CHILD DEVELOPMENT

Child Development, July/August 2018, Volume 89, Number 4, Pages 1157–1176

Predicting Adolescents' Bullying Participation from Developmental Trajectories of Social Status and Behavior

J. Loes Pouwels
Radboud University

Christina Salmivalli and Silja Saarento
University of Turku

Yvonne H. M. van den Berg, Tessa A. M. Lansu, and Antonius H. N. Cillessen
Radboud University

The aim of this study was to determine how trajectory clusters of social status (social preference and perceived popularity) and behavior (direct aggression and prosocial behavior) from age 9 to age 14 predicted adolescents' bullying participant roles at age 16 and 17 (n = 266). Clusters were identified with multivariate growth mixture modeling (GMM). The findings showed that participants' developmental trajectories of social status and social behavior across childhood and early adolescence predicted their bullying participant role involvement in adolescence. Practical implications and suggestions for further research are discussed.

Bullying is a group process in which children have different participant roles (Hymel, McClure, Miller, Shumka, & Trach, 2015; Salmivalli, 2010). Previous studies on the participant roles have three limitations. First, most studies have focused on middle childhood or early adolescence and few have examined the participant roles in adolescence. Second, although much is known about the concurrent associations of the participant roles of bullying with social status and behavior, much less is known about the developmental precursors of the participant roles. Longitudinal studies have provided some valuable insights into the developmental predictors of the bully and victim roles (e.g., Caravita, Di Blasio, & Salmivalli, 2009; Cook, Williams, Guerra, Kim, & Sadek, 2010; Sentse, Kretschmer, & Salmivalli, 2015), but little is known about the predictors of the other roles. Third, longitudinal predictions of the bully and victim roles were sometimes difficult to integrate because they used a variable-centered approach such as longitudinal panel models, that showed significant effects at some ages but not at others (see e.g., Sentse et al., 2015). Longitudinal panel models cannot generalize to more than two time points. Combining a variable-centered with a person-centered approach provides a more integrated perspective on the childhood trajectories leading up to each role. For example, latent growth models examine growth in developmental trajectories and capture individual differences over time. In contrast to longitudinal panel models that focus on changes in relative rank ordering, growth models assume that adolescents' involvement in bullying may be predicted from an accumulation of earlier social experiences by taking mean changes in social status and social behavior at both the individual and group levels into account. Instead of focusing on levels of social status and behavior at specific ages the goal of this article was to examine the trajectories that connect childhood experiences to adolescent participant role involvement. We examined what trajectories of social status and behavior across middle childhood and early adolescence predicted the bullying

The data collection at Wave 5 was supported by grant 400-05-060 from the Netherlands Organisation for Scientific Research awarded to J. Marianne Riksen-Walraven. The data collection at Wave 9 was supported by Research Talent Grant 406-12-110 from the Netherlands Organisation for Scientific Research awarded to J. Loes Pouwels. The authors are grateful to the children, parents, teachers, and school administrators who made this research possible. We also thank Ellen Peters who conducted the Wave 5 data collection and the research assistants who assisted with the data collection.

Correspondence regarding this article may be sent to J. Loes Pouwels, Behavioural Science Institute, Radboud University, Montessorilaan 3, 6525 HR Nijmegen, The Netherlands. E-mail may be sent to j.pouwels@psych.ru.nl.

0009-3920/2018/8904-0009
DOI: 10.1111/cdev.12794

participant roles in adolescence. We used a person-centered approach with data from an ongoing longitudinal study across 7 years. We first identified clusters of youth based on trajectories of social status and clusters based on trajectories of social behavior across middle childhood and early adolescence (Grades 3–8). We then examined how these longitudinal clusters were associated with the participant roles of bullying in adolescence (Grades 10 and 11).

The Bullying Participant Roles

Salmivalli, Lagerspetz, Björkqvist, Österman, and Kaukiainen (1996) proposed six participant roles of bullying: *bullies* who start bullying; *assistants* who join the bullies by helping them to attack the victims; *reinforcers* who encourage bullying by providing an audience and inciting the bully; *defenders* who comfort the victim and try to intervene; *outsiders* who stay away from bullying situations; and *victims* who are relatively powerless children who are repeatedly victimized over a prolonged period of time (Solberg & Olweus, 2003). Victims may reinforce bullying by responding with withdrawn behavior or reactive aggression to being the target of aggressive acts of their peers (Schwartz, Dodge, & Coie, 1993). As all six bullying roles contribute to the bullying process, examining their developmental predictors is an important research goal. In this study, this general goal was translated into two specific goals: predictions of adolescent participant roles from childhood trajectories of social status and predictions from childhood trajectories of social behavior.

Predicting Adolescent Participant Roles from Longitudinal Clusters of Social Status

To predict adolescents' participant roles from developmental trajectories of social status, we first identified longitudinal clusters of status (Goal 1A). Social status can be operationalized as social preference and perceived popularity (Parkhurst & Hopmeyer, 1998). Social preference indicates how well liked children are among their classmates. It is derived from subtracting the standardized number of nominations received for least liked from most liked (Coie, Dodge, & Coppotelli, 1982; Newcomb, Bukowski, & Pattee, 1993). Perceived popularity indicates children's impact, dominance, and social influence in the classroom and is derived from direct nominations of popularity (LaFontana & Cillessen, 2010; Parkhurst & Hopmeyer, 1998). Brendgen, Vitaro, Bukowski, Doyle, and Markiewicz (2001) examined longitudinal clusters of social preference in elementary school and identified a stable liked cluster, a stable average cluster, and a disliked cluster whose preference decreased over time.

Previous studies have shown that social preference and perceived popularity are interrelated over time (Cillessen & Mayeux, 2004). Preference and popularity become more divergent over time from childhood to adolescence, as evidenced by a decreasing positive correlation between them from middle childhood to early adolescence (e.g., Cillessen & Mayeux, 2004). In addition, a previous cluster analysis of status groups identified one cluster of popular and liked children until age 14. After age 14, this cluster split into two clusters: a liked cluster and a popular cluster. Liked adolescents scored high on social preference and average on perceived popularity, whereas popular adolescents scored average on social preference and high on perceived popularity (van den Berg, Burk, & Cillessen, 2015). Therefore, we identified longitudinal clusters based on joint developmental trajectories of perceived popularity and social preference.

Our hypothesis was that we would identify an *unpopular/disliked* cluster, an *average* cluster, a *liked* cluster, and a *popular* cluster (Brendgen et al., 2001; van den Berg et al., 2015). We hypothesized that the *unpopular/disliked* cluster would have low levels of preference and popularity that would further decrease over time (Brendgen et al., 2001). Our hypothesis was that the *average* cluster would have stable average levels of preference and popularity. We hypothesized that the *liked* and *popular* clusters would have above average levels of preference and popularity in middle childhood, but that the liked cluster would increase in preference and decrease in popularity over time, whereas the *popular* cluster would increase in popularity but decrease in preference. Gender was included as a covariate to control for gender differences in initial levels and developmental trajectories of status, as girls are more likely to be classified as popular-liked or liked than boys are (van den Berg et al., 2015).

After identifying these social status trajectories, our next goal was to predict adolescents' participant role involvement from them (Goal 1B). Previous research on the participant roles of bullying in adolescence has shown that the roles have different social status profiles (Pouwels, Lansu, & Cillessen, 2016). Adolescent bullies (Caravita et al., 2009; Dijkstra, Lindenberg, & Veenstra, 2008) and assistants and reinforcers (followers; Pouwels, Lansu et al.,

2016) are highly popular and disliked by some peers, whereas they are liked by others. Our hypothesis was therefore that adolescent bullies/followers would be characterized by a popular trajectory cluster in childhood. In adolescence, defenders are liked, but average in popularity (Caravita et al., 2009; Pouwels, Lansu et al., 2016). Therefore, our hypothesis was that adolescent defenders would be characterized by a liked trajectory in childhood. Outsiders are unpopular but neither liked nor disliked (Pouwels, Lansu et al., 2016). We therefore had the hypothesis that adolescent outsiders would be characterized by average and unpopular disliked trajectories in childhood. Adolescent victims are disliked and unpopular (Pouwels, Lansu et al., 2016), so our hypothesis was that adolescent victims would be characterized by a trajectory of being unpopular and disliked in childhood.

Predicting Adolescent Participant Roles from Longitudinal Clusters of Behavior

Our second goal was to predict adolescents' participant roles from developmental trajectories of social behavior. To do so, we first identified clusters representing the heterogeneity of children's joint development of direct aggression and prosocial behavior (Goal 2A). Multiple studies have examined children's trajectories of direct aggression. Most children show a stable low or high/moderate decreasing aggression trajectory (Kokko, Tremblay, Lacourse, Nagin, & Vitaro, 2006; Nagin & Tremblay, 1999). A small group follows a stable high aggression trajectory (Brame, Nagin, & Tremblay, 2001; Nagin & Tremblay, 1999; Nantel-Vivier, Pihl, Côté, & Tremblay, 2014), although this group did not emerge in the cluster analysis by Kokko et al. (2006).

In general, aggression is negatively associated with prosocial behavior (Card, Stucky, Sawalani, & Little, 2008; Kokko et al., 2006; Nantel-Vivier et al., 2014). Nantel-Vivier et al. (2014) found separate trajectories for direct aggression and prosocial behavior and showed that children with a stable high trajectory of prosocial behavior are likely to have a low or average aggression trajectory. In contrast, children with a stable low trajectory of prosocial behavior are likely to follow a high direct aggression trajectory. These findings suggest clusters of children with qualitatively different developmental trajectories of aggression and prosocial behavior.

Aggression is not always negatively associated with prosocial behavior. Some previous studies identified a small group of students who were both aggressive and prosocial in childhood (Kokko et al., 2006; Nantel-Vivier et al., 2014; Veenstra et al., 2008). In contrast, there is a larger group displaying both behaviors in adolescence (Hawley, 2003; Lease, Musgrove, & Axelrod, 2002; Olthof, Goossens, Vermande, Aleva, & van der Meulen, 2011).

Based on previous studies our hypothesis was that we would find a *prosocial* cluster, an *aggressive* cluster, a *decreasing aggression* cluster, and a *prosocial/increasing aggression* cluster (Brame et al., 2001; Kokko et al., 2006; Nagin & Tremblay, 1999). Our hypothesis was that the *prosocial* trajectory cluster would show stable low levels of direct aggression and high levels of prosocial behavior. In contrast, the *aggressive* trajectory cluster would show stable high levels of direct aggression and decreasing levels of prosocial behavior. Our hypothesis was that the *decreasing aggression* trajectory cluster would start with high levels of direct aggression and low levels of prosocial behavior and we expected that children in this trajectory would decrease in aggression over time. We hypothesized that there would be a small *prosocial/increasing aggression* trajectory cluster that would start with average levels of direct aggression in middle childhood which would increase over time, accompanied by high levels of prosocial behavior. Gender was again taken into account as a covariate because girls are more prosocial and less directly aggressive than boys (e.g., Eagly & Wood, 1991).

Finally, we predicted adolescents' participant role involvement from their middle childhood to early adolescence behavior trajectory clusters (Goal 2B). Adolescent bullies/followers display relatively high levels of aggression and low levels of prosocial behavior (Cook et al., 2010; Pouwels, Lansu et al., 2016). Therefore, our hypothesis was that they would be characterized by a childhood aggressive trajectory. Adolescent defenders display low levels of aggression and are the most prosocial members of the classroom. Outsiders are not aggressive and show moderate levels of prosocial behavior (Pouwels, Lansu et al., 2016). Therefore, our hypothesis was that adolescent defenders and outsiders would be characterized by a prosocial trajectory. The association between victimization and aggression is complex. Some victims are relatively aggressive and often display, similar to bullies, low levels of prosocial behavior (Cook et al., 2010; Pouwels, Lansu et al., 2016). Other victims tend to be submissive and may withdraw themselves (Perren & Alsaker, 2006; Toblin, Schwartz, Hopmeyer Gorman, & Abou-ezzeddine, 2005). We therefore explored whether the victim role could be predicted from an aggressive trajectory.

Method

This study was part of the Nijmegen Longitudinal Study (NLS); an ongoing study of child development in the Netherlands (van Bakel & Riksen-Walraven, 2002). The original sample consisted of a core of 129 children who have been followed since they were 15 months old and are now adolescents. Since school age, their classmates also participated in the project, and those classmates who participated multiple waves have been incorporated in the analyses as well. This study had two parts. Part 1 was the identification of longitudinal clusters. Part 2 was the prediction of the participant roles from these clusters.

Participants and Procedure in Part 1

Part 1 regarded the identification of longitudinal clusters of children's trajectories of social status and behavior. The data for Part 1 came from Waves 5, 6, and 7 of the NLS, that we refer to here as T1, T2, and T3, respectively. In each wave, the longitudinal core and their classmates were invited to participate in a classroom data collection session at school (45–60 min). Schools were asked to give permission for the project. Active consent was given by the school. The parents of all children in these classrooms (longitudinal and classmates) received a letter carefully explaining the study and asking permission for a sociometric and self-report data collection session at school. Five teachers and 16 parents did not give consent to participate in the study. Data were collected among 1,960 students in 83 classrooms from 51 primary schools at T1 (2006–2007), 2,114 students in 86 classrooms from 30 primary schools and 32 secondary schools at T2 (2009–2010), and 2,061 students in 81 classrooms from 4 primary schools and 31 secondary schools at T3 (2010–2011).

For this study, we selected the data of the participants from the core of the NLS as well as classmates who participated in the classroom session in at least two consecutive or nonconsecutive waves from T1 to T3. The advantage of growth curve modeling is that children who were not present at all three time points could still be taken into account in the analyses of the growth trajectories. However, there was a relatively large number of children who were present at just one of three waves, which may lead to estimation problems of the slopes of the different clusters. Therefore, we only included those children who were present at least two of three waves so that we had some information on how their status and behavior changed over time (T1–T3). Special educational classrooms were not included ($n = 15$). Data from three additional classrooms were not included because a high percentage of students were absent on the day of data collection at T2 ($\geq 45\%$).

Two main longitudinal cohorts that were large enough for modeling the status and behavior trajectories emerged. Longitudinal Cohort 1 consisted of a group of children who were in Grade 3 at T1, Grade 6 at T2, and Grade 7 at T3. Longitudinal Cohort 2 consisted of a group of children who were in Grade 4 at T1, Grade 7 at T2, and Grade 8 at T3. Together, these two cohorts yielded a sample of 1,228 children. The identification of social status clusters was based on this sample (Cohort 1, $n = 635$, 47% girls, M_{age} T1 = 9.05 years, $SD = .48$; Cohort 2, $n = 593$, 55% girls, M_{age} T1 = 9.78 years, $SD = .49$). At the request of the school, two classrooms did not complete the aggressive behavior assessment at T1. Therefore, the identification of social behavior clusters was based on a sample of 1,165 students (Cohort 1, $n = 620$; Cohort 2, $n = 545$). A flowchart of included participants is presented in Figure 1.

At each time point. a logistic regression analysis was run to examine the effects of social preference, perceived popularity, aggression, and prosocial behavior on the likelihood that participants were included in one of the two main cohorts or not. The model was statistically significant at T1, $\chi^2(4) = 10.13$, $p = .04$, Nagelkerke $R^2 = .01$. Higher levels of prosocial behavior at T1, were associated with an increased likelihood of being included in one of the two main cohorts, $B = .15$, $SE = .06$, $p = .02$. At T2 and T3, no significant differences were found between children in or not in one of the two main cohorts.

Participants and Procedure in Part 2

Part 2 regarded associating the longitudinal clusters identified in Part 1 (across T1–T3) with the participant roles of bullying determined at T4 (NLS Wave 9). At T4, the longitudinal core and their classmates again were invited to participate in a classroom data-collection session at school (2013–2014). One teacher, seven parents, and eight children did not give consent to participate at T4. Therefore, data were collected among 1,911 students in 74 classrooms from 28 schools. Four special education classrooms and one classroom in which more than 45% of the students were absent on the day of data collection were excluded from the analyses. Of the 1,911 children who participated at T4,

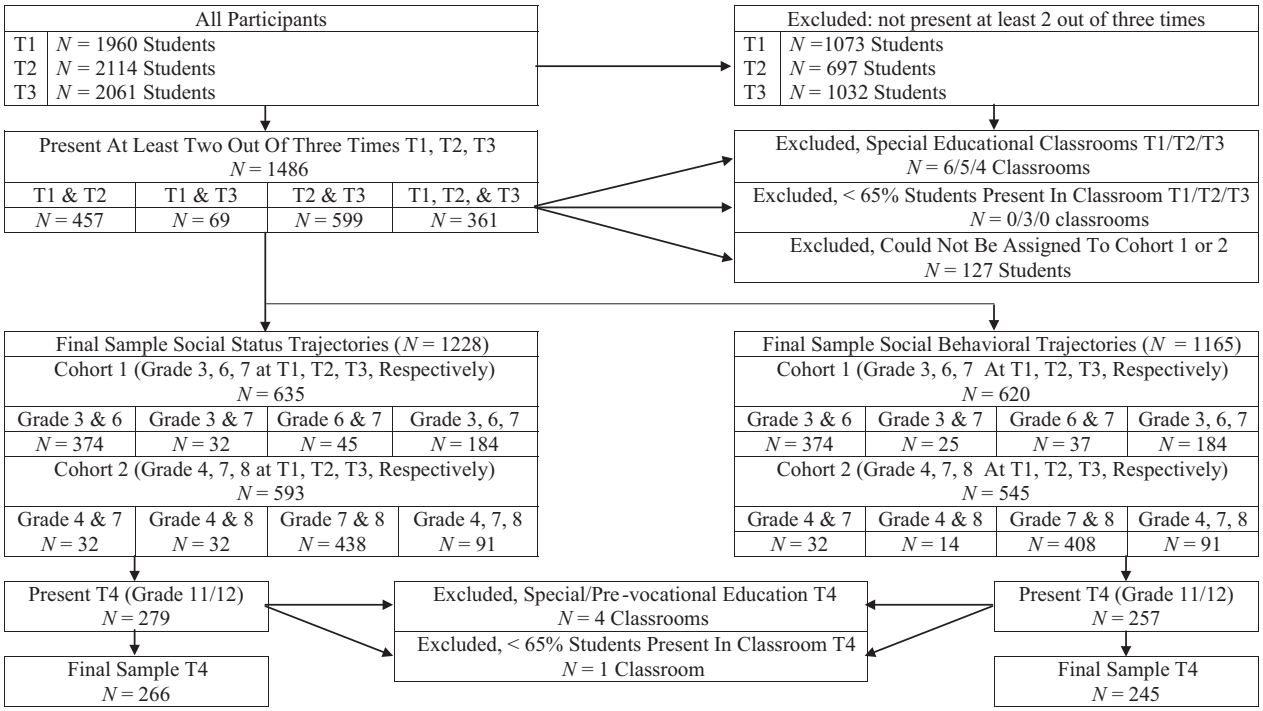

Figure 1. Flowchart of included participants.

266 participated also in least two of the three earlier waves (T1–T3). In the Netherlands, classroom composition is highly stable the first grades of secondary school, but changes substantially after that when students choose different tracks. This explains why a relatively large number of T4 classmates had not been part of T1–T3.

The prediction of the T4 participant roles from the T1–T3 status trajectories was conducted on these 266 students (55% girls, M_{age} T4 = 16.26 years, SD = .54) of which 18% were in prevocational track education (VMBO), 24% in intermediate general secondary education (HAVO), and 58% in college preparatory education (VWO). The higher educational tracks were overrepresented in this sample (Onderwijs in Cijfers, 2014). The sample was 83.8% Caucasian. Non-Caucasian adolescents were Moroccan (.8%), Turkish (1.2%), Surinamese (1.2%), Antillean/Aruban (1.2%), of other ethnic origin within Europe (4.2%), of other ethnic origin outside Europe (7.3%), or of mixed ethnic origin (.5%).

The prediction of the adolescent participant roles from the earlier behavior trajectories was conducted with 245 of the 266 students because of the missing aggression data at T1. Logistic regression analyses were conducted to examine whether the Part 2 sample was a random selection of the Part 1 sample. Neither social status scores nor social behavior scores at T1–T3 were significantly associated with whether children were present at T4 or not, $\chi^2(6) = 3.54$, $p = .74$; $\chi^2(6) = 10.27$, $p = .11$. This suggests that the adolescents who participated at T4 (Part 2) were a representative subsample of the T1–T3 sample (Part 1).

Measures

At T1, participants completed the measures on paper. At T2–T4, data were collected by means of computerized assessments. The research assistants provided each child with a minilaptop computer that they used to fill in the questionnaire in their own classroom. Tables were separated, and partitioning screens were placed on each table top so that children could not see others' laptop screens. For more details and the comparison of the paper-and-pencil and computerized sociometric assessment methods see van den Berg and Cillessen (2012). Children could name an unlimited number of classmates, both same- and other-sex. Research assistants were present to monitor the data collection and answer questions.

Social Status

Four nomination questions asked children who they liked ("Who do you like the most?"), disliked

("Who do you like the least?"), who were popular ("Who are most popular?"), and unpopular ("Who are least popular?"). For these questions, students were asked to nominate at least one classmate. For each question, the number of nominations received was counted and standardized to *z*-scores within classrooms. For social preference, we subtracted the standardized number of nominations received for least liked from most liked, and standardized this score again within classrooms (Coie et al., 1982). For perceived popularity, we subtracted the standardized number of nominations received for least popular from most popular, and standardized this score again within classrooms (Parkhurst & Hopmeyer, 1998). Scores below −3 and above 3 were set to −3 and 3, respectively (Tabachnick & Fidell, 2007).

Social Behavior

Prosocial behavior was assessed with peer nominations for cooperation ("Who cooperates well with others?") and helping ("Who are often willing to help others?"). Aggression was assessed with "Who argues a lot with others?" (T1, T2) and "Who fights with others?" (T2, T3). Children were asked to nominate at least one classmate for each item. For each question, nominations received were counted and standardized within classrooms. We averaged the two prosocial scores at each wave (*r*s = .63–.75) and the two aggression scores at T2 (*r* = .86). We again standardized the average scores within classrooms. Scores below −3 and above 3 were again set to −3 and 3, respectively.

Participant Roles of Bullying and Victimization

The participant roles of bullying were assessed with the shortened Participant Role Questionnaire (PRQ; Kärnä et al., 2013; Pouwels, Lansu et al., 2016; Salmivalli & Voeten, 2004). Previous research has shown that this is a reliable and valid measure of the participant roles among Dutch adolescents (Pouwels, Lansu et al., 2016). The PRQ has three items for each role: bully (e.g., "Who starts bullying?"), assistant (e.g., "Who joins in the bullying when someone else started it?"), reinforcer (e.g., "Who comes to watch when someone is bullied?"), defender (e.g., "Who tells the bullies to stop?"), and outsider (e.g., "Who does not take sides with anyone?"). Victimization was assessed with four additional peer nominations (e.g., "Who is victimized?"; Pouwels, Lansu et al., 2016). For all these items, students were not required to nominate anyone.

The number of nominations received for each question was standardized within classrooms. Average scale scores for each role were computed which were again standardized within classrooms. Standardized scores below −3 and above 3 were set to −3 and 3, respectively. Cronbach's α was .92 for the standardized items of the bully scale, .80 for the assistant scale, .72 for the reinforcer scale, .85 for the defender scale, .75 for the outsider scale, and .78 for the victim scale. Table 1 presents the correlations between the scales.

Children were assigned to the participant roles of bullying based on the criteria of Salmivalli et al. (1996). They were assigned to a role when they scored above the classroom mean on the corresponding scale ($Z > 0$). If they met the criterion for more than one role, they were assigned to the role for which they had the highest scale score, to ensure that they were assigned to just one role. In addition, in line with previous research (Salmivalli et al., 1996) the difference between the scores for the highest and second highest role had to be at least .10. If this difference was less than .10, no role was assigned. We combined bullies, assistants, and reinforcers into one bully/follower group to facilitate the analyses because separating bullies from assistants and reinforcers resulted in group sizes that were too small. Cronbach's α was .90 for the scale scores of these three roles. Of the 266 adolescents, 96 (36%) were classified as bully/follower, 52

Table 1
Correlations Between Participant Role Scales

	Bullying	Assisting	Reinforcing	Defending	Outsider Behavior
Assisting	.56***				
Reinforcing	.62***	.68***			
Defending	−.15*	−.14*	−.18**		
Outsider Behavior	−.43***	−.50***	−.62***	.09	
Victimization	−.11	−.17**	−.18**	−.04	.24***

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

(20%) as defender, 65 (24%) as outsider, 26 (10%) as victim, and 28 (11%) could not be classified into any role.

Results

Correlations

First, we examined stability correlations. Social status and behavior were moderately to highly stable over time intervals from 1 to 4 years, with correlations varying from .41 to .84 for perceived popularity, .34 to .64 for social preference, .15 to .72 for direct aggression, and .25 to .69 for prosocial behavior. Second, as the estimation of the trajectories used data from different grades, we examined concurrent correlations of social status and behavior by grade. The concurrent correlations between perceived popularity and social preference were .57, .62, .59, .51, and .43, and the concurrent correlations between direct aggression and prosocial behavior were −.25, −.28, −.39, −.42, and −.38, for Grades 3, 4, 6, 7, and 8, respectively. These correlations suggest that the positive concurrent association between perceived popularity and social preference slightly decreased after the transition from primary to secondary school, whereas the negative concurrent association between aggression and prosocial behavior increased at the end of primary school. Table A1 presents the correlations between all study variables.

Part 1: Identifying Developmental Trajectories of Social Status and Behavior

The developmental trajectories were estimated in *M*plus version 7.3, which uses the Expectation Maximization algorithm to obtain maximum likelihood estimates (Muthén & Muthén, 1998-2012). To estimate the developmental patterns of social status and behavior from middle childhood to early adolescence, we used the data of both cohorts in a single cohort-sequential design. This resulted in a quasi-longitudinal study of children's social status and social behavior trajectories from Grade 3 to Grade 8.

Before proceeding, we checked whether we were allowed to analyze the data according to a cohort-sequential approach. We compared a multivariate perceived popularity and social preference latent growth curve model (LGM) in which the intercepts and slopes were constrained to be equal across cohorts with an unconstrained LGM in which the estimates were allowed to vary across cohorts. The slope loadings were fixed at 0, .3, and .4, for Cohort 1, and at .1, .4, and .5, for Cohort 2. The same procedure was used for the social behavior model. The unconstrained LGM model did not fit significantly better than the constrained LGM model for social status, $\Delta\chi^2(4) = 2.89$, $p = .58$, and for behavior, $\Delta\chi^2(4) = 6.22$, $p = .18$, indicating that it was valid to analyze the data with a cohort-sequential approach.

Next, we examined the intercept and slope variances of the restricted multivariate social status and behavior LGMs. Significant intercept and slope variances were found for popularity (Di = .81; Ds = 3.21) and preference (Di = .87; Ds = 3.52) in the status model, and for aggression (Di = .78; Ds = 3.63) and the intercept of prosocial behavior (Di = .58) in the behavior model, all ps < .001. The only exception was the slope variance of prosocial behavior (Ds = 2.40, $p = .13$) in the behavior model. Together, this indicates that there was substantial variance around the means and slopes, suggesting that children followed different trajectories of social status and behavior that may form identifiable clusters.

Therefore, we began our main analyses by determining the number and characteristics of clusters of joint developmental trajectories of social preference and perceived popularity and of joint trajectories of direct aggression and prosocial behavior. A cohort-sequential multivariate latent class growth mixture modeling (GMM) approach was used. For all models, we estimated two- to five-class solutions. At this moment, there are no clear criteria in the literature for the optimal number of classes. The bootstrap likelihood ratio test and Lo-Mendell-Rubin tests of model fit are not available for a cohort-sequential approach within the growth mixture model framework. Therefore, we used a combination of theoretical justification, parsimony, and fit indices to decide on the number of latent classes. We used the Bayesian Information Criterion (BIC; Schwarz, 1978), and plots of log-likelihood values as indicators of model fit as recommended by Nylund, Asparouhov, and Muthén (2007). We also included entropy and class sizes in our decision on the number of latent classes (Jung & Wickrama, 2008).

Trajectories of Social Status

Multivariate GMM was used to identify clusters in the joint development of perceived popularity and social preference. First, we estimated unconditional models with two to five classes (Goal 1A, see Table 2). The three-class solution had the lowest BIC. We also plotted the log-likelihood values by the

number of classes. Inspection of the plot showed that the increase in log-likelihood flattened out when moving from three to four classes, suggesting that the increase in log-likelihood was not significant (Nylund et al., 2007). The three-class solution also had the highest entropy value. Therefore, we decided that three-class solution best fitted our data.

Second, we tested a conditional model in which gender was included. We tested the effect of gender on the intercepts and slopes of each cluster. The conditional model (14,473.17) had a higher BIC value than the unconditional model (14,457.96), which suggests that the model fit did not improve by adding gender to the model.

Third, it could be that the intercept and slope variances and intercept-slope covariances are different between classes. We estimated them across classes in Step 1. In Step 3, we examined whether model fit could be improved by freeing and allowing them to vary across trajectory clusters. Models in which these estimates were predicted within each cluster did not have a substantially better fit than models in which they were predicted across clusters. Therefore, the final unconditional model, in which the variances and covariances were estimated across clusters, resulted in a log-likelihood H_0 value of −7,108.07, BIC value of 14,457.96, and an entropy estimate of .89.

Figure 2 shows the estimated trajectories of perceived popularity and social preference for each of the three clusters and the number of boys and girls in each cluster. Trajectory Cluster 1 was labeled "*stable average/liked*" and included children who had a stable average trajectory of popularity, but who scored above average on social preference in middle childhood ($b = 0.24$, $p < .001$) which did not

Table 2
Model Fit Indices of the Cohort-Sequential Multivariate Growth Mixture Models

	Social Status (n = 1,228)				Social behavior (n = 1,165)			
Class	k[a]	LL[b]	BIC[c]	Entropy	k	LL	BIC	Entropy
Two	29	−7,154.90	14,516.08	.91	29	−6,492.56	13,189.86	.98
Three	34	−7,100.04	14,441.92	.89	30	−6,242.72	12,697.26	.98
Four	39	−7,083.65	14,444.72	.89	35	−6,153.21	12,553.54	.97
Five	44	−7,065.99	14,444.97	.84				

Note. BIC = Bayesian Information Criterion. [a]k parameters. [b]Log-likelihood. [c]Bayesian Information Criteria.

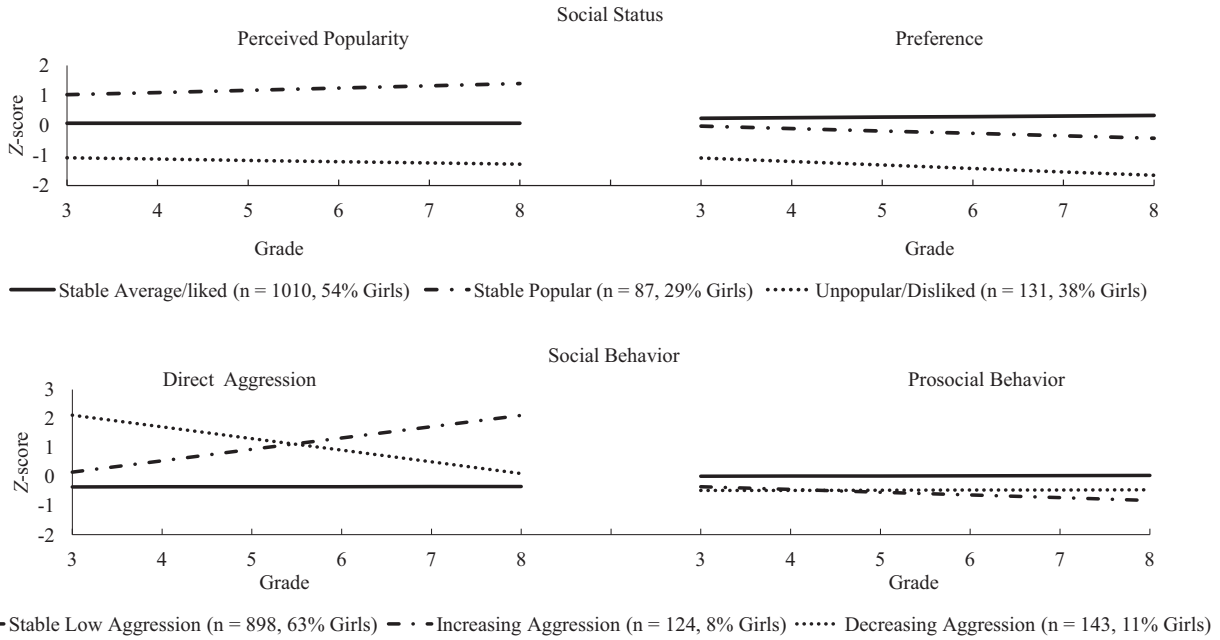

Figure 2. Estimated trajectories for the three-class multivariate social status and social behavior growth mixture models.

significantly increase over time ($b = 0.20$, $p = .10$). Trajectory Cluster 2 was labeled "*stable popular*" and included children who scored above average on popularity ($b = 1.03$, $p < .001$) that did not increase significantly over time ($b = 0.74$, $p = .12$). These children scored average on social preference that did not decrease significantly over time ($b = -0.81$, $p = .11$). Trajectory Cluster 3 was labeled "*unpopular/disliked*" and included children who scored below average on popularity and social preference in middle childhood ($b = -1.07$, $p < .001$; $b = -1.08$, $p < .001$) and their preference decreased over time ($b = -1.15$, $p = .05$).

Trajectories of Behavior

Another set of multivariate GMM analyses was conducted to identify clusters in the joint development of direct aggression and prosocial behavior (Goal 2A, see Table 2). We found a small nonsignificant negative intercept variance for aggression for the three- and four-class solutions, which we fixed to zero. The five-class solution did not converge. First, we examined which class solution had the best fit. The four-class solution had the lowest BIC value, indicating that this may be the best solution. However, we also plotted the log-likelihood values by the number of classes. Inspection of the plot showed that the increase in log-likelihood flattened out when moving from three to four classes. The three-class solution also had a higher entropy than the four-class solution indicating greater clarity in classification. The extraclass in the four-class solution was just a minor variation on a single increasing aggression theme. In the four class solution, there were two classes with increasing levels of direct aggression; one class with increasing aggression and stable low levels of prosocial behavior and another class with increasing aggression and low decreasing levels of prosocial behavior. We selected the more parsimonious three-class solution in which these two classes were combined.

Second, we estimated the conditional model in which gender was included. The conditional model (12,459.31) had a lower BIC than the unconditional model (12,697.26), indicating that the model better fitted the data when gender was included as a covariate.

Third, we also examined whether model fit could be improved by freeing the intercept and slope variances and covariances within classes as compared to fixing them to be equal across classes. The conditional model in which the intercept variances were allowed to vary within classes and the slope variances and intercept-slope variances were fixed across classes led to the best solution. The final conditional GMM model resulted in a log likelihood H_0 value of -5,818.25, BIC value of 11,968.34, and an entropy estimate of .94.

Figure 2 shows the estimated trajectories of direct aggression and prosocial behavior for each cluster and the number of boys and girls in each cluster. Trajectory Cluster 1 was labeled "*stable low aggression*" and included children with a stable below average trajectory of aggression ($b = -0.35$, $p < .001$) and a stable average trajectory of prosocial behavior. Trajectory Cluster 2 was labeled "*increasing aggression*" and included children who scored average on aggression in Grade 3, and who gradually increased in aggression over time ($b = 3.91$, $p < .001$). These children scored below average on prosocial behavior ($b = -0.35$, $p < .001$) and decreased in their level of prosocial behavior over time ($b = -0.95$, $p < .001$). Trajectory Cluster 3 was labeled "*decreasing aggression*" and included children who scored above average on aggression in Grade 3 ($b = 2.11$, $p < .001$) and who decreased in their level of aggression over time ($b = -4.01$, $p < .001$). These children had a stable below average ($b = -0.48$, $p < .005$) trajectory of prosocial behavior. The *increasing aggression* and *decreasing aggression* trajectory clusters scored below average on prosocial behavior as indicated by a significant negative intercept of prosocial behavior. It should be noted that their level of prosocial behavior was only a bit lower than the level of the *stable low aggression* trajectory cluster which scored average on prosocial behavior (see Figure 2). In contrast to the social status model, the final behavior model was a conditional model with gender included as a covariate. Table B1 shows the effects of gender on the intercept and slope of aggression and prosocial behavior in each cluster.

Part 2: Predicting the Bullying Participant Roles from Trajectory Clusters

Bullying Roles and Trajectories of Social Status

We predicted adolescents' participant role involvement from the social status trajectory clusters (Goal 1B, see Table 3). Fisher's Z exact test showed that there was significant overlap between the bullying roles and social status trajectory clusters, $p < .001$. The adjusted standardized residuals showed that children with a bully/follower role were overrepresented in the *stable popular* trajectory cluster and underrepresented in the *unpopular/disliked*

Table 3
Observed (and Expected) Frequencies of Bullies/Followers, Defenders, Outsiders, and Victims with Different Social Status and Behavior Trajectories

	Bully/Follower	Defender	Outsider	Victim	Total
Social status cluster					
Stable average/liked	78 (79)	48 $(43)_a$	57 (53)	13 $(21)_b$	196
Stable popular	13 $(6)_a$	2 (3)	1 (4)	0 (2)	16
Unpopular/disliked	5 $(10)_b$	2 (6)	6 (7)	13 $(3)_a$	26
Total	96	51	64	26	237
Social behavior cluster					
Stable low aggression	60 $(70)_b$	46 $(38)_a$	54 $(48)_a$	16 (19)	176
Increasing aggression	9 (6)	1 (3)	2 (4)	4 (2)	16
Decreasing aggression	19 $(11)_a$	1 $(6)_b$	4 (8)	4 (3)	28
Total	88	48	60	24	220

Note. Frequencies with subscript $_a$ had adjusted standardized residuals larger than 2 and refer to overrepresentations. Frequencies with subscript $_b$ had adjusted standardized residuals smaller than −2 and refer to underrepresentations.

cluster. Defenders were overrepresented in the *stable average/liked* trajectory cluster. Outsiders were not over- or underrepresented in any of the status trajectory clusters. Victims were overrepresented in the *unpopular/disliked* trajectory cluster and underrepresented in the *stable average/liked* cluster.

Bullying Roles and Trajectories of Behavior

Finally, we predicted adolescents' participant role involvement from the behavior trajectory clusters (Goal 2B, see Table 3). Fisher's Z exact test showed that there was significant overlap between children's social behavior trajectory cluster and their participant role, $p < .001$. Adjusted standardized residuals revealed that bullies/followers were overrepresented in the *decreasing aggression* trajectory cluster and underrepresented in the *stable low aggression* trajectory cluster. Defenders were overrepresented in the *stable low aggression* trajectory cluster and underrepresented in the *decreasing aggression* cluster. Outsiders, like defenders, were overrepresented in the *stable low aggression* trajectory cluster, but, in contrast to defenders, were not underrepresented in any of the other clusters. Victims were not over- or underrepresented in any of the behavior trajectory clusters.

We also examined the association of the social status and behavior trajectories with the continuous participant role behavior scales. To be consistent with most previous studies that assigned children to roles we decided to only report the categorical results in this manuscript. Regarding the continuous outcomes, approximately the same pattern of results was found as for the categorical outcomes (results are available upon request by first author).

Discussion

This longitudinal study with a time span of 7 years showed that developmental trajectories of social status and behavior in middle childhood and early adolescence predicted adolescents' participant roles of bullying. The results may help to improve early intervention and prevention of bullying and victimization by (additionally) targeting status and behavior before victimization crystallizes in adolescence and becomes more difficult to change (Hanish & Guerra, 2004; Rueger, Malecki, & Demaray, 2011; Smith, Ananiadou, & Cowie, 2003).

Clusters in Children's Development of Social Status

We first identified clusters in children's development of social status from middle childhood to early adolescence (Goal 1A). We extended previous studies by assigning children to clusters based on their joint trajectories of preference and perceived popularity. Three clusters were identified: *stable average/liked*, *stable popular*, and *unpopular/disliked*. Most children were assigned to the *average/liked* cluster. They showed a stable trajectory of above average social preference and average popularity. In contrast, the *popular* cluster scored average on social preference and above average on popularity. They did not significantly increase in popularity over time. These results show that children followed relatively stable trajectories of being popular or being liked. It should be noted that van den Berg and Cillessen (2012) showed that it was unlikely to identify separate liked and popular clusters before age 14. This suggests that it may be hard to distinguish liked from popular children in middle

childhood when their future levels of likability and popularity could not yet be taken into account (van den Berg et al., 2015). However, when looking at children's trajectories over time, we can conclude that early adolescents who scored average or high on likability already scored lower on popularity in middle childhood than early adolescents who were popular.

In addition to the stable average/liked and popular clusters, we identified an *unpopular/disliked* trajectory cluster which scored below average on both preference and popularity in middle childhood. They further decreased in social preference over time. Children may dissociate themselves from rejected classmates, because they may be afraid to lose status when affiliating themselves with rejected peers. Dissociation from rejected peers may be especially important in adolescence when being popular is an important goal (Juvonen & Galván, 2008; LaFontana & Cillessen, 2010; Sentse et al., 2015). This may explain the further decrease in preference of unpopular/disliked children over time.

In contrast to previous studies, we did not identify an average cluster of children who scored average on both social preference and popularity (Brendgen et al., 2001; Lease et al., 2002; van den Berg et al., 2015). The average cluster was the largest cluster in previous studies (20%–50% of children). We did find a large cluster (82%) that we labeled as "*stable average/liked*". In general, children in the *stable average/liked* cluster followed average trajectories of popularity and trajectories of social preference that were slightly, but significantly, above zero ($M = .14$). It should be noted that on average their level of social preference was less than one standard deviation above the mean, a frequently used criterion (e.g., Coie et al., 1982). It may be that the *stable average/liked* cluster is relatively heterogeneous: all children who could not be identified as *popular* or *unpopular/disliked* may have been assigned to this cluster.

Clusters in Children's Development of Social Behavior

We continued our study by identifying clusters in children's joint development of aggression and prosocial behavior from middle childhood to early adolescence (Goal 2A). Again, three clusters were identified: *stable low aggression*, *increasing aggression*, and *decreasing aggression*. Children in the *stable low aggression* cluster showed a stable low trajectory of aggression and a stable average trajectory of prosocial behavior. Students in the *increasing aggression* cluster scored average on aggression in middle childhood and increased in aggression over time. In contrast, they started with below average levels of prosocial behavior and decreased in prosocial behavior over time. Aggressive children are often rejected and avoided by their peers, as their peers may dislike the company of aggressive children. Therefore, aggressive children may have few opportunities to develop their prosocial skills which may explain their increase in aggression and decrease in prosocial behavior (Obsuth, Eisner, Malti, & Ribeaud, 2015).

Children in the *decreasing aggression* cluster scored above average on aggression in middle childhood and decreased in aggression over time. They showed stable below average levels of prosocial behavior. Physical aggression, a type of direct aggression like fighting and arguing, is decreasingly predictive of popularity, whereas relational aggression is increasingly predictive of popularity over time (Cillessen & Mayeux, 2004). There was substantial overlap between the *decreasing aggression* and *popular* clusters (see Table C1). Therefore, it could be that some children in the popular cluster started to use other types of aggression that are more fitting with their age. For example, some youth in this popular group may have started using relational aggression instead of fighting when they entered early adolescence. This may also explain why we, in contrast to our hypothesis and previous studies, did not identify a stable high aggressive and low prosocial cluster (Brame et al., 2001; Nagin & Tremblay, 1999; Nantel-Vivier et al., 2014).

Like previous studies, we found that high levels of aggression were related to low levels of prosocial behavior (Kokko et al., 2006; Nantel-Vivier et al., 2014). In contrast to studies on physical aggression, we found that the negative association of fighting and arguing with prosocial behavior increased in strength by age (Kokko et al., 2006; Zimmer-Gembeck, Geiger, & Crick, 2005). We also did not identify a cluster of bistrategic controllers who were perceived as both highly aggressive and prosocial (Hawley, 2003; Lease et al., 2002). Fighting and arguing are subtypes of direct aggression which may be less age-adequate in adolescence than other types of aggression such as relational aggression. Unfortunately, these types have not been examined systematically in the NLS and could therefore not be taken into account in this study.

Predicting the Participant Roles of Bullying from Developmental Trajectories of Social Status and Behavior

Our second goal was to examine the associations of the social status (Goal 1B) and behavior clusters (Goal 2B) with the participant roles of bullying in adolescence. For each role, it was examined whether certain social status or behavior trajectories were overrepresented. These results are summarized and discussed below.

Among adolescent bullies/followers the *stable popular* trajectory cluster was overrepresented. These results suggest that as in adolescence (Pouwels, Lansu et al., 2016), adolescent bullies/followers already were quite popular in middle childhood. They also scored average on likability throughout middle childhood and early adolescence. Among adolescent bully/followers the *decreasing aggression* trajectory cluster was also overrepresented. This is in line with findings by Cook et al. (2010) who showed that externalizing behavior is a stronger predictor of bullying in childhood than in adolescence. This finding also supports our idea that children in the *decreasing aggression* cluster, who scored high on arguing and fighting in middle childhood, may have started to use other types of aggression, such as relational aggression, in adolescence. Future research could also address different functions of aggression, such as proactive aggression and machiavellianism. Fighting and arguing are more reactive with regard to their function. Although the levels of reactive aggression of children in the decreasing aggression cluster may decrease over time, bullies may increase their use of proactive aggression. It has been found that adolescent bullies display high levels of proactive aggression (Pouwels, Lansu et al., 2016; Salmivalli & Nieminen, 2002) which may help them to increase in popularity over time (Juvonen & Galván, 2008; Olthof et al., 2011).

It should be noted that although bullies/followers were underrepresented in the *stable low aggression* cluster as compared to the other roles, still the largest part of the adolescent bullies/followers followed this trajectory, which is characterized by average levels of prosocial behavior. These relatively prosocial bullies may be bistrategic controllers in adolescence. They may use prosocial resource control strategies in combination with bullying behaviors (Hawley, 2003; Olthof et al., 2011). A characteristic of bistrategic controllers is that they are able to perceive how their behavior impacts their peers. They also have good perspective taking skills. Therefore, adolescent bullies who followed a stable low aggression trajectory may use more proactive and indirect types of aggression and bullying rather than engaging in the fighting and arguing that we examined in this study. Moreover, bullying is often selective; adolescent bullies are not necessarily aggressive toward all their classmates. Another explanation for the high number of bullies/followers with a stable low aggression trajectory is that bullies and followers were treated as one group. Previous research has shown that adolescent bullies are somewhat more aggressive and less prosocial than assistants and reinforcers (Pouwels, Lansu et al., 2016). As we collapsed bullies and followers into one group, the followers may have been the participants who were classified as *stable low aggressive.*

Among adolescent defenders, the *stable average/liked* and *stable low aggression* clusters were overrepresented. These results are in line with previous research showing that defenders are more popular in childhood than in adolescence (Caravita et al., 2009; Sainio, Veenstra, Huitsing, & Salmivalli, 2011). We further support this idea by showing that the adolescent defenders followed a trajectory of average popularity and above average likability. Defending is a type of prosocial behavior. This study showed that adolescents who defend others in bullying situations were already relatively prosocial in middle childhood.

No significant overlap between the outsider role and the status trajectory clusters was found. Outsiders are relatively unpopular in adolescence (Pouwels, Lansu et al., 2016). In line with this study, we found that only one adolescent classified as outsider followed a popular childhood trajectory. This underrepresentation may not have been statistically significant due to the small size of the popular group. Therefore, future studies with larger group sizes are needed to examine whether students who are popular throughout middle childhood and early adolescence are unlikely to be an outsider in adolescence.

Among adolescent outsiders, the *stable low aggression* cluster was overrepresented. When comparing the behavior trajectories of outsiders with the trajectories of defenders we see that they are quite similar. Defenders and outsiders may have followed a similar behavior trajectory of above average prosocial behavior and below average aggression. This is in line with findings by Pronk, Goossens, Olthof, de Mey, and Willemen (2013) that both outsiders and defenders have a prosocial intention to help children who are victimized. There

may be other reasons why outsiders refrain from defending, such as having a lower self-efficacy for direct intervention than defenders (Pronk et al., 2013). Additional longitudinal research is needed to examine whether defenders and outsiders had different trajectories of these other constructs. In addition, it has been proposed that defending is risky behavior as the defender may become the next target of the bully (Pöyhönen, Juvonen, & Salmivalli, 2010). Therefore, it has been assumed that defenders need to have social power to prevent this (Pöyhönen, Juvonen, & Salmivalli, 2010). In adolescence, defenders are better accepted by their peers and more popular than outsiders (Pouwels, Lansu et al., 2016), and may therefore intervene more often in bullying situations than outsiders. Thus, differences in the levels of social preference and self-efficacy rather than differences in prosocial behavior may explain why some students with a *stable low aggression* trajectory throughout middle childhood and early adolescence become outsiders while others become defenders in adolescence.

Among adolescent victims the *unpopular/disliked* cluster was overrepresented. In line with previous research we found that most adolescent victims already were unpopular and disliked throughout middle childhood and early adolescence (Cook et al., 2010; Hodges & Perry, 1999). Rejected children are an easy target for bullies because it is less likely that peers retaliate upon the bullies when they are victimized (Hodges & Perry, 1999). We even showed that the social preference of adolescent victims further decreased from middle childhood to early adolescence. We did not examine whether adolescent victims were already victimized in middle childhood, but a meta-analysis showed that peer-reported victimization is quite stable during this age period (Pouwels, Souren, Lansu, & Cillessen, 2016). Therefore, we assume that a relatively large part of adolescent victims were already bullied before. Their social preference may further decrease because their peers dissociate themselves from the victims (Sentse et al., 2015).

Surprisingly, the social behavior clusters were not related to adolescents' victimization. Adolescent victims were not overrepresented in any of the behavior trajectory clusters. One explanation is that the group of victims is quite heterogeneous and that each type of victim may have their own behavior trajectory. One type may consist of bully victims; children who are highly reactively aggressive and tend to retaliate when they are bullied (Salmivalli & Nieminen, 2002). They may represent the small number of victims who followed an *increasing aggression* trajectory. Another type may consist of unaggressive victims who are submissive and who may withdraw themselves when they are bullied (Perren & Alsaker, 2006). They may be the victims who followed a *stable low aggression* trajectory. Unfortunately, the sample size of this study was not large enough to distinguish between different victim subgroups, thus this remains an issue for future research.

Limitations and Suggestions for Further Research

This study had several limitations which lead to suggestions for further research. First, we did not have information about children's participant role involvement from middle childhood to adolescence. Children's trajectories of social status and behavior were related to their bullying role in adolescence. However, we do not know if these trajectories were also related to trajectories of participant role behavior. For example, perhaps children in the stable popular cluster already had a bully/follower role in middle childhood. However, it could also be that they did not bully at all in middle childhood, but gradually increased in bullying over time. We only assessed the participant roles in adolescence, so we could not take children's earlier participant roles into account. Therefore, future research should examine the joint development of the participant roles with social status and behavior from childhood to adolescence.

Next, there may be significant gender differences in the prediction of the participant roles from the trajectory clusters (see, e.g., Salmivalli et al., 1996; Sentse et al., 2015). For example, previous research shows that girls who engage in bullying and follower behavior have a lower social preference than boys who engage in these behaviors (Salmivalli et al., 1996). Unfortunately, the sample size of this study was not large enough to examine gender differences. We followed 238 children across 7 years, and it is difficult to identify large numbers of each participant role. This is especially difficult for victimization as its prevalence decreases from middle childhood to adolescence (Pouwels, Lansu et al., 2016; Salmivalli, Lappalainen, & Lagerspetz, 1998). As a result, the participant role prevalences were too small to examine gender differences and we could only control for gender in the cluster analysis. Another suggestion for further research is to examine whether there are differences between educational tracks in how status and behavioral trajectories are related to the bullying participant roles in adolescence.

Another limitation of the small sample was that bullies/followers were combined into one group. Previous research has shown that adolescent bullies, assistants, and reinforcers show a status and behavioral profile that is relatively similar, which justifies that the groups were combined (Pouwels, Lansu et al., 2016). However, there are some small differences between bullies, assistants, and reinforcers. For example, although both adolescent bullies and followers are more popular than all other roles, bullies are somewhat more popular than their followers. Therefore, a suggestion for further research with a larger sample is to include bullies, assistants, and reinforcers as separate groups in the analyses for example, to identify how popular and aggressive trajectories can differentially predict the likelihood of being a bully versus a follower in adolescence.

Another suggestion for further research is to examine how social status trajectories and behavior trajectories can jointly predict bullying participant role involvement. For example, children who followed a stable popular trajectory may be more likely to be a bully/follower in adolescence when they also followed a decreasing aggression trajectory than when they also followed a stable low aggression trajectory. Our cluster sizes were too small to answer this question, but further research with larger samples should examine whether the interaction between the status and behavior trajectories also predicts the participant roles.

Social status and behavior were examined by peer nominations. Peer nominations tend to focus on extremes. For example, children were asked to nominate who they liked most and liked least. As a consequence, more subtle differences in likability between peers and relatively average levels of likability were not captured. This may explain why it was hard to detect increases or decreases in popularity and likability over time. A suggestion for further research is to use other methods to examine social status and behavior, such as peer ratings, observations (see, e.g., Lansu & Cillessen, 2015) and experimental designs (e.g., a noise blast task to measure aggression, Sandstrom & Herlan, 2007).

This study highlights the importance of individual child characteristics that predict later bullying involvement. Children's individual social developmental trajectories are important predictors of their participant roles. A strength of this study is that children were enrolled in various classrooms during their school career and that there was a new composition of classrooms from T3 to T4. Therefore, we did not add classroom characteristics as control variables when examining the relationship between social status and bullying. Previous studies have highlighted that classroom characteristics also significantly contribute to bullying, defending and victimization in the classroom (see, e.g.,Garandeau, Lee, & Salmivalli, 2013; Peets, Poyhonen, Juvonen, & Salmivalli, 2015; Saarento, Kärnä, Hodges, & Salmivalli, 2013; Salmivalli & Voeten, 2004; Scholte, Sentse, & Granic, 2010). It is hard to take specific classroom characteristics into account in a 7-year longitudinal study, as children were enrolled in many different classrooms during this time period. A first step for further research would be to examine how classroom characteristics interact with children's status and behavior in predicting changes in their bullying involvement across one school year (see, e.g., Sentse, Veenstra, Kiuru, and Salmivalli, 2015).

Practical Implications

The results of this study may help to improve early prevention of adolescent bullying. Over the last decades, a number of antibullying programs have been developed (Ttofi & Farrington, 2011). Unfortunately, many programs, including those that target bullying at the group level, show a decline in efficacy from primary to secondary school (Kärnä et al., 2013; Yeager, Fong, Lee, & Espelage, 2015). In addition, the stability of peer-reported victimization increases with age (Pouwels, Souren et al., 2016). Together, these findings highlight the need for early intervention and prevention before victimization becomes chronic and difficult to change (Hanish & Guerra, 2004; Rueger et al., 2011; Smith et al., 2003). Insights from this study may help to identify children who are at risk for bullying involvement later in adolescence already at an early age.

Children who score high on popularity and aggression in childhood are more likely than others to bully in adolescence. This group may already need some attention in childhood and early adolescence. Intervening with popular children's aggressive behavior seems especially challenging (see Garandeau, Lee, & Salmivalli, 2014; for KiVa effects on popular vs. nonpopular bullies). It might therefore be critical to influence group norms so that aggression is not a way to gain popularity. One concrete suggestion might be to teach popular children prosocial rather than aggressive strategies by which they can maintain status in the peer group (Ellis, Volk, Gonzalez, & Embry, 2016). For example, the meaningful roles approach (Ellis et al., 2016) assigns bullies together with prosocial

children to meaningful roles in school, such as door greeter or technology assistant. This approach also describes how these prosocial roles may affect peer group status by letting children praise each other in public for their prosocial acts. Empirical research is needed to examine whether the meaningful roles approach will indeed make bullies give up their popular strategies. If positive effects are found, the same strategies may be used at an early age, before bullying takes place, to foster a climate in which popular children are prosocial. The advantage of these strategies is that they can easily be incorporated in an existing curriculum, which is an important strength as we acknowledge that teachers often have little time and few resources for classroom interventions.

It is also important to pay attention to children who are disliked and unpopular in middle childhood. They are at risk of being victimized over time. One way to increase their likability in the peer group is to increase the amount of positive interaction between children who are being disliked by their peers, for example by letting them cooperate in team-based tasks (Mikami, Boucher, & Humphreys, 2005).

Further, our study emphasizes the importance of the development of prosocial behavior. Adolescents who scored average on prosocial behavior in childhood and adolescence were more likely to act as defenders in bullying situations than adolescents who scored high on aggression and low on prosocial behavior. This highlights the importance of screening children on aggression and helping them to change their behavior. We acknowledge that teachers do not always have the time and resources in their regular curriculum to help aggressive children. Therefore, these children may benefit from school-based preventive interventions that are individually delivered by trained adults. Such interventions reduce the risk of peer contagion of aggression, enhance opportunities to reward learned skills, and foster the development of positive relationship with an adult (Stoltz, Londen, Deković, Castro, & Prinzie, 2012). Individually delivered school based interventions have shown to decrease externalizing behavior in children at risk (see, for a meta-analysis Stoltz et al., 2012).

Conclusion

This study examined the association of developmental trajectories of social status and behavior from age 9 to 14 with the participant roles of bullying at age 16 and 17. Adolescent bully followers were characterized by a childhood trajectory of above average popularity and average preference. A relatively large proportion of bullies/followers also followed a trajectory starting with high levels of aggression in middle childhood which decreased over time. Most defenders followed childhood trajectories of stable above average social preference and stable low aggression and average prosocial behavior. A relatively large proportion of outsiders followed childhood trajectories of stable low aggression and average prosocial behavior. Most victims followed a trajectory of being unpopular and disliked. Together, the findings of this study showed that children's developmental trajectories of social status and behavior across childhood and early adolescence are predictive of their bullying participant role involvement in adolescence. This emphasizes that bullying prevention programs may want to pay more attention to children's social status, especially when they also want to positively affect children's bullying involvement later in adolescence.

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Appendix

Table A1

Correlations Between Social Status, Social Behavior and Participant Roles of Bullying for Cohort 1 (below diagonal) and Cohort 2 (above diagonal)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1. Pref T1		.47***	.40***	.62***	.35***	.33***	−.47***	−.37***	−.24*	.58***	.39***	.35**	−.03	−.16	.00	.25	−.21	−.57***
2. Pref T2	.62***		.64***	.47***	.57***	.50***	−.06	−.32***	−.19***	.19*	.62***	.39***	.02	−.01	.08	.28**	−.01	−.37***
3. Pref T3	.34***	.48***		.45***	.36***	.43***	−.01	−.28***	−.27***	.30**	.51***	.60***	.00	−.07	.13	.25**	−.06	−.30***
4. Pop T1	.57***	.48***	.16*		.62***	.58***	.02	−.06	.12	.53***	.30**	.17	.27*	.11	.34*	.25	−.53***	−.54***
5. Pop T2	.35***	.59***	.31***	.62***		.84***	.19*	.16***	.21***	.18*	.22***	.04	.27**	.30**	.40***	.13	−.37***	−.42***
6. Pop T3	.22**	.37***	.37***	.41***	.62***		.18	.19***	.23***	.25*	.19***	.05	.32***	.24**	.45***	.06	−.42***	−.40***
7. Agg T1	−.49***	−.27***	−.27***	−.02	.13**	.08		.50***	.53***	−.27**	−.22*	−.19	.20	.20	.13	−.21	−.09	.38*
8. Agg T2	−.36***	−.36***	−.34***	.01	.13**	.10	.59***		.72***	−.18*	−.41***	−.37***	.32***	.30**	.31***	−.10	−.27**	−.01
9. Agg T3	−.16*	−.21**	−.43***	−.08	−.11	.02	.14	.51***		−.01	−.31***	−.38***	.42***	.24**	.35***	−.17	−.31**	−.02
10. Pros T1	.57***	.42***	.20**	.49***	.27***	.22**	−.25***	−.23***	−.20**		.25**	.29**	.02	−.20	−.04	.04	−.09	−.25
11. Pros T2	.48***	.62***	.33***	.34***	.32***	.20**	−.31***	−.38***	−.23**	.53***		.69***	−.10	−.06	−.05	.46***	.08	−.19*
12. Pros T3	.20*	.33***	.66***	.15	.25**	.22**	−.17*	−.24***	−.42***	.36***	.45***		−.22*	−.19*	−.22*	.41***	.22*	−.13
13. Bul T4	−.05	−.08	−.31**	.21*	.26**	.21	.26**	.31***	.10	.06	−.16	−.15		.54***	.55**	−.13	−.43***	−.14
14. Ass T4	.01	.03	−.10	.09	.16	.27*	.08	.12	.03	.03	−.15	−.01	.57***		.71***	−.17*	−.56***	−.17*
15. Rei T4	−.06	.01	−.27*	.15	.28**	.35**	.31**	.29**	.10	−.08	−.14	−.15	.65***	.68***		−.12	−.69***	−.15
16. Def T4	.04	.06	.19	−.03	.08	−.02	−.10	−.13	−.14	.05	.10	.20	−.10	−.18*	−.23**		.12	−.03
17. Out T4	−.19*	−.17	.01	−.19*	−.32***	−.39***	.00	−.05	.09	−.18	−.05	−.04	−.45***	−.41***	−.56***	.11		.20*
18. Vic T4	−.25**	−.39***	−.36**	−.34***	−.52***	−.53***	.01	.05	−.04	−.21*	−.21*	−.25	−.19*	−.09	−.21*	−.07	.26**	

Note. Below the diagonal are the results for Cohort 1, above the diagonal the results for Cohort 2. Pref = social preference, pop = perceived popularity, agg = direct aggression, pros = prosocial behavior, bul = bullying, ass = assisting, rei = reinforcing, def = defending, out = outsider behavior, vic = victimization. *$p < .05$. **$p < .01$. ***$p < .001$.

Table B1.
Coefficients for the Effect of Gender on the Growth Factors of the Social Behavior Growth Mixture Model

	Stable low aggression		Increasing aggression		Decreasing aggression	
Gender on	Effect	*t* statistic	Effect	*t* statistic	Effect	*t* statistic
Direct aggression intercept	−.10	−2.76	−2.64	−8.86	1.91	4.71
Direct aggression slope	.02	.18	10.54	8.13	−9.40	−9.10
Prosocial behavior intercept	.34	3.77	.15	.54	.15	.54
Prosocial behavior slope	.02	.09	−1.44	−1.30	.41	.39

Note. All *t* values larger than 1.96 were significantly different from zero ($p < .05$). Gender was dummy coded (0, 1) with girls as the reference category.

Table C1.
Observed (and Expected) Frequencies of the Overlap Between the Social Status and Behavior Trajectories

	Social behavior cluster			
	Stable low aggression	Increasing aggression	Decreasing aggression	Total
Social status cluster				
Stable average/liked	804 $(742)_a$	77 $(102)_b$	80 $(118)_b$	961
Stable popular	29 $(65)_b$	22 $(9)_a$	33 $(10)_a$	84
Unpopular/disliked	65 $(94)_b$	25 $(13)_a$	30 $(15)_a$	2,230
Total	898	124	143	1,165

Note. Frequencies with subscript $_a$ had adjusted standardized residuals larger than 2 and refer to overrepresentations. Frequencies with subscript $_b$ had adjusted standardized residuals smaller than −2 and refer to underrepresentations.