 'maintenance' or status 'defence' (Cillessen & Mayeux, 2004). Lastly, increase in relational aggression leads to higher perceived popularity, suggesting a self-perpetuating cycle over time (Rose et al., 2004).

Moreover, a distinction between 'perceived popularity' and 'perceived likeability' (also known as 'social preference' or 'peer acceptance') warrants emphasis (Parkhurst & Hopmeyer, 1998). Although these forms of peer status are related, they show differential associations with aggressive behaviour (Cillessen & Mayeux, 2004; LaFontana & Cillessen, 2002; Lease, Kennedy, & Axelrod, 2002; Prinstein & Cillessen, 2003). Relational aggression is negatively related to peer perceptions of who they like the most, but positively related to peer perceptions of who is most popular (Cillessen & Mayeux, 2004; LaFontana & Cillessen, 2002; Prinstein & Cillessen, 2003; Rose et al., 2004).

In contrast to overt aggression, relational aggression does not consist of verbal and physical violence, but of covert aggressive behaviours (Young, Boye, & Nelson, 2006). In addition, relational aggression differs in the way it relates to gender. Girls are more likely to use indirect or psychological forms of relational aggression, including exclusion and isolation, gossip and rumour spreading, and public humiliation (Putallaz et al., 2007; Underwood, 2003; Vaillancourt & Hymel, 2006). It appears that the use of relational aggression by girls is quite stable over time, whereas boys tend to catch up during adolescence, approaching the same level of relational aggression as girls (Mayeux & Cillessen, 2008). Also, the association between perceived popularity and relational aggression is moderated by gender (Mayeux & Cillessen, 2008): overt aggression is more strongly linked to perceived popularity for boys, and relational aggression is more strongly linked to popularity for girls (Cillessen & Mayeux, 2004; Rose et al., 2004).

Self-perception of popularity as a moderator

Self-perception of popularity is linked to relational aggression. Not only adolescents who are aware of being popular show more relational aggression, also adolescents who wrongly think that they are popular do (Mayeux & Cillessen, 2008; Sandstrom & Herlan, 2007). Although boys and girls somewhat differ in accurate self-perceptions – overall boys tend to overestimate and girls tend to underestimate themselves (McGrath & Repetti, 2002) – for both overestimating their peer status is linked to more use of relational aggression (Lynch, Kistner, Stephens, & David-Ferdon, 2015; Mcquade, Achufusi, Shoulberg, & Murray-Close, 2014). The established positive association between positively biased self-perceptions and relational aggression (Lynch et al., 2015) reinforces the idea that self-perceptions of popularity – accurate or inaccurate – can moderate the association between popularity and relational aggression.

This idea is further supported by longitudinal research on the role of self-perception in the development of perceived popularity and relational aggression (Mayeux & Cillessen, 2008). In this study, the highest levels of relational aggression where observed in popular girls aware of their popularity. Although, overall findings of this study confirmed that being popular and knowing it leads to increased aggression, self-perception did not moderate the association between popularity and relational aggression for boys. For girls however, the positive effect of perceived popularity on relational aggression was significantly stronger at higher levels of self-perceived popularity (Mayeux & Cillessen, 2008). As it seems that knowing that you are popular – or thinking that you are not that popular – influences the resources adolescents have and the choices they make regarding the use of relational aggression (Cillessen & Mayeux, 2004; Mayeux & Cillessen, 2008).

One explanation of how self-perception moderates the association between perceived popularity and relational aggression can be that adolescents – aware of their popularity – attempt to maintain their high peer status by using relational aggression (Mayeux & Cillessen, 2008; Young et al., 2006). Those unaware of their popularity may not feel the need to maintain or defend their high peer status, resulting in lowers levels of relational aggression (Cillessen & Mayeux, 2004; Faris & Felmlee, 2011). Secondly, for popular adolescents, their high peer status provides a situation in which they can use relational aggression without suffering negative consequences for their peer status, whereas relational aggression used by adolescents with low peer status results in more adverse effects. Although overall, the use of relational aggression results in increased dislike by peers, the power gained with high popularity compensates for this negative consequences (Cillessen & Mayeux, 2004). This way, 'being aware' becomes an influencing factor.

These findings lead us to believe that self-perception of popularity may moderate the association between popularity and relational aggression, and contributed to our expectations regarding the direction of this moderation; we expect popular adolescents to be more aggressive when they perceive themselves as popular. Also – referring to the findings that adolescents who perceive themselves as popular show more relational aggression – we also expect this for adolescents who wrongly perceive themselves as popular. The present study will examine these hypotheses, including a comparison for girls and boys, and in this way contribute to the understanding of how popularity and relational aggression are related.

Methods

Sample

The number of adolescents asked to participate in this study is 642. Of these adolescents, 88.9% received parental consent and among them, 88.4% gave their own consent. Of the total number of adolescents, 88% participated in this study (N = 565). Data is available for 642 adolescents because the participants could nominate classmates who did not participate. Adolescents were selected from 27 different classrooms in 14 schools across the Netherlands. The adolescents' age ranged from 11 to 17 years (M = 12.89, SD = 0.87). The sample consisted of 333 boys (51.9%) and 303 girls (47.2%). Of the sample, 82.6% of the adolescents were born in the Netherlands, 0.2% in Morocco and 3.4% in other countries.

Procedure

We selected the adolescents in our sample in middle schools in the Netherlands. The participants were asked to take part in four different assessments, including an intervention. This study focused on the first two assessments, both consisted of questionnaires. There was at least one week and at most two weeks between the first and second assessments. The adolescents were told that we are studying the behaviour of adolescents at school, their self-image and how they perceive their peers. The adolescents had the opportunity to stop their participation at any time. Only adolescents with active parental consent and who gave consent themselves, participated in this study. Thus we ensured ethical standards (Hollmann & McNamara, 1999).

First, to ensure anonymity and confidentiality, the researchers assigned code numbers to each student in the sample, these code numbers were used to identify the students while entering the data. Participants were provided with the list of code numbers linked to the names of their classmates. To ensure the confidentiality of the participant's answers, we asked them to fill in the code numbers instead of writing down the names of their classmates for questions that required peer nomination. The lists linking their name to their code number was only seen by the adolescents and the researchers, and were destroyed once the data collection was finished. Second, the adolescents had to separate their tables and work individually on the assessments in the classroom. Thereby they could not see the answers of their classmates. Finally, the adolescents without active consent were given another questionnaire with puzzles, so their classmates could not see they did not participate.

Measures

Perceived popularity. Perceived popularity was measured using peer-nominations. Participants were asked to answer the questions 'Which classmates do you think are most popular?' and 'Which classmates do you think are least popular?' by writing down the code number that belonged to the student they thought fit the description. Each class was instructed they could nominate all classmates but they could not nominate themselves. Peer-nomination scores were changed into proportion scores by dividing the number of received nominations by the number of nominators, resulting in a range from 0 to 1. For our analysis we made one variable for popularity by subtracting the 'Least popular' variable from the 'Most popular' variable, calling the new variable 'Popularity'.

Self-perceived popularity. Participants completed a self-report measure that included one item for self-perceived popularity. The item was measured on a 7-point scale (0 = 'not at all', 6 = 'totally agree') where adolescents had to rate the extent to which the statement 'My classmates think of me as popular' fitted their opinion. This measure is comparable to the measure that was used in the study of Mayeux and Cillessen (2008).

Relational aggression. Relational aggression was measured using peer nominations. Participants were asked to answer the question 'Which classmates spread rumours or lies about another student this week, or isolated students?' by writing down the code number that belonged to the student they thought fit the description. For this peer nomination question the same instructions were given as for the perceived popularity items. These scores were also converted into proportional scores, so the range of possible values is 0 to 1.

Analysis Plan

In the present study, we will test the hypothesis that self-perceived popularity moderates the association between perceived popularity and relational aggression. More specifically, we expect popular adolescents to be more relationally aggressive when they perceive themselves as popular (Mayeux & Cillessen, 2008). In addition, referring to the findings that adolescents who perceive themselves as popular show more relational aggression (Lynch, Kistner, Stephens, & David-Ferdon, 2015), we also expect this for adolescents who wrongly perceive themselves as popular. We conducted a linear regression analysis with an interaction term between perceived popularity and self-perceived popularity to test for a moderating effect of self-perceived popularity on the association between perceived popularity and relational aggression. Both gender and age were included in this analysis.

Results

Descriptive statistics

The descriptive statistics for the main variables of the study are shown in Table 1. The scores of all participating students and non-participating students are presented in these statistics. Independent sample *t*-tests were used to compare boys and girls, showing that there was no significant gender differences in relational aggression, $t(643) = 0.59$, $p = .55$. However, boys and girls did significantly differ on self-perceived popularity, boys ($M = 3.17$, $SD = 1.46$) showing higher self-perceived popularity than girls ($M = 2.38$, $SD = 1.49$), $t(534) = 6.21$, $p < .001$. In addition, significant gender differences were found for peer-perceived popularity, boys ($M = .05$, $SD = .36$) being perceived as more popular than girls ($M = -.01$, $SD = .34$), $t(643) = 2.03$, $p = .04$.

Table 1

Descriptive statistics of main study variables

	N	Minimum	Maximum	*M*	*SD*
Age	560	11	17	12.89	0.87
Self-perceived popularity	538	0	6	2.78	1.53
Peer-perceived popularity	642	-.88	.92	.02	.35
Relational aggression	642	.00	.50	.03	.05

Note. N may vary because of missing values, boys = 333, girls = 303.

Correlations

Correlations were computed among the main variables included in this study: age, self-perceived popularity, peer-reported popularity and relational aggression. Table 2 presents the results of this two-tailed analysis. Overall, peer-perceived popularity and relational aggression are significantly and positively correlated, $p = .003$. Moreover, a significant positive correlation was found between self-perceived popularity and peer-perceived popularity, $p < .001$, indicating that although not identical, these constructs are related. Finally, age was found to be positively correlated with self-perceived popularity, $p = .025$, and negatively correlated with relational aggression, $p = .002$, meaning that older adolescents perceive themselves as more popular, and tend to be less aggressive.

Table 2

Correlations among all study variables

	Age	Self-perceived popularity	Peer-perceived popularity	Relational aggression
Age	-	.10*	.04	-.13**
Self-perceived popularity		-	.44**	.08
Peer-perceived popularity			-	.12**
Relational aggression				-

Note. ** p < .01. * p < .05.

Regression Analyses

A linear regression analysis was conducted with all variables included in this study; gender, age, self-perceived popularity and peer-perceived popularity. Some of the independent variables were mean-centered: age, self-perceived popularity and peer-perceived popularity. This means that of every value within a variable we subtracted the variable mean. This was done to avoid multicollinearity with the interaction terms used in the regression.

Results are presented in Table 3. Model 1 shows the main effects of all the study variables on relational aggression, resulting in a significant model, $R^2 = .04$, $F(4,527) = 5.29$, $p < .001$. Peer-perceived popularity is positively associated with relational aggression ($B = .019$, $SE = .007$), $p = .008$. Age predicts relational aggression as well, age being negatively associated with relational aggression ($B = -.01$, SE = .003), $p = .001$. This indicates that older adolescents were less relationally aggressive. Both gender ($B = -.002$, $SE = .005$, $p = .597$) and self-perceived popularity ($B = .001$, $SE = .002$, $p = .496$) did not show a significant main effect on relational aggression. This indicates that self-perceived popularity in itself does not predict relational aggression, once gender, age and peer-perceived popularity are controlled for. Furthermore, gender does not predict relational aggression once age, self-perceived popularity and peer-perceived popularity are controlled for.

Model 2 includes the interaction effect of peer-perceived popularity with self-perceived popularity - while controlling for age, gender, self-perceived popularity and peer-perceived popularity - resulting in a significant model, $R^2 = .05$, $F(1,526) = 5.52$, $p = .019$. Results are presented in Table 3.

Both age (*B* = -.01, *SE* = .002, *p* = .001) and peer-perceived popularity (*B* = -.02, *SE* = .007, *p* = .004) predict relational aggression in this model. The interaction effect (*B* = .01, *SE* = .004, *p* = .019) was significant, indicating that self-perceived popularity moderates the association between popularity and relational aggression; highly popular adolescents who perceive themselves as popular show more relational aggression than those who do not perceive themselves as popular. This interaction effect is shown in Figure 1.

Table 3

Regression analysis on relational aggression predicted by gender, age, self-perceived popularity and peer-perceived popularity

	Model 1		Model 2	
	β	95% *CI*	β	95% *CI*
Gender	-.02	[-.011, .006]	-.03	[-.011, .006]
Age	-.14***	[-.013, -.003]	-.14***	[-.013, -.003]
Self-perceived popularity	.03	[-.002, .004]	.03	[-.002, .004]
Peer-perceived popularity	.13**	[.005, .033]	.14**	[.006, .034]
Self-perceived popularity* Peer-perceived popularity			.10*	[.001, .017]

Note. * $p < .05$. ** $p < .01$. *** $p < .001$, $\Delta R^2 = .01$ for model 2 ($p = .019$), *CI* = confidence interval, for the binary variable 'gender' boys are coded '0' and girls are coded '1'.

A linear regression analysis was also conducted for boys and girls separately. For boys we found a significant main effect of age (*B* = -.01, *SE* = .004, *p*= .038) in Model 1 and a significant interaction (*B* = .02, *SE* = .006, *p* = .001) in Model 2. The highest levels of relational aggression were found in boys who were popular and were aware of this. The lowest levels of relational aggression were found in boys who were not popular and did not perceive themselves as popular. For girls however, we found significant main effects for age (*B* = -.01, *SE* = 003, *p* = .008) and popularity (*B* = .03, *SE* = .009, *p* = .007) in Model 1, but no significant interaction (*B* = .00, *SE* = .005, *p* = .946) in Model 2.

This indicates that self-perceived popularity does moderate the association between popularity and relational aggression for boys, but not for girls. Figure 2 shows the graph of the interaction effect for boys.

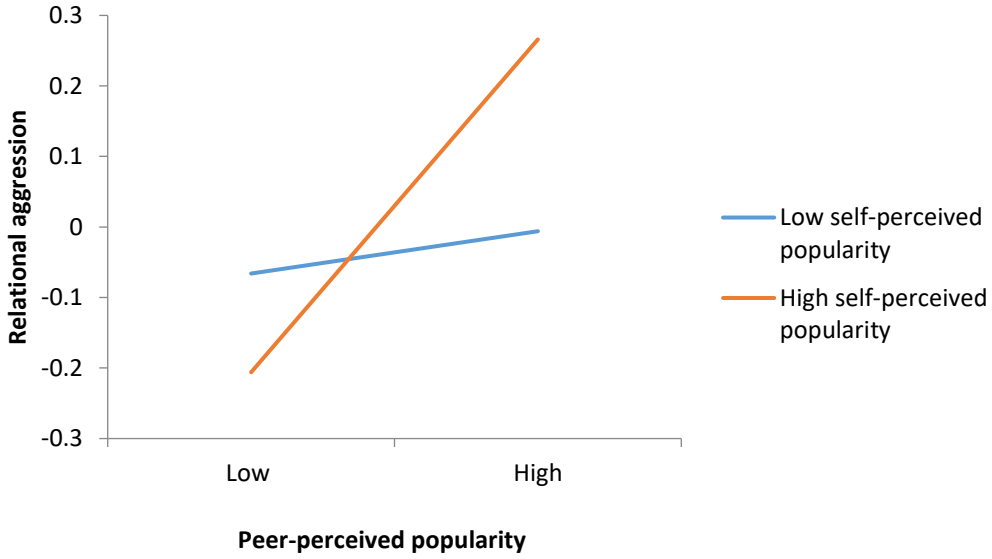

Figure 1. Interaction effect of self-perceived popularity with peer-perceived popularity on relational aggression.

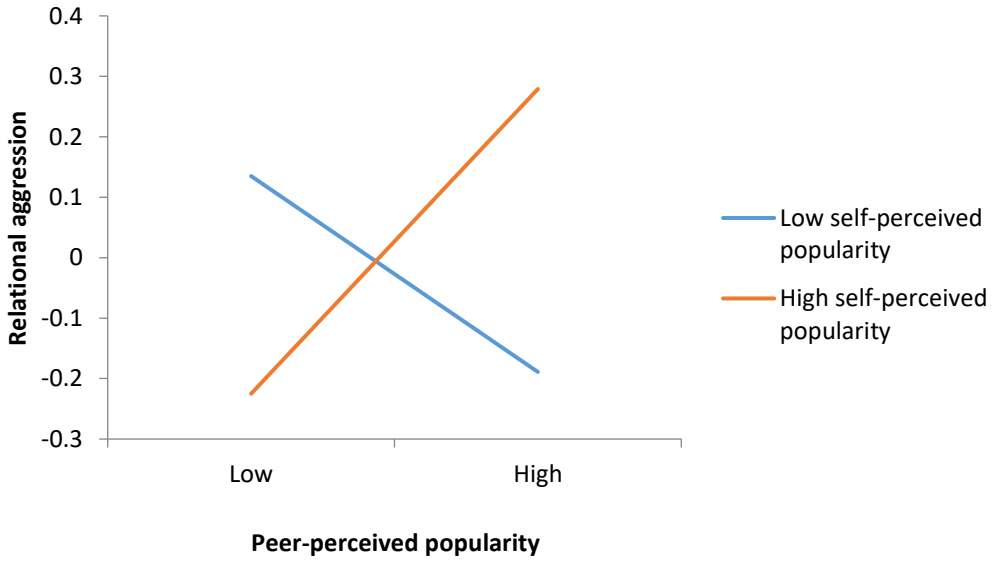

Figure 2. Interaction effect of self-perceived popularity with peer-perceived popularity on relational aggression for boys.

Discussion

The current study tested the hypothesis that self-perceived popularity moderates the positive association between perceived popularity and relational aggression. We found that this hypothesis is confirmed, meaning that this association differs depending on the degree to which adolescents perceive themselves as popular. Consistent with our expectations regarding the direction of the moderating effect, we found that the more adolescents perceived themselves as popular, the more relational aggression they showed. As hypothesized, the highest levels of relational aggression were observed in highly popular adolescents aware of their high peer status, whereas highly popular adolescents unaware of their peer status showed less relational aggression than highly popular adolescents aware of their peer status. The lowest levels of relational aggression were found in adolescents who perceive themselves as highly popular, but who are not perceived as popular by their peers, whereas the adolescents aware of their low peer status showed more aggression.

This moderating effect differed by gender. Surprisingly, the expectation that for both boys and girls this moderating effect of self-perceived popularity would be present, was not supported; it was merely found for boys, not for girls. This conclusion is in contrast to the findings of Mayeux and Cillessen (2008), who found a moderating effect of self-perceived popularity on the association between perceived popularity and relational aggression for girls, not for boys. A possible explanation for our findings could be that boys and girls differ in their self-perceptions; boys showed higher levels of self-perceived popularity than girls. In addition, previous studies found that boys tend to overestimate their popularity, whereas girls tend to underestimate their popularity (McGrath & Repetti, 2002). In light of these findings, a bigger effect of self-perceived popularity – accurate or not – on the association between perceived popularity and relation aggression for boys could be explained.

The absence of the moderating effect of self-perceived popularity for girls can be explained given the information that relational aggression is often used to maintain or defend peer status (Faris & Felmlee, 2011). Considering the fact that girls tend to underestimate their peer status and are not aware of their popularity, they do not 'need' to maintain or defend their peer status by using relational aggression, because they are perceived as less popular and they also perceive themselves as less popular (Cillessen & Mayeux, 2004; Mayeux & Cillessen, 2008; Young, Boye, & Nelson, 2006). This could explain the absence of the moderating effect.

In addition to these findings, relational aggression was found to decrease over time. Older adolescents tended to be less relational aggressive than younger adolescents. This finding was not consistent with previous studies stating that relational aggression increased over time (Mayeux & Cillessen, 2008).

A possible explanation can be that older adolescents develop in the way they use relational aggression, using it in a more effective and less 'visible' way (Andreou, 2006). Another explanation could be that aggression in general is used to establish dominance in social groups. When this dominance is settled, aggression decreases (Pellegrini & Bartini, 2001). Since the present study examined the first and second grade of middle school, it is possible that the establishing of this dominance plays a big role in the first class and is set in the second class, resulting in a decrease in relational aggression.

Regarding the generalization of these results, this study focused on early and middle adolescents from regular middle schools in the Netherlands. Participants in this study were 11 to 17 years old. Because we controlled for age, this contributes to the generalization of the study results to early and middle adolescence. However, there are several limitations in this study that need consideration. First, we did not test our hypothesis within the different age groups. Considering the unexpected results regarding the negative relation between age and the use of relational aggression, future research could focus on this question. This would extend our understanding of the moderating effect of self-perceived popularity in different age groups.

In addition, a limitation regarding the measures can be pointed out. Although three aspects of relational aggression were included (telling lies, gossiping or excluding peers) this was measured by a one-item scale, the same applies to self-perceived popularity. Perceived popularity was measured by two items. To improve the reliability and validity of measuring this construct, a test-retest method or a more extensive scale would be recommended. Furthermore, because the adolescents had to nominate their peers, it is possible that they gave socially desirable answers instead of honest answers. Also, some students did not fully understand the questions they were asked to answer. For instance, adolescents seemed to struggle with the difference between popularity and likeability. This could have led to biased results. To improve reliability and validity regarding these items, a clear explanation beforehand about the difference between popularity and likeability, or adding multiple questions that can give an indication about the adolescents' meaning of popularity and likeability can be added in future research.

This study extends previous research and pointed out that, although self-perception of popularity does moderate the association between perceived popularity and relational aggression, this moderating effect differs for boys and girls. These findings show the opposite of other studies emphasizing the moderating effect of self-perception of popularity is present for girls. Future research should examine how and why the moderating effect of self-perception of popularity is effected by gender, in order to improve our understanding of the complex role of self-perception in the association between perceived popularity and relational aggression.

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