Students’ negative social positions among peers and their academic functioning

Cumulative and combined effects of victimization, friendlessness, peer rejection, and a lack of peer popularity *

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Abstract

Feeling safe at school and feeling connected to peers are important for students’ social and academic development. The current study focused on the role of four negative social positions among peers (victimization, friendlessness, peer rejection, and a lack of popularity) on students’ school well-being and self-perceived academic achievement (Study 1), and teacher-reported academic engagement and academic achievement (Study 2). Unique and cumulative effects were examined, as well as differences between combinations of negative social positions. Participants were third to sixth grade students (Study 1: $N = 8886$, $Mage = 10.2$; Study 2: $N = 419$, $Mage = 10.9$).

Mixed model analyses showed that each unique negative social position was negatively related to students’ academic functioning, with stronger effects for school well-being and academic engagement than for academic achievement. Also, the total number of negative positions was negatively related to students’ academic functioning. Cumulative effects were particularly found for school well-being. Finally, combinations that included victimization were most negatively related to students’ academic functioning, followed by friendlessness. Our results show the importance of positive social positions among peers for students’ school well-being, academic engagement, and in the end their academic achievement.

Key words: victimization; friendship; rejection; popularity; academic achievement
The primary goal of education is to stimulate students’ academic and social development. It is important that students are engaged with the academic and social aspects of school in order to prevent school dropout and facilitate learning and academic achievement (Appleton, Christenson, & Furlong, 2008). Besides the valuable role of parents and teachers, the peer context in schools also plays an important role in students’ behaviors and their development (Furrer & Skinner, 2003). Peers and friends affect students’ academic outcomes, such as their goals, engagement, values, and achievement (e.g., Altermatt & Pomerantz, 2003; Gremmen, Dijkstra, Steglich, & Veenstra, 2017; Ryan, 2001; Shin & Ryan, 2014). Further, feeling safe at school and being connected to peers are acknowledged as prerequisites for healthy development (Eisenberg, Neurnark-Sztainer, & Perry, 2003; Ponzo, 2013).

The desire for interpersonal connectedness and positive interactions with others reflects a fundamental need to belong (Baumeister & Leary, 1995). In order to feel good and motivated, students need to receive social and emotional support, as this can lead to more constructive behaviors when faced with difficulties or challenges (Social Determination Theory; SDT). Relatedness is a main factor for optimal functioning, healthy social development, and high well-being (Ryan & Deci, 2000). A sense of classroom belonging and peer support (e.g., being liked, respected, and valued by fellow peers) can fulfill students’ social goals and stimulate academic outcomes, including engagement, success expectations, goals, school marks, and self-concept (Furrer & Skinner, 2003; Goodenow, 1993). For instance, when students like going to school and feel safe at school, they can concentrate better on school work and feel more motivated for school, which also results in a higher academic achievement (Dieterich, 2015). However, when they do not feel well-connected to peers, students may become disaffected from academic activities, experience a lower well-being, and might have a lower desire to be in school, and thereby also miss the benefits of academic advancement (Eisenberg, 2003; Ryan, 2001). Hence, feeling unconnected to classmates can be detrimental for students’ school well-being, academic engagement, and academic achievement.

Four crucial aspects of peer relatedness have been distinguished in previous studies, that is, peer victimization, having no friends, peer rejection, and a lack of peer popularity. Together, these four factors indicate the lack of positive and the presence of negative relatedness with classmates, hereafter referred to as ‘negative social positions’. Previous studies mostly focused on one single aspect of negative social positions within a study.
However, it is less well understood how the *cumulation* of several negative social positions among peers affects academic functioning. Are students with an increasing number of negative social positions worse off? Moreover, it is unclear to what extent specific *combinations* of negative social positions are particularly detrimental. These questions are relevant, as they may help identifying children who are especially at risk for negative consequences of negative social positions on their academic functioning. Hence, specific insights might provide a step towards designing interventions that increase students’ school well-being and academic outcomes via their peer relations.

Therefore, in this study we exploratory examine four negative social positions among classmates, that is, being victimized, a lack of reciprocal friendships, being rejected, and not being considered popular. We focus on the *unique, combined, and cumulative* effects of these negative social positions on students’ school well-being and self-perceived academic achievement (Study 1) and teacher-perceived academic engagement and academic achievement (Study 2). Whereas the cumulation of negative social positions indicates whether each additive negative social position has an extra effect on students’ outcomes, the combination of negative social positions concerns whether specific combinations are more detrimental than others.

**NEGATIVE SOCIAL POSITIONS RELATED TO ACADEMIC FUNCTIONING**

**Peer victimization.** Much research has focused on the consequences of being victimized for students’ academic adjustment (see Nakamoto & Schwartz, 2010 for a meta-analytic review). Students who experience bullying at school have a lower academic achievement than their peers who are not victimized (Ponzo, 2013). Self-reported victimization is longitudinally related to lower grades and lower teacher-rated academic engagement across middle-school years (Espelage, Sung Hong, Rao, & Low, 2013; Juvonen, Wang, & Espinoza, 2011). Victimization may be related to a low academic achievement because of the psychological consequences of victimization that can inhibit students’ participation in the classroom and decrease students’ self-esteem (Ladd & Troop-Gordon, 2003), which in turn lowers their motivation and academic grades. Also, recent person-centered analyses on specific victimization trajectories and their association with academic outcomes and adjustment show a clear link between peer victimization and academic outcomes (Ladd, Ettekal, & Kochenderfer-Ladd, 2017). *Therefore,*
we expect that peer victimization is negatively associated with students’ academic well-being, engagement, and achievement (H1a).

**Friendlessness.** Friends in school and particularly in the classroom are crucial for students’ school and peer connectedness (Altermatt & Pomerantz, 2003). Friends can provide social support to students, help with school-related questions, increase students’ motivation to go to school, and enhance their academic self-competence (Bissel-Havran & Loken, 2009). More specifically, friends can be academic and social resources for students (i.e., social capital) by modeling pro-social behaviors, benefitting from each other’s knowledge and they can elevate the importance of schooling and encourage involvement at school (e.g., Crosnoe, Cavanagh, & Elder, 2003; Gremmen et al., 2017). Especially reciprocated friends often have regular contact, share resources, and feel connected in the peer group, compared to unilateral friendship nominations that are more related to liking (Witkow & Fuligni, 2010). Hence, we focus on students’ reciprocated friendships. We hypothesize that friendlessness is negatively related to students’ academic well-being, engagement and achievement (H1b).

**Peer rejection.** Peer rejection, being disliked by classmates, has been consistently linked to students’ school disengagement (e.g., avoidance of school and negative attitudes towards school) and low academic achievement (Buhs, Ladd, & Herald, 2006). Exclusion from the peer group is associated with less participation in the classroom and also adverse school adjustment outcomes over time, due to restriction of students’ access to social resources in classroom activities (Buhs, Ladd, & Herald, 2006). Students generally have a strong preference for interactions with members of their own sex and friendship dyads and playgroups mostly consist of same-sex peers (Bellmore & Cillessen, 2003), making same-sex peers the relevant peer group. Hence, we focus on disliking by same-sex peers and hypothesize that peer rejection is negatively associated with students’ academic well-being, engagement, and achievement (H1c).

**A lack of peer popularity.** Students’ social status can be assessed by their perceived popularity in the classroom, that is, a shared recognition (reputation) among peers regarding a student’s visibility, status, or power (Schwartz et al., 2006). Popularity is associated with a higher well-being and a more positive individual and interpersonal functioning (Östberg, 2003). As
perceived popularity can be the result of both positive (e.g., prosocial) or negative (e.g., aggressive) behaviors, mixed results have been found with regard to its relationship with academic outcomes (Meijs, Cillessen, Scholte, Segers, & Spijkerman, 2010; Schwartz et al., 2006). Although this relationship is ambiguous, status is an important goal for students (LaFontana & Cillessen, 2009) and when they fail to reach this goal, it can be considered a negative experience. Thus, we expect that a lack of peer popularity is negatively related to students’ academic well-being, engagement, and achievement (H1d).

CUMULATION AND COMBINATION OF NEGATIVE SOCIAL POSITIONS

Students differ in their total number of negative social positions. As of yet, previous studies have not examined whether an increasing number of negative social positions is more negatively associated with academic functioning. We argue that the sum of these negative aspects might not be associated to academic functioning in a linear way, but rather that the added negative effect of an extra negative peer relation might be stronger than the added effect of a previous one. For example, being victimized can be buffered to some extent by other social resources, such as friendships. This implies that the more negative social positions students have, the less buffering peer relations they have, thus the more negative each additional negative social position will be on their academic functioning. Based on this idea, our second hypothesis (H2) is that more negative social positions are also related to a more negative school well-being, academic engagement, and academic achievement, with stronger additional negative effects of extra negative social positions.

Besides the cumulation of negative social positions, there might be differences between specific combinations of negative social positions. In other words, the four negative social positions might differ in terms of their importance for students and the extent to which they actively experience it negatively. Although they seem to co-occur quite often, there might be specific social positions that explain the negative effects on students’ academic functioning. Students’ reciprocal friendships, peer status, and peer network affiliations (i.e., being liked or disliked) are interrelated but also represent distinct aspects of students’ peer experiences (Gest, Graham-Bermann, & Hartup, 2001; Gifford-Smith and Brownell, 2003). More specifically, these may be ordered based on their importance for students’ feelings of relatedness in the classroom.
Feelings of safety and security are essential and basic human needs (Maslow, 1970). As especially victimization can strongly affect students’ feelings of safety, whether they like going to school and be motivated for school work (e.g., Espelage et. al., 2013), this might be considered the most crucial type of peer relatedness for students’ academic functioning. People’s need for belongingness and social contacts (such as friendships) are also important. Connectedness to peers is considered a basic condition for a positive social and academic development (e.g., Eisenberg, 2003; Furrer & Skinner, 2003). Therefore, students’ friendships might be the second most important type of peer relatedness. Peer rejection by same-sex peers in the classroom also touches upon students’ belongingness needs, but as relationships with classmates are less close compared to relationships with friends, they may be the third most important type of social position. In line with the SDT (Ryan & Deci, 2000), students’ status in social groups is also considered important. This is related to reputation, which is not easy to achieve for all students and less important than being liked or having close relationships, thus will less likely be an active negative experience for students compared to feelings of safety and belonging. Therefore, we expect that students’ perceived popularity is the least important social position.

Based on this order of importance (victimization, friendlessness, rejection, a lack of popularity), several combinations might be more negatively associated with students’ academic functioning than others. We hypothesize (H3) that (a) four negative social positions are most negatively related to students’ academic functioning, followed by (b) being victimized, having no friends, and being rejected as the most detrimental combination in case of three negative social positions. When students have two negative social positions, we expect that (c) being victimized and being friendless is the most negative combination. Finally, (d) victimization is considered to be most negatively associated with students’ academic functioning when a student has one negative social position.

PRESENT STUDY
Our main aim is to examine whether each unique negative social position has a negative effect on students’ school well-being and academic outcomes, whether there is a cumulative effect, and whether specific combinations have a stronger negative association than others. In Study 1, we use a large dataset with students’ self-reported school well-being and self-perceived academic achievement as outcome measures. Besides students’ self-perceived school well-
being and self-perceived academic achievement, we also assessed students’ academic engagement and academic achievement based on teacher reports in a small dataset including different students (Study 2).

**STUDY 1**

**METHOD**

**PARTICIPANTS AND PROCEDURE**

The data for this study is part of a larger project evaluating the effectiveness of the implementation of the KiVa anti-bulling program in the Netherlands. In 2011, elementary schools were recruited for the KiVa program and 99 schools participated, of which 64 intervention schools. Prior to the implementation and also before the actual data collection, the questionnaire was tested in a pilot study (May 2012) to ensure that students would understand all questions. Afterwards, students completed an internet-based questionnaire in the schools’ computer labs during regular school hours, twice per school year (October and May). During the assessments, teachers were present and distributed individual passwords to their students to access the questionnaire, and to answer and assist students with the questionnaire when necessary. Students filled out the questions by themselves and difficult topics were explained in instructional videos. Questionnaires were completed on a voluntary basis and data were anonymized. Parents received information about the study and permission forms from the school. Parents who did not want their child to participate were requested to return the form to the school. Teachers also informed students about the research and asked oral consent. Both parents and students were able to withdraw from participation at any time.

We used data from the second wave of KiVa (October 2012), including 9066 students, with 1871 students in 3rd grade, 2391 students in 4th grade, 2398 students in 5th grade and 2368 students in 6th grade. However, 180 students (2.0%) did not fill out the questionnaire, as they did not receive parental consent or did not want to participate themselves. This left us with 8886 students (49.8% boys; $Mage = 10.2$ years, $SD = 1.2$, Range = 7.1-13.8).
MEASURES

Negative social position measures

Peer victimization. An introduction movie was shown in which bullying was defined in the way formulated in the Olweus’ Bully/Victim questionnaire (Olweus, 1996), including several examples concerning the forms of bullying and an explanation that emphasized the intentional and repetitive nature of bullying as well as the power imbalance between bully and victim. Directly after watching this instructional video, the following question was posed: “Now you know what bullying is, can you indicate how often you have been bullied in the past months?”. Students answered on a 5-point scale, with 1= it did not happen, 2= once or twice, 3= two or three times a month, 4= about once a week, 5= several times per week (Solberg & Olweus, 2003). In line with previous studies, students were considered victimized when they indicated that they have been bullied at least twice a month (Oldenburg et al., 2015; Solberg and Olweus 2003). This resulted in a dummy variable with a value of 0 for item scores 1 and 2 (no victimization) and a value of 1 (some victimization) for scores 3, 4, and 5.

Friendlessness. Students’ friendships within the classroom were assessed using a peer nomination procedure. Students were presented the names of their classmates in a random order on a computer screen and were asked to nominate their friends (“Which classmates are your best friends?”). They were able to nominate an unlimited number of same- and cross-sex peers and could also indicate nobody. We calculated students’ reciprocal friendships by counting all outgoing nominations that were also incoming nominations. A dummy variable was created, indicating whether a student had no reciprocal friends (0) or at least 1 reciprocal friend (1).

Peer rejection. Students were asked to nominate classmates they dislike using a similar peer nomination procedure as for friendships, by asking “Which classmates do you dislike?”. We counted per student the number of received nominations by same-sex classmates. For both boys and girls, we recoded this into a dummy variable with 0 (0 or 1 nomination by same-sex peers) or 1 (2 or more nominations by same-sex peers). We decided to treat two or more nominations as a negative social position instead of one nominations due to more realistic prevalence rates (29.8% instead of 54.8% of students being rejected).
A lack of peer popularity. Using a similar peer nomination procedure as for students’ friendships, students indicated which students they perceived as most popular ("Who are the most popular students in your class?"). For each student, we counted the number of received nominations and recoded this into dummy scores, with either 0 (at least one received nomination) or 1 (no received nominations).

Academic measures
School well-being. Students responded to seven items concerning their perceptions of the school and their classroom to assess their school well-being. Examples are "I feel safe at school" and "I feel at ease in the class" and answers were given on a four-point scale (1 = never, 2 = sometimes, 3 = often, 4 = always). Exploratory as well as confirmatory factor analyses showed that the seven items measured one factor (with factor loadings between .62 and .83). Item scores were averaged and formed an internally consistent scale (α = .89).

Self-perceived academic achievement. Students responded to three items concerning their perceptions on their academic performance. These items were "I think I am doing well at school", "I think I am a smart student", and "I am one of the best students of the class". Exploratory and confirmatory factor analyses showed that the three items measured one factor (factor loadings between .59 and .77). Item scores were averaged and formed an internally consistent scale (α = .81).

Control variables
Age was assessed by asking students’ day, month, and year of birth. Age in years on the day of data collection was calculated.

Sex was dummy coded into 0 (girl) and 1 (boy).

ANALYTICAL APPROACH
Each negative social position was coded as a dummy variable, so students either scored a 0 (absence) or a 1 (presence) on victimization, friendlessness, peer rejection and a lack of peer popularity. A total score was also calculated, ranging per student between 0 (no negative social positions) and 4 (all four negative social positions).
Negative social positions among peers and academic functioning

We calculated descriptive statistics to assess the prevalence of all negative social positions and the correlations between these negative social positions and school well-being and self-perceived academic achievement. Also, we calculated the prevalence of all different combinations of negative social positions. Subsequently, we used a mixed model approach in SPSS to analyze several multilevel models with students nested in classrooms. First, a main effects model was estimated to examine the effect of each unique negative social position on all outcome measures (hypothesis 1). Second, a cumulative effects model was estimated, by examining the additional effect of having at least one, at least two, at least three, or at least four negative social positions on the outcome measures (hypothesis 2). Third, we examined the prevalence and means of all different combinations of negative social positions compared to students who did not have any negative social position (hypothesis 3).

As negative social positions and school well-being and academic achievement differ across age groups and between boys and girls, we controlled for students’ age (in years) and sex in all models (e.g., Voyer & Voyer, 2014).

RESULTS

Descriptive statistics. We calculated the number and percentage of students that either had a specific negative social position (1) or not (0). Friendlessness (7.9%) was the least common negative social position, followed by victimization (20.5%), a lack of peer popularity (25.9%), and peer rejection (29.9%).

School well-being ($M = 3.09$, $SD = 0.56$) was on average higher than self-perceived academic achievement ($M = 2.66$, $SD = 0.66$). Both were positively correlated, indicating that school well-being was on average higher when self-perceived academic achievement was also higher ($r = .32$, $p < .001$). Moreover, the more negative social positions (ranging from 0 to 4), the lower students’ school well-being ($r = -.26$, $p < .001$), and to a lesser extent the lower self-perceived academic achievement ($r = -.03$, $p = .011$).

Main effects of negative social positions. To examine unique effects, we estimated a model with the main effects of all negative social positions as a predictor of students’ well-being and self-perceived academic achievement. Significant but small variations between classrooms were found for school well-being (6.9% of variance due to classroom differences, $p < .001$) and self-perceived academic achievement (2.4% of variance due to classroom differences, $p < .001$).
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Results in Table 2.1 show significant negative main effects of each negative peer relation on school well-being (in line with hypothesis 1). However, for self-perceived academic achievement, the negative effect for victimization reached significance, the negative effect for friendlessness was marginally significant, whereas the negative effect for rejection did not reach significance. Moreover, a lack of popularity was positively associated with self-perceived academic achievement. These results are only partially in line with hypothesis 1, as we expected significant negative effects for all negative social positions.

Additional analyses indicated a negative significant effect of the total number of negative social positions on students’ school well-being ($B = -0.15$, $p < .001$, AIC = 13909.7) and a smaller but also negative effect on self-perceived academic achievement ($B = -0.03$, $p < .001$, AIC = 17224.6), when controlling for students’ age and sex. Thus, the more negative social positions, the more negative students’ school well-being and self-perceived academic achievement.

Table 2.1

Main Effects of Negative Social Positions on Students’ School Well-Being and Self-Perceived Academic Achievement (Study 1)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>School well-being</th>
<th></th>
<th></th>
<th>Self-perceived achievement</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$B$</td>
<td>$SE$</td>
<td>95% CI</td>
<td>$B$</td>
<td>$SE$</td>
<td>95% CI</td>
</tr>
<tr>
<td>Intercept</td>
<td>3.531</td>
<td>0.068</td>
<td>[-0.34 to -0.29]</td>
<td>3.531</td>
<td>0.069</td>
<td>[-0.14 to -0.08]</td>
</tr>
<tr>
<td>Victimization</td>
<td>-0.316***</td>
<td>0.014</td>
<td>[-0.34 to -0.29]</td>
<td>-0.110***</td>
<td>0.017</td>
<td>[-0.14 to -0.08]</td>
</tr>
<tr>
<td>Friendlessness</td>
<td>-0.155***</td>
<td>0.021</td>
<td>[-0.20 to -0.11]</td>
<td>-0.050</td>
<td>0.026</td>
<td>[-0.10 to -0.00]</td>
</tr>
<tr>
<td>Rejection</td>
<td>-0.092***</td>
<td>0.013</td>
<td>[-0.12 to -0.07]</td>
<td>-0.018</td>
<td>0.016</td>
<td>[-0.05 to -0.01]</td>
</tr>
<tr>
<td>No popularity</td>
<td>-0.050***</td>
<td>0.013</td>
<td>[-0.08 to -0.02]</td>
<td>0.037***</td>
<td>0.016</td>
<td>[0.01 to -0.07]</td>
</tr>
<tr>
<td>Sex (1=boy)</td>
<td>-0.056***</td>
<td>0.006</td>
<td>[-0.08 to -0.03]</td>
<td>0.178***</td>
<td>0.014</td>
<td>[0.15 to -0.21]</td>
</tr>
<tr>
<td>Age</td>
<td>-0.029***</td>
<td>0.014</td>
<td>[-0.04 to -0.02]</td>
<td>-0.092***</td>
<td>0.007</td>
<td>[-0.10 to -0.08]</td>
</tr>
</tbody>
</table>

Note. * $p < .05$. ** $p < .01$. *** $p < .001$. For school well-being AIC = 13735.0. For self-perceived academic achievement AIC = 17203.9

Cumulative effects of negative social positions. We estimated cumulative effects of the number of negative social positions on students’ school well-being and self-perceived academic achievement (see Table 2.2). Each effect indicates the additive effect of an extra negative social position on students’ outcome measures (i.e., at least one, at least two, at least three, or at least four negative social positions). In both models, small but significant variations between
classrooms were found (6.8%, $p < .001$ for school well-being and 2.3%, $p < .001$ for self-perceived academic achievement).

With regard to school well-being, each additional negative social position had a significant negative effect. Thus, students with more negative social positions had a lower school well-being. Each additional negative social position affected students’ school well-being between $B = -0.14$ and $B = -0.24$, with the strongest additive negative effect of four negative social positions compared to three. This in line with hypotheses 2, as we expected a cumulative effect and stronger effects of additive negative social positions. Moreover, girls and younger students had a higher well-being than boys and older children, respectively.

With regard to self-perceived academic achievement, only the effect of one versus zero negative social positions had a significant negative effect, but each additional negative social position beyond the first did not significantly add to self-perceived academic achievement. This is not in line with hypothesis 2. Furthermore, boys and younger students had a higher self-perceived academic achievement than girls and older students, respectively.

**Table 2.2**

*Cumulative Effects of at Least One, Two, Three, and Four Negative Social Positions on Students’ School Well-Being and Self-Perceived Academic Achievement (Study 1)*

<table>
<thead>
<tr>
<th>Parameter</th>
<th>School well-being</th>
<th>Self-perceived achievement</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$B$</td>
<td>$SE$</td>
</tr>
<tr>
<td>Intercept</td>
<td>3.501</td>
<td>0.072</td>
</tr>
<tr>
<td>At least one</td>
<td>-0.142***</td>
<td>0.013</td>
</tr>
<tr>
<td>At least two</td>
<td>-0.158***</td>
<td>0.018</td>
</tr>
<tr>
<td>At least three</td>
<td>-0.113***</td>
<td>0.029</td>
</tr>
<tr>
<td>At least four</td>
<td>-0.236***</td>
<td>0.055</td>
</tr>
<tr>
<td>Sex (1=boy)</td>
<td>-0.057***</td>
<td>0.011</td>
</tr>
<tr>
<td>Age</td>
<td>-0.027***</td>
<td>0.006</td>
</tr>
</tbody>
</table>

*Note. * $p < .05$. ** $p < .01$. *** $p < .001$. For school well-being AIC = 13921.1. For self-perceived academic achievement AIC = 17232.6

**Combinations of negative social positions.** We examined to what extent average scores on well-being and academic achievement differed between students with specific combinations of social positions. Figure 2.1 shows that each possible combination of negative social positions was related negatively to students’ average school well-being. Victimization seems to
contribute most strongly to the negative effects of negative social positions on school well-being and friendlessness seems to contribute second most strongly. Figure 2.2 shows that the relation between all combinations and self-perceived academic achievement was weaker compared to school well-being. Only three combinations reached significance, the combination of victimization and friendlessness, the combination of victimization, friendlessness, and disliking, and the individual effect of victimization.

Thus, results in both Figure 2.1 and 2.2 indicate that especially victimization was negatively associated with students’ school well-being and self-perceived academic achievement, as this negative social position was part of all most negative combinations. Moreover, friendlessness was often involved. This is in line with our third hypothesis that especially victimization would be negatively associated with students’ outcomes, followed by friendlessness.

Finally, an inspection of the model fit indicates that the main effects models reported in Table 1 fit best, followed by the full combinations models of Figures 2.1 and 2.2 and the unreported analyses with “number of negative peer relations” as numerical covariate. The cumulative models reported in Table 2.2 show the worst fit.
Figure 2.1: School well-being means and 95% Confidence Intervals for each possible combination of negative social positions compared to the mean of students without any negative social position (vertical line).
V = Victimization, F = Friendlessness, R = Rejection, P = a lack of Popularity
AIC of full interaction model controlling for sex and age = 13762.2
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Figure 2.2: Self-perceived academic achievement means and 95% Confidence Intervals for each possible combination of negative social positions compared to the mean of students without any negative social position (vertical line). V = Victimization, F = Friendlessness, R = Rejection, P = a lack of Popularity

AIC of full interaction model controlling for sex and age = 17213.1

STUDY 2

In the second study, we examined the role of the four negative social positions (victimization, friendlessness, peer rejection, and a lack of popularity) on students’ teacher-reported academic engagement and academic achievement.

METHOD

PARTICIPANTS AND PROCEDURE

For this part of the study, we also used data from the KiVa project (see Study 1; Method). In September 2015, we approached the 64 intervention schools that have been using KiVa from the start of the intervention and asked teachers from grade 4 to 6 to participate in this extra project concerning students’ academic outcomes. Twenty-two teachers were willing to participate and filled out a questionnaire concerning each student’s academic engagement and achievement in October/November 2015, around the same time as the KiVa T8 wave for students. We asked teachers to use administrative information on students’ school results and their school report cards when filling out the questionnaire.
The final dataset contained data from both teachers and students. The mean classroom size of these fourth to sixth grade classrooms was 23.6 (SD = 5.1, Range = 10-32), with a total of 490 students. However, using an active consent procedure, 71 students (14.5%) did not fill out the questionnaire, as they did not receive parental consent, did not want to participate themselves or did not return the consent form. This left us with 419 participants (45.1% boys; Mage = 10.9, SD = 0.8, Range = 8.3-12.9). The participating schools come from several provinces in the Netherlands, from rural as well as (semi-)urban areas.

MEASURES

Negative social position measures

These were measured in the same way as in Study 1.

Academic measures

Academic engagement. Teachers filled out five items concerning academic engagement per student, that is, the student’s working attitudes, concentration, motivation for school, listening, and self-confidence. They responded on a five-point scale, ranging from -2 (insufficient) to 2 (good). Factor analysis showed a low factor loading for self-confidence (.54), but high factor loadings for the other four items (.83 -.92). As the content of self-confidence is less related to the other behavioral engagement items, we decided to calculate academic engagement scores based on the average of the other four items. The internal consistency of this scale was α = .93.

Academic achievement. Teachers indicated each student’s scores on five items regarding academic achievement. Scores were measured on a five-point scale, from -2 (insufficient) to 2 (good). Factor analysis indicated two different factors: one for spelling, reading comprehension and arithmetic and another one for the creative subjects (arts) and physical subjects (gymnastics). We decided to focus on students’ main courses, that is, spelling, reading comprehension and arithmetic scores, and calculated an average of these three items (with factor loadings between .76 and .84). The internal consistency of this scale was α = .81.

Control variables

We measured age and gender in the same way as in Study 1.
Chapter 2

ANALYTICAL APPROACH
We coded all negative social positions as dummy variables, similar to Study 1. We calculated descriptive statistics to assess the prevalence of all negative social positions and the correlations between these negative social positions and school well-being and self-perceived academic achievement. Subsequently, we used a mixed model approach in SPSS to analyze multilevel models with students nested in classrooms. First, we estimated a main effects model to examine the effect of each unique negative social position on the outcome measures (hypothesis 1). Second, we analyzed cumulative effects of at least one to four negative social positions on the outcome measures (hypothesis 2). Unfortunately, it was not meaningful to examine combinations of negative social positions, due to the small sample size and consequently the small number of students in each category. We controlled for students’ age in years and sex in all models.

RESULTS
Descriptive statistics. We calculated the number and percentage of students that had a specific negative social position (1) or not (0). Victimization (7.9%) was the least common, followed by friendlessness (8.6%), peer rejection (15.8%), and a lack of peer popularity (31.3%).

Academic achievement ($M = 0.79$, $SD = 0.94$) was on average higher when academic engagement ($M = 0.36$, $SD = 1.12$) was also higher ($r = .50$, $p < .001$). Moreover, the higher the total number of negative social positions (ranging from 0 to 4) the lower students’ academic achievement ($r = -.12$, $p < .001$), but not their academic engagement ($r = -.06$, $p = .219$).

Main effects of negative social positions. We estimated unique effects of all negative social positions on students’ academic engagement and academic achievement. Results in Table 2.3 show negative main effects of each negative social position on the academic outcomes. The effect of peer rejection on academic engagement only reached significance, the effects of friendlessness ($B = -.28$, $p = .081$) and a lack of popularity ($B = 0.17$, $p = .097$) on academic engagement and the effect of rejection on academic achievement ($B = -.29$, $p = .061$) were marginally significant. Thus, although the directions of the effects were in line with hypothesis 1, not all of these effects reached significance. There were significant variations between classrooms for academic engagement (16.2% of variance, $p = .018$), but this variation did not reach significance for academic achievement (1.8% of variance, $p = .447$). Additional analyses
indicated a negative significant effect of the total number of negative social positions on students’ academic engagement ($B = -0.11, p = .025, \text{AIC} = 1077.9$) and academic achievement ($B = -0.18, p = .004, \text{AIC} = 1275.2$). Thus, students with more negative social positions had a lower academic engagement and achievement.

**Table 2.3**

*Main Effects of Negative Social Positions on Students’ Academic Engagement and Academic Achievement (Study 2)*

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Academic engagement</th>
<th></th>
<th>Academic achievement</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$B$</td>
<td>$SE$</td>
<td>95% CI</td>
<td>$B$</td>
</tr>
<tr>
<td>Intercept</td>
<td>1.970</td>
<td>0.723</td>
<td>[-0.50 – 0.14]</td>
<td>2.762</td>
</tr>
<tr>
<td>Victimization</td>
<td>-0.179</td>
<td>0.163</td>
<td>[-0.55 – 0.08]</td>
<td>-0.215</td>
</tr>
<tr>
<td>Friendlessness</td>
<td>-0.281</td>
<td>0.161</td>
<td>[-0.60 – 0.04]</td>
<td>-0.009</td>
</tr>
<tr>
<td>Rejection</td>
<td>-0.317***</td>
<td>0.119</td>
<td>[-0.55 – 0.08]</td>
<td>-0.291</td>
</tr>
<tr>
<td>No popularity</td>
<td>-0.167</td>
<td>0.100</td>
<td>[-0.38 – 0.00]</td>
<td>-0.176</td>
</tr>
<tr>
<td>Sex (1=boy)</td>
<td>-0.534****</td>
<td>0.084</td>
<td>[-0.70 – 0.37]</td>
<td>-0.290***</td>
</tr>
<tr>
<td>Age</td>
<td>-0.081</td>
<td>0.066</td>
<td>[-0.21 – 0.05]</td>
<td>-0.197**</td>
</tr>
</tbody>
</table>

*Note. $^* p < .05. ^{**} p < .01. ^{***} p < .001. For academic engagement AIC = 1072.4. For academic achievement AIC = 1277.3*

**Cumulative effects of negative social positions.** We estimated the additive effect of each extra negative social position on students’ academic outcomes (i.e., at least one, at least two, at least three, or at least four negative social positions; see Table 2.4). Significant variations between classrooms were found for academic engagement (13.9% of variance due to classroom differences, $p = .019$), but not for academic achievement (2.2% of variance due to classroom differences, $p = .361$).

For academic engagement, no significant cumulative effects were found. With regard to academic achievement, we only found an additive negative significant effect for having one versus zero negative social position. Girls were more academically engaged than boys. Academic achievement was significantly higher for girls and younger students than for boys and older students, respectively.

These results are not in line with hypothesis 2 that each additive negative social position would have a significant additive negative effect on students’ academic engagement and academic achievement. Having versus not having a negative social position was negatively
related to academic achievement, but our results did not suggest that more negative social positions have an added negative effect.

Goodness of fit considerations for academic engagement give the same result as in Study 1, with the best fit for the main effects model (Table 2.3), followed by the unreported analyses with “number of negative peer relations” as numerical covariate. The cumulative model (Table 2.4) shows the worst fit. For academic achievement, the unreported analyses with “number of negative peer relations” as numerical covariate shows the best fit and the main effects model the worst fit.

Table 2.4

Cumulative Effects of at Least One, Two, Three, and Four Negative Social Positions on Students’ Academic Engagement and Academic Achievement (Study 2)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Academic engagement</th>
<th></th>
<th>Self-perceived achievement</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>SE</td>
<td>95% CI</td>
<td>B</td>
</tr>
<tr>
<td>Intercept</td>
<td>2.056</td>
<td>0.724</td>
<td></td>
<td>2.699</td>
</tr>
<tr>
<td>At least one</td>
<td>-0.054</td>
<td>0.098</td>
<td>[-0.25 – -0.14]</td>
<td>-0.365*</td>
</tr>
<tr>
<td>At least two</td>
<td>-0.188</td>
<td>0.164</td>
<td>[-0.51 – -0.13]</td>
<td>0.146</td>
</tr>
<tr>
<td>At least three</td>
<td>0.005</td>
<td>0.287</td>
<td>[-0.56 – -0.57]</td>
<td>-0.186</td>
</tr>
<tr>
<td>At least four</td>
<td>-0.421</td>
<td>0.437</td>
<td>[-1.28 – -0.44]</td>
<td>-0.471</td>
</tr>
<tr>
<td>Sex (1=boy)</td>
<td>-0.564**</td>
<td>0.086</td>
<td>[-0.73 – -0.40]</td>
<td>-0.310*</td>
</tr>
<tr>
<td>Age</td>
<td>-0.087</td>
<td>0.066</td>
<td>[-0.22 – -0.04]</td>
<td>-0.187*</td>
</tr>
</tbody>
</table>

*Note.*  
* p < .05.  
** p < .01.  
*** p < .001. For academic engagement AIC = 1078.6. For academic achievement AIC = 1271.7

GENERAL DISCUSSION

To understand students’ school well-being, academic engagement, and academic achievement, it is important to take their social embeddedness in the peer group into account (e.g., Espelage et al., 2013; Furrer & Skinner, 2003). Students need to feel connected to their peers (Baumeister & Leary, 1995; Ryan & Deci, 2000) in order to feel good, and a supportive peer context can motivate students and can enhance their academic development. Our studies examined the unique, combined, and cumulative effect of four negative social positions (victimization, friendlessness, peer rejection, and a lack of peer popularity) on students’ school well-being and self-perceived academic achievement (Study 1), and teacher-reported academic engagement and academic achievement (Study 2).
The unique, combined, and cumulative effects of negative social positions

Students often have a lower well-being and achievement when they are victimized (Nakamoto & Schwartz, 2010), friendless (Bissel-Havran & Loken, 2009), rejected (Buhs et al., 2006), or lack popularity (Östberg, 2003). Our results are in line with these findings and hypothesis 1, as we found negative effects of all negative social relations on school well-being and academic outcomes, with exception of the effect of a lack of popularity on students’ self-perceived academic achievement. However, not all effects are equally important and stronger effects were found for school well-being and academic engagement than for self-perceived and teacher-reported academic achievement.

Thus, social positions among peers seem to matter more for how students feel in class and whether they are motivated compared to their academic achievement. This could indicate that school well-being and engagement are first affected by students’ social positions, with later consequences for their academic achievement. In other words, students might achieve lower over time when they have more negative social positions, but it may first negatively influence how they feel. As a consequence of less school engagement, students’ academic achievement can drop as well, for instance by spending less time on homework (Doctoroff & Arnold, 2017; Lynch, Lerner, & Leventhal, 2013). Also, elementary school students generally attach much value to the opinions of teachers and parents, who try to stimulate academic achievement and underscore the importance of schooling (Hill & Tyson, 2009). Possibly, peer relatedness is more closely related to academic achievement in secondary school, when students spend even more time with peers and are more inclined to behave according to their norms (Witkow & Fuligni, 2010).

Furthermore, results regarding the cumulative effect of negative social positions (hypothesis 2) indicated mixed results. Each additive negative social position had a significantly additive negative effect on students’ school well-being. However, only one negative social position was significantly related to students’ self-perceived and teacher-perceived academic achievement and no significant effects were found regarding academic engagement. This is in line with the weaker effects for academic achievement compared to school well-being.

Moreover, in both Study 1 and Study 2, negative significant correlations were found between students’ total number of negative social positions and all academic outcome measures. We also compared the goodness of fit between the models with the total number
of negative social positions and the cumulative effects. Results show that in both studies, except for academic achievement, the effect of negative social positions is cumulative in a very simple sense (i.e., proportional to the number of negative social positions), and that it does not add to our understanding when we investigate steps in the cumulation separately (i.e., there are no non-linearity’s or thresholds). Hence, the more negative social positions students have, the more negative their outcomes.

Finally, in Study 1 we were able to examine whether specific combinations of negative social positions were related to lower scores on students’ school well-being and self-perceived academic achievement (hypothesis 3). We expected that feelings of safety (no victimization) would be most important for students, then feelings of affection (friendships) and acceptance in the peer group (no peer rejection), followed by status in the peer group (popularity). In line with our expectations, we found that especially victimization was often part of the combinations of negative social positions with lower well-being and achievement for students. Stronger effects were found for school well-being than for academic achievement. Results showed particularly lower means for students who were victimized and also when they had no friends. Peer relations within dyads, such as bullying and friendships, indeed turned out to be closer related to students’ well-being and self-perceived academic achievement than when students were not nominated by peers as being liked or popular. This is related to the idea that feelings of safety and affection are most important and that connections with other peers are basic needs for a positive academic and social development (Eisenberg, 2003; Espelage et al., 2013; Maslow, 1970; Ponzo, 2013).

**Strengths and Limitations**

Strengths of our study were that we not only focused on a specific or a few negative social positions, but on the effects of four main negative social positions in the classroom. We focused on cumulative effects and whether some combinations of negative social positions were more negatively related to students’ outcomes than others. This provides more insights into the role that peer relatedness can play in students’ well-being and academic functioning. Also, our study included self-, peer-, and teacher-reported measures and we examined various academic functioning measures, that is, students’ school well-being, self-perceived academic achievement, and teacher-reported academic engagement and achievement within a large sample of students (Study 1).
However, our study should also be viewed in light of several limitations. First, as this is a cross-sectional study, we were not able to draw conclusions on students’ development. It would be interesting for future studies to follow changes in both students’ social positions and their academic functioning over a longer period of time.

Second, there might be influence of shared method variance between victimization levels and school well-being and self-perceived academic achievement in Study 1, as these were all reported by students. A student who is generally negative might indicate high victimization levels as well as a low school well-being and self-perceived academic achievement. Nevertheless, all other negative social positions were assessed by peer nominations.

Third, we focused on a lack of popularity, that is, students who did not receive popularity nominations. However, the absence of popularity does not necessarily mean that students are unpopular. Thus, future studies might also include a direct unpopularity measure. Also, future studies can assess the quality of students’ friendships to examine whether friendships fulfill students’ social needs. Further, this would gain insight in the type of friendship between two students and whether friends motivate or demotivate students for school. When friends demotivate students for school work, a positive social position (having friends) may imply high school well-being but low academic achievement. Moreover, future studies can also take into account other contextual factors, such as teachers and parents who can also play a role in enhancing students’ well-being and academic engagement and achievement (Flook, Repetti, & Ullman, 2005), and in this way function as a buffer.

Finally, a limitation that should be taken into account is that students in our samples were part of the KiVa study. KiVa is an intervention program that focuses on a positive peer environment in the classroom by stressing all students’ roles and responsibilities in achieving this. Especially in Study 2, students had already worked with KiVa for several years, which might explain lower prevalence rates for victimization and friendlessness. Nevertheless, we found negative effects of negative peer relations on students’ outcomes in all KiVa classrooms, so even worse outcomes can be expected in classrooms in which less attention is paid to creating a positive group atmosphere. Thus, in our study we probably underestimate the true impact of negative social positions on students’ academic functioning.
Conclusions and implications

Our findings indicate that students’ embeddedness in the peer group and experiences at school contribute to their school well-being, academic engagement, and academic achievement. Especially the number of negative social positions seems to have negative consequences for students’ academic functioning. This is particularly true for students’ school well-being and academic engagement. These results can raise even more concerns about negative social positions as they seem to intensify each other’s effects. Moreover, results suggest that especially being victimized and friendless can be detrimental.

Teachers and parents should recognize and be aware of the role that students’ social positions among peers play in their academic functioning. By fostering a favorable peer climate with positive peer relations, for instance through preventing bullying and promoting friendships in the classroom, students’ academic well-being, engagement, and in the end achievement can be enhanced.