Measuring Social Status and Social Behavior with Peer and Teacher Nomination Methods

Abstract

Sociometric nomination methods have been used extensively to measure social status and social behaviors among children and adolescents. In the current study, the correspondence between teacher and peer nomination methods for the identification of preference and popularity were examined. Participants were 733 children in Grade 5/6 (*M*age = 12.05 years, *SD* = .64; 53.3% boys) and their 29 teachers. Children and teachers completed nomination questions for preference, popularity, and 12 social behaviors. Results showed moderate overlap between teacher and peer nominations of social status; teachers and peers agreed on students' preference and popularity levels in 62.7% and 69% of the cases, respectively. Distinct behavioral profiles were found for low, average, and highly preferred or popular children. For preference, the distinct behavioral profiles did not differ between teachers and peers. For popularity, no differences between teachers and peers were found in the descriptions of unpopular and average children. However, teachers and peers differed in their behavioral descriptions of popular children. Implications and directions for further research were discussed.

Keywords: Sociometric Methods, Peer Assessment, Teacher Assessment, Social Status

Measuring Social Status with Peer and Teacher Nomination Methods

Since Jacob Moreno (1934) introduced the procedure, sociometric methods have been used extensively to measure peer relationships and children's social functioning within a group (Cillessen, 2009). Traditionally, these data are collected by asking peers about the social status and behaviors of their group members. This method has shown to be highly reliable and valid (Cillessen & Marks, 2011; Terry, 2000). However, researchers often wonder whether teachers can provide the same data. Some studies have examined the correspondence between teacher and peer perceptions of social status (McKown, Gumbiner, & Johnson, 2011; Wu, Hart, Draper, & Olsen, 2001), yet most of those studies examined rating or categorization methods instead of sociometric nominations. The current study compared teacher and peer perspectives when both were derived from nomination procedures.

Peer and Teacher Nomination Methods

Sociometric methods refer to methods that measure the positive and negative relationships between group members, in which group members are asked to evaluate other group members on various characteristics (Bukowski, Cillessen, & Velásquez, 2012; Cillessen, 2009). The most common sociometric method is the peer nomination method (Cillessen, 2009). Traditionally, participants receive a paper questionnaire that includes several sociometric questions. Each participant then nominates as many peers from the reference group as she or he sees fit for each question by writing down their peers' names or code numbers. The reference group typically includes all members of a school classroom or grade. Nominations received are then counted for each group member and transformed into several relational and behavioral constructs (see Cillessen, 2009).

For decades, peer nomination methods have been used to measure children's social status within the group. In research, social status has been operationalized in terms of (social) preference and (perceived) popularity (LaFontana & Cillessen, 1998; Parkhurst & Hopmeyer, 1998).

Preference is a measure of liking and personal preference (Coie, Dodge, & Coppotelli, 1982; Newcomb, Bukowski, & Pattee, 1993), whereas popularity is a measure of impact, visibility, and reputation in a group (LaFontana & Cillessen, 1998; Parkhurst & Hopmeyer, 1998). Both forms share a number of behavioral characteristics, but also differ on many (Mayeux, Houser, & Dyches, 2011). Yet, peer nomination methods can be used to evaluate a child's position within the group on any given criterion. Therefore, researchers have not only used peer nomination methods to measure social status, but also to measure a variety of behavioral characteristics (Bukowski et al., 2012).

Peer nomination methods have certain advantages over other sources of information such as self-reports, observations, and parent reports. First, measuring peer relations by questioning those who frequently interact with each other and are insiders in the peer culture has high face validity. Second, children's social status or behavioral characteristics are based on the judgments of multiple participants instead of a single individual (Bukowski et al., 2012, Marks, Babcock, Cillessen, & Crick, 2012). Third, these methods have shown to be reliable and valid procedures to measure social status (Cillessen & Borch, 2006; Jiang & Cillessen, 2005). Moreover, numerous studies have demonstrated concurrent and longitudinal associations between different peer nomination measures of social competence and adjustment (e.g., Ladd, 2005; Newcomb et al., 1993).

Although there are many advantages to peer nomination methods, there are also some limitations. First, data collection is time consuming, as individual scores are based on the nominations given by multiple peers instead of a single person. Research has shown that for variables such as acceptance and friendship, at least 80% of the reference group needs to participate in order to obtain reliable results (Marks et al., 2012). Second, writing down multiple names for each sociometric question can be labor intensive for children, which sometimes results in frustration and fatigue. Third, data entry can be time consuming, as answers are sometimes

illegible due to poor handwriting, which may also lead to errors in data entry. Fourth and finally, teachers and parents are sometimes concerned about the negative consequences of peer nomination methods, especially when children evaluate classmates on characteristics that can be considered as negative, such as aggression, bullying, and dominance (Bell-Dolan, Foster, & Sikora, 1989; Iverson, Barton, & Iverson, 1997; Mayeux, Underwood, & Risser, 2007). Finding enough schools willing to participate can therefore be challenging, despite the fact that research has found minimal to no evidence for malicious effects of peer nomination methods on participants' well-being (Bell-Dolan et al. 1989; Iverson et al., 1997; Mayeux et al., 2007).

Given the limitations and complications of peer nomination methods, the question arises whether teachers can provide the same information. Teachers in primary education observe and interact with students on a daily basis throughout the entire school year. As teachers have multiple years of experience in the classroom, they can compare the behaviors of students across multiple reference groups (Cillessen & Marks, 2011). Next, teachers are trained in child development, with a special focus on academic and social functioning (Andrade et al., 2005) and are thus educated in observing students' social behaviors and peer relationships. Some even argue that teachers provide more neutral and unbiased information, as they are not part of the reference group (Rubin, Moller, & Emptage, 1987). Finally, as one only has to question the teacher, teacher assessments are less time consuming and expensive than peer nomination methods (Rubin et al., 1987; Wu et al., 2001). Thus, teacher assessments may be a reliable yet less expensive and time-consuming alternative to peer nomination methods in measuring children's social status.

Various types of teacher assessments have been used to measure children's social status among their classmates (Andrade et al., 2005; Landau, Milich, & Whitten, 1984; Renk & Phares, 2004; Wu et al., 2001), such as teacher ratings ('how well is child X liked by his/her peers'), teacher rankings ('rank all children in the classroom according to their likeability'), and classification systems or Q-sorts ('place every child in one of the following categories …'). A

group of researchers have asked teachers to estimate the proportion of students nominating a child as liked or disliked (McKown et al., 2011), in this way assessing teachers' accuracy of the strength of the classroom perception of specific students. However, the correspondence between teacher assessment and peer nominations of social status is only moderate (McKown et al., 2011, Landau et al., 1984; Renk & Phares, 2004; Wu et al., 2001). Teachers' perceptions of social status are thus not always in line with the perceptions of peers.

All of these methods require teachers to evaluate each student in the classroom on a variety of criteria. For instance, a teacher is asked to rate for each child to what extent that child is liked by its classmates. When researchers are interested in multiple behaviors, this can become very labor intensive and time consuming for the teacher. To reduce the amount of effort and time asked from the teacher, teacher nomination methods are regularly used to assess children's social position and behaviors in the classroom (Babad, 2001; Ledingham, Younger, Schwartzman, & Bergeron, 1982; Wu et al., 2001). Teachers are asked to name those students that fit the description of a specific criterion. Thus, instead of evaluating every child for every characteristic, teachers only have to name those who stand out on the characteristic that is being questioned. Although this method has been shown to be highly reliable and a stable measure of preference, the correspondence between teacher and peer-nominated preference has been found to be only moderate (Wu et al., 2001).

Research on the correspondence between teacher nomination and peer nomination methods to measure social status is limited. In the current study, we therefore examined the consensus between teacher and peer nominations of social status among peers using nomination methods for both groups of informants. Moreover, previous studies only focused on teacher assessments of preference as a measure of social status. In our study, we will examine the agreement between teacher and peer nomination for both preference and popularity, as they are two unique and distinct measures of youth's social status (Cillessen & Marks, 2011).

Behavioural Characteristics of Social Status According to Peers and Teachers

When teachers and peers nominate the same children as high, average, or low on preference or popularity, this does not necessarily mean that they also have the same perceptions about the social behaviors associated with high or low levels of status. Numerous studies have examined the types of behaviors that children ascribe to peers who vary in preference and popularity. These studies show that preference is associated with positive behaviors, such as sociability, and the absence of negative behaviors, such as aggression (Asher & McDonald, 2009; Mayeux et al., 2011; Parkhurst & Hopmeyer, 1998). For popularity, peers associate both positive and negative behaviors with highly popular children. As with preference, high levels of popularity are associated with leadership, prosocial behavior, attractiveness, trustworthiness, and a sense of humor (LaFontana & Cillessen, 1998, 2002; Mayeux et al., 2011). Unlike highly preferred students, those perceived as popular are also more likely to be seen as relationally and physically aggressive, just like unpopular youth (LaFontana & Cillessen, 1998; 2002; Mayeux et al., 2011; Rose, Swenson, & Waller, 2004). Although some studies use different or multiple types of informants, most of these studies rely on peer nomination data to measure both social status and behaviors.

There is not much research on teacher descriptions of social behaviors associated with status. Some studies show that teachers and students share the same perspective about characteristics associated with status (Babad, 2001; Rodkin, Farmer, Pearl, & Van Acker, 2000). For instance, Rodkin and colleagues (2000) found high correspondence between teacher and peer descriptions of the behavior of two groups of high status children (‘toughs’ and ‘models’). Both teachers and peers described the ‘models’ as popular, prosocial, and academically skilled, whereas the ‘toughs’ were described as popular and antisocial. Not only did the teacher and peer descriptions correspond with each other, they were also in line with the behavioral characteristics associated with preference and popularity in other studies using peer nomination methods (e.g.

Mayeux et al., 2011).

Other research suggests that teachers base their ideas of social status on different criteria than peers (Andrade et al., 2005; Coie, Dodge, & Kupersmidt, 1990; Landau et al., 1984; Ledingham et al., 1982). Whereas children acknowledge that aggression can be linked to high popularity, teachers seem to associate aggression only with low social status. This could be described as a *negative halo effect*, in which teachers' may perceive children negatively in terms of social status as a result of their disruptive behaviors (Andrade et al., 2005). Some researchers argue that popular children's disruptive behaviors, such as aggression and oppositional behavior are very salient and noticeable for teachers, and that teachers will therefore underestimate popular children's social status (Andrade et al., 2005; Landau et al., 1984; Ledingham et al., 1982). Others hypothesize that teachers have positive perceptions of popular children because they do not notice the negative behaviors of popular children that are likely to take place in hallways, bathrooms, or the schoolyards, out of their sight (Coie et al., 1990).

Thus, even if peers and teachers correspond in their nominations for social status to a certain extent, they may still differ in their perceptions of behavioral characteristics that are associated with high or low levels of status. Because of limited previous research and multiple opposing hypotheses, we compare the behavioral descriptions of social status as provided by the teachers with behavioral descriptions given by peers. Moreover, these analyses shed light on why teacher and peer nominations for social status may diverge. For instance, if teachers nominate those who they see as being popular with their peers as prosocial, but peers do not report this behavior for popular classmates this might explain why teachers are sometimes misled when judging students' social status among peers.

Current Study

The goal of this study was to examine the correspondence between teacher and peer nomination methods to assess preference and popularity. First, we examined the agreement

between nominations given by teachers and peers for popularity and preference among classmates. It was expected that the correspondence between teacher and peer nominations of preference would be moderate (McKown et al., 2011; Wu et al., 2001). As there are no studies of the correspondence between teacher and peer nominations of popularity, these analyses were exploratory.

Second, we examined the social behaviors that teachers and peers ascribe to children at different levels of preference and popularity. We expected peers and teachers to ascribe similar behaviors to highly preferred children because in other studies both peers and teachers associated preference with a highly prosocial, low aggressive behavioral profile (Asher & McDonald, 2009; Mayeux et al., 2011). Differences between peers' and teachers' descriptions could arise for the behavior associated with popularity. This might particularly emerge in the descriptions of the behaviors of highly popular children. Youths tend to see aggression in these peers (e.g., Cillessen & Mayeux, 2004), whereas teachers potentially see less aggression in popular children as it either takes place outside of their view (Coie et al., 1990), or because they classify aggressive popular children as low in status because they think aggressive behavior makes children unpopular in the group (Andrade et al., 2005).

The findings of this study can also have important applied implications. Many school-based intervention programs to enhance social skills or reduce aggressive and disruptive behaviors are provided to students who are specifically selected based on their poor social position in the classroom to receive help or treatment. Typically, teachers are asked to identify those socially 'at risk' children (for a review see Wilson & Lipsy, 2008). Moreover, teachers are sometimes asked to identify children who are central and influential in the classroom who can be used as buddy or model among their peers to promote specific skills or desired behaviors (Jackson & Campbell, 2009). When applying such practices one wants to be certain that a child who is identified by the teacher as socially rejected or victimized is also a child who is actually rejected or victimized by

its peers. Or that the one who the teacher perceives as a model is also the person who is actually admired and liked by the peers. It is therefore important to know the strength of the correspondence between teacher and peer perceptions of a child's social position in the group.

Method

Recruitment and Procedure

Participants were recruited for the 6th measurement wave of the Nijmegen Longitudinal Study (NLS) on Infant and Child Development in The Netherlands, which started in 1998 with a community-based sample of 129 healthy 15-month-old infants and their parents (van Bakel & Riksen-Walraven, 2002). Of the original sample, 113 children and parents gave permission for the school visits. These 113 children were in 92 different classrooms (47 primary and 47 secondary education).

Next, the teachers were contacted with a letter explaining the project and a follow-up phone call. Three teachers were not able to participate due to limitations of time and teaching load (1 primary education, 2 secondary education). Parental consent was then obtained for all students in these classrooms (longitudinal participants and all of their classmates) following school policies. Six parents did not consent to their child's participation.

As the current study focused on primary education, we selected the 47 classrooms in primary schools. The seven classrooms in special education were excluded from the analyses as the questionnaires were too difficult for the students to understand due to their language difficulties and/or difficulties in socio-emotional understanding. Eight classrooms had to be excluded from the analyses due to missing teacher data and three classrooms due to non-traditional classroom organization (e.g. students from three grades in one classroom or changing classroom compositions and teachers within one school day).

Participants

The final sample consisted of 733 children and their 29 teachers (31.0% male). They were

in 29 5th and 6th grade classrooms from 26 Dutch primary schools. Children's mean age was 12.05 years (*SD* = .64, range = 9.5 – 13.8) and 53.3% were boys. Participants filled in an electronic questionnaire with peer nominations and self-report questions, during a 45 to 60 minute classroom session. 29 participants (4%) were absent on the day of data collection. Although they did not complete the questionnaire themselves, data on all study variables was available for them as they were allowed to participate and could therefore be nominated by the teachers and peers. Teacher nominations were collected using a paper questionnaire.

Peer Nomination Method

Children filled in a computerized sociometric questionnaire measuring social status and social behaviors (for psychometric properties, see van den Berg & Cillessen, 2013). Each sociometric question was presented at the top of a separate screen. Classmates' names were listed below each question. The order of names was randomized for each participant, but remained the same across the questions. Children could name as many or as few classmates as they wanted, with a minimum of one. Same-sex and other-sex choices were allowed. Children could not name themselves, as their names were not presented on the screen.

Peer status. Children were asked to nominate children who they liked most, who they liked least, who were most popular, and who were least popular. The number of nominations received for each item was counted and standardized within classrooms. A score for preference was computed as the difference between the standardized liked most and liked least scores, which was standardized again within classrooms (Parkhurst & Hopmeyer, 1998). A score for popularity was computed as the difference between the standardized most popular and least popular scores, again standardizing the resulting scores within classrooms (Cillessen & Marks, 2011). Finally, the standard scores for preference were recoded into three categories; highly preferred ($z \geq 1$), average preferred ($-1 > z < 1$), and unpreferred ($z \leq -1$). The same categorization was used for popularity.

Social behaviors. Prosocial behavior was measured with two questions: "Who cooperates

with others?" and "Who helps others often?". Overt aggression was measured with three questions: "Who argues a lot with others", "Who fights a lot with others?", and "Who bullies others?". Relational aggression was measured with three questions: "Who gossips about others?", "Who ignores others?" and "Who excludes others?". Victimization was measured with four questions: "Who is bullied?", "Who is gossiped about?", "Who is ignored by others?", and "Who is excluded by others?". Nominations received were counted for each child for each question and standardized within classrooms to control for differences in classroom size. The resulting scores were averaged to composite scores for prosocial behavior (Cronbach's $\alpha = .84$), overt aggression ($\alpha = .94$), relational aggression ($\alpha = .72$), and victimization ($\alpha = .95$). The composite scores were again standardized within classrooms. Standard scores less than -3 and greater than +3 were truncated to -3 and +3 (1.32%) (Tabachnick & Fidell, 2007).

Teacher Nomination Method

Teachers filled in a paper questionnaire of children's peer status and social behaviors. They were asked to nominate only those children who best fitted each description and stood out with regard to the characteristic being questioned. Unlimited nominations were allowed, with a minimum of one.

Peer status. To measure preference, teachers were asked to nominate the students who were 'most liked by their peers' and 'least liked by their peers'. Children who were named as 'most liked by peers' were categorized as highly preferred. Children who were named as 'least liked by peers' were categorized as unpreferred. Children who were not named as either most liked or least liked were categorized as average in preference according to the teacher. No children were named as both most liked and least liked. The same procedure was followed for popularity, using the questions 'most popular among their peers' and 'least popular among their peers'. Again, no children were named as both most and least popular.

Social behaviors. Teachers also nominated children for prosocial behavior, overt

aggression, relational aggression, and victimization, using the same questions as in the peer nomination procedure. To measure prosocial behavior, the average number of received nominations for "Who cooperates with others?" and "Who helps others often?" was calculated for each student (Cronbach's $\alpha = .58$). Overt aggression was measured as the average of "Who argues a lot with others", "Who fights a lot with others?", and "Who bullies others?" ($\alpha = .76$). To measure relational aggression, the average number of nominations received for "Who gossips about others?", "Who ignores others?" and "Who excludes others?" was calculated ($\alpha = .57$). Victimization was measured as the average of "Who is bullied?", "Who is gossiped about?", "Who is ignored by others?", and "Who is excluded by others?" ($\alpha = .78$). These scores were standardized within teachers for each behavioral characteristic.

Results

Preliminary Analysis

Table 1 presents the descriptive statistics and correlations of peer status and social behaviors nominated by peers and teachers. As expected, preference and popularity were moderately correlated for both types of informants. Preference was positively correlated with prosocial behavior and negatively with overt aggression, relational aggression, and victimization. Popularity correlated positively with prosocial behavior as well as overt aggression and relational aggression, and negatively with victimization. Prosocial behavior correlated negatively with overt aggression, relational aggression, and victimization. Overt and relational aggression correlated positively with each other. The teacher-report measures overt aggression correlated positively with victimization, whereas peer reported victimization was positively correlated with relational aggression.

Fisher's *r*-to-*Z* tests were performed to test whether associations among variables differed between peers and teachers; 26 did (87%) and 4 did not (13%). Examination of the exact values of the 26 differing correlations indicated a similar pattern and direction of associations between both reporter types (24 out of 26, 92%). The correlations were in the same direction, but generally

stronger for peers than for teachers. Exceptions to this general pattern were the two correlations of overt aggression with preference and with victimization, which were stronger for teachers than peers.

Degree of Consensus

To measure the degree of agreement between nominations for popularity and preference by teachers and peers, Pearson's χ^2 and Cohen's Kappa were calculated. Table 2 shows the number of observations per cell. There was a significant cross-informant association for preference, $\chi^2(4) = 251.25$, $p < .001$. The strength of this association was medium, $V = .414$. In 64.1% of the cases teachers and peers agreed whether a student was preferred or not. In 35.9% of the cases they did not agree. Cohen's kappa was .34 (95% CI: .27-.40), indicating a moderate agreement.

There was also significant cross-informant correspondence for popularity, $\chi^2(4) = 248.75$, $p < .001$. The strength of this association was medium, $V = .412$. In 67.8% of the cases teachers and peers agreed on whether a student was popular or not. In 32.2% of the cases they did not agree. Cohen's kappa was .38 (95% CI: .31-.44), indicating a moderate agreement.

The analyses were repeated using 0.75 and 1.25 standard deviation above the mean to categorize children in 'low', 'average' and 'high' based on the peer nominations for preference and popularity. The level of consensus did not differ when using different cut-off points; cross-informant correspondence was 64.1% resp. 61% with Kappa's of .33 and .28 for preference and 67.8% resp. 68.5% with Kappa's of .35 and .34 for popularity.

Behavioral Descriptions of Preference by Teachers and Peers

To determine what behaviors are associated with preference according to teachers and peers, we selected those children who both teachers and peers agreed upon as being low, average, or highly preferred. A 2 (Observer: Teachers vs. Peers) by 3 (Status: Low vs. Average vs. High) mixed design ANOVA was then conducted on each of the four social behaviors (prosocial, overt aggression, relational aggression, victimization), with observer as within-subjects factor. Results

are shown in Figure 1.

There was a significant main effect of status for prosocial behavior, $F(2, 467) = 103.32$, $p < .001$, $\eta^2_{partial} = .31$. Post-hoc testing using a Bonferroni correction showed that all three groups differed significantly from each other; prosocial behavior was highest among highly preferred children, followed by average and low preferred children. These group differences varied by the type of observer, as indicated by a significant status by observer interaction, $F(2, 467) = 21.70$, $p < .001$, $\eta^2_{partial} = .09$. It appeared that peers reported more prosocial behavior for highly preferred children than teachers did, and less prosocial behavior for low preferred children than teachers did. Teachers and peers did not differ in their reported levels of prosocial behavior for average preferred children.

A significant main effect of status was also found for overt aggression, $F(2, 467) = 41.26$, $p < .001$, $\eta^2_{partial} = .15$. The post-hoc test using a Bonferroni correction showed more overt aggression for low preferred children than for average or highly preferred children, who did not differ from each other. Again, group differences varied by type of observer, $F(2, 467) = 3.72$, $p = .025$, $\eta^2_{partial} = .02$. Teachers reported more overt aggression for low preferred children than peers did. Teachers and peers did not differ in their reported levels of overt aggression for average and highly preferred peers.

A significant main effect of status was also found for relational aggression, $F(2, 467) = 19.78$, $p < .001$, $\eta^2_{partial} = .08$. Bonferroni corrected post-hoc testing indicated more relational aggression for low preferred children than for average or highly preferred children, who did not differ from each other. Again, group differences varied by observer type, $F(2, 467) = 5.77$, $p = .003$, $\eta^2_{partial} = .02$. Peers reported more relational aggression for low preferred children than teachers did. Teachers and peers did not differ in their reported levels of relational aggression for average and highly preferred peers.

A main effect of status group was also found for victimization, $F(2, 467) = 189.04$, $p < .001$,

$\eta^2_{partial}$ =.45. Bonferroni corrected post-hoc testing showed that all three groups differed significantly from each other; victimization was highest among low preferred children, followed by average and highly preferred children. No other effects were found.

Behavioral Descriptions of Popularity by Teachers and Peers

To determine what behaviors teachers and peers associate with popularity, we selected those children who both teachers and peers agreed upon as being low, average, or highly popular. A 2 (Observer: Teachers vs. Peers) by 3 (Status: Low vs. Average vs. High) mixed design ANOVA was then conducted on each of the four social behaviors, with observer as within-subjects factor. Figure 2 shows the results.

There was a significant main effect of status for prosocial behavior, $F(2, 494) = 26.14$, $p < .001$, $\eta^2_{partial}$ =.10. Bonferroni corrected post-hoc testing showed less prosocial behavior for unpopular children than for average and popular children, who did not differ from each other. Group differences varied by the type of observer as indicated by a significant status by observer interaction, $F(2, 494) = 8.57$, $p < .001$, $\eta^2_{partial}$ =.03. Peers reported more prosocial behavior for popular children than teachers did, and less prosocial behavior for unpopular children than teachers did. Teachers and peers did not differ in their reported levels of prosocial behavior for average popular children.

A main effect of status was also found for overt aggression, $F(2, 494) = 5.38$, $p = .005$, $\eta^2_{partial}$ =.02. Bonferroni corrected post-hoc testing showed less overt aggression for average children than unpopular and popular children, who did not differ from each other. Again, status group differences varied by type of observer, $F(2, 494) = 4.41$, $p = .013$, $\eta^2_{partial}$ =.02. Peers reporter more overt aggression for popular children than teachers did. Teachers and peers did not differ in their reported levels of overt aggression for unpopular and average popular children.

There was also a main effect of status for relational aggression, $F(2, 494) = 26.94$, $p < .001$, $\eta^2_{partial}$ =.10. Bonferroni corrected post-hoc testing indicated more relational aggression for popular

children than for average and unpopular children, who did not differ from each other. No other effects were found.

Finally, a main effect of status was also found for victimization, $F(2, 494) = 413.86$, $p < .001$, $\eta^2_{partial} = .63$. Bonferroni corrected post-hoc tests showed more victimization for unpopular children than for average and unpopular children, who did not differ in levels of victimization. Again, status group differences varied by observer type, $F(2, 494) = 8.15$, $p < .001$, $\eta^2_{partial} = .03$. Peers reported more victimization for unpopular children than teachers did, and less victimization for popular children than teachers did. Teachers and peers did not differ in their reported levels of victimization for average popular children.

Discussion

For decades, peer nominations have been used to measure social relationships and behaviors among children and adolescents (Cillessen, 2009). Due to certain limitations and complications of peer nomination methods, researchers have been interested in the question whether teachers can provide the same information as peers (e.g., McKown et al., 2011; Wu et al., 2001). However, previous studies have not examined the degree of agreement between teacher and peer nomination methods in identifying social status even though teacher nomination methods may be a reliable yet less expensive and time-consuming alternative to peer nomination methods. The first goal of this study was therefore to examine the correspondence between teacher and peer nomination methods in identifying two distinct measures of status, namely preference and popularity. First, agreement between teacher and peer nomination methods was examined. Next, the social behaviors that were ascribed by teachers and peers to children with different levels of preference and popularity were examined.

The findings showed considerable overlap between teacher and peer nominations of social status; in 64.1% of the cases teachers and peers agreed on a student's level of preference; in 67.8% of the cases they agreed on a student's level of popularity. Agreement was moderate for both

preference and popularity. These findings are in line with previous studies (McKown et al., 2011; Wu et al., 2001) that showed meaningful overlap between teacher and peer perceptions of preference. This study adds to the literature by showing that there is also moderate, yet considerable overlap between teacher and peer nominations of popularity. Taken together, our findings suggest that teacher nomination methods can be used as a valid measure of social status among children, especially in situations when peer nomination methods are not possible or feasible.

When looking more closely into the cases in which teachers and peers had different perceptions of social status, it appears that teachers were as likely to perceive higher levels as they were to perceive lower levels of social status compared to peers; about 35% of the children who were liked by their peers were less liked according to the teachers and about 35% of the children who were disliked by the peers were better liked according to the teachers. Similar results were found for popularity; about 35% of children who were popular according to their peers were less popular according teachers and about 40% of children who were unpopular according to their peers were more popular according to the teachers.

In terms of social behaviors, we found that low preferred children were described by teachers and peers in a similar negative fashion: low in prosocial behavior, high in overt and relational aggression, and high in victimization. Teacher and peer descriptions of highly preferred children were also similar: high in prosocial behavior, low in victimization, and average in aggression. As expected, average preferred children were average on all behaviors. Thus, although teachers and peers made clear behavioral distinctions between low, average, and highly preferred children, such behavioral profiles in general do not differ between teachers and peers.

Teachers and peers also attributed distinct behavioral profiles to unpopular, average, and popular children. No differences between teachers and peers were found for unpopular and average children; both types of informants described unpopular children as low in prosocial

behavior and high in victimization. Average popular children were described as average on all behaviors. Teachers and peers agreed that popular children were highly prosocial but also high in relational aggression. However, peers also more strongly described them as overtly aggressive and unlikely to be victimized. Whereas teachers did not discriminate popular and average children in terms of overt aggression and victimization, peers did.

The question remains why teachers do not distinguish average and popular children in terms of victimization and overt aggression, whereas peers do. It could be that teachers are just not that able to pick up on those behaviors, especially overt aggression. Popular children's bullying and aggression often takes place out of the teachers' sight on the playground or in the hallways (Coie et al., 1990). This could explain why it is more difficult for teachers to notice those negative behaviors, whereas peers do notice the aggressive behavior of popular children. It could also be that the behaviors of unpopular children require a lot of attention from the teacher and that they therefore attend less to heterogeneity in the behavior and position of the rest of the group. They might know to some extent who is popular and who is not, but not notice the subtle differences in behavior that exist between average popular and highly popular children.

Although this study provides new insights in the use of teacher nomination methods to identify and characterize social status among children, there are some limitations and questions that remain unanswered. First, it is important to notice that the methods used to classify children as 'low', 'average' or 'high' in status differed between teachers and peers; children were categorized according to their deviation from the mean using the nominations of multiple peers, whereas children were categorized based on whether or not they were named by the teacher as high or low in status. This differing metric could have led to different distributions across status groups and as a result to low consensus. Indeed, if the classification of the teacher nomination had resulted in substantially larger or smaller numbers of students with a certain status, perfect consensus between teachers and peers would have been impossible to begin with. However, the

distribution across the status groups were equal; the percentage of children categorized as ‘high’, ‘average’, or ‘low’ was similar with the teacher nomination method compared to the peer nomination method. Moreover, the level of agreement between teachers and peers was not affected when using different cut-off points for the classification of the peer nomination data (e.g. SD = 0.75 or 1.25). It is therefore unlikely that the differences in metric or distribution across status groups are the main reason for the levels of consensus between teacher and peer nominations found in the current study.

Still, when classifying children into subgroups it is almost inevitable that children who are not that qualitatively different from each other fall just above or below the cut-off point. Certain children whom a teacher left off a nomination for liked most may have been much better liked than other children who were not nominated by their teacher. The same is true when using peer nomination data; an ‘average’-labeled child who scores .99 above the mean may be much more similar to a ‘high’ popular child with a score of 1.10 than to an ‘average’ child who scores around or below zero. As a result, the group of average children can become a rather heterogeneous group in terms of their social behaviors. The advantage of peer nomination data is that a continuous measure of status and behavior can be used. However, continuous scores are more difficult to compute when using teacher nomination data as there is often only one teacher per classroom. Thus, for analytic or applied purposes it can be helpful to classify children into subgroups using teacher or peer nomination data, but one should be aware of relative heterogeneity within a subgroup and similarity between children on the borderlines of the cut-off points.

Second, this study was conducted among a Dutch sample of children and teachers at elementary schools. This means that children are in the same classroom with the same teacher throughout the entire day. Thus, teachers had frequent interactions with the children and observed them regularly. At secondary schools, children have different teachers for each class. As a result, teachers and students do not interact daily and teachers will not be able to observe all interactions

and behaviors occurring between peers. It is therefore the question whether the same results will been found when examining teachers and peers in secondary education. It can be expected that there will be less consensus between teachers and peers in identifying peer status. Moreover, the social behaviors ascribed by teachers may differ more from the perspective of peers in secondary schools than in elementary schools, as children's negative behaviors are probably even less visible to the teachers in middle and high schools. Future studies should therefore further examine teacher and peer nomination methods in different contexts.

Related to the potential differences between primary and secondary education, future research should take age differences into account. This study was conducted among 9-to-13 year-old children, an age group in which preference and popularity are moderately associated (Cillessen & Mayeux, 2004; Parkhurst & Hopmeyer, 1998). Preference and popularity become more distinct measures of peer status later in adolescence, with unique behavioral profiles associated with each type of status (Cillessen & Borch, 2006; Cillessen & Mayeux, 2004). For example, in adolescence, relational aggression and risk behaviors are strongly related to popularity, but not to preference (Mayeux et al., 2011; Rose et al., 2004). Peers may quickly pick up on the subtle age-related changes taking place in the behaviors associated with popularity. Teachers, however, might be less sensitive to such changes in the behaviors of popular children and therefore lag behind in their knowledge of what popular children do. Future research should thus examine the validity of teacher nomination methods in different age groups.

Finally, it would be interesting to take a closer look at the differences in behavioral descriptions when teachers and peers have different perceptions regarding a youth's social status. We found that teachers sometimes perceived higher levels of social status compared to peers and sometimes perceived lower levels. What would be interesting to know is whether teachers perceive more positive behaviors and less negative behaviors in a student than peers when they overestimate this student's social status. And would teachers also judge the behavior of students as

more negative than peers when they underestimate the levels of social status? Or is it a specific group (e.g. average children who are perceived by the teacher as unpopular) that is seen more negatively in terms of social behavior?

From an applied perspective, the findings of this study indicate that teacher nomination methods can be a valid alternative to peer nomination methods; they are less time consuming and expensive (Rubin et al., 1987; Wu et al., 2001), partially get around the problem of low participation rates (Marks et al., 2012), and solve ethical concerns of teachers and parents concerning the potential negative consequences of asking children about negative relationships with classmates or behaviors shown by peers (Bell-Dolan et al., 1989; Iverson et al.,1997; Mayeux et al., 2007). Moreover, teachers are accurate in identifying children's social status (low, average, high) in at least 64% of the cases. Still, at a conceptual level, one can argue whether teacher perceptions are the best way of measuring social status. If one questions peers, one is sure to measure status among those who actually define it. Peers know best what is popular to do, wear, listen to, and look like. Even though there is considerable agreement between teacher and peer nominations, peer nominations may (for conceptual rather than practical reasons) provide the most valid measures of social status.

Moreover, teacher nomination methods are often used to select children for specific treatments or to select children who can serve as a model for their peers (Jackson & Campbell, 2009; Wilson & Lipsy, 2008). The current results show that 54 to 65 percent of the children who are named as socially vulnerable by their teachers are also named as rejected or unpopular by their peers. With regard to the selection of children who are socially successful and can be used as models, we find similar correspondence: 58 to 62 percent of the high status children named by the teachers as high in status are also highly liked or popular among their peers. The current results show us that in about half of the cases children are identified as socially rejected or vulnerable by teachers whereas peers do not see these students that way. This is important to realize when

socially rejected or vulnerable students are selected by the teacher for a specific treatment or intervention program. One should therefore be cautious in using teacher nominations to select socially vulnerable children and should at least include other sources of information like peer nominations or self- reports.

Sociometric nomination methods have been used extensively to measure peer relationships and social behaviors. In most cases, peer nomination procedures are used because of their high reliability and validity (Cillessen & Marks, 2011; Terry, 2000). However, practical and ethical concerns may be reasons to turn to teacher nomination methods instead. The current study showed that there is considerable agreement between teacher and peer perceptions of social status. Still, researchers should be cautious in using teacher nominations as a replacement of peer nominations given the specificity of the current sample. Moreover, peer nomination methods may be the most valid tool to measure social status from a conceptual viewpoint.

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Table 1

Correlations Between Peer Status and Behavioral Characteristics perceived by Teachers (Below Diagonal) and Peers (Above Diagonal)

	1.	2.	3.	4.	5.	6.	*M*	*SD*	Range
1. Preference		$.39_a$**	$.54_a$**	$-.24_a$**	$-.27_b$**	$-.56_a$**	-.02	.54	-1.00 – 1.00
2. Popularity	$.56_a$**		.28*	$.20_a$**	$.22_b$**	$-.63_a$**	.00	.57	-1.00 – 1.00
3. Prosocial behavior	$.41_a$**	.25**		$-.38_a$**	$-.28_a$**	$-.38_a$**	-.00	.98	-2.14 – 2.99
4. Overt aggression	$-.37_a$**	$-.09_a$*	$-.22_a$**		$.58_a$**	$.04_a$	-.01	.93	-1.03 – 3.00
5. Relational aggression	$-.15_b$**	$.09_b$*	$-.15_a$**	$.36_a$**		.11**	-.01	.96	-1.90 – 3.00
6. Victimization	$-.42_a$**	$-.46_a$**	$-.20_a$**	$.12_a$**	.02		-.02	.93	-1.10 – 3.00
M	.03	.02	-.00	-.01	-.01	-.02			
SD	.66	.61	.97	.95	.93	.92			
Range	-1.00 – 1.00	-1.00 – 1.00	-1.08 – 3.00	-1.13 – 3.00	-1.42 – 3.00	-1.10 – 3.00			

Note. Correlations with asterisk were significantly different from 0, *$p < .05$, **$p < .01$.

Correlations with subscript were significantly different between teachers and peers when tested with a two-sided Fisher's *Z*-test, $_a$ $p < .05$, $_b$ $p < .01$.

Table 2

Correspondence Teacher and Peers on Preference and Popularity

			Peers									
			Low			Average			High			
			Obs	Exp	% Agreement	Obs	Exp	% Agreement	Obs	Exp	% Agreement	*n*
Teacher	**Preference**	**Low**	74	23.3	64.9	76	105.8	14.7	0	20.9	.0	150
		Average	39	63.9	34.2	333	289.9	64.4	39	57.2	38.2	411
		High	1	26.8	.9	108	121.3	20.9	63	23.9	61.8	172
		n	114			517			102			
	Popularity	**Low**	64	20.9	54.2	59	87.8	11.9	7	21.3	5.8	130
		Average	51	73.9	43.2	364	310.0	73.5	44	75.1	36.7	459
		High	3	23.2	2.5	72	97.2	14.5	69	23.6	57.5	144
		n	118			495			120			

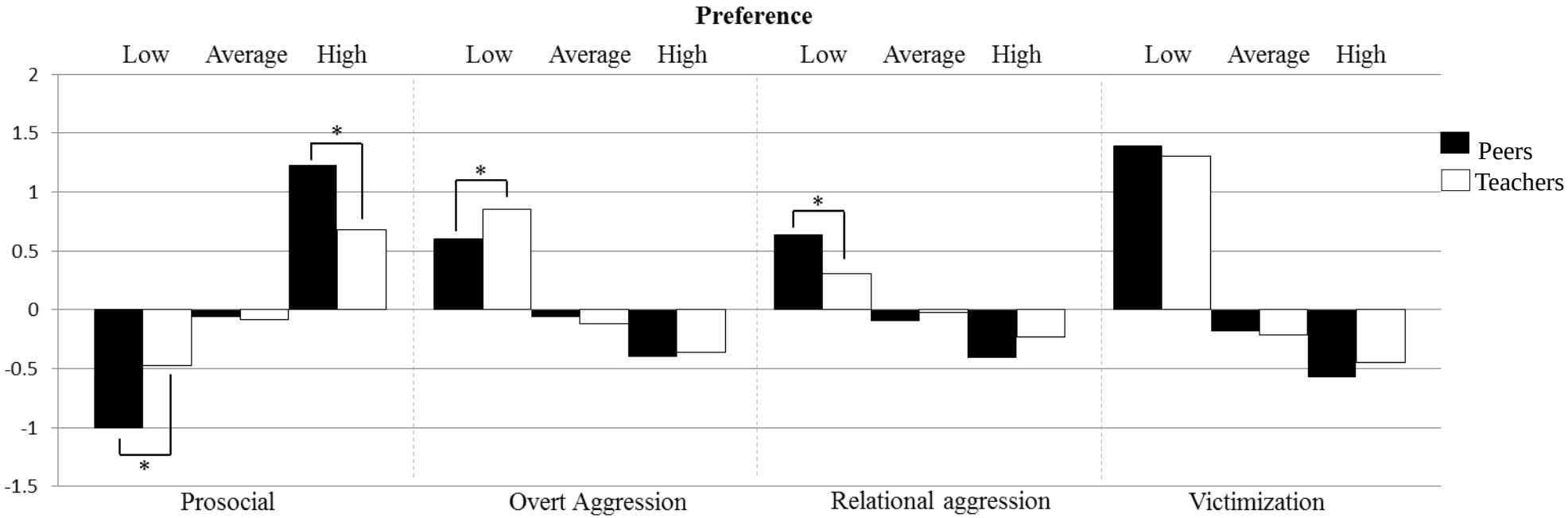

Figure 1. Teacher and peer nominated behavioral characteristics of preference groups.

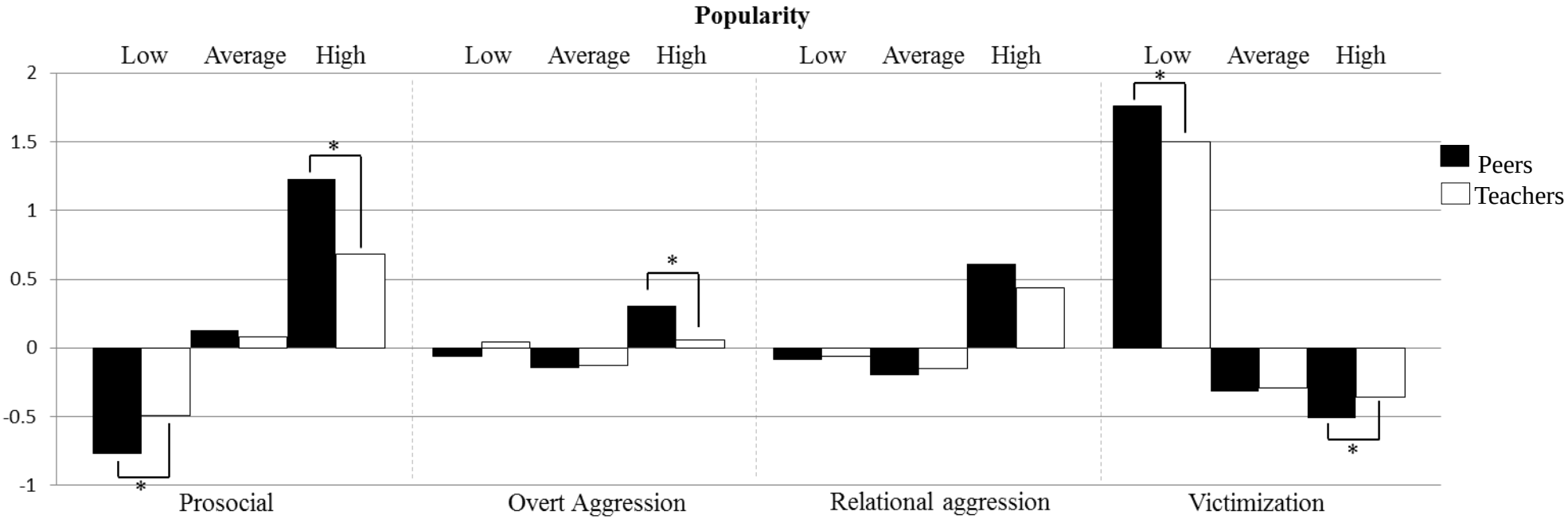

Figure 2. Teacher and peer nominated behavioral characteristics of popularity groups.