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Peer-perceived Popularity and Overt Aggression in Adolescence: The Moderating Effect of Self-perceived Popularity

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Abstract

This study tested whether self-perceived popularity and gender are moderators of the association between peer-perceived popularity and overt aggression in adolescence. The sample consisted of 642 Dutch adolescents (mean age = 12.9 years), from 27 classrooms from 14 secondary schools. Consistent with our expectations, the association between peer-perceived popularity and overt aggression was positive and significant. As expected, self-perception of popularity moderated this association, with popular adolescents who also perceived themselves as popular being more overtly aggressive than popular adolescents who were not aware of their popularity. Consistent with our hypotheses, gender was found to be a moderator on the association between peer-perceived popularity and overt aggression as well, but not exactly in the way it was expected. Boys showed overall higher levels of overt aggression in comparison to girls, but when peer-perceived popularity increased this gender difference became smaller. In other words, the increase in overt aggression with peer-perceived popularity was stronger for girls than for boys. With both self-perceived popularity and gender found to be moderators of the positive association between overt aggression and peer-perceived popularity, all hypotheses were confirmed.

Peer-perceived Popularity and Overt Aggression in Adolescence: The Moderating Effect of Self-perceived Popularity

The goal of this study was to gain an understanding of the association between aggression and popularity in early adolescence. At this age, children become increasingly concerned with their status in the peer group (De Bruyn & Cillessen, 2006; LaFontana & Cillessen, 2010; Sullivan, 1953), which increases the likelihood of engaging in bullying behaviour (Cillessen & Mayeux, 2004). Bullying can be seen as a subcategory of aggression, characterised by repetitive intentional behaviour and an imbalance of power (Smith, Cowie, Olafsson, & Liefooghe, 2002) Bullying is a widespread problem, with 10-50% of children worldwide reporting to be bullied (Currie et al., 2012). Bullying can have negative outcomes for the individuals that display this behaviour (Cillessen & Rose, 2005; Kelly et al., 2015). Because of these negative consequences and the high international prevalence, it is important to gain knowledge about factors that play a role in aggression and bullying behaviour.

Several studies have suggested that popular adolescents use aggressive behaviour strategically to manipulate their social environment in ways they find advantageous (Underwood, Galen, & Paguette, 2001; Xie, Swift, Cairns, & Cairns, 2002). This is supported by studies that have shown that popular adolescents display more aggression than their non-popular peers, with positive outcomes for their status in the peer group. Displaying this behaviour seems to maintain or even further increase their popularity (Mayeux, Sandstrom, & Cillessen, 2008). Further investigating this positive association between popularity and aggression, could reveal social processes or mechanisms that can be manipulated to reduce the use of aggression by adolescents (Prinstein & Cillessen, 2003). Little studies have focused on possible moderators of this association, but it is suggested that the insight adolescents have into their own status might influence their behaviour (Sandstrom & Coie, 1999). This could mean that self-perception of status moderates the link between aggression and popularity. In other words: popular adolescents who perceive themselves as popular might be even more aggressive than popular adolescents who are unaware of their popularity. Therefore, this study focused on self-perceived popularity as a possible moderator on the association between aggression and popularity.

Aggressive behaviour can be divided into overt and covert aggression. Overt aggression can be defined as direct physical and verbal assaults towards an individual. Covert aggression, includes behaviours such as ignoring or excluding a person and spreading rumours, with the aim to influence and damage social relationships (Crick & Grotpeter, 1995). Most studies focus on the association between covert aggression and popularity, while the association between overt forms of aggression and popularity is less

established. To fill this gap in the literature, this study examined the moderating role of self-perception of popularity on the association between popularity and overt aggression.

Peer-perceived popularity and overt aggression

The available literature on the association between popularity and aggression is hardly consistent. The direction of the association seems to vary depending on the used definition of popularity (LaFontana & Cillessen, 1999; Mayeux & Cillessen, 2008; Mayeux et al., 2008; Parkhurst & Hopmeyer, 1998). When popularity is operationalized as being well-liked by peers, the association with aggression is negative (De Bruyn & Van den Boom, 2005; Prinstein & Cillessen, 2003; Rose, Swenson, & Waller, 2004; Underwood, 2002). However, it appears that adolescents themselves use a different kind of definition (Adler & Adler, 1998; Cillessen & Rose, 2005; Eder, Evans, & Parker, 1995), with likeable peers not necessarily perceived as popular (Cillessen & Mayeux, 2004; Gorman, Kim, & Schimmelbusch, 2002; LaFontana & Cillessen, 2002; Rodkin et al., 2000). This definition of popularity, peer-perceived popularity, is based on reputational and dominance-based characteristics rather than liking or disliking (Mayeux & Cillessen, 2008). When peer-perceived popularity is used in studies, the association between aggression and popularity is positive (Cillessen & Mayeux, 2004; Hawley, 2003; LaFontana & Cillessen, 2002; Prinstein & Cillessen, 2003; Rodkin et al., 2000; Rose et al., 2004). Therefore, to investigate why popular adolescents engage in bullying behaviour, a distinction needs to be made between peer-perceived popularity and likeability.

When popularity is operationalized as peer-perceived popularity, it is positively associated with aggression (Andreou, 2006; Cillessen & Rose, 2005; LaFontana & Cillessen, 2002; Rodkin et al., 2000; Rose et al., 2004). However when overt and covert aggression are distinguished, there are slight differences in the strength of this positive association, with the association for overt aggression being usually lower (Andreou, 2006; Rose et al., 2004). The reason for this could be that covert forms of aggression are more subtle and can therefore be used more strategically. Displaying overtly aggressive behaviour imposes more risk to an individual's status because this behaviour is less subtle. It could increase the peer-status because peers perceive it as a display of dominance, however it could also be judged in a negative way, with negative outcomes for the peer status. Therefore overt aggression could negatively influence the peer status more easily than covert aggression, and could consequently be less used by popular adolescents.

In addition, there appears to be a gender difference. Research has found a strong relationship between overt aggression and peer-perceived popularity for boys (Cillessen & Mayeux, 2004; LaFontana & Cillessen, 2002; Rodkin et al., 2000; Rose et al., 2004). However, for girls the literature is less consistent. Some studies have indeed found a significant positive association between overt aggression and peer-perceived popularity

for girls (LaFontana & Cillessen, 2002; Lease, Kennedy, & Axelrod, 2002), while other studies have not (Rose et al., 2004). A possible explanation for this gender difference could be that physical aggressive acts are more common and better accepted for boys (Salmivalli, Lagerspetz, Bjorkqvist, Osterman, & Kaukiainen, 1996).

Adolescents appear to use aggressive behaviour to establish a popular status (De Bruyn & Cillessen, 2006; Cillessen & Mayeux, 2004; Cillessen & Rose, 2005; Lease et al., 2002; Rodkin et al., 2000; Rose et al., 2004; Xie et al., 2002). In the case of overt aggression it is argued that physical and verbal acts of aggression can lead to popularity because adolescents can display dominance through this behaviour (Cillessen & Rose, 2005). When they succeed, the aggressive behaviour is, according to social learning theories, reinforced by social rewards, like influence (Bandura, 1973; Cillessen & Mayeux, 2004). Therefore, the aggressive behaviour is likely to occur more often in the future. There is increasing evidence that after adolescents achieve popularity, they increasingly rely on aggressive behaviour to maintain their popularity (De Bruyn & Cillessen, 2006; Cillessen & Mayeux, 2004; Lease et al., 2002; Mayeux et al., 2008; Rodkin et al., 2000; Rose et al., 2004; Sandstrom & Cillessen, 2006; Xie et al., 2002).

The moderating effect of self-perceived popularity

With the association between peer-perceived popularity and aggression well-established in the literature, it is important to gain knowledge about factors influencing this association. According to Coie's (1990) model for the development of peer-rejection, initially an individual's behaviour is the foundation of peer status. In the second phase, the acquired status becomes a characteristic of the individual, depending on several factors, one of which being their self-perception of their status. In other words, by accurately perceiving their status, adolescents could change their behaviour and their status. Although this model focuses on low peer-status, it is possible that comparable mechanisms are at work for high peer-status. Therefore, self-perception of status could influence the association between aggression and peer-perceived popularity.

When popular adolescents are aware of their status they can consciously engage in behaviour, such as aggression, to maintain or further increase their status. Second, if aware of their status, popular adolescents are more likely to rely on the social protection that their popularity provides, when engaging in aggressive behaviour. And third, these adolescents may even enjoy bullying their peers because it reinforces their feelings of dominance and social power. Popular adolescents who do not perceive themselves as popular, might not feel the urge to protect their status by using aggression and might fear the negative consequences if they would. This way, self-perception of popularity could moderate the association between peer-perceived popularity and aggression.

Initial evidence for this hypothesis was found by Mayeux & Cillessen (2008), they found that popular boys who perceived themselves as such, showed particularly high

levels of overt aggression. However, they did not find the same thing for girls. The goal of this study was to further investigate the moderating effect of self-perceived popularity on the association between peer-perceived popularity and overt aggression. We expected that popular adolescents, who also perceived themselves as popular, would be more aggressive than popular adolescents who were not aware of their popularity. In addition it was hypothesised that gender moderated the association between overt aggression and peer-perceived popularity as well. With boys expected to show higher levels of overt aggression and a stronger increase of overt aggression with peer-perceived popularity than girls.

Method

Sample

The sample consisted of 642 adolescents (51.9% boys and 47.2% girls) from 27 classrooms from 14 secondary schools. The adolescents were in the seventh, eighth and ninth grade. The age of the participants ranged from 11 to 17 years, with an average of 12.9 years (SD = 0.87). Parental consent forms were given to the adolescents' parents and the adolescents themselves. Adolescents who did not receive permission to participate or were unwilling to participate, were included in the sample as non-participants. The participation rate was 88%, with 565 adolescents (51% boys; 48.5% girls) from the sample included as participants and 77 adolescents (58.4% boys; 37.7% girls) included as non-participants. Participants were born in The Netherlands (82.6%), Morocco (0.2%), or in other countries (3.4%).

Procedure

The participants were recruited by contacting individual teachers. Once teachers agreed to participate, they were asked to select one or two of their classes that fit for participation based on grade level. The data used in this study was part of a larger study, consisting of 4 assessments, including a small intervention. Only the data collected during the first two assessments were used in this study. Data collection took place in March and April 2016, during school hours, in the classrooms of the adolescents. Surveys were administered by University students in the final year of their bachelor. In most cases, the teacher remained in the room during the assessments. Prior to the data collection, all confidentiality procedures were explained to the adolescents. They were told that participation was voluntary and that they could skip any questions they did not wish to answer, or stop participating whenever they wanted to. To ensure anonymity, the adolescents were assigned a code number. Adolescents were assured that no names would be used in the study, and that only the researchers would have access to the data. During the assessments, non-participants were given an unrelated questionnaire, such as a quiz, to reduce any possible social-pressure to participate.

Measures

Peer-perceived popularity. Peer-perceived popularity was measured during the first assessment with the use of peer nominations. Each participant was asked to write down the classmates they found most and least popular. Participants could nominate an unlimited number of classmates, including the non-participants. To obtain a score for peer-perceived popularity, first the number of nominations each adolescent received for 'most popular' and 'least popular' were summed up. Then the number of 'least popular' nominations was subtracted from the number of 'most popular' nominations. Proportion scores were computed by dividing this score by the number of nominators in their classroom. Scores for peer-perceived popularity ranged between -1 and 1.

Self-perceived popularity*.* The participants completed a self-report questionnaire which contained the statement: *'My classmates consider me as popular'*. A seven-point Likert scale was used to assess the extent to which the participants agreed or disagreed with this statement (0= 'not at all'; 6= 'very much'). Their answer resulted in a score for self-perceived popularity with a range between 0 and 6.

Overt Aggression*.* During the second assessment, two peer-nomination items were used to measure overt aggression. Participants indicated which peers *kicked, pushed or hit other students* and which peers *yelled at, or said bad things about other students in that past week*. A proportion score was calculated by dividing the sum of nominations by the number of nominators (Cronbach's alfa α = .74). Both items were averaged to create a composite variable of overt aggression. Scores for this variable ranged between 0 and 1.

Analysis strategy

A linear regression analysis was used to test the hypotheses that self-perception of popularity and gender moderate the association between peer-perceived popularity and overt aggression. The use of a linear regression analysis makes it possible to look at an interaction effect between two variables. In addition, with a linear regression, it is possible to examine the main effect of an independent variable on a dependent variable while controlling for other independent variables.

Four models were tested with overt aggression as the dependent variable. The predictors in these models were age, gender, peer-perceived popularity and self-perceived popularity. In the first model, we tested the main effect of each predictor. The goal of this model was to test if there is a positive association between peer-perceived popularity and overt aggression, while controlling for the other predictors. In the second model, we included the same predictors as in the first model, along with the interaction variable between peer-perceived popularity and overt aggression. The goal of this model was to determine if self-perceived popularity moderated the association between peer-perceived popularity and overt aggression. The aim of the third model was to determine

if gender moderated the association between peer-perceived popularity and overt aggression as well. Therefore, the interaction variable between peer-perceived popularity and gender was added. Finally, the fourth model tested for a three way interaction between self-perceived popularity, peer-perceived popularity and gender to see whether self-perceived popularity moderated the association between peer-perceived popularity and overt aggression for both genders.

Results

Descriptive statistics

Table 1 provides descriptive statistics of the main variables. The means were compared by gender using *t*-tests. As shown in Table 1, boys showed significantly higher levels of overt aggression (M = .040 for boys vs. M= .013 for girls), t = 6.909, p < .001. Boys were also perceived as more popular by their peers (M = .046 for boys vs. M= -.011 for girls), t = 2.036, p = .042, and perceived themselves as more popular than girls (M = 3.170 for boys vs. M= 2.380 for girls), t = 6.213, p < .001.

Correlational Analyses

To assess the strength and direction of the linear relationships between the key study variables, bivariate Pearson's correlation coefficients (*r)* were calculated. Table 1 provides the correlations between age, overt aggression, peer-perceived popularity, and self-perceived popularity.

Overt aggression was significantly and positively correlated with both peer-perceived popularity (r(641) = .227, p < .001), and self-perceived popularity (r(538) = .181, p < .001). These correlations suggest that adolescents who were perceived as popular by their classmates or perceived themselves as popular, showed higher levels of overt aggression than their peers. Self-perceived popularity was also significantly and positively correlated with age (r(534) = .097, p = 0.025), and peer-perceived popularity (r(537) = .438, p < .001). This indicates that older adolescents perceived themselves as more popular than younger adolescents, and that adolescents who were perceived as popular by their classmates also perceived themselves as more popular. No significant correlations were found between age and peer-perceived popularity (r(559) = .044, p = .302) and age and overt aggression (r(560) = .005, p = .906). This indicates that levels of overt aggression and the number of peer nominations for popularity did not differ depending on the age of the adolescents. In addition, separate correlations between the variables were calculated for boys and girls, but no gender differences were found.

Table 1
Descriptive statistics and Pearson Correlations

Parameter	*n*	*min*	*max*	*M*	*SD*	*2.*	*3.*	*4.*
1. Age								
Total	560	11	17	12.890	0.871	.005	.044	.097*
Boys	287	12	16	12.960	0.854	-.016	-.017	.069
Girls	271	11	17	12.810	0.886	-.038	.058	.089
2. OA								
Total	642	0	.47	.027	0.054	-	.227**	.181**
Boys	333	0	.47	.040	0.068		.248**	.139*
Girls	303	0	.19	.013	0.027		.200**	.096
3. PP								
Total	641	-.88	.92	.018	0.353		-	.438**
Boys	332	-.82	.92	.046	0.359			.400**
Girls	303	-.88	.92	-.011	0.343			.468**
4. SP								
Total	538	0	6	2.780	1.525			-
Boys	272	0	6	3.170	0.854			
Girls	264	0	6	2.380	1.485			

Note. * $p < .05$, ** $p < .01$. OA = Overt aggression, PP = Peer-perceived popularity, SP = Self-perception of popularity.

Linear regression analyses

We hypothesized that self-perceived popularity moderated the association between peer-perceived popularity and overt aggression. In other words, we expected that the positive association between overt aggression and actual popularity would be different depending on how popular adolescents thought they were. In addition, it was expected that gender would be a moderator on the association between overt aggression and peer-perceived popularity as well. We conducted four linear regression models to test these hypotheses, with overt aggression as the dependent variable and peer-perceived popularity, self-perceived popularity, gender and age as the predictor variables. These predictors, except for gender, were centered before conducting the analyses to aid in ease of interpretation and to reduce multicollinearity. The *P*-values were based on a two-tailed test with an alpha of $\alpha = .05$. Prior to interpreting the results of the multiple regression analyses, several assumptions were evaluated. First, stem-and-leaf plots and boxplots indicated normal distributions for most variables, with skewness for age and overt aggression. Second, we examined the potential for collinearity; both the variance inflation factor (VIF; all < 5) and tolerance (all > .20) indicated that multicollinearity was not a concern. Third, multivariate outliers were identified using Mehalanobis Distance with $p < .001$.

Model 1 showed the main effect of each of the predictors on overt aggression. This model was found to be significant with $F(4,526) = 18,027$, $p < .001$. Peer-perceived popularity, self-perception of popularity, age, and gender, accounted for a significant 12% of the variability in overt aggression, $R^2 = .121$, adjusted $R^2 = .114$. In Model 2, the interaction between peer-perceived popularity and self-perceived popularity was added. This model was found to be significant ($F(5, 530) = 16.3$, $p < .001$; $R^2 = .134$), and can therefore be used to predict overt aggression. Model 3 was the same as Model 1, only including the interaction between gender and peer-perceived popularity. This was done to see if not only self-perceived popularity, but gender as well, could be a moderator on the association between peer-perceived popularity and overt aggression. This model was found to be significant as well ($F(5, 530) = 15.908$, $p < .001$; $R^2 = .132$). Model 4 tested for a three-way interaction between peer-perceived popularity, self-perceived popularity and gender, to see if self-perceived popularity moderated the association between peer-perceived popularity and overt aggression for both genders. The model included the interaction variable between peer-perceived popularity, self-perceived popularity and gender in addition to all possible two-way interactions. This model was also found to be significant ($F(8, 530) = 10.703$, $p < .001$; $R^2 = .141$).

Main effects. Model 1 showed a significant positive association between peer-perceived popularity and overt aggression ($\beta = .189$, $p < .001$). This indicates that popular adolescents showed significantly higher levels of overt aggression in comparison to non-popular adolescents. The results of Model 1 are presented in Table 2. The main effect of self-perceived popularity on overt aggression was non-significant ($\beta = .030$, $p = .525$). This indicates that adolescents' levels of overt aggression did not change solely on basis of their self-perceived popularity. The association between gender and overt aggression was significant ($\beta = -.257$, $p < .001$). This means that adolescent boys in the sample showed significantly higher levels of overt aggression in comparison to adolescent girls. Age was not significantly associated with overt aggression, $\beta = -.011$, $p = .790$.

Table 2

Model 1: Main effects of the variables with overt aggression as the dependent variable

Parameter	*b*	*SE*	*β*	*p*	*95% CI*
Constant	0.040	0.003		<.001	[0.034, 0.046]
Gender	-0.027	0.004	-.257	<.001	[-0.036, -0.018]
Age	-0.001	0.002	-.011	.790	[-0.006, 0.004]
Peer-perceived popularity	0.029	0.007	.189	<.001	[0.015, 0.043]
Self-perceived popularity	0,001	0,002	.03	.525	[-0.002, 0.004]

Note. CI = confidence interval. Coding gender: 0 = male; 1 = female.

Interaction between peer-perceived and self-perceived popularity. Model 2 tested for an interaction effect between peer-perceived popularity and self-perceived popularity. As expected, this interaction was found to be significant (β = .118, p = 0.004). It indicates that popular adolescents who perceive themselves as popular are even more aggressive in comparison to popular adolescents who are unaware of their popularity (see Figure 1). When peer-perceived popularity is low, adolescents that inaccurately have a high self-perception of popularity show lower levels of overt aggression in comparison to adolescents who know they are not popular. However, when peer-perceived popularity is high, adolescents who perceive themselves as popular show higher levels of overt aggression than adolescents that do not perceive themselves as popular. In other words, with both low and high peer-perceived popularity, levels of overt aggression are higher when adolescents' self-perception of popularity are accurate in comparison to when adolescents' self-perceptions of popularity are inaccurate.

Table 3

Model 2: Interaction effect of peer-perceived popularity and self-perceived popularity with overt aggression as the dependent variable

Parameter	*b*	*SE*	*β*	*p*	*95% CI*
Constant	0.037	0.003		<.001	[0.031, 0.043]
Gender	-0.027	0.004	-.259	<.001	[-0.036, -0.019]
Age	-0.001	0.002	-.010	.808	[-0.005, 0.004]
Peer-perceived popularity	0.031	0.007	.200	<.001	[0.017, 0.044]
Self-perceived popularity	0.001	0.002	.026	.582	[-0.002, 0.004]
Interaction perceived popularity and self-perceived popularity	0.011	0.004	.118	.004	[0.004, 0.018]

Note. CI = confidence interval. Coding gender: 0 = male; 1 = female.

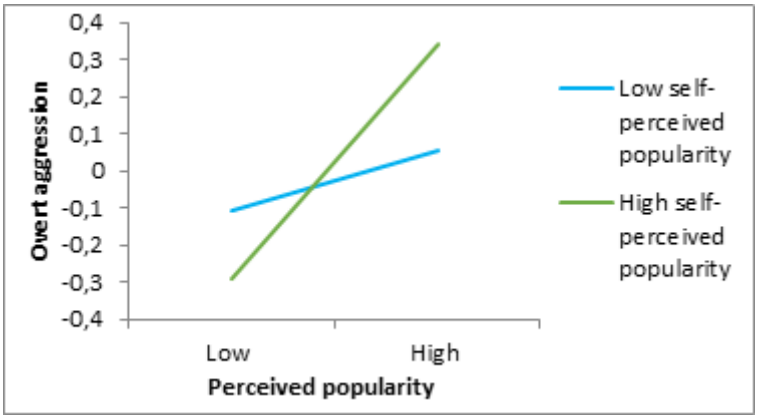

Figure 1. Interaction between peer-perceived popularity and self-perceived popularity on overt aggression

Interaction between gender and peer-perceived popularity. The third model showed a significant interaction between peer-perceived popularity and gender (β = -.143, p = .010). It indicates that the association between peer-perceived popularity and overt aggression differed significantly for boys and girls (see Figure 2). Both boys and girls show lower levels of overt aggression when peer-perceived popularity is low, in comparison to high peer-perceived popularity. However, the increase in overt aggression with peer-perceived popularity is stronger for girls than for boys. While girls show lower levels of overt aggression in comparison to boys, this difference decreases when peer-perceived popularity increases.

Table 4

Model 3: Interaction effect of peer-perceived popularity and gender with overt aggression as the dependent variable

Parameter	*b*	*SE*	*β*	*p*	*95% CI*
Constant	0.039	0.003		<.001	[0.033, 0.045]
Gender	-0.027	0.004	-.258	<.001	[-0.036, -0.018]
Age	-0.001	0.002	-.009	.827	[-0.005, 0.004]
Peer-perceived popularity	0.002	0.009	.284	.000	[0.026, 0.061]
Self-perceived popularity	0.044	0.002	.037	.436	[-0.002, 0.004]
Interaction perceived popularity and gender	-0.033	0.013	-.143	.010	[-0.057, -0.008]

Note. CI = confidence interval. Coding gender: 0 = male; 1 = female.

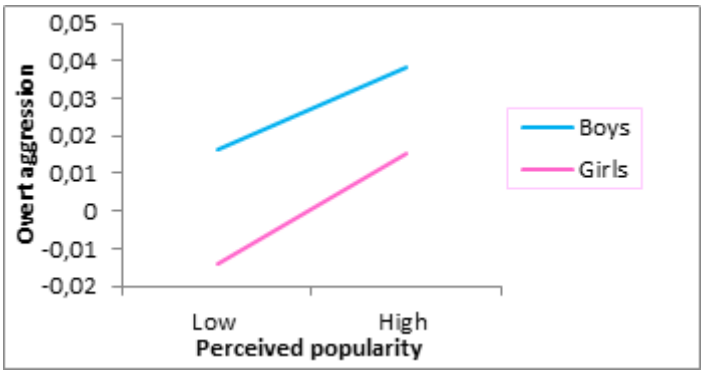

Figure 2. Interaction between peer-perceived popularity and gender on overt aggression

Three-way interaction between peer-perceived popularity, self-perceived popularity and gender. In model 4, the three-way interaction between self-perceived popularity, was found to be non-significant (β = -.008, p = .342). This indicates that, the way self-perceived popularity moderated the association between peer-perceived popularity and overt aggression did not differ for boys and girls.

Table 5

Model 4: Three-way interaction between peer-perceived popularity, self-perceived popularity and gender with overt aggression as the dependent variable

Parameter	*b*	*SE*	*β*	*p*	*95% CI*
Constant	0.036	0.003		<.001	[0.030, 0.043]
Gender	-0.026	0.005	-.245	<.001	[-0.035, -0.016]
Age	-0.001	0.002	-.008	.836	[-0.005, 0.004]
Peer-perceived popularity	0.038	0.009	.247	<.001	[0.019, 0.056]
Self-perceived popularity	0.002	0.002	.049	.453	[-0.003, 0.006]
Interaction perceived popularity and gender	-0.021	0.015	-.093	.152	[-0.050, 0.008]
Interaction perceived popularity and self-perceived popularity	0.012	0.006	.132	.033	[0.001, 0.024]
Interaction self-perceived popularity and gender	-0.002	0.003	-.031	.637	[-0.008, 0.005]
Interaction perceived popularity, self-perceived popularity and gender	-0.008	0.008	-.063	.342	[-0.024, 0.008]

Note. CI = confidence interval. Coding gender: 0 = male; 1 = female.

In conclusion, consistent with the hypotheses, the results showed that popular adolescents that knew they were popular, showed higher levels of overt aggression than popular adolescents that were unaware of their popularity. In addition, gender was found to be a moderator on the association between peer-perceived popularity and overt aggression as well. The association between peer-perceived popularity and overt aggression differed significantly depending on adolescents' gender and their self-perceptions of popularity. Boys were overall more overtly aggressive than girls, but this difference in overt aggression between the genders decreased with increasing peer-perceived popularity. In other words, the increase in overt aggression with peer perceived popularity was stronger for girls than for boys. The three-way interaction between peer-perceived popularity, self-perceived popularity and gender was found to be non-significant.

Discussion

This study tested whether self-perceived popularity and gender moderate the association between overt aggression and peer-perceived popularity. In addition, we tested for a three-way interaction between self-perceived popularity, peer-perceived popularity and overt aggression to see if self-perceived popularity moderates the association between popularity and overt aggression for both genders.

As expected, peer-perceived popularity positively predicted overt aggression. Popular adolescents were more overtly aggressive than their unpopular peers. A possible explanation for this could be that popular adolescents can achieve and maintain their status by using overt aggression to display dominance (Cillessen & Mayeux, 2004; De Bruyn & Cillessen, 2006; Lease et al., 2002; Mayeux et al., 2008; Rodkin et al., 2000; Rose et al., 2004; Sandstrom & Cillessen, 2006; Xie et al., 2002).

The hypothesis that self-perceived popularity moderated the association between peer-perceived popularity and overt aggression was supported. Popular adolescents who also perceived themselves as popular were more aggressive than popular adolescents who were not aware of their popularity. This finding is in line with Coie's (1990) two-phase model which states that an individual's behavior can result in achieving a certain status. The acquired status can then become a stable characteristic of the individual, depending on several factors, such as the individual' self-perception of their status. By accurately perceiving their status, adolescents can therefore consciously engage in behaviour to acquire or maintain popularity. In addition, it could be that popular adolescents who know they are popular are more likely to rely on the social protection that their popularity provides, and are therefore less hesitant to engage in aggressive behaviour than popular adolescents who are unaware of their popularity. And finally, popular adolescents that know they are popular could even enjoy bullying because it reinforces their feelings of dominance and social power.

As expected, there was a significant interaction between gender and peer-perceived popularity, thus the association between peer-perceived popularity and overt aggression was different for boys and girls. Boys overall showed higher levels of overt aggression in comparison to girls. This could be explained by overtly aggressive acts being more socially accepted for boys than for girls (Salmivalli, Lagerspetz, Bjorkqvist, Osterman, & Kaukiainen, 1996). Therefore, displaying overtly aggressive behaviour can more easily interfere with a girl's status, or lead to social rejection than it does for boys. However, the exact way gender moderated the association between overt aggression and peer-perceived popularity was inconsistent with our hypothesis. It was hypothesised that boys would show a stronger increase in overt aggression with increasing peer-perceived popularity in comparison to girls. The results however showed that when peer-perceived popularity increased, the difference between boys and girls in overt aggression

decreased. In other words, the increase in overt aggression with peer-perceived popularity was not stronger for boys, but stronger for girls. This unexpected finding could possibly be explained by the suggestion that the successful use of aggression to improve social status could require well-developed social skills (Hawley, 2007). There are studies that found girls to have better social skills than boys (Ferrie, Lamswood, & McGeown, 2012), therefore making girls perhaps more capable of increasing their social status by using aggression. A second explanation could be that girls are perhaps more concerned with their peer status than boys, and are therefore more likely to try to enhance or maintain it. However, there are currently no studies that support this hypothesis, future research could try to explore this topic.

The results of this study are relevant in several different ways. First of all, it provides additional information to the currently still limited knowledge of factors that moderate the association between popularity and aggression. The findings of this study, add to the existing knowledge on factors influencing aggression in the classroom context and can hopefully be integrated in interventions that target this problem. A meta-analysis investigating several different bullying interventions found that the implemented interventions had modest to no positive effects on reducing participation in aggressive behavior and self-reported victimization (Merrell, Gueldner, Ross, & Isava, 2008). As shown in this study, popular adolescents who are aware of their own popularity show the highest levels of aggression. This finding is crucial for understanding the processes and motives that drive an adolescent to be aggressive and more importantly what it takes for this adolescent to stop with this behaviour. Incorporating these findings in a new intervention may offer better results, which previous interventions have failed to provide. An example of how our findings could be used is designing interventions that target the reduction of the social benefits which are currently granted for overtly aggressive behavior. Reducing the social benefits one receives for aggressive behavior can possibly lower the motivation for displaying this behavior.

An important limitation to the current study is that it did not have a longitudinal design. Therefore no assumptions could be made about the causality of the associations found in this study. Future research should consider longitudinal designs to help clarify the direction of effects among peer-perceived popularity, self-perception of popularity, gender and aggression. Another limitation of the study is that the sample did not accurately represent the population of Dutch secondary school students. The nationalities of the participants were 82.6% Native Dutch, 0.2% Moroccan, and 3.4% adolescents of other ethnic origins. This could be because the sample was not selected randomly from the population. In addition, the use of a single item to measure self-perceived popularity could affect the validity of this construct. Future research should examine adolescents' social cognitions about their own popularity and the social status of their peers in ways

that take their awareness of the complex nature of the dynamics of popularity into account. Furthermore, it would be beneficial to control for other possible moderators. In the current study, for example, we did not check if the participating schools have implemented bullying programmes or interventions. Such factors should be controlled for as much as possible.

The finding that self-perceived popularity moderates the association between peer-perceived popularity and overt aggression suggests that some adolescents are able to use overt aggression to control and manipulate their social environment (Hawley, 2007). To do this, they would need (cognitive) social skills that enable them to implement the aggressive behaviour in such a way that it has the desired outcome (Sutton et al., 1999). This would be consistent with a study that described aggression as adaptive, skilled behaviour. It would be interesting for future studies to examine the characteristics and skills an individual should have to successfully use aggression to increase their social status.

The findings of this study also raise several new questions. Why are some popular adolescents aware of their popularity and others not? And based on what cues do adolescents evaluate their social status in the peer group? What are the more complex social processes involved in popular adolescent's self-perceptions of popularity? Future studies could try to find an answer to these questions. We hope that policy makers, intervention designers and researchers will be able to utilize our findings to reduce and further research the problem of overt aggression in classroom contexts.

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