SOCIOMETRIC STATUS, PEER-PERCEIVED POPULARITY, BULLYING, AND PSYCHOPATHOLOGICAL OUTCOMES



Associations and the moderating role of involvement in bullying

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TABLE OF CONTENTS

1 INTRODUCTION 3
1.1 RESEARCH ON SOCIOMETRIC STATUS AND LONELINESS AND DEPRESSION 4
1.2 AIM OF THE PRESENT STUDY 5
1.3 MODERATING ROLE OF INVOLVEMENT IN BULLYING 5
1.4 HYPOTHESES 6
2 METHOD 8
2.1 PARTICIPANTS 8
2.2 PROCEDURE 8
2.3 MEASURES 9
2.4 ANALYSES 10
3 RESULTS 11
3.1 PRELIMINARY ANALYSES 11
3.2 CORRELATION ANALYSES 11
3.3 REGRESSION ANALYSES 12
4 DISCUSSION 18
4.1 GOAL OF THE PRESENT STUDY 18
4.2 OTHER NOTABLE RESULTS 19
4.3 LIMITATIONS OF THE PRESENT STUDY 20
4.4 PRACTICAL IMPLICATIONS 21
5 REFERENCES 23

1 INTRODUCTION

Children spend a considerable amount of time with similar-age peers throughout childhood and adolescence. Most children participate in positive and valuable peer relations, but some have peer relations that are much less satisfying. These children are to some degree rejected by their peers and they lack adequate and sufficient opportunities to improve their relationships with peers. For these children, their negative or less satisfying peer relations are often an important source of stress and damaging for themselves and their (future) development. For this reason, studying rejected children and the trajectory that led them to be rejected by their peers, is an important area of research that requires adequate attention.

Studying rejected children is an important source of information for developing effective intervention programs aimed at improving the peer relationships of unpopular children (Asher, 1990). Achieving a better understanding of the development of social competence and learning from rejected children what it is that caused their unpopular status helps us help unpopular children in their quest for better peer relationships.

The impact of peer relationships becomes increasingly important as children move into and through adolescence (Asher, 1990; Fontaine et al., 2009). Peer relations are usually assessed using sociometric nomination measures which divide children into five sociometric status categories: popular, rejected, average, controversial and neglected (Coie, Dodge, & Coppotelli, 1982). This division is based on each child's social preference, which is calculated by counting and standardizing the nominations the child received on a "liked most" (LM) question minus the nominations the child received on a "liked least" (LL) question.

Valuable peer relations play an important role in achieving an adequate level of social and emotional functioning during childhood and adolescence. Friends provide companionship and recreation, share advice and valued possessions, act as trusted confidants, critics and loyal allies, and arrange for a certain stability in times of stress and transition (Asher, 1990). There is evidence to assume that the experience of being accepted by peers plays a moderating role in the development of psychopathology (Kupersmidt, Coie & Dodge, 1990) and there is also evidence to assume that the experience of being rejected is directly causally related to psychopathological outcomes. Being rejected by peers therefore should be considered an important risk factor and predictor of multiple forms of negative outcome (Asher, 1990).

We, as a society as a whole, are obligated to help these children achieve and enjoy group acceptance and close personal friendships, to prevent any negative outcome that might result from a lack of social competence and possible unpopular status. Furthermore, we are obligated to prevent or challenge any negative behavior that might contribute to a less than optimal development of social competence and positive peer relationships. Bullying is such negative behavior.

Exposure to bullying behavior should be considered a serious threat to a healthy development throughout childhood and adolescence. Being involved in bullying is associated with various negative outcomes, including a low self-esteem, depressive feelings (Junger-Tas & Van Kesteren, 1999) and suicidal thoughts (Fekkes, Pijpers, & Verloove-Vanhorick, 2004). Futhermore, involvement in bullying is negatively associated with sociometric status (Bokhorst, Goossens, Bokhorst, Dekker & De Ruyter, 2002; Salmivalli, Lagerspetz, Björkqvist, Österman & Kaukiainen, 1996), which means that bullying behavior contributes directly to a low social preference, which in turn is associated with negative or less satisfying peer relationships and other negative outcomes later in life.

1.1 RESEARCH ON SOCIOMETRIC STATUS AND LONELINESS AND DEPRESSION

Numerous studies have shown that children with a negative sociometric status (i.e. children with a low social preference) are more likely to show social, emotional, and behavioral problems. Although the evidence for links between a negative sociometric status and maladjustment are stronger for forms of externalizing behaviors, previous research did show that sociometric status does play a role in predicting, contributing to or accumulating to forms of internalizing behaviors. However, the link is not always a direct one; there are often other factors that play a mediating or moderating role between sociometric status and maladjustment (Boivin, Hymel, & Burkowski, 1995; Fontaine, 2009; Kiesner, 2002; Lansford et al., 2007).

Sociometric status has been associated with depressive symptoms. For instance, Lansford et al. (2007) found that the negative association between low social preference and depressive symptoms was mediated by prior depressive symptoms and concurrent aggression. However, the same study showed that low social preference remained a significant predictor of later depressive symptoms, even after controlling for prior depressive symptoms, prior aggression, and concurrent aggression. In the study performed by Hecht, Inderbitzen, and Bukowski (1998), no differences were found in the Children's Depression Inventory (CDI) total scores between the sociometric subgroup classifications (e.g. average, neglected, et cetera), yet differences were found with respect to specific depression subscales. For instance, children with an aggressive-rejected status, reported more interpersonal problems and showed higher scores on the subscale ineffectiveness, which led to the conclusion that these aggressive-rejected children do perceive themselves more negatively than children classified as average. In the study performed by Cole & Carpentieri (1990), children with a rejected sociometric status scored significantly more depressed than popular, neglected and average children on all measures of depression.

Sociometric status has also been associated with loneliness. Children who have the greatest difficulties in peer relations are also more likely to report a higher degree of loneliness and social dissatisfaction (Asher, Parkhurst, Hymel, & Williams, 1990; Fontaine et al., 2009). Although this link is to some degree influenced by other factors, like the chronicity of peer rejection, social conditions and the availability of one or more best friends, there are good reasons to assume that rejected children are dissatisfied with their peer relations and show significant

feelings of loneliness. In the opposite direction, lonely children might become more isolated and less interactive over time, thereby further negatively affecting their negative sociometric status (Boivin, Hymel, & Burkowski, 1995). Furthermore, rejected children place as much importance on peer relations as do other children (Taylor & Asher, in Asher, Parkhurst, Hymel, & Williams, 1990, p. 254), which makes is plausible to assume that their negative status, peer difficulties and feelings of loneliness, further negatively affect their emotional and psychological well-being (Schneider, Weiner, & Murphy, in Fontaine et al., 2009, p. 480) and possibly invoke depressive symptoms. This conclusion is based on evidence found in the study performed by Fontaine et al. (2009). In this study, loneliness partially mediated between low social preference in childhood and anxious/depressed symptoms in adolescence, even after controlling for early anxious/depressed symptoms in childhood.

1.2 AIM OF THE PRESENT STUDY

In the present study the predictors under investigation are social preference (i.e. sociometric popularity) and peer-perceived popularity. Social preference is assessed using the sociometric questions “like most” (LM) and “like least” (LL). Children with a high social preference are characterized by peers as kind and trustworthy. Children with a high peer-perceived popularity, which is assessed using the sociometric questions “most popular” (MP) and “least popular” (LP), are often characterized as dominant, aggressive, or stuck-up (Parkhurst & Hopmeyer, 1998). The criteria under investigation are depressive symptoms and loneliness. The links between the predictors and the criteria are analyzed. The aim of the present study is to assess the effect of a negative sociometric status (i.e. rejected) and a high peer-perceived popularity on loneliness and depression. Furthermore, the moderating role of involvement in bullying (as a bully and/or a victim) between the predictors and the criteria is investigated. Significant results could possible increase the importance of the assessment of sociometric and peer-perceived popularity, to prevent or reverse negative outcomes like loneliness and depression.

1.3 MODERATING ROLE OF INVOLVEMENT IN BULLYING

Previous research has shown that victims as well as bullies report higher levels of depressive symptoms and psychological distress than those not involved in bullying (Brunstein, Marrocco, Kleinman, Schonveld, & Gould, 2007; Fekkes, Pijpers, & Verloove-Vanhorick, 2004; Hawker & Boulton, 2000). Involvement in bullying has also been associated with sociometric status (Bokhorst, Goossens, Bokhorst, Dekker & De Ruyter, 2002; Salmivalli, Lagerspetz, Björkqvist, Österman & Kaukiainen, 1996). Since involvement in bullying is associated with social preference as well as with depressive symptoms and psychological distress, the supposition that involvement in bullying could play a moderating role between these variables is plausible.

Asher, Parkhurst, Hymel, and Williams (1990) also found that the correlation between sociometric status and loneliness shows considerable variations; not all unpopular children report feeling lonely and some popular children do report feeling lonely. Other factors, like involvement in bullying, might explain these variations. Although bullies are often not liked, they are often perceived by their peers as popular, powerful and "cool". Bullies are often central members of their peer group and have a sufficient number of friends, often other aggressive peers (Salmivalli & Peets, 2009). It could be their peer-perceived popularity, their relatively large peer network and the availability of friends (enforcers, collaborators), that accounts for less feelings of loneliness, despite their negative sociometric status and their aggressive behavior.

Gender and age are included in the model to test for any gender and/or age effects. The availability of a best friend is also included in the model as a control variable. The availability of a best friend might be a confounding factor, since it could provide an alternative explanation for the negative correlation between perceived popularity and loneliness (Asher, Parkhurst, Hymel, & Williams, 1990).

1.4 HYPOTHESES

The hypothesis is – based on previous research – that there are significant, negative correlations between the predictors and the criteria. Participants who score high on social preference (i.e. high sociometric popularity) or peer-perceived popularity, have a lower score on depressive symptoms and loneliness, than participants who score low or average on the predictor variables. Previous research has shown that children who are liked by their peers, as well as children who are dominant and aggressive (due to their unrealistic self-conceptions and an overestimation of their own competence) report less extreme feelings of loneliness (Asher, Parkhurst, Hymel, & Williams, 1990). Concerning the moderating role of involvement in bullying, the hypothesis is that involvement in bullying as a bully neutralizes the negative link between the peer-perceived popularity and the criteria. Involvement in bullying as a bully is hypothesized to be a protective factor. Involvement in bullying as a victim is hypothesized to be a risk factor. In other words, involvement in bullying as a bully is assumed to be beneficial to the protective influence of a high peer-perceived popularity on loneliness and depression, involvement in bullying as a victim is assumed to be detrimental to this protective influence of peer-perceived popularity.

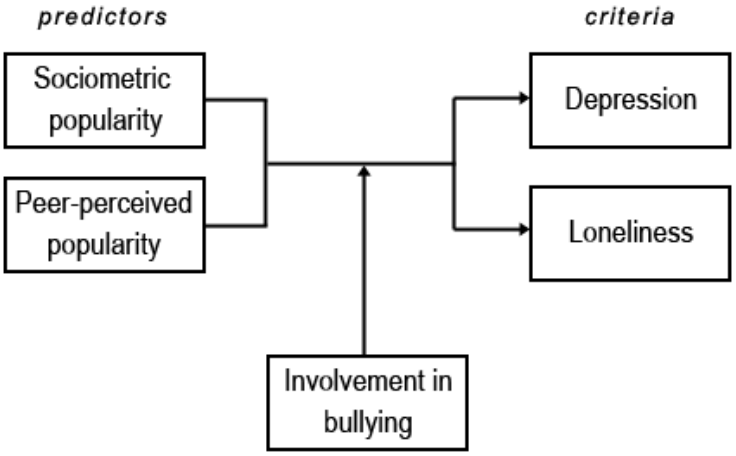

Figure 1
Conceptual Model

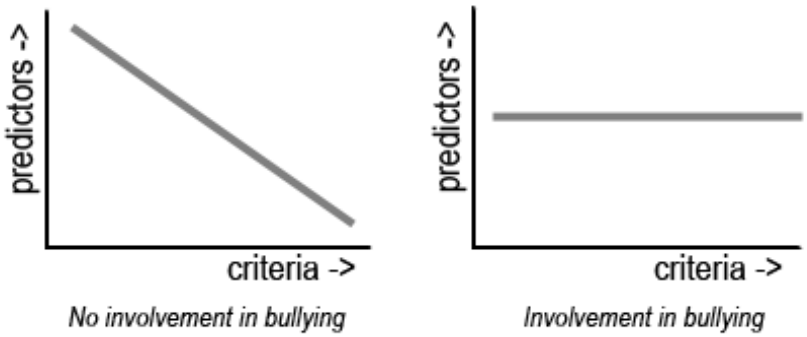

Figure 2
Expected moderating role of Involvement in Bullying as a Bully

2 METHOD

2.1 PARTICIPANTS

Participants were 151 elementary school students (81 boys, 70 girls) from grades 5 to 8, ranging in ages from 8 to 13 years (M age = 10.30; SD = 1.265), from one elementary school (approximately 350 students) in a rural town (approximately 6,300 residents) near the city of Nijmegen, The Netherlands. All students from the selected grades participated in the study. Consent procedures requested by the school administrators for regular testing in the school context were followed. The vast majority of the students in this school were native Dutch-speaking residents. The school is located in a region with an above average score of 5 on a 7-point socioeconomic status scale ranging from low to high (SCP, 2006).

2.2 PROCEDURE

Participants took part in a group assessment session in the classroom. The assessment session took place in late March, 2008. Seven months of daily interaction (September till March) among the classmates were presumed to be sufficient to ensure evaluations could be based on a substantial number of social behaviors. Furthermore, students were largely familiar to each other, being in the same grade for the majority of the previous two to six years. Students received no compensation for participating in the study.

During the assessment session, all classrooms completed the questionnaire consisting of nine sociometric questions about their peers' sociometric status and behaviors and ten questions about themselves measuring self-worth/depression, loneliness/withdrawal, and impulsiveness.

Prior to the assessment, the class was informed about the study and the questionnaire during a 30-minute instruction period. Students were told that the goal of the study was to understand children's peer relationships at school. There was also an interactive discussion between the students and the instructor about the difference between bullying and teasing, pointing out the differences on the blackboard and using various case examples of bullying and teasing. Finally, instructions were given as to how the questionnaire should be completed. The confidentiality and privacy of answers was emphasized.

During the assessment, talking was prohibited and all students were seated in a test-arrangement at their individual desk, with adequate space between each desk. After completing the sociometric and self-report questions, participants were given the opportunity to write a short note about their own experiences with bullying.

An instructor was present in the classroom to answer questions and make sure that instructions were followed. Questions were privately answered by the instructor. Repetitive questions of the same nature were – if desirable – answered by the instructor to the entire class in the form of a general instruction (e.g., whether it was allowed to nominate themselves). In certain cases answering the question to the entire class was not desirable due

to the personal nature of the question or due to the fact that the answer implied permission to skip a question that he/she could not answer (i.e. when the student did not know any other students to nominate for a certain question). Such answers were meant to be personal and for each of these questions, the primary response of the instructor was to motivate the student to think again and try to complete the question. Only after a second attempt, the instructor allowed the student to skip the question if he/she really did not know anybody to nominate.

2.3 MEASURES

Sociometric measures

Each participant received a roster containing the names of all classmates, alphabetically sorted by first name. Participants were instructed to place the roster at the top on their desk to make it easier for them to find a particular student. On the roster, each classmate was identifiable by an unique number. The students received the questionnaire after the roster was given out. The first question on the questionnaire asked participants to write down their own number from the roster (and their birth date for further verification of their identity). The questionnaire started with a short repetition of the most imported instructions.

In the questionnaire, each sociometric question contained nine blank lines to nominate other students. Thus, nominations were unlimited with a maximum of nine. Participants were allowed to nominate any student from the roster. Both same- and other-sex nominations were allowed. Self-nominations, if given, were not included during data processing.

To facilitate nominations, three steps were followed. First, in the instructions, participants were deliberately not instructed that 0 or 1 nominations would be allowed. Instead, an implicit minimum of 2-3 nominations per sociometric question was mentioned, by instructing participants that not all blank lines needed to be filled in and that 2-3 nominations per sociometric question was allowed for instance if they would not be able to nominate more than 2-3 students for a question. Second, instead of writing down names of classmates, participants were instructed to write down their numbers, assuming that this is easier than writing down names. Third, participants could add a question mark to the number of a nominated classmate to point out that they were not 100% sure about their nomination. Nominations with a question mark were included as regular nominations during data processing.

There were nine sociometric questions in the extended questionnaire. Participants were asked “Who do you like the most?” (LM) and “Who do you like the least?” (LL) to measure peer status. The LM and LL items were used to calculate social preference and social impact for each student within each classroom, according to the procedure of Coie and Dodge (1983). Based on their social preference, all children were divided into five sociometric status categories: popular, rejected, average, controversial and neglected (Coie, Dodge, & Coppotelli, 1982). A score for each participant on both the LM and LL items was obtained by summing the nominations received from classmates. For each score on the LM and LL items, z-scores were calculated within the classroom.

Participants were also asked to nominate classmates for two acquaintanceship questions ("Who do you hang around with?" and "Who do you rather not hang around with?"), two popularity questions ("Who is the most popular?" and "Who is the least popular?"), two bullying involvement questions ("Who bullies other children?" and "Who is bullied by other children?") and one friendship question ("Who is your best friend?"). For the best friend question, participants had to nominate other students in order, beginning with their first best friend, resulting in a sequenced list of friendships. For the acquaintanceship, popularity, bullying, and friendship items, nominations received were counted for each student and were standardized to z-scores in the classroom. Peer-perceived popularity was calculated using the z-scores of the "most popular" (MP) and "least popular" (LP) questions, by substracting the LP z-score from the MP z-score for each participant.

Self-report measures

The questionnaire included ten self-report questions about their social and emotional development. The questions were based on similar questions from a questionnaire aimed at pointing out students at risk (Van der Meer, 2000) and were extended and adjusted using the Social-Emotionele Vragenlijst (SEV) aimed at assessing the social and emotional development of children age 4 to 18 (Scholte & Van der Ploeg, 2005). The ten self-report questions were divided in three factors: self-worth/depression (α = 0,391, n = 144, e.g. "I feel like nobody understands me"), loneliness/withdrawal (α = 0,248, n = 146, e.g. "I rather play alone than with others"), and impulsiveness (α = 0,475, n = 147, e.g. "I find it difficult to wait or control myself when I want something"). Each question was answered on a 4-point scale: always, often, sometimes, and never. A total score for each participant was obtained for all three factors, by giving each point on the 4-point scale a score (4 to 1) and summing the scores for each participant for the three factors. Z-scores were calculated within each classroom to classify each participant in one of three groups (low, medium, high) indicating the severity of their social and emotional problems in comparison to the reference group (the classroom).

2.4 ANALYSES

Dependence between sociometric popularity and peer-perceived popularity (the predictors) and depressive symptoms and loneliness (the criteria) is tested using Pearson's correlation coefficient. The possible moderating role of involvement in bullying (i.e. whether involvement in bullying neutralizes the negative link between sociometric popularity/peer-perceived popularity and depressive symptoms/loneliness) is tested using linear multiple regression analysis. Variables are included in the regression model by forward addition, in the order of: control variables (gender, age, availability of best friend in the same classroom), predictor, and interaction (predictor x moderator). The predictors are transformed by subtracting the mean from each score on the predictor variable, creating deviationscores, to resolve the multi-collinearity problem in regression analyses including interaction terms.

3 RESULTS

3.1 PRELIMINARY ANALYSES

The preliminary analyses show no significant differences for the variables of interest between boys and girls, except for the variables impulsiveness, self-worth/depression and involvement in bullying nominations (see Table 1). Boys score significantly higher on the impulsiveness scale and girls score significantly higher on the self-worth/depression scale. Boys tend to be more impulsive than girls and girls tend to have a less positive self-image and report more feelings of depression than boys. Concerning the involvement in bullying, boys receive significantly more nominations than girls on both questions assessing the involvement in bullying (as a bully / as a victim).

Table 1
Means and Standard Deviations for Variables of Interest by Gender

	Gender					
	Boys (n = 81)		Girls (n = 70)		*t*	
	M	SD	*M*	SD		
Age	10.27	1.31	10.34	1.21	-.35	
Best friend nominations	5.05	2.36	5.26	2.68	-.50	
Social preference ([a])	-.12	1.83	.14	1.52	-.94	
Peer-perceived popularity ([a])	.08	1.07	-.10	.87	1.13	
Bully nominations	1.94	3.44	.45	1.09	3.44	***
Victim nominations	1.35	2.97	.57	1.02	2.10	*
Impulsiveness	5.60	1.62	5.03	1.54	2.20	*
Self-worth/depression	6.40	1.43	7.10	1.68	-2.71	**
Loneliness/withdrawal	5.18	1.33	5.40	1.39	-.96	

[a] The standardized z-scores are used with a mean of 0 and a SD of 1.
** p < .05; ** p < .01; *** p < .001.*

3.2 CORRELATION ANALYSES

The correlations between all variables used in the regression analyses are presented in Table 2. Of particular interest are the positive correlations between best friend nominations, social preference and peer-perceived popularity ($p < .01$). For boys as well as for girls, the more best friend nominations one receives, the higher the standardized social preference and peer-perceived popularity score. Furthermore, a higher social preference score results in a higher peer-perceived popularity score as well.

Another correlation of interest is the negative correlation between social preference and the number of bully nominations ($p < .01$). Both boys and girls who received a high number of bully nominations, score lower on social preference. For girls, this negative correlation is equally true for participants who received a high number of victim

nominations (r = -.329, p < .01). Girls who are victims of bullying have a less positive social preference than girls who are not victims of bullying. For boys, the correlation between social preference and the number of victim nominations is not significant.

Although the previous correlation is not significant for boys, the negative correlation between peer-perceived popularity and the number of victim nominations is significant for boys (r = -.471, p < .01). Boys who are victims of bullying have a lower peer-perceived popularity than boys who are not victims of bullying. For girls, this correlation is similar, although significant at a lower significance level (r = -.261, p < .05).

Finally, another significant correlation to point out is the negative correlation between peer-perceived popularity and self-worth/depression (r = -.254, p < .05) for girls, as well as the negative correlation between peer-perceived popularity and loneliness/withdrawal (r = -.348, p < .01) for girls. Girls with a lower peer-perceived popularity have a less positive self-worth and report more feelings of depression and loneliness. For boys, although the correlation between peer-perceived popularity and self-worth/depression is not significant, there is a significant negative correlation between peer-perceived popularity and loneliness/withdrawal (r = -.261, p < .05) and between the number of victim nominations and feelings of loneliness (r = .469, p < .01). Boys with a lower peer-perceived popularity and/or who received a high number of victim nominations report more feelings of loneliness. Contrary to the results found for girls, boys do not report having a lower positive self-worth or more depressive feelings, due to their less positive peer-perceived popularity.

Table 2

Correlations between All Variables ([b])

	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)
(a) Age		.18	.21	.21	.04	-.26 *	.02	-.12
(b) Best friend nominations	-.28 *		.67 **	.46 **	-.15	-.17	-.29 *	-.05
(c) Social preference ([a])	-.05	.65 **		.38 **	-.43 **	-.33 **	-.10	-.11
(d) Peer-perceived popularity ([a])	.07	.48 **	.37 **		.00	-.26 *	-.25 *	-.35 **
(e) Bully nominations	-.08	-.03	-.42 **	.26 *		.30 *	-.04	-.06
(f) Victim nominations	-.19	-.16	-.20	-.47 **	-.06		.27 *	.05
(g) Self-worth/depression	.01	-.02	-.07	-.22	-.21	.22		.26 *
(h) Loneliness/withdrawal	-.13	-.02	.03	-.26 *	-.22 *	.47 **	.22	

Note: n = 151; * p < *.05;* ** p < *.01.*

[a] The standardized z-scores are used with a mean of 0 and a SD of 1.

[b] Correlation coefficients above the diagonal are for girls, coefficients below the diagonal are for boys.

3.3 REGRESSION ANALYSES

To test for the moderating role of involvement in bullying, four multiple regression models were executed. Variables

were added hierarchically in the following sequence: the control variables in step 1, the predictor variables in step 2 and the interaction terms in step 3.

In the first model, self-worth/depression was used as the dependent variable (see Table 3). In the first step, the control variables explained 8% of the variance. The negative β coefficient indicates that a high number of best friend nominations predicted a more positive self-worth and less depressive feelings. In the second step, the predictor variables explain another 5% of the variance although not significant, $F_{change}(3, 137) = 2.635$, $p = .052$.

Table 3

Model 1: Multiple Regression Analyses of Self-worth/Depression predicted by Gender, Age, Best Friend Nominations, Social Preference, Bully Nominations, Victim Nominations, Social Preference x Bully Nominations and Social Preference x Victim Nominations (n = 143)

		Self-worth/Depression			
	Variables	B	SE B	β	
Step 1	Gender	.730	.258	.230	**
	Age	.015	.102	.012	
	Best Friend Nominations	-.105	.052	-.166	*
Step 2	Gender	.697	.269	.220	
	Age	.052	.103	.041	
	Best Friend Nominations	-.086	.070	-.136	
	Social Preference ([a])	-.014	.115	-.015	
	Bully Nominations	-.086	.055	-.147	
	Victim Nominations	.123	.059	.178	*
Step 3	Gender	.686	.271	.216	*
	Age	.051	.104	.040	
	Best Friend Nominations	-.085	.070	-.135	
	Social Preference ([a])	-.015	.117	-.016	
	Bully Nominations	-.128	.077	-.219	
	Victim Nominations	.123	.087	.178	
	Social Preference x Bully Nominations	-.028	.035	-.096	
	Social Preference x Victim Nominations	-.002	.065	-.004	

Note: $R^2 = .08$ for step 1 ($p < .01$); $\Delta R^2 = .05$ for step 2 (*n.s.*); $\Delta R^2 = .00$ for step 3 (*n.s.*).
[a] The standardized z-scores are used with a mean of 0 and a SD of 1.
** p < .05; ** p < .01.*

Adding the victim nominations in a separate step indicates that the victim nominations variable explains 3% of the variance, which was significant. The positive β coefficient indicates that a high number of victim nominations predicted a less positive self-worth and more depressive feelings. In the third step, no additional variance is explained by the added interaction terms.

In the second model, again self-worth/depression was used as the dependent variable (see Table 4). For the first step, the results are equal to the results in the first model. In the second step, the predictor variables

explain another 6% of the variance, which was significant. In the third step, another 1% of the variance is explained, although not significant. The significant positive β coefficient in step 3 indicates that a high number of victim nominations predicted a less positive self-worth and more depressive feelings.

Table 4

Model 2: Multiple Regression Analyses of Self-worth/Depression predicted by Gender, Age, Best Friend Nominations, Peer-perceived Popularity, Bully Nominations, Victim Nominations, Peer-perceived Popularity x Bully Nominations and Peer-perceived Popularity x Victim Nominations (n = 143)

		Self-worth/Depression			
	Variables	B	SE B	β	
Step 1	Gender	.730	.258	.230	**
	Age	.015	.102	.012	
	Best Friend Nominations	-.105	.052	-.166	*
Step 2	Gender	.663	.268	.209	*
	Age	.065	.103	.051	
	Best Friend Nominations	-.061	.058	-.097	
	Peer-perceived Popularity ([a])	-.181	.165	-.112	
	Bully Nominations	-.068	.050	-.116	
	Victim Nominations	.099	.062	.144	
Step 3	Gender	.673	.269	.212	*
	Age	.096	.106	.076	
	Best Friend Nominations	-.052	.059	-.082	
	Peer-perceived Popularity ([a])	-.184	.168	-.114	
	Bully Nominations	-.062	.057	-.106	
	Victim Nominations	.231	.110	.335	*
	Peer-perceived Popularity x Bully Nominations	-.021	.035	-.058	
	Peer-perceived Popularity x Victim Nominations	.062	.044	.212	

Note: R^2 = .08 for step 1 (p < .01); ΔR^2 = .06 for step 2 (p < .05); ΔR^2 = .01 for step 3 (*n.s.*).
[a] The standardized z-scores are used with a mean of 0 and a SD of 1.
** p < .05; ** p < .01.*

In the third model, loneliness/withdrawal was used as the dependent variable (see Table 5). In the first step, the control variables explain 2% of the variance, though not significant. In the second step, an additional 12% of the variance is explained by the variables bully nominations and victim nominations, $F_{change}(3, 139) = 6.588$, p < .001. The negative β coefficient for bully nominations indicates that a high number of bully nominations predicted less feelings of loneliness. The positive β coefficient for victim nominations indicates that a high number of victim nominations predicted more feelings of loneliness. In the third step, 1% of the variance is explained by the added interaction terms, though not significant.

Table 5

Model 3: Multiple Regression Analyses of Loneliness/Withdrawal predicted by Gender, Age, Best Friend Nominations, Social Preference, Bully Nominations, Victim Nominations, Social Preference x Bully Nominations and Social Preference x Victim Nominations (n = 145)

		Loneliness/Withdrawal			
	Variables	B	SE B	β	
Step 1	Gender	.232	.226	.085	
	Age	-.131	.089	-.122	
	Best Friend Nominations	-.022	.045	-.041	
Step 2	Gender	.235	.226	.087	
	Age	-.071	.087	-.066	
	Best Friend Nominations	.018	.059	.032	
	Social Preference ([a])	-.045	.097	-.056	
	Bully Nominations	-.093	.047	-.187	*
	Victim Nominations	.182	.049	.308	**
Step 3	Gender	.217	.227	.080	
	Age	-.078	.087	-.073	
	Best Friend Nominations	.019	.059	.035	
	Social Preference ([a])	-.064	.098	-.080	
	Bully Nominations	-.125	.064	-.250	
	Victim Nominations	.122	.073	.208	
	Social Preference x Bully Nominations	-.020	.029	-.079	
	Social Preference x Victim Nominations	-.062	.055	-.133	

Note: R^2 = .02 for step 1 (*n.s.*); ΔR^2 = .12 for step 2 ($p < .001$); ΔR^2 = .01 for step 3 (*n.s.*).
[a] The standardized z-scores are used with a mean of 0 and a SD of 1.
** p < .05; ** p < .01.*

In the fourth model, again loneliness/withdrawal was used as the dependent variable (see Table 6). For the first step, the results are equal to the results in the third model. In the second step, the predictor variables explain another 15% of the variance, which was significant. The significant negative β coefficient for peer-perceived popularity indicates that a high peer-perceived popularity predicted less feelings of loneliness. The significant positive β coefficient for victim nominations indicates, like in model 3, that a higher number of victim nominations predicted more feelings of loneliness. In the third step, another 3% of the variance is explained by the interaction terms, although not significant, $F_{change}(2, 137) = 2.901$, $p = .06$. The significant negative β coefficient for bully nominations indicates that a higher number of bully nominations predicted less feelings of loneliness. Similar results were found for peer-perceived popularity. A higher peer-perceived popularity predicts less feelings of loneliness.

Based on the significant positive β coefficient for the interaction term peer-perceived popularity x bully nominations, the effect of peer-perceived popularity on feelings of loneliness is partially moderated by the number of bully nominations. A higher number of bully nominations significantly reduced the correlation between peer-perceived popularity and feelings of loneliness.

Table 6

Model 4: Multiple Regression Analyses of Loneliness/Withdrawal predicted by Gender, Age, Best Friend Nominations, Peer-perceived Popularity, Bully Nominations, Victim Nominations, Peer-perceived Popularity x Bully Nominations and Peer-perceived Popularity x Victim Nominations (n = 145)

		Loneliness/Withdrawal			
	Variables	B	SE B	β	
Step 1	Gender	.232	.226	.085	
	Age	-.131	.089	-.122	
	Best Friend Nominations	-.022	.045	-.041	
Step 2	Gender	.186	.223	.069	
	Age	-.051	.086	-.048	
	Best Friend Nominations	.048	.049	.089	
	Peer-perceived Popularity ([a])	-.289	.137	-.209	*
	Bully Nominations	-.059	.042	-.118	
	Victim Nominations	.146	.051	.247	**
Step 3	Gender	.145	.221	.053	
	Age	-.056	.087	-.052	
	Best Friend Nominations	.039	.048	.071	
	Peer-perceived Popularity ([a])	-.337	.138	-.244	*
	Bully Nominations	-.103	.047	-.206	*
	Victim Nominations	.048	.090	.081	
	Peer-perceived Popularity x Bully Nominations	.067	.029	.215	*
	Peer-perceived Popularity x Victim Nominations	-.036	.036	-.146	

Note: R^2 = .02 for step 1 (*n.s.*); ΔR^2 = .15 for step 2 ($p < .001$); ΔR^2 = .03 for step 3 (*n.s.*).

[a] The standardized z-scores are used with a mean of 0 and a SD of 1.

** p < .05; ** p < .01.*

As shown in Figure 3, a high number of bully nominations neutralized the effect of peer-perceived popularity on feelings of loneliness. The negative effect of having a low peer-perceived popularity, as assessed by classmates, is significantly reduced when the number of bully nominations increases. Interestingly enough, participants with a low peer-perceived popularity and with a low score on bully nominations tend to report more feelings of loneliness than participants with a low peer-perceived popularity yet with a high score on bully nominations. Involvement in bullying as a bully appears to have a positive effect on peer-perceived popularity and feelings of loneliness.

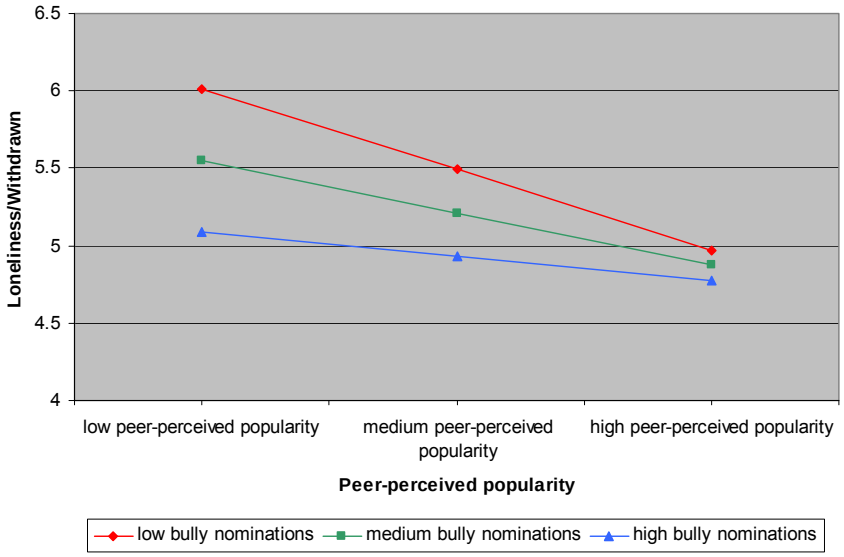

Figure 3

Moderating Role of Bullying on Feelings of Loneliness by Peer-perceived Popularity

4 DISCUSSION

4.1 GOAL OF THE PRESENT STUDY

The primary goal of the present study was to examine associations between (a) sociometric and peer-perceived popularity and (b) self-worth, depressive feelings and feelings of loneliness. The secondary goal was to examine the moderating role of involvement in bullying in these correlations.

The hypothesis was that there are significant negative correlations between social preference and self-worth, depressive feelings and feelings of lonelineness. Participants with a high social preference score have a more positive self-worth and score lower on depressive feelings and feelings of loneliness, than participants who score low on social preference. The present study shows no significant correlation between social preference and self-worth, depressive feelings and feelings of loneliness, despite the results found in previous research (Asher, Parkhurst, Hymel, & Williams, 1990, Boivin, Hymel, & Burkowski, 1995; Cole & Carpentieri, 1990; Fontaine, 2009; Hecht, Inderbitzen, & Bukowski, 1998; Kiesner, 2002; Lansford et al., 2007). The previously formulated hypothesis therefore cannot be completely confirmed. Partly this could be due to the small number of participants or due to the low internal consistency of the self-report measures on self-worth/depression and loneliness/withdrawal. Another explanation for the absence of this negative correlation may be found in the high rate of positive peer relationships and the low rate of depressive feelings and feelings of loneliness in the present sample.

A similar hypothesis was formulated for peer-perceived popularity. The hypothesis was that there are significant negative correlations between peer-perceived popularity and self-worth, depressive feelings and feelings of loneliness. Participants with a high peer-perceived popularity have a more positive self-worth and score lower on depressive feelings and feelings of loneliness, than participants with a low peer-perceived popularity. For boys, the negative correlation between peer-perceived popularity and feelings of loneliness was significant. Boys with a lower peer-perceived popularity tend to report more feelings of loneliness. For girls, a negative correlation was found between peer-perceived popularity and self-worth, depressive feelings and feelings of loneliness. Girls with a lower peer-perceived popularity tend to report a less positive self-worth, more depressive feelings and more feelings of loneliness. It is unclear whether a low peer-perceived popularity leads to these negative outcomes or whether these negative outcomes are caused by other factors, which in turn leads to a less positive peer-perceived popularity. Based on previous research, it is assumed that the causal link between both variables is two-way, strengthening each other in a cyclic manner. Further research is required to answer this question more precisely.

Concerning the moderating role of involvement in bullying, the hypothesis was that involvement in bullying as a bully neutralizes the negative link between peer-perceived popularity and the criteria. Evidence suggests that this hypothesis is true. Involvement in bullying as a bully appears to be beneficial for those participants with a low peer-perceived popularity, despite the logical assumption that involvement in bullying has to be considered a risk factor. Based on the current study, the conclusion is made that the negative correlation between peer-perceived

popularity and feelings of loneliness is neutralized by involvement in bullying as a bully. Children who are highly involved in bullying as a bully tend to have a more positive peer-perceived popularity and tend to report less feelings of loneliness than children who are not highly involved in bullying as a bully. Children with a low peer-perceived popularity, tend to report less feelings of loneliness when they are involved in bullying as a bully. The negative correlation between peer-perceived popularity and feelings of loneliness is thus moderated by involvement in bullying as a bully. Based on correlation analysis, the dependency is assumed to be stronger for boys than for girls. For boys, involvement in bullying as a bully seems to correlate with a higher peer-perceived popularity, thus making involvement in bullying as a bully among boys more accepted as effective and profitable social behavior. Other explanations could be that (a) boys overestimate their social competence, perceiving themselves as more popular than perceived by their peers or (b) boys tend to report less feelings of loneliness due to a difference in gender roles between boys and girls, thus making it for boys less socially acceptable to report negative feelings of loneliness.

For involvement in bullying as a victim, no significant interaction was found, meaning the negative correlation between peer-perceived popularity and feelings of loneliness is not neutralizes by involvement in bullying as a victim. Victims have a lower peer-perceived popularity and report more feelings of loneliness and depression, and the correlation between these variables is not moderated by involvement in bullying.

4.2 OTHER NOTABLE RESULTS

The present study showed that a higher social preference score results in a higher peer-perceived popularity score as well. This is contradictory to results found in previous research (Mayeux, Sandstrom, & Cillessen, 2008; Parkhurst & Hopmeyer, 1998), where most sociometric popular children are not popular based on peer-perception. Social preference is calculated by subtracting the number of received liked least (LL) nominations from the received liked most (LM) nominations. Partial correlation analyses were performed controlling for liked least (LL) nominations. The positive correlation between peer-perceived popularity and liked most (LM) remained significant for boys (r = .373, p < .001), but became non-significant for girls (r = .183, p = .139). Boys with a high peer-perceived popularity tend to be more liked by peers, which is similar to results found in previous research (Mayeux, Sandstrom, & Cillessen, 2008). This could indicate that these highly peer-perceived popular boys in the current sample are mostly kind, trustworthy and moderately dominant, but it could also mean that dominant, aggressive, stuck-up boys are liked (sociometric popular) by their peers (Parkhurst & Hopmeyer, 1998). For girls, the previously found positive correlation between peer-perceived popularity and social preference is mostly defined by similar best friend nominations.

For boys, involvement in bullying as a bully correlates positively with peer-perceived popularity and negatively with social preference. Previous research confirms these findings (Salmivalli, Lagerspetz, Björkqvist, Österman, & Kaukiainen, 1996; Samivalli, Huttunen, & Lagerspetz, 1996). Children who are involved in bullying as

a bully tend to have larger peer networks (usually other bullies as well as assistants and reinforcers) than more prosocial children and victims (Samivalli, Huttunen, & Lagerspetz, 1996), which could lead to a higher peer-perceived popularity.

4.3 LIMITATIONS OF THE PRESENT STUDY

The present study was conducted at a small, elementary school in a rural town in The Netherlands, in a region with an above average socioeconomic status. Most students were native Dutch-speaking residents. The generalization of the results found in the present study is therefore limited.

The preliminary analysis showed that the data contains several outliers and that there is possible low linear connection and heteroscedasticity. Conclusions drawn from the results found in the present study therefore must be interpreted with care. The assumed linear correlations between the predictors and the criteria have been shown in previous research and evidence suggests that these correlations are confirmed by the present study as well.

Reliability analysis on the self-report items measuring self-worth/depression and loneliness/withdrawal showed low internal consistency for both scales. In future research, internal consistency has to be improved by increasing the number of participants and/or by adding more reliable and valid items to each scale.

The present data does not support the moderation hypothesis for other correlations, except for the previously mentioned interaction between peer-perceived popularity and the number of bully nominations on feelings of loneliness. Multiple reasons can be pointed out for this absence. One possible reason for the absence of moderation could be the small effect sizes found in previous research (Fontaine, 2009) and the small number of participants in the current sample to point out these small effect sizes. Another reason is the longitudinal nature in which early rejection and peer-relation problems leads to negative outcomes in late childhood, thus causing the negative outcomes only to occur after a certain period of time and dependent on the degree and chronicity of rejection and peer-relation problems. No longitudinal data was collected in the present study, which could provide an answer for moderation effects not to occur. Finally, only the quality and frequency of peer-relationships within the classroom were assessed. Relationships with peers outside the classroom, in other contexts than school, and with adults instead of peers, were not included in the present study. Possible, these other relationships are of significance in explaining the effects between the predictors and the criteria and in explaining moderation.

Another limitation of the present study is that no distinction was made between various participant roles in bullying. Possibly the results are different based on what role a child plays in the bullying behavior (bully, assistant, reinforcer). Further research is required to investigate whether the results found in the present study are equally true for all participant roles in bullying.

4.4 PRACTICAL IMPLICATIONS

The results of the present study showed that peer rejection and involvement in bullying do play a significant role in psychopathological outcomes, like less positive self-worth, depressive feelings and feelings of loneliness. Another finding is that involvement in bullying as a bully is often evaluated with a higher peer-perceived popularity. Thus, involvement in bullying as a bully is perceived by peers to be effective and profitable, since it leads – in the perception by peers – to a more prominent influence in defining group social norms and social rules. Interventions should target these perceptions, since these perceptions causes bullying to persevere. Changing these perceptions requires a multidisciplinary approach targetting all those involved in maintaining the status quo: school, teachers, parents, bullies, victims and bystanders. To do this, two different – though not mutual exclusive – interventions are discussed.

Salmivelli (1999) suggests three steps in curriculum-based preventive and reactive work. The first step is raising awareness among all group members about what bullying is and what it feels like to be bullied. Of particular importance is pointing out the discrepancy between one's attitude towards bullying and the actual behavior one displays in actual bullying situations. The second step is to encourage self-reflection, to become aware of their own (active or passive) involvement in displaying, encouraging and/or maintaining bullying behavior. The third and final step is to promote commitment among all individuals to put an end to bullying, for instance by rehearsing alternative, more desired behavior in bullying situations and by discussing and developing class rules. By enforcing this Participant Role Approach developed by Salmivelli (1999), peer pressure is increased, peer-perceived popularity is decreased, and bullies are more isolated from their social support, which de-motivates them to display or enforce bullying behavior (Sutton & Smith, 1999).

Another intervention is based on the negative correlation between social preference and psychopathological outcomes and the negative correlation between social preference and involvement in bullying as a victim. Interventions should target improving social preference among all group members, for instance by providing social skills training for both bullies and victims, by training teachers in establishing and maintaining a positive and healthy group climate, by informing parents about the things they can do to prevent their child to become involved in bullying and by having the school develop a written anti-bullying policy. Previous research has shown that a more multidisciplinary approach towards bullying has a significant effect on bullying behavior and group climate (Fekkes, Pijpers, & Verloove-Vanhorick, 2006; Vreeman & Caroll, 2007).

Finally, to keep bullying at a consistently low level and to maintain a positive and healthy group climate, continuous measurements on social preference, peer-relation problems, and involvement in bullying should be performed by the school each year. Continuous measurements also provide school and teachers with the necessary data to possible alter the type and degree of anti-bullying interventions and to target specific areas within school or within the classroom where bullying is most apparent and most detrimental.

Bullying behavior is a relational characteristic of the system (i.e. the classroom, the school) and thus interventions should target all aspect of this system to be effective and to stop and prevent bullying behavior from occuring. Interventions targetting the bully exclusively have been proven to be ineffective. Changing perspectives among all children, for instance the positive evaluation of bullying behavior as we have seen in the present study (i.e. high peer-perceived popularity among bullies), causes bullying to become less effective and profitable behavior. This will motivate all children to display more socially acceptable behavior, and will lead to a transformation of group social norms and social rules, providing a better and more favourable climate for children to learn and develop. It is the bully who should be held accountable for his/her negative behavior, but it is also the classroom (i.e. the system) which should be held accountable for maintaining the status quo, for not taken a stand against bullying, and for reinforcing and rewarding the bullying behavior by positive sociometric and peer-perceived popularity evaluations.

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