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Abstract

The present study examines the reciprocal associations between cyberbullying behavior and young adolescents' social status. For this purpose, a two-wave panel study with an 8-month time interval was conducted among an entire grade of 154 secondary school pupils (age 12–14). The survey featured items on traditional bullying and cyberbullying as well as peer-nomination questions on sociometric and perceived popularity. Cyberbullying was related to subsequent increases in perceived popularity of the perpetrators. In contrast, traditional bullying perpetration was not longitudinally associated with social status during the studied period. Although perceived popularity was also expected to precede cyberbullying behavior, this was not observed. Taken together, the results suggest that electronic forms of bullying, rather than traditional forms, can provide a means to acquire additional perceived popularity in early adolescence. The findings warrant future research on the factors that moderate the association between cyberbullying and social status.

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Keywords

cyberbullying, online perpetrators, social status, perceived popularity, adolescents

Bullying is a form of disruptive behavior that is based on power imbalances and aimed at achieving social status. Power imbalances, which are inherent to bullying, imply that victims are overpowered by their perpetrators and that they have difficulties defending themselves (Olweus, 1993). The power of bullies may originate from their physical characteristics, such as strength or size, as well as from the support of others within the social context (Atlas & Pepler, 1998). In addition to this power requirement, bullying is also characterized by its goal-oriented nature. Sutton, Smith, and Swettenham (1999) argue that bullies seek to increase their popularity in the peer group and that they attain this by carefully selecting their victims. Research supports this position and demonstrates that bullies tend to strategically target those who are rejected by others in order to achieve and maintain social status (Pellegrini & Long, 2002; Sijtsema, Veenstra, Lindenberg, & Salmivalli, 2009; Veenstra et al., 2007).

Although the dependency on power and the goal-oriented nature have been thoroughly studied for traditional bullying, research on cyberbullying is limited in this regard. Cyberbullying is a type of bullying that can be described as “an aggressive, intentional act carried out by a group or individual, using electronic forms of contact, repeatedly and over time against a victim who cannot easily defend him or herself” (Smith et al., 2008, 376). For this type of bullying, the present study examines the mutual relationship with social status. More specifically, it focuses on the association between social status and subsequent engagement in cyberbullying, as well as the relationship between cyberbullying and subsequent changes in social status. This mutual relationship is studied in the context of young adolescents at school, because the school environment serves as an important source of peer contacts for young people (Blyth, Hill, & Thiel, 1982) and because it is the primary origin of traditional bullying and cyberbullying incidents (Juvonen & Gross, 2008; Slonje & Smith, 2008).

The Social Status Component of Bullying

Social status is an important factor to consider. It is a key motivator for human behavior, as it provides access to resources as well as emotional rewards (Huberman, Loch, & ÖNçüler, 2004). Research has demonstrated that social

status can be obtained in multiple ways and that high social status among adolescents is primarily associated with two types of profiles. One profile is that of socially accepted adolescents, who are cooperative, display prosocial behavior and exhibit low levels of aggression (Cillessen & Rose, 2005; de Bruyn & van den Boom, 2005). To measure which adolescents fit this profile, researchers typically employ peer-nomination procedures and ask respondents which students they like or which students they are friends with (Cillessen & Rose, 2005; Wentzel, 2003). Such measures refer to the concept of *sociometric popularity*. This type of popularity sharply contrasts with *perceived popularity*, which is connected with the second high-status profile. Being perceived as popular is associated with certain positive traits, such as being attractive, outgoing, and fashionable. However, it is also associated with negative characteristics, such as being manipulative, aggressive, and dominant (Cillessen & Rose, 2005; de Bruyn & van den Boom, 2005). Perceived popularity is measured by directly asking the respondents to list those who are popular among their peers. Even though these adolescents are labeled as “popular,” this label does not necessarily imply that they are liked or that they have many friends (Babad, 2001).

Research indicates that bullying perpetration is positively associated with perceived popularity but negatively related to social liking (de Bruyn, Cillessen, & Wissink, 2010; Juvonen, Graham, & Schuster, 2003; Reijntjes et al., 2013; Sijtsema et al., 2009). For instance, de Bruyn et al. (2010) found that 13- to 14-year-olds who are perceived as popular were more likely to engage in bullying and that this association was stronger when the perpetrators' peers indicated that they would rather not be friends with them. Although the perceived popularity of perpetrators is accompanied by peer dislike, the latter does not imply that perpetrators have few friends (Gest, Graham-Bermann, & Hartup, 2001). Research based on peer assessments of friendship cliques at school has found that perpetrators have more friends than outsiders, defenders and victims (Salmivalli, Huttunen, & Lagerspetz, 1997). One explanation for the heightened social status of perpetrators is that it constitutes a prerequisite for bullying. Being able to rely on peer support for bullying actions can contribute to the power that perpetrators have over their victims (Atlas & Pepler, 1998; Salmivalli et al., 1997; Sutton et al., 1999). Another explanation is that high social status results from bullying behavior (Salmivalli, 2010; Sijtsema et al., 2009), that is, bullying effectively increases the perpetrators' perceived popularity and their number of friends. The finding that bullies attach higher value to social status goals (compared with non-bullies) strengthens the argument that achieving social status is one of the motivators for individuals to bully (Sijtsema et al., 2009).

As a moderating factor, the association between bullying and social status was shown to depend on the gender of perpetrators. Research has demonstrated that bullying behavior is more closely related with perceived popularity for boys than for girls (de Bruyn et al., 2010; Dijkstra, Lindenberg, & Veenstra, 2008). As Pellegrini and Long (2002) argued, boys may view bullying behavior as more positive and may endorse this type of behavior within their peer groups. Additionally, male bullies were found to be more disliked than their female counterparts (Dijkstra et al., 2008; Salmivalli, Lagerspetz, Björkqvist, Österman, & Kaukiainen, 1996). As a possible explanation, Salmivalli et al. (1996) noted that girls use more verbal and indirect forms of bullying, which may be perceived as less disruptive than the physical and direct bullying that is often practiced by boys.

Cyberbullying, Electronic Aggression, and Social Status

While the associations between social status and traditional bullying have been the subject of multiple studies, for cyberbullying this aspect has not been studied in detail. There are, however, good reasons to investigate how cyberbullying relates to the social status of perpetrators. One reason is that the power of cyberbullies may originate from various sources, such as their social status in the peer group (as in traditional bullying), as well as from their technological skills, or the ability to bully anonymously online (Kowalski, Giumetti, Schroeder, & Lattanner, 2014; Slonje, Smith, & Frisé, 2013). A second reason to study cyberbullying in relationship with social status is the potential impact of this type of bullying. On the one hand, electronic forms of bullying may be less rewarding for perpetrators vis-à-vis traditional bullying, because the cyberbullies do not immediately see the victims' embarrassment and lack face-to-face bystander reinforcement (Kowalski et al., 2014; Salmivalli, Sainio, & Hodges, 2013). On the other hand, the effect of cyberbullying on social status may be particularly strong, as the bullying messages can be widely distributed and reach a potentially high number of bystanders (Kowalski, Limber, & Agatston, 2012; Strom & Strom, 2005; Walrave & Heirman, 2010). The following sections describe the literature on social status as a potential antecedent and consequence of cyberbullying.

Social Status as an Antecedent of Cyberbullying

Support for bullying actions can be based on the alignment of others in the peer context (Atlas & Pepler, 1998); bullies may be supported and assisted in

their actions, whereas victims may feel isolated and defenseless (Kowalski et al., 2012; Sutton & Smith, 1999). Therefore, it is expected that also cyberbullies require a certain level of peer support for their behavior. One form of support may derive from the perceived popularity of perpetrators. This would correspond to “ringleader”-type of bullies who are popular in the broader peer group and who dominate certain peers (Olthof, Goossens, Vermande, Aleva, & van der Meulen, 2011). Some support for this pattern is provided by research on mobile phone bullying and electronic aggression. Vanden Abeele and De Cock (2013) performed a cross-sectional study, and found that mobile phone bullies were perceived as being popular by their peers. Corresponding results were found in two longitudinal studies on social status and perpetration of electronic aggression (Badaly, Kelly, Schwartz, & Dabney-Lieras, 2013; Wright, 2014). The study by Badaly et al. (2013) employed a two-wave set-up in which seventh-grade students nominated their peers on items such as perceived popularity, social liking, and electronic aggression (defined as “using the internet or text messages to insult or be mean”). Perceived popularity was demonstrated to be a precursor of electronic aggression (Badaly et al., 2013). A similar two-wave study on early adolescents confirmed the longitudinal association between perceived popularity and electronic aggression, operationalized as name calling or teasing in a mean way online or through text messages (Wright, 2014). Although the latter studies focused on aggression, instead of bullying specifically, they suggest that perceived popularity may also constitute an antecedent of cyberbullying.

Another form of support for perpetrators is related to sociometric popularity, that is, the degree of social acceptance in the peer group. For traditional bullying and aggression, it was found that perpetrators are disliked in the peer group, but that they nevertheless belong to relatively large friendship groups (Gest et al., 2001; Salmivalli et al., 1997). In the context of electronic forms of perpetration three studies have investigated the relationship with acceptance (or dislike) in the peer group. Social dislike was found to be associated with mobile phone bullying (Vanden Abeele & De Cock, 2013) and electronic aggression (Wright, 2014), but not with cyberbullying specifically (Calvete, Orue, Estévez, Villardón, & Padilla, 2010). The issue of peer friendship, in contrast, has received only limited attention in the research on cyberbullying perpetration. A cross-sectional study by Festl and Quandt (2013) investigated the friendship networks of cyberbullies at school and found that involvement in cyberbullying perpetration *combined with* victimization was associated with a higher number of friendship nominations, whereas being only a perpetrator was not (Festl & Quandt, 2013). However, the findings may be influenced by the focus on best friends rather than the broader set of friends; prior research has shown that aggressive and disruptive individuals

do not have a higher number of reciprocated best friends, but do have more peers who “hang around” with them (Gest et al., 2001). Therefore, when a wider set of friends is considered, sociometric popularity is expected to be a prerequisite for cyberbullying, in correspondence with the findings on traditional perpetration.

Social Status as a Consequence of Cyberbullying

In addition to being a potential antecedent of cyberbullying, social status can also be the result of cyberbullying behavior. Whereas the longitudinal associations between traditional bullying and perceived popularity are well documented, see, for instance, Reijntjes et al. (2013), such evidence is lacking for cyberbullying. Indications of a positive association have been found in the cross-sectional study on mobile phone bullying by Vanden Abeele and De Cock (2013), and the longitudinal research on electronic forms of aggression by Badaly et al. (2013). In the latter study, electronic aggression was positively associated with perceived popularity over time, but the relationship was found only for female respondents (Badaly et al., 2013). Both studies suggest that also cyberbullying may be positively related to subsequent perceived popularity. In addition, as referred to earlier, technology facilitates the distribution of electronic bullying messages to a wide audience, which may contribute to the perceived popularity of perpetrators (Kowalski et al., 2012). With school life nowadays being seamlessly extended through social media (Kwan & Skoric, 2013), cyberbullying messages may reach a large proportion of the schoolyard population. Therefore, it is expected that cyberbullying is positively related to the perceived popularity of perpetrators over time.

With regard to sociometric popularity, cyberbullying perpetration may result in a higher number of friends. Prior research has shown that bullying behavior is often directed from the in-group toward the out-group (Duffy & Nesdale, 2009), and that being included in a group, preferably one that is popular, can protect against harassment (Owens, Slee, & Shute, 2001). Hence, pupils may want to associate with the friendship groups of cyberbullies, as it can protect them from online bullying. In addition to the possibility of attracting new friends, cyberbullies may also succeed in maintaining existing friendships. First, bully friendship groups tend to share similar (positive) norms about bullying (Duffy & Nesdale, 2009). Therefore, the perpetrators' friends may not be disturbed by the cyberbullying behavior. Second, research has shown that bullies aim to maintain affection from their peers by specifically targeting individuals who are rejected in the peer group (Veenstra, Lindenberg, Munniksma, & Dijkstra, 2010). If this strategy is successful,

cyberbullies may experience an increase in their number of friends, rather than a decrease. Hence, a positive association between cyberbullying and subsequent sociometric popularity is expected.

The Present Study

The aforementioned studies have provided various insights into (a) the different associations between cyberbullying perpetration and social status, and (b) the longitudinal relationship between electronic aggression and social status. However, for the research on cyberbullying, three aspects require further assessment. First, longitudinal research is needed on the relationship between social status and cyberbullying behavior, rather than online aggressive behavior. Online aggression encompasses single incidents and fights, whereas cyberbullying implies a consistent pattern of aggressive behavior in which the bully has power over the victim (Langos, 2012). It is this consistency and power imbalance that may signal that perpetrators are supported by their peers and that they are rewarded for their behavior. Hence, to capture cyberbullying, it is most appropriate to ask respondents directly about their involvement in “bullying” on the Internet or mobile phone (Vandebosch & Van Cleemput, 2008).

Second, the existing longitudinal studies have operationalized sociometric popularity as being liked by peers. Although studying social liking has proven useful, the concept of friendship networks (Festl & Quandt, 2013) is worth further investigation. One reason is that adolescents may dislike cyberbullies, while at the same time prefer to be part of their friendship groups. Belonging to these groups can serve as a form of self-protection, as negative actions are mainly directed at the out-group (Nesdale, Durkin, Maass, Kiesner, & Griffiths, 2008; Owens et al., 2001). Another reason to study friendships is that, in traditional bullying, perpetrators rely on their immediate friends to assist them in their acts (Salmivalli et al., 1997).

Third, the existing studies on social status in cyberbullies did not include traditional bullying in their analyses. This is nevertheless a relevant factor to take into account, as prior research has found that cyberbullies are also more likely to engage in traditional bullying (Dehue, Bolman, & Völlink, 2008; Smith et al., 2008). Hence, as both behaviors are related, it is important to control for one another when assessing how each type of bullying is associated with social status.

The present article addresses these issues and employs a cross-lagged design with two measurement points to examine the longitudinal associations between bullying perpetration and social status. Both traditional bullying and cyberbullying are studied, and social status is operationalized as sociometric and perceived popularity. In addition, stability in social status is controlled

for, and potential gender differences are investigated. It is expected that social status is both an antecedent and a result of cyberbullying. Therefore, it is hypothesized that perceived popularity and sociometric popularity are positively associated with subsequent perpetration of cyberbullying, and that cyberbullying is positively associated with subsequent perceived popularity and sociometric popularity.

Method

Sample and Procedure

The sample was selected in a Belgian secondary school, located in a medium-sized town near Antwerp. The school's pupils from an entire grade were surveyed in March and November 2011, a period that spans a transition from the first year of secondary school to the second year (comparable with the seventh and eighth grades in the United States). The customary ethical guidelines were followed and approval was received from the institutional review board. Furthermore, informed consent was obtained from the school head, as is customary in Belgium (Vandenbosch & Eggermont, 2012). After being guaranteed confidentiality, the respondents completed two paper surveys during school time with an 8-month time interval between them. All students received survey copies with unique identification numbers. This made it possible to link the pupils between the two waves and to connect the respondents with their social status as identified by their fellow grade members. The list that connected pupils to their number, however, was only available to the researchers and not to the schools. In addition, the students received a separate sheet with their survey that indicated where they could find more information regarding safe Internet use as well as what to do if they experienced traditional bullying or cyberbullying. After the data collection, the institution that participated obtained a report that featured the general prevalence numbers and the characteristics of traditional bullying and cyberbullying at that school.

In the first wave (T1), 175 respondents participated in the study (97.22% of the grade population); in the second wave (T2), 171 pupils took part (96.61% of the grade population). One respondent was removed from the sample, because the items on social status were not completed. The final sample for analysis consisted of pupils who participated at both waves and contained 154 respondents (retention rate: 88.51%). The mean age at T1 was 13.24 ($SD = 0.43$), and 55.20% of the pupils were female. On an average school day, the respondents indicated using the Internet for nearly 90 minutes (T1, $\bar{X} = 79.37$, $SD = 80.85$; T2, $\bar{X} = 87.53$, $SD = 81.26$) and sending over 40 mobile phone text messages (T1, $\bar{X} = 44.44$, $SD = 98.80$; T2, $\bar{X} = 48.00$,

$SD = 78.62$). The pupils who were only present at T1 did not differ significantly from the respondents who participated in both waves with regard to the following variables: sociometric popularity, perceived popularity, traditional bullying, cyberbullying, Internet use, mobile phone texting, age, and gender. Additionally, as the key variables were based on peer nominations (see Measures), no missing values were present for these variables.

Measures

Sociometric and perceived popularity. The survey featured questions regarding the social status of fellow pupils within the same grade. To measure sociometric popularity, students indicated who their friends were in the same grade (a reference list was provided). Both “best friends” and “just friends” could be nominated in two separate questions, with a maximum of eight nominations for each question. The total number of received friendship nominations for both types of friendship was calculated to measure sociometric popularity. To assess perceived popularity, the respondents indicated which pupils they considered to be “popular” in their grade. Eight or fewer same-grade students could be nominated and the number of received nominations was used as a measure of perceived popularity.

Involvement in traditional bullying and cyberbullying. At T1 and T2, the survey measured involvement in traditional bullying and cyberbullying. In the questionnaire, bullying was described as hurtful and intentional behavior against a victim who cannot easily defend himself or herself. The respondents indicated how often they were victims of traditional bullying and “bullying via the Internet or mobile phone” during the previous 6 months. Pupils who reported being victimized by students in the same grade were asked to write down the names of maximum eight perpetrators who bullied them. The information provided by victims was used to calculate the total number of bullying nominations received. For traditional bullying and cyberbullying, sum scores were constructed that measure the number of victims the respondents had made. For both measures, the victims’ point of view was consistently adopted. This was considered to be the most reliable perspective, as research has suggested that perpetrators may underestimate their involvement in bullying because of social desirability (Görzig & Ólafsson, 2013; Menesini & Nocentini, 2009).

Analyses

A cross-lagged panel model was constructed to study the reciprocal associations between perpetration of traditional bullying and cyberbullying, and the

two aspects of social status (sociometric and perceived popularity). The model allowed correlations between all variables at T1 and T2 to control for cross-sectional relationships. Furthermore, it contained the following types of paths: (a) stability in all measured variables over time, (b) the associations between bullying perpetration at T1 and social status at T2, and (c) the associations between social status at T1 and bullying perpetration at T2. Thus, the analysis included the longitudinal paths from social status to traditional bullying and cyberbullying perpetration, and vice versa (reciprocal effects).

The modeling was performed in Mplus 6.11 (Muthén & Muthén, 2012) using robust maximum likelihood estimation (MLR) for non-normally distributed variables. Three criteria were used to evaluate the model fit: the root mean squared error of approximation (RMSEA), comparative fit index (CFI), and the chi-square test. The first model specified the parameter estimates for the whole sample. The second (multigroup) model allowed different parameter estimates for boys and girls. To compare the two models, a chi-square difference test was performed, using Satorra-Bentler rescaling because of multivariate non-normality (Satorra & Bentler, 2001). Additionally, gender differences were assessed for each path by comparing the model with cross-group equality constraints with models in which a single parameter was free to differ between both genders (Badaly et al., 2013).

Results

Descriptives

Approximately one tenth of the respondents reported victimization of cyberbullying by same-grade students (T1, 9.74%; T2, 11.04%). Based on the victims' nominations, over 10% of the studied pupils were identified as perpetrators of cyberbullying (T1, 10.39%; T2, 16.23%). McNemar's tests show that these proportions did not significantly change over time for cyberbullying victimization ($p = .839$) or perpetration ($p = .078$). Regarding traditional bullying, over one out of four students indicated being bullied by someone from the same grade (T1, 36.36%; T2, 25.97%), nominating 38.96% of the fellow grade members as perpetrators at T1 and 44.81% at T2. A significant decrease over time was observed for traditional bullying victimization ($p = .041$), but not for perpetration ($p = .243$).

Table 1 provides the descriptives of the received nominations for traditional bullying and cyberbullying. On average, the respondents received fewer than one nomination as a perpetrator. For traditional bullying, the mean was 0.69 at T1 ($SD = 1.15$) and 0.72 at T2 ($SD = 1.02$); for cyberbullying, the average number was 0.14 at T1 ($SD = 0.46$) and 0.19 at T2

Table 1. Descriptives of the Bullying Perpetration and Social Status Variables (Number of Received Nominations).

Variable	Overall (<i>N</i> = 154)			Boys (<i>n</i> = 69)			Girls (<i>n</i> = 85)		
	\bar{X}	<i>SD</i>	Range	\bar{X}	<i>SD</i>	Range	\bar{X}	<i>SD</i>	Range
Bullying perpetration									
T1 traditional bullying	0.69	1.15	0-7	0.88	1.31	0-7	0.54	0.97	0-6
T2 traditional bullying	0.72	1.02	0-5	1.01	1.29	0-5	0.48	0.65	0-2
T1 cyberbullying	0.14	0.46	0-3	0.06	0.24	0-1	0.21	0.58	0-3
T2 cyberbullying	0.19	0.47	0-2	0.10	0.30	0-1	0.27	0.57	0-2
Social status									
T1 sociometric popularity	11.51	4.83	0-28	11.64	5.50	0-28	11.41	4.24	0-21
T2 sociometric popularity	10.96	4.79	0-26	11.17	5.04	0-20	10.79	4.60	0-26
T1 perceived popularity	3.10	5.05	0-32	3.52	5.03	0-26	2.76	5.07	0-32
T2 perceived popularity	3.66	7.84	0-58	4.17	7.57	0-33	3.24	8.07	0-58

(*SD* = 0.47). The mean number of received nominations for perpetrators did not significantly differ between T1 and T2 for traditional bullying, $t(153) = 0.277, p = .783$, or for cyberbullying, $t(153) = 1.52, p = .131$. Furthermore, Table 1 shows the average number of received nominations for sociometric and perceived popularity. With regard to the nominations as a friend (either as a “best friend” or “just a friend”), each student was named by 10 to 11 peers on average: T1, $\bar{X} = 11.51, SD = 4.83$; T2, $\bar{X} = 10.96, SD = 4.79$. In terms of perceived popularity, on average, the respondents were considered “popular” by three to four peers from the same grade: T1, $\bar{X} = 3.10, SD = 5.05$; T2, $\bar{X} = 3.66, SD = 7.84$.

The bivariate correlations between the key study variables are summarized in Table 2. Considerable stability over time was found for perceived popularity ($r = .86, p < .01$), sociometric popularity ($r = .66, p < .01$), cyberbullying ($r = .59, p < .01$), and traditional bullying ($r = .43, p < .01$). Although these measures showed high correlations, the values were still below the suggested threshold of multicollinearity (.90; Tabachnick & Fidell, 2012). Furthermore, the perpetration of traditional bullying and cyberbullying was related at T1 ($r = .49, p < .01$) and at T2 ($r = .28, p < .01$). Similarly, sociometric popularity and perceived popularity were positively correlated at T1 ($r = .61, p < .01$), and T2 ($r = .40, p < .01$). Correlations were also found between bullying perpetration and social status. Traditional bullying at both measurement points was positively related to sociometric popularity at T1 and perceived popularity at T1 and T2. Cyberbullying at both measurement

Table 2. Bivariate Correlations for Bullying Perpetration and Social Status Variables.

Variable	1	2	3	4	5	6	7	8
1. T1 traditional bullying	—	.43**	.49**	.32**	.17*	.10	.30**	.26**
2. T2 traditional bullying		—	.17*	.28**	.17*	.06	.30**	.41**
3. T1 cyberbullying			—	.59**	.19*	.06	.13	.18*
4. T2 cyberbullying				—	.17*	.11	.06	.18*
5. T1 sociometric popularity					—	.66**	.61**	.52**
6. T2 sociometric popularity						—	.40**	.40**
7. T1 perceived popularity							—	.86**
8. T2 perceived popularity								—

* $p < .05$. ** $p < .01$. *** $p < .001$.

times positively correlated with sociometric popularity at T1 and perceived popularity at T2 (see Table 2 for the values).

Associations Between Bullying and Social Status

A path model was estimated to study the relationship between bullying and social status (see Figure 1). Three goodness-of-fit indices were considered: chi-square ($\chi^2 = 0.61$, $df = 4$, $p = .962$), RMSEA ($< .01$), and CFI (1.00). All three indicators show an excellent model fit. The longitudinal stability of the four key variables may have contributed to this fit. Furthermore, the path analysis confirmed the association between traditional bullying and cyberbullying (T1, $r = .49$, $p < .001$; T2, $r = .24$, $p = .001$).

The path analysis (see Figure 1) included the longitudinal associations between the two forms of popularity and subsequent bullying perpetration. First, the results show no significant relationship between perceived popularity at T1 and the measurements of traditional bullying at T2 ($\beta = .20$, $p = .083$) and cyberbullying at T2 ($\beta = -.08$, $p = .189$). The association between perceived popularity and subsequent traditional bullying was the largest of all standardized cross-lagged coefficients, but it only neared the accepted level of significance. Nevertheless, using maximum likelihood estimation, the parameter contributed significantly ($p = .030$). Second, in terms of sociometric popularity, no relationship was found with subsequent involvement in traditional bullying ($\beta < .01$, $p = .996$) or cyberbullying ($\beta = .11$, $p = .131$).

Furthermore, Figure 1 shows the association between bullying perpetration and social status at the subsequent measurement point. First, cyberbullying perpetration emerged as a significant predictor of perceived popularity

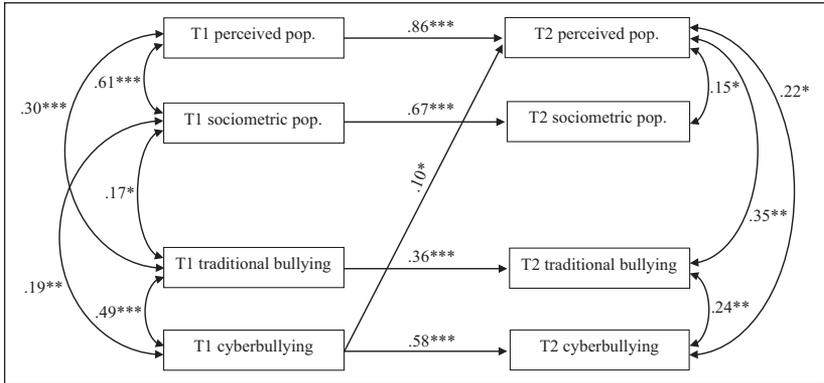


Figure 1. General path model for bullying perpetration and social status.
 Note. The model contained all possible correlations at a single measurement time and all cross-lagged paths between bullying and social status. Only paths with significant parameter estimates are displayed. The values represent the standardized estimates of the general model. Pop. = popularity.
 * $p < .05$. ** $p < .01$. *** $p < .001$.

($\beta = .10, p = .022$). Pupils who had cyberbullied a larger number of peers at T1 were perceived as more popular at T2. Traditional bullying, in contrast, was not associated with higher levels of perceived popularity ($\beta = -.05, p = .508$). Only cross-sectional correlations were found between traditional bullying and perceived popularity (T1, $r = .30, p < .001$; T2, $r = .35, p = .003$). Second, in terms of sociometric popularity at T2 neither traditional bullying ($\beta = .02, p = .749$) nor cyberbullying ($\beta = -.08, p = .273$) showed significant longitudinal associations.

Analysis of Gender Differences

To assess whether the associations differed between male and female respondents, a multigroup analysis was performed. For this estimation, the same model was used for boys and girls, and all longitudinal paths were allowed to vary by gender. The resulting chi-square goodness-of-fit index was compared with that of the fully constrained model (with all paths fixed to be equal for boys and girls). This comparison showed a significant difference between the Satorra-Bentler (SB) chi-square values of the multigroup model and the fully constrained model ($\Delta SB\chi^2 = 785.63, \Delta df = 12, p < .001$).

Additionally, potential gender differences were investigated for each longitudinal association separately. Chi-square difference tests were calculated

between the fully constrained model and the models in which one path was free to differ between male and female respondents. The results show that the chi-square value significantly changed when gender-specific estimates for stability in traditional bullying were allowed ($\Delta\text{SB}\chi^2 = 4.49$, $\Delta df = 1$, $p = .034$). In the multigroup model, traditional bullying perpetration was more strongly related over time for boys ($\beta = .37$, $p = .003$) than for girls ($\beta = .18$, $p = .028$). For all other longitudinal associations, in contrast, the fit indices of the models did not significantly improve by allowing gender differences. Hence, these analyses did not support gender differences in the cross-lagged associations between bullying and social status.

Discussion

The present study focused on cyberbullying as a strategic behavior that is based on power imbalances and that potentially affects the social status of early adolescents. For this purpose, a longitudinal study was conducted that assessed the reciprocal effects of cyberbullying and traditional bullying on perceived and sociometric popularity. Although similar approaches had been applied in research on cyberbullying victimization (Gradinger, Strohmeier, Schiller, Stefanek, & Spiel, 2012) and electronic aggression (Badaly et al., 2013; Wright, 2014), this was the first time that perpetration of cyberbullying was studied in such a fashion. As cyberbullying is a consistent behavior in which the bully has power over the victim (Langos, 2012), it was expected that social status and cyberbullying perpetration are related over time. The results show that sociometric popularity and perceived popularity are not associated with subsequent cyberbullying; perceived popularity was an antecedent to traditional bullying, but this association only neared significance. Furthermore, cyberbullying predicted perceived popularity over time, but not sociometric popularity. Traditional bullying, in contrast, was not associated with subsequent sociometric popularity or perceived popularity.

Having power over a victim is a necessary condition for bullying perpetration (Olweus, 1993), and being supported by peers can contribute to this power (Atlas & Pepler, 1998). Therefore, it was hypothesized that being perceived as popular and having a large number of friends would increase the opportunities to cyberbully. The results, however, do not support this hypothesis; perceived popularity was not associated with subsequent cyberbullying. This finding indicates that cyberbullying may not require extensive support from the peer group. Perpetrators may not need broad support, as they have control over who witnesses the cyberbullying. Communication technology makes it easy to reach specific audiences by using certain applications (Van Cleemput, 2010) or certain settings within applications, such as on Facebook (Ellison, Vitak,

Steinfeld, Gray, & Lampe, 2011). Hence, skillful cyberbullies may share their actions with peers who are unlikely to defend the victim and who are inclined to assist in bullying. It is perhaps this skillful use of technology that contributes to the power of cyberbullies, as suggested by Kowalski et al. (2012), and which may reduce the need for broader group support that characterizes traditional bullying (Sutton & Smith, 1999). In this regard, perceived popularity may be expected to precede traditional bullying. As this type of bullying peaks before early adolescence (Slee, 1995; Tokunaga, 2010), traditional bullies may have already attained elevated levels of social status, while cyberbullies are still in the process of gaining social status during that stage of life. Even though some indications of a longitudinal association between perceived popularity and traditional bullying emerged in the present study, it was not unequivocally demonstrated. Furthermore, for sociometric popularity, the results showed no significant association with consecutive traditional bullying or cyberbullying. Hence, the hypothesis that sociometric popularity is an antecedent of cyberbullying was not supported. Even though bullying may require a minimal set of close friends (Salmivalli et al., 1997), having a more extensive friendship group may not facilitate perpetration. In fact, for aggressive students, prior research has shown that having (nonaggressive) friends was related to lower levels of aggression over time (Adams, Bukowski, & Bagwell, 2005).

In addition to studying social status as a prerequisite for cyberbullying, the possibility that cyberbullying behavior is related to subsequent sociometric and perceived popularity was investigated. Although the effectiveness of electronic forms of bullying to advance social status has been questioned (Salmivalli et al., 2013), the present study demonstrates that cyberbullying is positively related to future perceived popularity, which was also hypothesized. Pupils who cyberbullied managed to gain perceived popularity over time, even despite the observed stability of this social status component. Therefore, during early adolescence, cyberbullying can function as a novel tool that has the potential to disrupt the existing hierarchy of perceived popularity at school. Traditional bullies may persist with their behavior (hence the stability in traditional bullying), but this type of bullying may only confirm the perpetrator's perceived popularity, rather than enhance it (as traditional bullying did not affect social status). The finding that cyberbullying is more strongly associated with social status may explain why this behavior becomes more prevalent during early adolescence, evidence for which was found in prior research (Kowalski & Limber, 2007), whereas the prevalence of traditional bullying diminishes during that period of life (Slee, 1995; Tokunaga, 2010). The ability to gain social status may motivate certain adolescents to cyberbully, in addition to other motivators such as retaliation or enjoyment (Gradinger, Strohmeier, & Spiel, 2012).

Furthermore, even though certain research has found gender-specific associations between social status and traditional bullying (de Bruyn et al., 2010; Salmivalli et al., 1996) or electronic aggression (Badaly et al., 2013), this was not demonstrated in the present study. One possible explanation is the limited sample size, which may not allow finding different associations between subgroups. Another explanation is that the moderating factor of gender depends on the type of behavior that is investigated (Dijkstra et al., 2008; Wright, 2014). Badaly et al. (2013), for instance, found that mean message sending was related with the social status of boys and girls differently, whereas Wright (2014) reported that gender was not a moderator in relational forms of electronic aggression. Thus, future research on gender differences should consider the type of behavior that is studied.

With regard to sociometric popularity, cyberbullying was not related to the number of received friendship nominations at a later measurement time. Thus, pupils who had cyberbullied did not experience a decrease or increase in their number of friends. Although it was expected that pupils may want to associate with cyberbullies as a form of self-protection, no evidence was found for this behavior. Despite the relative instability of friendship relationships during early adolescence (Poulin & Chan, 2010), bullying behavior did not contribute to explaining changes in the size of the perpetrators' friendship groups. The idea of associating with bullies may not be attractive because (a) the aggressive and coercive behavior of these pupils makes them generally disliked (de Bruyn et al., 2010) and because (b) bullies tend to target group members who do not conform to the group norms (Bukowski & Sippola, 2001). At the same time, adolescents who are already friends with perpetrators may not find the bullying behavior problematic, because in such friendship groups, bullying may be considered as normative behavior.

The aforementioned findings provide opportunities for further research. When cyberbullying is associated with perceived popularity, future studies may investigate how this association is related to the victims who are targeted (in terms of their social status), the applications and devices that are used (with regard to reaching a particular audience), and the bystanders who are involved (in terms of their relationship with the perpetrator and the victim). For instance, whereas research has found that online perpetrators distribute bullying messages to friends and peers (Slonje, Smith, & Frisén, 2012), it is unclear whether cyberbullies can gain social status by involving particular groups of bystanders (who support their actions) or by distributing their messages to a wide set of peers.

Although the present study successfully linked cyberbullying to social status, it also has certain limitations. First, the sample included only a single grade at one particular school, which restricts the generalizability of

the findings. Future research may include a variety of schools to extend the findings to more diverse populations and settings. The generalizability is also limited by the time frame that was studied, which included a school holiday and a potential change of class. Therefore, the relationship between cyberbullying and social status may be further investigated over the course of a single school year. Second, the measures of (cyber)bullying involvement were solely based on victims' assessments of the incidents. The views of perpetrators or bystanders were not considered, and those perspectives may shed a different light on which instances are considered bullying and which are not (Pellegrini & Long, 2002). Third, this research was limited to studying cyberbullying that took place among same-grade pupils. Instances of bullying that took place outside the school context, for example, involving online-only contacts, were not included. Finally, in this study, social status was determined using peer nominations without regard to gender. Future research may also compare same-gender and different-gender estimations of social status in bullies, as studied by Dijkstra, Lindenberg, and Veenstra (2007).

This longitudinal, cross-lagged study of peer relationships constitutes a new approach in the research on cyberbullying. Despite its limitations, the present study demonstrated that cyberbullying behavior is related to the social status of young adolescents in their everyday social environment. As many online contacts (boyd, 2010; Lee, 2009) and online bullying perpetrators (Juvonen & Gross, 2008; Slonje & Smith, 2008) originate from the school environment, the association between cyberbullying and perceived popularity at school was both expected and demonstrated. The results point out the importance of studying offline social relationships to understand online instances of bullying. Future research may assess exactly *what* cyberbullies aim to achieve, and *how* they strategically select their victims, choose their methods of bullying, and involve potential bystanders. Ultimately, studying cyberbullying in the social context at school can provide key information to fuel effective prevention efforts.

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References

- Adams, R. E., Bukowski, W. M., & Bagwell, C. (2005). Stability of aggression during early adolescence as moderated by reciprocated friendship status and friend's aggression. *International Journal of Behavioral Development, 29*, 139-145.
- Atlas, R. S., & Pepler, D. J. (1998). Observations of bullying in the classroom. *The Journal of Educational Research, 92*, 86-99.
- Babad, E. (2001). On the conception and measurement of popularity: More facts and some straight conclusions. *Social Psychology of Education, 5*, 3-30.
- Badaly, D., Kelly, B. M., Schwartz, D., & Dabney-Lieras, K. (2013). Longitudinal associations of electronic aggression and victimization with social standing during adolescence. *Journal of Youth and Adolescence, 42*, 891-904.
- Blyth, D. A., Hill, J. P., & Thiel, K. S. (1982). Early adolescents' significant others: Grade and gender differences in perceived relationships with familial and nonfamilial adults and young people. *Journal of Youth and Adolescence, 11*, 425-450.
- boyd, d. (2010). Friendship. In M. Ito et al. (Eds.), *Hanging out, messing around, and geeking out: Kids living and learning with new media* (pp. 79-115). Cambridge, MA: MIT Press.
- Bukowski, W. M., & Sippola, L. K. (2001). Groups, individuals and victimisation. In J. Juvonen & S. Graham (Eds.), *Peer harassment in school: The plight of the vulnerable and victimized* (pp. 355-377). New York, NY: Guilford Press.
- Calvete, E., Orue, I., Estévez, A., Villardón, L., & Padilla, P. (2010). Cyberbullying in adolescents: Modalities and aggressors' profile. *Computers in Human Behavior, 26*, 1128-1135.
- Cillessen, A. H. N., & Rose, A. J. (2005). Understanding popularity in the peer system. *Current Directions in Psychological Science, 14*, 102-105.
- de Bruyn, E. H., Cillessen, A. H. N., & Wissink, I. B. (2010). Associations of peer acceptance and perceived popularity with bullying and victimization in early adolescence. *The Journal of Early Adolescence, 30*, 543-566.
- de Bruyn, E. H., & van den Boom, D. C. (2005). Interpersonal behavior, peer popularity, and self-esteem in early adolescence. *Social Development, 14*, 555-573.
- Dehue, F., Bolman, C., & Völlink, T. (2008). Cyberbullying: Youngsters' experiences and parental perception. *CyberPsychology & Behavior, 11*, 217-223.
- Dijkstra, J. K., Lindenberg, S., & Veenstra, R. (2007). Same-gender and cross-gender peer acceptance and peer rejection and their relation to bullying and helping among preadolescents: Comparing predictions from gender-homophily and goal-framing approaches. *Developmental Psychology, 43*, 1377-1389.
- Dijkstra, J. K., Lindenberg, S., & Veenstra, R. (2008). Beyond the class norm: Bullying behavior of popular adolescents and its relation to peer acceptance and rejection. *Journal of Abnormal Child Psychology, 36*, 1289-1299.
- Duffy, A. L., & Nesdale, D. (2009). Peer groups, social identity, and children's bullying behavior. *Social Development, 18*, 121-139.
- Ellison, N. B., Vitak, J., Steinfield, C., Gray, R., & Lampe, C. (2011). Negotiating privacy concerns and social capital needs in a social media environment. In S. Trepte & L. Reinecke (Eds.), *Privacy online* (pp. 19-32). New York, NY: Springer.

- Festl, R., & Quandt, T. (2013). Social relations and cyberbullying: The influence of individual and structural attributes on victimization and perpetration via the Internet. *Human Communication Research, 39*, 101-126.
- Gest, S. D., Graham-Bermann, S. A., & Hartup, W. W. (2001). Peer experience: Common and unique features of number of friendships, social network centrality, and sociometric status. *Social Development, 10*, 23-40.
- Görzig, A., & Ólafsson, K. (2013). What makes a bully a cyberbully? Unravelling the characteristics of cyberbullies across twenty-five European countries. *Journal of Children and Media, 7*, 9-27.
- Gradinger, P., Strohmeier, D., Schiller, E. M., Stefanek, E., & Spiel, C. (2012). Cyber-victimization and popularity in early adolescence: Stability and predictive associations. *European Journal of Developmental Psychology, 9*, 228-243.
- Gradinger, P., Strohmeier, D., & Spiel, C. (2012). Motives for bullying others in cyberspace: A study on bullies and bully-victims in Austria. In Q. Li, D. Cross, & P. K. Smith (Eds.), *Cyberbullying in the global playground: Research from international perspectives* (pp. 263-284). West Sussex, UK: Wiley-Blackwell.
- Huberman, B. A., Loch, C. H., & ÖNçüler, A. (2004). Status as a valued resource. *Social Psychology Quarterly, 67*, 103-114.
- Juvonen, J., Graham, S., & Schuster, M. (2003). Bullying among young adolescents: The strong, the weak, and the troubled. *Pediatrics, 112*, 1231-1237.
- Juvonen, J., & Gross, E. F. (2008). Extending the school grounds? Bullying experiences in cyberspace. *Journal of School Health, 78*, 496-505.
- Kowalski, R. M., Giumetti, G. W., Schroeder, A. N., & Lattanner, M. R. (2014). Bullying in the digital age: A critical review and meta-analysis of cyberbullying research among youth. *Psychological Bulletin, 140*, 1073-1137.
- Kowalski, R. M., & Limber, S. P. (2007). Electronic bullying among middle school students. *Journal of Adolescent Health, 41*, S22-S30.
- Kowalski, R. M., Limber, S. P., & Agatston, P. W. (2012). *Cyberbullying: Bullying in the digital age* (2nd ed.). West Sussex, UK: Wiley-Blackwell.
- Kwan, G. C. E., & Skoric, M. M. (2013). Facebook bullying: An extension of battles in school. *Computers in Human Behavior, 29*, 16-25.
- Langos, C. (2012). Cyberbullying: The challenge to define. *Cyberpsychology, Behavior, and Social Networking, 15*, 285-289.
- Lee, S. J. (2009). Online communication and adolescent social ties: Who benefits more from Internet use? *Journal of Computer-Mediated Communication, 14*, 509-531.
- Menesini, E., & Nocentini, A. (2009). Cyberbullying definition and measurement: Some critical considerations. *Zeitschrift für Psychologie/Journal of Psychology, 217*, 230-232.
- Muthén, L. K., & Muthén, B. O. (2012). *Mplus user's guide* (7th ed.). Los Angeles, CA: Author.
- Nesdale, D., Durkin, K., Maass, A., Kiesner, J., & Griffiths, J. A. (2008). Effects of group norms on children's intentions to bully. *Social Development, 17*, 889-907.

- Olthof, T., Goossens, F. A., Vermande, M. M., Aleva, E. A., & van der Meulen, M. (2011). Bullying as strategic behavior: Relations with desired and acquired dominance in the peer group. *Journal of School Psychology, 49*, 339-359.
- Olweus, D. (1993). *Bullying at school: What we know and what we can do*. Cambridge, MA: Blackwell.
- Owens, L., Slee, P. T., & Shute, R. (2001). Victimization among teenage girls: What can be done about indirect harassment? In J. Huvonen & S. Graham (Eds.), *Peer harassment in school: The plight of the vulnerable and victimized* (pp. 215-241). New York, NY: Guilford Press.
- Pellegrini, A. D., & Long, J. D. (2002). A longitudinal study of bullying, dominance, and victimization during the transition from primary school through secondary school. *British Journal of Developmental Psychology, 20*, 259-280.
- Poulin, F., & Chan, A. (2010). Friendship stability and change in childhood and adolescence. *Developmental Review, 30*, 257-272.
- Reijntjes, A., Vermande, M., Olthof, T., Goossens, F. A., van de Schoot, R., Aleva, L., & van der Meulen, M. (2013). Costs and benefits of bullying in the context of the peer group: A three wave longitudinal analysis. *Journal of Abnormal Child Psychology, 41*, 1217-1229.
- Salmivalli, C. (2010). Bullying and the peer group: A review. *Aggression and Violent Behavior, 15*, 112-120.
- Salmivalli, C., Huttunen, A., & Lagerspetz, K. M. J. (1997). Peer networks and bullying in schools. *Scandinavian Journal of Psychology, 38*, 305-312.
- Salmivalli, C., Lagerspetz, K., Björkqvist, K., Österman, K., & Kaukiainen, A. (1996). Bullying as a group process: Participant roles and their relations to social status within the group. *Aggressive Behavior, 22*, 1-15.
- Salmivalli, C., Sainio, M., & Hodges, E. V. E. (2013). Electronic victimization: Correlates, antecedents, and consequences among elementary and middle school students. *Journal of Clinical Child and Adolescent Psychology, 42*, 442-453.
- Satorra, A., & Bentler, P. M. (2001). A scaled difference chi-square test statistic for moment structure analysis. *Psychometrika, 66*, 507-514.
- Sijtsema, J. J., Veenstra, R., Lindenberg, S., & Salmivalli, C. (2009). Empirical test of bullies' status goals: Assessing direct goals, aggression, and prestige. *Aggressive Behavior, 35*, 57-67.
- Slee, P. T. (1995). Peer victimization and its relationship to depression among Australian primary school students. *Personality and Individual Differences, 18*, 57-62.
- Slonje, R., & Smith, P. K. (2008). Cyberbullying: Another main type of bullying? *Scandinavian Journal of Psychology, 49*, 147-154.
- Slonje, R., Smith, P. K., & Frisén, A. (2012). Processes of cyberbullying, and feelings of remorse by bullies: A pilot study. *European Journal of Developmental Psychology, 9*, 244-259.
- Slonje, R., Smith, P. K., & Frisén, A. (2013). The nature of cyberbullying, and strategies for prevention. *Computers in Human Behavior, 29*, 26-32.
- Smith, P. K., Mahdavi, J., Carvalho, M., Fisher, S., Russell, S., & Tippet, N. (2008). Cyberbullying: Its nature and impact in secondary school pupils. *Journal of Child Psychology and Psychiatry, 49*, 376-385.

- Strom, P. S., & Strom, R. D. (2005). Cyberbullying by adolescents: A preliminary assessment. *The Educational Forum*, *70*, 21-32.
- Sutton, J., & Smith, P. K. (1999). Bullying as a group process: An adaptation of the participant role approach. *Aggressive Behavior*, *25*, 97-111.
- Sutton, J., Smith, P. K., & Swettenham, J. (1999). Bullying and "theory of mind": A critique of the "social skills deficit" view of anti-social behaviour. *Social Development*, *8*, 117-127.
- Tabachnick, B. G., & Fidell, L. S. (2012). *Using multivariate statistics* (6th ed.). New York, NY: Pearson.
- Tokunaga, R. S. (2010). Following you home from school: A critical review and synthesis of research on cyberbullying victimization. *Computers in Human Behavior*, *26*, 277-287.
- Van Cleemput, K. (2010). "I'll see you on IM, text, or call you": A social network approach of adolescents' use of communication media. *Bulletin of Science, Technology & Society*, *30*, 75-85.
- Vandebosch, H., & Van Cleemput, K. (2008). Defining cyberbullying: A qualitative research into the perceptions of youngsters. *CyberPsychology & Behavior*, *11*, 499-503.
- Vanden Abeele, M., & De Cock, R. (2013). Cyberbullying by mobile phone among adolescents: The role of gender and peer group status. *Communications*, *38*, 107-118.
- Vandenbosch, L., & Eggermont, S. (2012). Understanding sexual objectification: A comprehensive approach toward media exposure and girls' internalization of beauty ideals, self-objectification, and body surveillance. *Journal of Communication*, *62*, 869-887.
- Veenstra, R., Lindenberg, S., Munniksma, A., & Dijkstra, J. K. (2010). The complex relation between bullying, victimization, acceptance, and rejection: Giving special attention to status, affection, and sex differences. *Child Development*, *81*, 480-486.
- Veenstra, R., Lindenberg, S., Zijlstra, B. J. H., De Winter, A. F., Verhulst, F. C., & Ormel, J. (2007). The dyadic nature of bullying and victimization: Testing a dual-perspective theory. *Child Development*, *78*, 1843-1854.
- Walrave, M., & Heirman, W. (2010). Towards understanding the potential triggering features of technology. In S. Shariff & A. H. Churchill (Eds.), *Truths and myths of cyber-bullying: International perspectives on stakeholder responsibility and children's safety* (pp. 28-49). New York, NY: Peter Lang.
- Wentzel, K. R. (2003). Sociometric status and adjustment in middle school: A longitudinal study. *The Journal of Early Adolescence*, *23*, 5-28.
- Wright, M. F. (2014). Longitudinal investigation of the associations between adolescents' popularity and cyber social behaviors. *Journal of School Violence*, *13*, 291-314.

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