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Adolescents' peer status profiles and differences in school engagement and loneliness trajectories: A person-centered approach



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ABSTRACT

This study used a person-centered approach to identify adolescents' peer status profiles and examined how these profiles differed regarding the development of school engagement and loneliness. A sample of 794 adolescents was followed from Grades 7 to 11 ($M_{\text{ageWave1}} = 13.81$ years). Measures included peer nominations of peer status, and student reports of school engagement and peer-related loneliness. Latent class growth analysis identified three profiles: popular-liked, unpopular-disliked, and normative. The popular-liked class revealed the lowest levels of behavioral engagement and loneliness. The unpopular-disliked class had higher levels of behavioral engagement, less steep increases in behavioral disaffection, and showed more loneliness. The normative class revealed moderate trajectories of engagement and loneliness. Moreover, boys and girls differed in their academic and psychosocial development. Implications of the findings for school practitioners are discussed.

1. Introduction

For many adolescents it is important to obtain a high social status, and perhaps even more important than their achievement and engagement in school (Galván, Spatzier, & Juvonen, 2011). Although numerous studies have investigated the nature and behavioral correlates of peer status in childhood and adolescence, little is known about the developmental changes in peer status and developmental consequences regarding academic and psychosocial functioning (Cillessen, 2009; van den Berg, Burk, & Cillessen, 2015). In this study, we used a longitudinal person-centered approach to identify trajectories of peer status profiles and examined how these classes of peer status differ with respect to trajectories of adolescents' school engagement and peer-related loneliness. By doing so, this study provides insights in the developmental nature of adolescents' peer status and its associations with academic and psychosocial functioning.

1.1. Peer status as a multidimensional construct

Peer status is a multidimensional construct referring to the social position of an individual in his or her peer group (Cillessen, Schwartz, &

Mayeux, 2011). We focus on four interrelated, but distinct aspects of peer status, that is acceptance, rejection, popularity, and unpopularity. Peer acceptance refers to the degree to which students are liked by their peers, whereas peer rejection reflects the degree to which students are disliked by the peer group (Rubin, Bukowski, & Laursen, 2009). Both peer acceptance and rejection provide information about students' association with other students and reflect an interpersonal or affective form of status (Cillessen, 2009). Highly accepted students are often cooperative, friendly, helpful, and kind (Rubin et al., 2009). On the other hand, students who are rejected by their peers tend to show lower levels of prosocial behavior and higher levels of withdrawn, aggressive, and disruptive behavior (Rubin et al., 2009). Although acceptance and rejection can be examined separately, they can also be combined into a social preference score, which reflects the difference between acceptance and rejection (Rubin et al., 2009). In contrast to these affective peer status dimensions, popularity and unpopularity reflect reputational evaluations, because they refer to students' visibility, power, reputation, and prestige in the peer group (Cillessen & Rose, 2005). Popularity and unpopularity are typically measured by asking children to nominate peers they believe to be most and least popular, respectively (Cillessen, 2009). The behavioral profile of popular students is

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diverse, as these students can be intelligent, friendly, and attractive, but aggressive, arrogant, and manipulative as well (Cillessen & Rose, 2005). Conversely, students scoring high on unpopularity generally show low social standing, influence, and prosocial behavior, and high levels of social withdrawal (Lease, Musgrove, & Axelrod, 2002). In addition, popularity and unpopularity scores can be treated as separate constructs, but can also be combined into a (perceived) popularity score, reflecting the difference between popularity and unpopularity (Rubin et al., 2009).

1.2. Peer status profiles

So far, researchers have predominantly focused on the differences between the peer status dimensions and their unique, differential associations with developmental outcomes (Asher & McDonald, 2009). However, it is possible that different dimensions of peer status co-occur within individuals. For example, given the heterogeneous behavioral profile of popular students, students could be both highly popular and highly liked at the same time (Cillessen & Rose, 2005), considering that they may achieve high status as well as high likeability through showing prosocial behavior. Also, students receiving negative affective reactions from their peers and many dislike nominations may be perceived as being low in prestige and social power too (Gorman, Schwartz, Nakamoto, & Mayeux, 2011). Research has indeed shown positive moderate to large correlations between acceptance and rejection, on the one hand, and popularity and unpopularity, on the other hand (Asher & McDonald, 2009).

Yet, person-centered approaches to investigate the co-occurrence of peer status dimensions within individuals have been adopted in only a few studies. Moreover, these studies inferred peer status profiles from both behavioral variables and peer status variables. For instance, prior research combined peer status dimensions with peer interpersonal behavior (Rodkin, Farmer, Pearl, & Van Acker, 2000), social dominance (Lease et al., 2002), and academic behavior (de Bruyn & Cillessen, 2006). As a result, the inclusion of these behavioral measures resulted in identifying up to seven peer status profiles, but this heterogeneity in profiles might be due to differences in these behaviors rather than distinct levels of likeability and popularity (van den Berg et al., 2015).

To the best of our knowledge, only two person-centered studies have examined peer status profiles based on measures of peer status solely. In the cohort-sequential longitudinal study by van den Berg et al. (2015), children and early adolescents in primary (i.e., Grades 3/4 and 5/6) and secondary education (i.e., Grades 7 and 8) were followed across two waves with a one-year interval. Three clusters emerged in the young age group (i.e., Grades 3/4 to Grade 7), that were referred to as: popular-liked, average, and unpopular-disliked. Interestingly, four clusters emerged in Grade 8. In this grade, the cluster of popular-liked was divided into two separate clusters of liked and popular students. Although results were based on measures of preference (i.e., liked most minus liked least nominations) and popularity (i.e., most popular minus least popular nominations) to categorize peer status groups, similar results were obtained when using acceptance, rejection, popularity, and unpopularity. These results suggested that from age 14 (i.e., Grade 8) onwards, a differentiation occurs between likeable and popular peers. However, this distinction between being liked and being popular might emerge at an earlier age (Pouwels et al., 2018). In a study by Pouwels et al. (2018), developmental trajectories of peer status during early and late childhood (Grade 3 to 7) were investigated. Using latent class growth mixture modeling, they identified three classes of peer status. First, a stable average/liked class consisted of children who had a stable average trajectory of popularity, but with above average levels on social preference in middle childhood, which did not significantly increase over time. Second, a stable popular class represented children with above average scores on popularity that did not increase significantly over time and moderate levels on social preference that did not decrease significantly over time. Third, an unpopular-disliked class

included children who had below average on popularity and social preference in middle childhood, and their preference decreased over time. These findings call for additional research aimed at unravelling the unique developmental pathways of likeability and popularity during adolescence, and to build a developmental theory of peer status (Cillessen et al., 2011; van den Berg et al., 2015).

1.3. Peer status and differences in school engagement and loneliness

Peer status profiles can be useful in describing adolescents' peer relationships and benefit interventions addressing the specific needs of subgroups of adolescents (Bulotsky-Shearer, Bell, & Domínguez, 2012; Mindrila, 2016). Following bio-ecological models and developmental systems theory, the way adolescents develop is subject to their social environment (Bronfenbrenner & Morris, 2006; Lerner, 2006). In adolescents' immediate context, peer relationships are key proximal relationships that constitute an 'engine' of development. These interpersonal relationships teach adolescents about themselves and how to function effectively in school environments (Martin & Dowson, 2009). Through high-quality relationships, adolescents internalize and model the beliefs valued by others (Bandura, 1977; Wentzel, 2000). Specifically, being socially connected to peers facilitates the adoption of goals and interests valued by others, for instance, regarding academic and social goals (Wentzel, 2000). According to the self-determination theory, these relationships also provide adolescents with warmth and support, as well as opportunities to fulfil their basic psychological needs (Connell & Wellborn, 1991; Deci & Ryan, 1985). Peers can promote or hamper adolescents' need for autonomy, competence, and relatedness, which in turn provides the basis for their behavior, such as their engagement in school or feelings of loneliness. In line with these theories, a large body of research revealed that peer relationships are associated with students' academic and psychosocial development (Wentzel & Muenks, 2016). For instance, well-liked students are considered to be a relatively low-risk group for academic or psychosocial maladjustment compared to popular students (Cillessen & van den Berg, 2012; Ferguson & Ryan, 2019; North, Ryan, Cortina, & Brass, 2019; Pouwels et al., 2018; Prino, Pasta, Longobardi, Marengo, & Settanni, 2018; van den Berg et al., 2015).

In this study, we examine trajectories of adolescents' school engagement and loneliness, as important aspects of academic and psychosocial functioning, and their possible associations with changes in peer status. These aspects are particularly key in adolescence, as this period is characterized by an increasing importance of peer relationships (Rubin et al., 2009), a normative decline in school engagement (Fredricks, Blumenfeld, & Paris, 2004), and an increase in loneliness (Mahon, Yarcheski, Yarcheski, Cannella, & Hanks, 2006).

1.3.1. School engagement

Students' engagement in school is important for successful learning, achievement, and graduation (Fredricks et al., 2004; Skinner, Kindermann, & Furrer, 2008). Yet, prior research has shown declining trajectories in students' school engagement (Archambault, Janosz, Morizot, & Pagani, 2009; Engels, 2018; Janosz, Archambault, Morizot, & Pagani, 2008; Wang, Chow, Hofkens, & Salmela-Aro, 2015; Wang & Eccles, 2012a; Wylie & Hodgen, 2012). Following a motivational conceptualization of engagement, we distinguish between students' behavioral and emotional engagement, as well as disaffection in learning activities (Skinner, Furrer, Marchand, & Kindermann, 2008). Behavioral engagement is conceptualized in terms of students' action initiations, efforts, attention in class, and absorption of information, whereas emotional engagement refers to students' emotional states during learning activities, such as interest, enjoyment, and enthusiasm (Skinner, Kindermann, et al., 2008). On the other hand, disaffection refers to behaviors and emotions that reflect maladaptive motivational states (Skinner, Kindermann, et al., 2008). For example, behavioral disaffection includes behaviors such as withdrawal, distraction,

unpreparedness, and passivity during learning activities, whereas emotional disaffection refers to emotions such as boredom, disinterest, anxiety, and frustration (Skinner, Kindermann, et al., 2008). Recent studies have revealed that these engagement dimensions show different developmental patterns with decreasing trajectories of behavioral and emotional engagement, increasing trajectories of cognitive engagement and behavioral disaffection, and rather stable levels of emotional disaffection (Engels, 2018; Engels et al., 2017; Wang & Eccles, 2012a). Furthermore, previous research has suggested that these engagement dimensions have differential educational outcomes, which stresses the importance of investigating both behavioral and emotional, as well as positive and negative dimensions of engagement (Wang et al., 2015).

Previous research denotes differences in school engagement between students with different types of peer status. Scholars investigating affective peer status dimensions suggest that positive and negative peer experiences, such as being accepted and rejected by peers, facilitate or hamper students' school engagement through increasing or reducing feelings of belongingness and emotional security (e.g., Buhs, 2005; Engels et al., 2016). Indeed, research is consistent with this line of reasoning and showed that highly accepted students in upper elementary and secondary school show, on average, slower declines in behavioral and emotional engagement (De Laet et al., 2015; Wang & Eccles, 2012b). Highly rejected students, on the other hand, tend to show decreased classroom participation and have more negative school attitudes (e.g., Buhs & Ladd, 2001). Of note, most of the studies on peer rejection have been conducted among kindergartners and early elementary school children, not among older students.

Furthermore, relations between school engagement and reputational peer status, such as popularity and unpopularity, have been relatively understudied. Yet, the maturity gap theory postulates that many students assert their autonomy through non-compliance to adult-like behaviors, such as being disengaged from school, which gives these students a certain power, reputation, and prestige, reinforcing their non-normative behavior (Moffitt, 1993). As a result, it could be that more popular adolescents express less engaged behavior as a strategy to obtain and maintain a high social status (Kindermann & Gest, 2009). In line with this theory, researchers have found that more popular adolescents show, on average, increased school disaffection and are more reluctant to present themselves as effortful and hardworking (Engels et al., 2016; Galván et al., 2011; Schwartz, Hopmeyer Gorman, Nakamoto, & McKay, 2006). However, evidence remains inconclusive on the relation between unpopularity and school engagement. On the one hand, (early) adolescents who are unpopular in their peer group might dedicate relatively more time and resources to academic work compared to popular students who spend more time on (social) extracurricular activities, such as team sports (Bellmore, 2011; Lease et al., 2002). This could suggest that academic goals might be more important for unpopular students than social goals. On the other hand, highly unpopular (early) adolescents could show maladaptive academic functioning due to the lack of belongingness at school (Juvonen, Espinoza, & Knifsend, 2012), or the lack of affiliative behavior, such as sharing and helping (de Bruyn & Cillessen, 2006), and thus, miss important resources and information from peers that can help them accomplish academic tasks (Wentzel, 2009).

Nevertheless, evidence on the relation between peer status and school engagement stems primarily from cross-sectional or short-term longitudinal studies, or has been gathered in younger samples. Also, previous research has been limited in the inclusion of multiple school engagement dimensions, and has failed to provide differentiated insights in the relation between peer status profiles and school engagement. Yet, there are indications that affective and reputational dimensions of peer status are differentially related to school engagement dimensions. For instance, using a variable-centered approach to peer status, Engels et al. (2017) revealed that affective dimensions, such as students' likeability, were related to more behavioral and emotional engagement, whereas reputational dimensions, such as students'

popularity, were associated with lower behavioral engagement and higher disaffection. However, person-centered studies on peer status profiles and the differential effects of the school engagement dimensions have been lacking.

1.3.2. Loneliness

In this study, we focus on loneliness as an important aspect of adolescents' psychosocial functioning. Loneliness is the negative feeling that arises when people perceive their social relations to be deficient, either quantitatively or qualitatively (Perlman & Peplau, 1981). Feelings of loneliness have been related to lower school liking, higher school drop-out, social anxiety, and lower self-esteem (Mahon et al., 2006). For adolescents, experienced deficiencies in the peer group are their main source of loneliness (Qualter et al., 2015). Specifically, research has shown increasing levels of loneliness during adolescence (Mahon et al., 2006). However, only a few researchers have examined adolescents' peer-related loneliness in relation to their peer status (e.g., Woodhouse, Dykas, & Cassidy, 2012), and it remains unclear whether different peer status profiles show different developmental trajectories of loneliness.

Prior studies provide several indications that adolescents' level of loneliness is related to their peer status. Researchers suggest that lower levels of loneliness are due to prosocial behavior, which results in an increasing level of positive peer contact (Woodhouse et al., 2012). Higher levels of loneliness, on the other hand, could be due to a lack of feelings of belongingness and emotional security (Wentzel & Muenks, 2016) resulting from fewer friendships and positive relationships in the peer group (Vanhalst, Luyckx, & Goossens, 2014). In line with this reasoning, highly accepted students tend to show lower levels of isolation (Prino et al., 2018), withdrawal (van den Berg et al., 2015), and loneliness (Newcomb, Bukowski, & Pattee, 1993). By contrast, rejected students reported, on average, more loneliness compared to other students (Buhs & Ladd, 2001). With regard to loneliness and reputational peer status, earlier studies revealed that highly popular students show, on average, less withdrawal (van den Berg et al., 2015) and feelings of loneliness (Gorman et al., 2011). Their high status has a large social impact on their peers, which enhances their feelings of belonging and relatedness (Bukowski, Hoza, & Boivin, 1993). In contrast, affiliating with unpopular students is a social liability, especially in adolescence, and therefore, youth tend to avoid these students in an attempt to maintain their own status in the peer group (Brown, Mory, & Kinney, 1994). As a result, unpopular adolescents have few friends that could serve as a buffer against negative peer experiences, which makes these students more vulnerable to feelings of loneliness (e.g., Bagwell & Schmidt, 2011) and withdrawal (van den Berg et al., 2015).

To date, an important limitation of earlier research is that researchers investigating peer status and psychosocial functioning have relied on cross-sectional or short-term longitudinal designs. As a result, they did not clarify how loneliness develops during adolescence for adolescents with different types of peer status.

1.4. The current study

In this longitudinal study, we address two questions. First, we examine how changes in peer acceptance, rejection, popularity, and unpopularity combine into classes of peer status over time. Although previous literature emphasizes the differences between dimensions of acceptance/rejection, on the one hand, and popularity/unpopularity, on the other, few researchers have examined how these dimensions combine to create distinct profiles of peer status. Based on findings of Pouwels et al. (2018) and van den Berg et al. (2015), we tentatively expect to find four classes of peer status: (a) a stable *accepted* class characterized by higher levels of acceptance, low to average levels of popularity, and lower levels of rejection and unpopularity, (b) a stable *popular* class with higher levels of popularity, low to average levels of acceptance, and lower levels of rejection and unpopularity, (c) an

unpopular-disliked status class reflected by higher levels of rejection and unpopularity, and lower levels of acceptance and popularity that would further decrease over time (Brendgen, Vitaro, Bukowski, Doyle, & Markiewicz, 2001), and (d) a normative status class characterized by moderate and stable levels of acceptance, rejection, popularity and unpopularity.

The second research question addresses how these classes of peer status differ with respect to trajectories of adolescents' academic and psychosocial functioning. We hypothesize a general decline in engagement and increase in disaffection and loneliness over time (Fredricks et al., 2004; Mahon et al., 2006), and explore whether peer status classes differ in their slope of engagement and loneliness. Given the positive association between peer acceptance and academic functioning, we hypothesize that over time, the class of accepted students shows higher levels of behavioral and emotional engagement, and lower levels of behavioral and emotional disaffection compared to students in the normative class (De Laet et al., 2015; Wang & Eccles, 2012b). For loneliness, we expect that the class of accepted students feels less lonely over time compared to the class of normative students. We hypothesize that students in the popular class show lower levels of behavioral engagement and higher levels of behavioral disaffection over time than the normative class (Schwartz et al., 2006). Our expectation regarding emotional engagement and disaffection of popular students is twofold. On the one hand, popular students may show higher emotional engagement and lower emotional disaffection trajectories, because these students enjoy going to school because of their high status in the classroom. On the other hand, in line with their low behavioral investment in school, they may show lower emotional involvement as well (Skinner, Furrer, et al., 2008). For loneliness, we expect that students in the popular class show lower levels of loneliness compared to the normative class (Gorman et al., 2011). For the unpopular-disliked status class, which comprises rejected and unpopular students, we based our hypotheses on research on peer rejection, because this construct is well investigated in comparison to unpopularity. We anticipate that the mechanisms involved in school engagement and loneliness are similar for both rejected and unpopular students, because both types of adolescents experience a lack of belongingness at school (Juvonen et al., 2012) and have fewer friends, which makes these students more vulnerable to feelings of loneliness (Bagwell & Schmidt, 2011). As a result, we expect that unpopular-disliked adolescents would show with lower levels of behavioral and emotional engagement over time and higher levels of disaffection and loneliness compared to the normative class. Finally, we expect that students in the normative status class show moderate levels of behavioral and emotional engagement, as well as disaffection, and also moderate levels of loneliness compared to the other classes. Moreover, to control for possible sex differences in school engagement and loneliness, we include sex as a covariate in subsequent analyses.

We extend prior research in four important ways. First, in contrast to prior variable-centered research (e.g., Engels et al., 2016; Engels et al., 2017), we use longitudinal person-centered analyses (i.e., latent class growth analyses), which enables us to examine the co-occurrence of acceptance, rejection, popularity, and unpopularity within individuals throughout adolescence. Variable-centered approaches describe associations among variables, whereas person-centered approaches describe differences among individuals in how variables are related to each other (Laursen & Hoff, 2006). Using person-centered approaches allows us to take the interrelated nature of these peer status dimensions into account (by presenting qualitatively and quantitatively distinct peer status profiles; Muthen, 2002) and provides insights in the joint developmental trajectories of peer status dimensions (accounting for longitudinal dependencies by separating baseline levels of peer status from developments over time; e.g., Morin, Maïano, Marsh, Nagengast, & Janosz, 2013). Second, with the long-term longitudinal design of our study, covering Grades 7 to 11, we address the need for more longitudinal research on adolescents' peer status and academic

and psychosocial functioning. Third, building on existing work (e.g., Engels et al., 2017; Ladd & Ettekal, 2013), our study investigates both trajectories of academic and psychosocial functioning as key developmental processes in adolescents' life, which are not necessarily in line with each other. For instance, students could be engaged in learning, but experience loneliness at the same time. Finally, in line with contemporary multidimensional views on student engagement, our study examines indices of behavioral engagement and disaffection, as well as indices of emotional engagement and disaffection at school.

2. Method

2.1. Participants

This study is part of a large-scale longitudinal STRATEGIES project (i.e., Studying Transactions in Adolescence: Testing Genes in Interaction with Environments) conducted in Belgium, in which an accelerated longitudinal design was used to investigate individual and contextual predictors of adolescents' development. Three cohorts of adolescents participated in the study. At the beginning of the study (spring of 2012), students from Cohort 1 were in Grade 7 of secondary school (36%), students from Cohort 2 in Grade 8 (37.4%), and students from Cohort 3 in Grade 9 (26.6%) ($N = 1116$). These cohorts were followed annually for a period of three years (Wave 2: $N = 990$; Wave 3: $N = 885$). A subsample of the original sample was used for this study containing $N = 794$ adolescents (48.1% male; $M_{\text{age}} = 13.81$, $SD = 0.92$) from 59 classes across 3 secondary schools. All schools were located in the Flemish community of Belgium. In the Flemish educational system, secondary school comprises of six years starting from the age of 12, and covers Grades 7 to 12. At the beginning of each school year, students are assigned to one class group with whom they take courses throughout the school year. The sample is relatively high in socio-economic status. Higher education was completed by 62.4% percent of the mothers and 63.8% of the fathers. Participants were predominantly in the higher educational tracks (i.e., 84.5% in the academic track and 14.3% in technical track). Only 1.2% of the students were in vocational tracks. Moreover, the vast majority of the participants (94.8%) and their parents (93.0% of the mothers and 92.6% of the fathers) were born in Belgium. In addition, most participants lived in intact families (i.e., parents living together; 82.7% of the students).

Participants in the subsample were selected based on the availability of peer status measures, as peer nominations were administered to participants, but not necessarily to their classmates. In order to obtain a valid and reliable view of students' status, we followed the recommendation of Marks, Babcock, Cillessen, and Crick (2013) that at least 60% of the classroom network had to participate in the peer nomination procedure, which resulted in data loss. Of the 794 participants, the vast majority completed questionnaires at each wave (83%). Nevertheless, we also had two types of missing data in our study. First, there were planned missings due to our accelerated longitudinal design. Grade 7 was represented by Cohort 1 ($N = 262$), Grade 8 by Cohort 1 and 2 ($N = 539$), Grade 9 by all cohorts ($N = 741$), Grade 10 by Cohort 2 and 3 ($N = 469$), and Grade 11 by Cohort 1 ($N = 190$). As this type of missingness is independent on students' level of engagement and loneliness, these data are missing at random. Second, data were missing due to a limited amount of attrition. Of the participants at Wave 1, only 2.1% were missing at Wave 2, 9.4% were missing at Wave 3, and 5.5% were missing at Wave 2 and 3. Participants who missed one or two waves and participants who were present at all waves were compared using Little's MCAR test. This test indicated that values were not completely at random, $\chi^2(282) = 388.96$, $p < .001$. Participants with missing data generally reported somewhat less behavioral (Wave 1 $M_{\text{difference}} = 0.33$, $d = 0.58$; Wave 2 $M_{\text{difference}} = 0.31$, $d = 0.50$) and emotional engagement (Wave 1 $M_{\text{difference}} = 0.27$, $d = 0.44$; Wave 2 $M_{\text{difference}} = 0.21$, $d = 0.36$), and somewhat more behavioral (Wave 1

$M_{\text{difference}} = 0.40$, $d = 0.65$; Wave 2 $M_{\text{difference}} = 0.37$, $d = 0.61$) and emotional disaffection (Wave 1 $M_{\text{difference}} = 0.18$, $d = 0.37$; Wave 2 $M_{\text{difference}} = 0.14$, $d = 0.27$; Wave 3 $M_{\text{difference}} = 0.31$, $d = 0.60$). Compared to the total sample, participants in the subsample reported somewhat more emotional engagement (Wave 1 $M_{\text{difference}} = -0.21$, $d = 0.33$; Wave 2 $M_{\text{difference}} = -0.14$, $d = 0.22$), less behavioral disaffection (Wave 1 $M_{\text{difference}} = 0.16$, $d = 0.24$; Wave 2 $M_{\text{difference}} = 0.17$, $d = 0.29$), less emotional disaffection (Wave 1 $M_{\text{difference}} = 0.16$, $d = 0.30$; Wave 2 $M_{\text{difference}} = 0.14$, $d = 0.29$), were somewhat younger ($M_{\text{difference}} = 0.18$, $d = 0.19$) and had somewhat higher levels of SES ($M_{\text{difference}} = -0.10$, $d = 0.13$).

2.2. Procedure

The STRATEGIES project was approved by the Internal Review Board of the Faculty of Medicine at KU Leuven. All procedures performed involving human participants were in accordance with the Helsinki declaration and its later amendments. The sample was recruited in 2011 using a randomized three-stage sampling approach (i.e., inviting schools, classes within school, and individuals within classes). In 9 schools and 121 classrooms, a total of 1116 adolescents agreed to participate. Response rate was 49.5% and comparable to other large-scale longitudinal studies conducted in Flanders (Guérin et al., 2012). Using a three-year accelerated longitudinal design, which started in 2012, students were annually assessed in the second part of the school year (from February till June). Adolescents' questionnaires were administered within the classroom during reserved hours. All adolescents and the parents of students below the age of 16 signed an active informed consent form. Specific for the peer nomination procedure, passive consent was obtained from the classmates (who were not part of the original sample) in order to obtain a large and more representative sample, and thus more valid results, than when active consent is used (Shaw, Cross, Thomas, & Zubrick, 2015). Moreover, data from the classmates were only used to provide reliable information concerning the peer status of the participants. In the Flemish educational system students remain together as a group across classes, so most social interactions of adolescents involve classmates. Therefore, a peer nomination procedure within the classroom was considered most appropriate. Participants received an alphabetical list of names of their classmates preceded by a number, which they could use to nominate peers. All participants were informed about the general aims of the study and received instructions about the procedure.

2.3. Measures

2.3.1. Peer status

We used classroom-based peer nominations to obtain measures of students' peer acceptance, rejection, popularity, and unpopularity. Peer status was measured in all three waves using traditional sociometric questions (Cillessen, 2009). Peer acceptance was operationalized as 'liked most' ("Whom do you like most in this class?") and peer rejection was measured with 'liked least' ("Whom do you like least in this class?") nominations. Popularity was measured with 'most popular' ("Who is most popular in this class?") and unpopularity with 'least popular' ("Who is least popular in this class?") nominations. For each question, students could nominate as many classmates as they wanted. Probability scores were computed using the program SocStat (Thissen & Bendermacher, 2012). The probability that a person is nominated by its classmates follows a generalized binomial distribution, depending on the group size and the number of possible nominations (i.e., group size - 1). This means that the probability of receiving a nomination is calculated based on the probability of being nominated by each of the classmates, taking the nomination pattern of the nominators into account. Specifically, for a person with a raw score X on a criterion, the corresponding probability score is the probability of a score less than X plus half the probability of a score equal to X , with probabilities based

on the generalized binomial distribution (see Thissen & Bendermacher, 2012, pp. 7–10 for more details about the computation). Probability scores range between 0 and 1, with a higher value indicating that students are more frequently nominated compared to their peers on that particular item.

2.3.2. School engagement

Students' self-reports were administered in all three waves to assess adolescents' school engagement by using the Student Report on Engagement Versus Disaffection with Learning questionnaire (Skinner, Kindermann, et al., 2008). In addition, three items from the Research Assessment Package for Schools – Student perceptions (RAPPS-S) were included (Institute for Research and Reform in Education, 1998), because they additionally assess students' working behavior regarding school in general (two items for behavioral engagement), and their (lack of) preparation for class (one item for behavioral disaffection). Both questionnaires are widely used and have been validated in previous research (e.g., Fredricks & McColskey, 2012).

Four dimensions were assessed and showed good internal reliability all waves: behavioral engagement (7 items, e.g., "When I am in class, I listen very carefully"; $\alpha \geq 0.89$), behavioral disaffection (6 items, e.g., "When I am in class, I just act like I am working"; $\alpha \geq 0.82$), emotional engagement (5 items, e.g., "I enjoy learning new things in class"; $\alpha \geq 0.84$), and emotional disaffection (12 items, e.g., "When we work on something in class, I feel discouraged"; $\alpha \geq 0.83$). The 30 items were rated on a 4-point scale ranging from 1 (*not true at all*) to 4 (*completely true*). Prior research with this combined questionnaire indicated good psychometric properties, including internal consistency and construct-related validity (Authors, 2016; Authors, 2017). Specially, confirmatory factor analysis revealed adequate fit of a four-factor model, distinguishing behavioral and emotional engagement, and behavioral and emotional disaffection, across three measurement waves in adolescence. Moreover, a four-factor model was preferred over alternative uni- or two-dimensional models (Authors, 2017). Sum scores were computed for each engagement dimension. A high value on the engagement dimensions refers to higher levels of behavioral and emotional participation in learning activities, whereas a high value on the disaffection dimensions reflects behavioral and emotional withdrawal from learning activities in the classroom.

2.3.3. Loneliness

Students' self-reports on loneliness were administered in all three waves using the subscale of peer-related loneliness of the Loneliness and Aloneness Scale for Children and Adolescents (LACA; Marcoen, Goossens, & Caes, 1987). Previous research revealed good reliability (i.e., Cronbach's alpha > 0.80) for all subscales (Maes, Van Den Noortgate, & Goossens, 2015) and a high stability over a 3-month period (median $r = 0.78$; Goossens, 2016). Moreover, the factor structure of the LACA was invariant across gender and age (Maes et al., 2015). The peer-related loneliness scale consisted of 12 items tapping into loneliness (e.g., "I feel alone at school") and revealed good reliability scores over the three waves ($\alpha \geq 0.90$). All items were rated on a 4-point Likert scale ranging from 1 (*often*) to 4 (*never*). Higher scores indicate higher levels of loneliness.

2.4. Statistical analysis

Accelerated longitudinal studies have time points that are missing due to the design of the study. A common and appropriate approach to examine cohort-sequential data accounting for missing data is to use the full information maximum likelihood estimate in Mplus (Parker, Marsh, Morin, Seaton, & Van Zanden, 2015), which uses all available information from the participants. This allows us to maximize the data that are present without replacing any missing values (e.g., Schafer & Graham, 2002). This approach requires a re-organized dataset in such way that each participant in our study (i.e., each line) is specified as

having five measurement points (instead of three waves; T1-T5), with two of those being missing by design (Parker et al., 2015). This approach was adopted using the “data cohort” command in Mplus 7.4.

First, latent class growth analyses were conducted to examine the co-occurrence of peer acceptance, rejection, popularity, and unpopularity within individuals over time. To determine the number of peer status classes, a combination of criteria was used (Nagin, 2005). First, the Bayesian Information Criterion (BIC) for a solution with k classes should be lower compared to a solution with $k-1$ classes. This decrease in BIC suggests that adding classes improves model fit. Second, entropy (E) is a standardized summary measure of classification accuracy, and ranges from 0.00 to 1.00. A value of 0.75 or higher indicates accurate classification. Third, the Lo-Mendell-Rubin Likelihood Ratio Test (LMR-LRT) provides a p -value to determine if there is a statistically significant improvement in model fit by adding an additional class. When a class solution was selected, participants were assigned to the most likely peer status class based on posterior probabilities. In addition, one-way analyses of variance were conducted to examine whether peer status classes were significantly different in terms of age and the parameter estimates of the four peer status dimensions ($p < .05$).

Subsequently, multigroup latent growth curve analyses were conducted to investigate whether adolescents in these peer status classes develop differently over time with respect to behavioral and emotional engagement, and disaffection (i.e., academic functioning), and peer-related loneliness (i.e., psychosocial functioning). First, a fully unconstrained baseline model was estimated with all intercepts and slopes being freely estimated in all peer status classes. In the second model, intercepts and slopes were held equal across all peer status classes, including the effect of sex on the intercept and slope. Model constraints were justified when model fit was not significantly worse compared to the baseline model, reflected in non-significant chi-square values ($\Delta\chi^2(df)$, $p > .05$) and $\Delta CFI < 0.01$.

Mplus models were specified so that the loading of the slope factor for the variable at Time 1 was fixed at 0, to ensure that the mean intercept represents the initial level. The loadings of the slope factor were fixed at 1, 2, 3, and 4 for T2, T3, T4, and T5, respectively, in order to model growth over time. Linear growth models were specified and compared using several criteria. Model fit was determined using the BIC, which reflects the quality of a model by taking the complexity of the model (i.e., number of parameters) into account, with lower values indicating better model fit (Zucchini, 2000). For all outcome variables, the unconstrained multigroup model had good model fit. Effect sizes were calculated for significant effects using the following formula: $(2 \times \text{unstandardized regression coefficient } (B) \times SD_{\text{predictor}}) / SD_{\text{outcome}}$ (cf. Marsh et al., 2009). Values ≤ 0.20 refer to small effects, > 0.20 and ≤ 0.50 to medium effects, and ≥ 0.80 to large effects.

3. Results

3.1. Descriptive statistics

Means, standard deviations, and variance of the study variables between Grades 7 and 11 are presented in Table 1. Bivariate correlations over time were medium to large (Cohen, 1988), depending on a one- or two-year time difference, between acceptance and rejection ($r_s = -0.30$ to -0.56 , $p < .001$), between acceptance and popularity ($r_s = 0.31$ to 0.45 , $p < .001$), and between acceptance and unpopularity ($r_s = -0.32$ to -0.60 , $p < .001$). Rejection was negatively correlated with popularity ($r_s = -0.11$ to -0.22 , $p < .01$), and positively with unpopularity ($r_s = 0.38$ to 0.67 , $p < .001$). Popularity and unpopularity were negatively correlated ($r_s = -0.26$ to -0.41 , $p < .001$). As expected, positive engagement dimensions were negatively correlated with their negative counterparts (behavioral engagement and disaffection $r_s = -0.36$ to -0.73 ; emotional engagement and disaffection $r_s = -0.26$ to -0.58 , $p < .001$). Moderate to large correlations existed between behavioral and emotional engagement

($r_s = 0.55$ to 0.60 , $p < .001$), and emotional and behavioral disaffection ($r_s = 0.48$ to 0.50 , $p < .001$). Significant correlations were found between acceptance and loneliness ($r_s = -0.12$ to -0.28 , $p < .01$), and between rejection and loneliness ($r_s = 0.17$ to 0.29 , $p < .01$), behavioral ($r = -0.03$, $p < .05$) and emotional engagement ($r = -0.08$ and $r = -0.16$, $p < .05$, Wave 1 and 2 respectively). Popularity was negatively correlated with behavioral engagement ($r_s = -0.16$ to -0.18 , $p < .01$) and loneliness ($r_s = -0.15$ to -0.31 , $p < .01$), and positively with behavioral disaffection ($r_s = 0.11$ to 0.15 , $p < .05$). Unpopularity was positively associated with behavioral engagement ($r_s = 0.11$, $p < .05$) and loneliness ($r_s = 0.25$ to 0.36 , $p < .01$), but negatively with behavioral disaffection ($r_s = -0.12$, $p < .05$). A correlation table is included as supplemental material.

3.2. Peer status profiles

Table 2 presents the results of the latent class growth analysis. As can be seen in the table, BIC values were the highest in the 2-class and the lowest in the 4-class solutions, indicating that increasing the number of classes improves model fit. Entropy was excellent for all class-solutions. LMR-LRT was significant in the 2-class and 3-class solution, and non-significant in the 4-class solutions. This denotes that adding a fourth class to the data does not significantly improve model fit compared to the 3-class solution. Given the low BIC, excellent classification accuracy, the significant BLRT and prior research, we selected the 3-class solution.

As can be seen in Table 3, the first class, referred to as the *normative* status class (58.9%), represented students with relatively moderate levels of acceptance and lower levels of rejection, popularity, and unpopularity. Moreover, as illustrated in Fig. 1, these students increased in their rejection over time. The second class, referred to as the *popular-liked* class (23.2%), resembled high-status students who scored relatively high on both acceptance and popularity, and low on rejection and unpopularity. The high levels of acceptance and popularity remained stable over time. The third class, referred to as the *unpopular-disliked* status class (17.9%), reflected students with relatively high levels of rejection and unpopularity, and relatively low levels of acceptance and popularity. Also, these students became less popular over time.

The average latent class probabilities for class membership ranged between 0.96 and 0.98, which indicated excellent classification accuracy. A one-way ANOVA indicated that the classes did not differ significantly regarding age ($F(2, 791) = 0.93$, $p = .395$). By contrast, a chi-square test revealed that classes were significantly different in sex composition ($\chi^2(2) = 6.88$, $p = .032$). The *normative* status class comprised slightly more girls (55.8%) compared to the other classes (46.2% in popular-liked and 46.5% unpopular-disliked). Consequently, sex was included as a covariate in subsequent analyses.

3.3. Developmental differences in school engagement and loneliness

Unconstrained multigroup models with linear slope factors were compared to constrained multigroup models in which intercepts and slopes (including the effect of sex on the intercept and slope) are held equal across groups (Table 4). Parameter estimates of the final models are presented in Table 5. For behavioral engagement, the unconstrained multigroup model was compared to a fully constrained model, revealing a significant decrease in model fit ($\Delta\chi^2(8) = 40.29$, $p < .001$, $\Delta CFI = 0.041$). More stringent testing revealed that all intercepts and slopes could be constrained to be equal across classes, except for the intercept of the *popular-liked* class and the slope of the *normative* class ($\Delta\chi^2(6) = 4.59$, $p = .597$, $\Delta CFI = 0.002$ for the final model compared to the fully constrained model). This final model had acceptable model fit, $\chi^2(38) = 85.99$, $p < .001$, RMSEA = 0.069, CFI = 0.939. Fig. 2A illustrates the differences in behavioral engagement for the three peer status classes. Adolescents in the *popular-liked* class showed lower initial levels of behavioral engagement compared to the normative and

Table 1
Means and standard deviations of the main variables in Grades 7 to 11.

Variable	Sample			Normative			Popular-liked			Unpopular-disliked		
	Mean	SD	Var.	Mean	SD	Var.	Mean	SD	Var.	Mean	SD	Var.
Acceptance G7	0.53	0.31	0.10	0.55	0.28	0.08	0.71	0.28	0.08	0.28	0.28	0.08
Acceptance G8	0.52	0.32	0.11	0.53	0.28	0.08	0.76	0.24	0.06	0.16	0.20	0.04
Acceptance G9	0.52	0.31	0.10	0.55	0.27	0.07	0.71	0.27	0.07	0.14	0.15	0.02
Acceptance G10	0.52	0.31	0.10	0.54	0.28	0.08	0.73	0.24	0.06	0.15	0.17	0.03
Acceptance G11	0.53	0.33	0.11	0.59	0.30	0.09	0.70	0.24	0.06	0.16	0.21	0.05
Rejection G7	0.38	0.32	0.10	0.24	0.19	0.04	0.32	0.27	0.07	0.81	0.26	0.07
Rejection G8	0.38	0.32	0.10	0.27	0.23	0.05	0.30	0.28	0.08	0.81	0.27	0.07
Rejection G9	0.38	0.31	0.10	0.30	0.24	0.06	0.30	0.27	0.07	0.77	0.31	0.09
Rejection G10	0.37	0.33	0.11	0.29	0.27	0.07	0.26	0.27	0.07	0.80	0.28	0.08
Rejection G11	0.40	0.31	0.10	0.32	0.26	0.07	0.33	0.27	0.07	0.70	0.35	0.12
Popularity G7	0.40	0.29	0.09	0.28	0.15	0.02	0.89	0.14	0.02	0.23	0.11	0.01
Popularity G8	0.35	0.33	0.11	0.22	0.19	0.04	0.84	0.23	0.05	0.12	0.06	0.00
Popularity G9	0.38	0.34	0.12	0.26	0.24	0.06	0.85	0.23	0.05	0.15	0.13	0.02
Popularity G10	0.36	0.35	0.12	0.23	0.21	0.05	0.89	0.19	0.04	0.12	0.11	0.01
Popularity G11	0.35	0.31	0.10	0.26	0.22	0.05	0.82	0.21	0.04	0.16	0.14	0.02
Unpopularity G7	0.39	0.28	0.08	0.29	0.17	0.03	0.23	0.13	0.02	0.79	0.26	0.07
Unpopularity G8	0.33	0.31	0.10	0.25	0.20	0.04	0.14	0.10	0.01	0.86	0.21	0.05
Unpopularity G9	0.32	0.30	0.09	0.23	0.18	0.03	0.17	0.13	0.02	0.84	0.26	0.07
Unpopularity G10	0.31	0.31	0.10	0.22	0.18	0.03	0.13	0.09	0.01	0.87	0.22	0.05
Unpopularity G11	0.36	0.32	0.10	0.28	0.22	0.05	0.18	0.09	0.01	0.82	0.30	0.09
Behavioral engagement G7	3.36	0.55	0.31	3.47	0.46	0.21	3.27	0.57	0.33	3.32	0.55	0.30
Behavioral engagement G8	3.20	0.58	0.34	3.29	0.56	0.32	3.02	0.64	0.41	3.31	0.53	0.29
Behavioral engagement G9	3.06	0.62	0.40	3.12	0.62	0.38	2.85	0.63	0.40	3.19	0.59	0.35
Behavioral engagement G10	3.03	0.65	0.42	3.06	0.64	0.41	2.92	0.59	0.35	3.22	0.59	0.35
Behavioral engagement G11	3.04	0.63	0.40	3.04	0.66	0.43	2.79	0.56	0.31	3.27	0.59	0.35
Behavioral disaffection G7	1.87	0.66	0.44	1.74	0.56	0.31	1.77	0.55	0.30	1.92	0.75	0.56
Behavioral disaffection G8	1.93	0.62	0.39	1.84	0.60	0.36	2.02	0.64	0.41	1.77	0.52	0.27
Behavioral disaffection G9	2.08	0.62	0.39	2.05	0.62	0.38	2.23	0.68	0.46	1.86	0.56	0.32
Behavioral disaffection G10	2.10	0.64	0.42	2.10	0.65	0.42	2.19	0.61	0.37	1.84	0.56	0.32
Behavioral disaffection G11	2.18	0.63	0.40	2.22	0.65	0.42	2.38	0.67	0.45	1.92	0.49	0.24
Emotional engagement G7	3.04	0.63	0.40	3.09	0.60	0.35	3.21	0.65	0.43	3.08	0.60	0.36
Emotional engagement G8	2.88	0.66	0.44	2.98	0.62	0.39	2.83	0.71	0.51	2.97	0.63	0.40
Emotional engagement G9	2.84	0.63	0.40	2.89	0.61	0.37	2.76	0.61	0.37	2.91	0.65	0.42
Emotional engagement G10	2.84	0.64	0.41	2.90	0.61	0.37	2.84	0.58	0.34	2.88	0.57	0.32
Emotional engagement G11	2.88	0.57	0.33	2.85	0.59	0.35	2.83	0.49	0.24	3.05	0.54	0.29
Emotional disaffection G7	1.92	0.56	0.31	1.86	0.51	0.26	1.87	0.57	0.32	1.89	0.55	0.31
Emotional disaffection G8	1.96	0.51	0.26	1.93	0.52	0.27	1.89	0.49	0.24	1.92	0.53	0.28
Emotional disaffection G9	1.96	0.50	0.25	1.94	0.50	0.25	1.93	0.50	0.25	1.88	0.51	0.26
Emotional disaffection G10	1.99	0.51	0.26	1.99	0.51	0.26	1.95	0.52	0.27	1.88	0.52	0.28
Emotional disaffection G11	1.93	0.53	0.28	2.00	0.54	0.29	1.88	0.47	0.22	1.76	0.45	0.21
Loneliness G7	1.55	0.58	0.34	1.54	0.53	0.28	1.43	0.55	0.30	1.87	0.69	0.48
Loneliness G8	1.55	0.55	0.30	1.52	0.49	0.24	1.33	0.44	0.19	1.85	0.62	0.38
Loneliness G9	1.54	0.53	0.28	1.50	0.46	0.21	1.39	0.45	0.20	1.87	0.68	0.46
Loneliness G10	1.60	0.54	0.30	1.58	0.51	0.26	1.36	0.44	0.19	1.86	0.58	0.34
Loneliness G11	1.60	0.55	0.31	1.56	0.52	0.27	1.33	0.46	0.21	1.84	0.54	0.29

Note. G7 = Grade 7; G8 = Grade 8; G9 = Grade 9; G10 = Grade 10; G11 = Grade 11.

Table 2
Results of latent class growth analysis and sensitivity analysis on acceptance, rejection, popularity, and unpopularity.

Model	Solution	BIC	Entropy	LMR-LRT	Trajectory group prevalence (%)			
					1	2	3	4
Linear growth ^a	2-Class	1555.160	0.959	$p < .001$	81.0	19.0		
	3-Class	706.242	0.929	$p < .001$	58.9	23.2	17.9	
	4-Class	552.480	0.882	$p = .29$	52.6	23.2	13.2	11.0
Split-half sample 1 ^b	2-Class	813.581	0.969	$p < .001$	80.4	19.6		
	3-Class	377.506	0.944	$p = .002$	57.0	23.6	19.4	
	4-Class	314.758	0.904	$p < .001$	52.4	19.2	18.0	19.2
Split-half sample 2 ^c	2-Class	927.394	0.950	$p < .001$	76.9	23.1		
	3-Class	570.156	0.912	$p = .032$	53.2	25.3	21.4	
	4-Class	480.140	0.886	$p = .034$	48.8	23.7	15.0	12.5

Note. BIC = Bayesian Information Criterion. LMR-LRT = Lo-Mendell-Rubin Likelihood Ratio Test. The solution in bold was selected.

^a N = 794.

^b N = 412.

^c N = 384.

Table 3
Final parameter estimates of peer status profiles across Grades 7 to 11.

Parameter	Peer status trajectory class			F (2, 793)	p	η^2
	Normative (58.9%; N = 468)	Popular-liked (23.2%; N = 184)	Unpopular-disliked (17.9%; N = 142)			
Acceptance						
M intercept	0.535 (0.022)	0.734 (0.030)	0.212 (0.029)	17.09	0.001	0.98
M linear slope	0.006 (0.010)	-0.006 (0.014)	-0.023 (0.013)	355.06	0.001	0.48
Rejection						
M intercept	0.253 (0.017)	0.314 (0.031)	0.814 (0.042)	24.72	0.001	0.98
M linear slope	0.018 ^a (0.008)	-0.008 (0.013)	-0.019 (0.018)	712.57	0.001	0.64
Popularity						
M intercept	0.266 (0.013)	0.865 (0.023)	0.194 (0.015)	103.26	0.001	0.996
M linear slope	-0.009 (0.006) ^a	-0.008 (0.012) ^a	-0.021 ^{**} (0.006)	145.30	0.001	0.27
Unpopularity						
M intercept	0.265 (0.014)	0.186 (0.015)	0.819 (0.036)	49.59	0.001	0.99
M linear slope	-0.012 (0.007) ^b	-0.013 ^a (0.005) ^b	0.011 (0.020)	298.73	0.001	0.43

Note. Rows that share a subscript were not significantly different from each other, $p > .05$.

^a $p < .05$.

^{**} $p < .01$.

unpopular-disliked status class. Furthermore, students in the *normative* class showed steeper decreases in behavioral engagement over time compared to students in the other peer status classes. For students in the *normative* class, a yearly average drop in behavioral engagement of 0.17 points amounts to a drop of 0.69 points over the years in secondary school. This decline is equivalent to a decline of 1.51 standard deviation in initial levels of behavioral engagement (cf. Van Den Noortgate, Pustjens, & Onghena, 2004). In addition, compared to boys, girls had higher initial levels and less steep decreases in behavioral engagement over time. For girls, this decline in behavioral engagement reflects 0.22 points in Grade 11, which is equal to 0.47 standard deviation in initial levels of behavioral engagement. We found no differences between peer status classes in the effect of sex on the intercept and slope of behavioral engagement.

For behavioral disaffection, the unconstrained multigroup model was compared to a fully constrained model, showing a significant

decrease in model fit ($\Delta\chi^2(8) = 30.84, p < .001, \Delta CFI = 0.038$). More stringent testing revealed that all intercepts and slopes could be held equal across classes, except for the slope of the *unpopular-disliked* class ($\Delta\chi^2(7) = 11.10, p = .134, \Delta CFI = 0.007$ for the final model compared to the fully constrained model). This final model had acceptable model fit, $\chi^2(37) = 76.90, p < .001, RMSEA = 0.064, CFI = 0.933$. Fig. 2B shows the differences in behavioral disaffection for the three peer status classes. Adolescents in the different peer status classes had similar initial levels of behavioral disaffection, but adolescents in the *unpopular-disliked* status class showed less steep increases in behavioral disaffection over time compared to the other classes. For students in the *unpopular-disliked* class, a yearly average increase in behavioral disaffection of 0.07 points represents an increase of 0.28 points over the years in secondary school. This is equivalent to 0.38 standard deviation in initial levels of behavioral disaffection. Moreover, for all peer status classes, girls had less steep increases of behavioral disaffection over

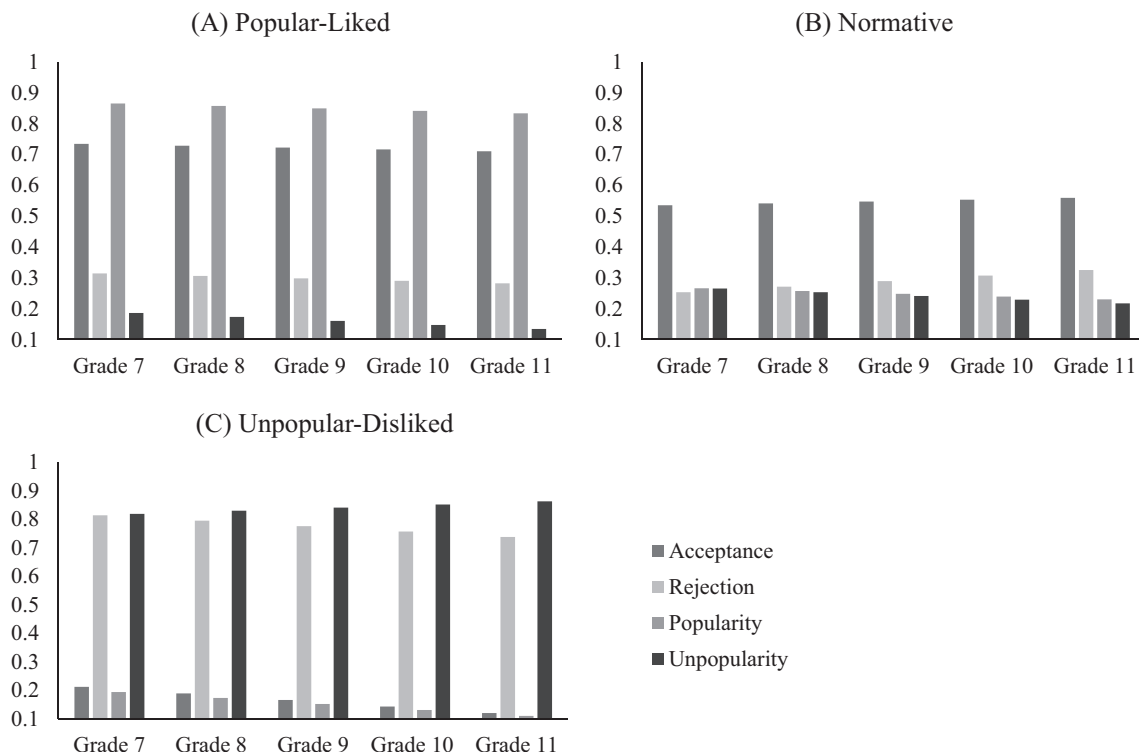


Fig. 1. Sample means of acceptance, rejection, popularity, and unpopularity for the peer status profiles.

Table 4
Model fit indices of the model comparisons.

Parameter	χ^2	df	p	RMSEA	CFI	$\Delta\chi^2$	Δdf	p	ΔCFI
Behavioral engagement									
Unconstrained	81.40	32 ^a	0.001	0.077	0.937	–	–	–	–
Fully constrained	121.69	40	0.001	0.088	0.896	40.29	8	0.001	0.041
Final	85.99	38	0.001	0.069	0.939	4.59	6	0.597	0.002
Behavioral disaffection									
Unconstrained	65.80	30	0.001	0.068	0.940	–	–	–	–
Fully constrained	96.64	38	0.001	0.077	0.902	30.84	8	0.001	0.038
Final	76.90	37	0.001	0.064	0.933	11.10	7	0.134	0.007
Emotional engagement									
Unconstrained	79.58	32 ^a	0.001	0.075	0.903	–	–	–	–
Fully constrained	85.61	40	0.001	0.066	0.907	6.03	8	0.644	0.004
Emotional disaffection									
Unconstrained	32.78	30	0.332	0.019	0.994	–	–	–	–
Fully constrained	38.86	38	0.431	0.009	0.998	6.08	8	0.638	0.004
Loneliness									
Unconstrained	37.66	33 ^a	0.265	0.023	0.992	–	–	–	–
Fully constrained	119.26	41 ^a	0.001	0.085	0.858	81.60	8	0.001	0.134
Final	43.32	39 ^a	0.292	0.020	0.992	5.66	6	0.462	0.000

Note.

^a Slope variance was constrained to 0 due to negative residual variance.

Table 5
Final multiple group parameter estimates of outcome variables in the three peer status classes.

Parameter	Peer status trajectory class		
	Normative	Popular-liked	Unpopular-disliked
Behavioral engagement			
M intercept	3.366	3.056	3.366
M linear slope	–0.172**	–0.115**	–0.115**
Sex on intercept	0.101*	0.101*	0.101*
Sex on slope	0.054**	0.054**	0.054**
Behavioral disaffection			
M intercept	1.800	1.800	1.800
M linear slope	0.152***	0.152***	0.070***
Sex on intercept	–0.011	–0.011	–0.011
Sex on slope	–0.047*	–0.047*	–0.047*
Emotional engagement			
M intercept	2.978	2.978	2.978
M linear slope	–0.074***	–0.074***	–0.074***
Sex on intercept	0.097	0.097	0.097
Sex on slope	0.009	0.009	0.009
Emotional disaffection			
M intercept	1.922	1.922	1.922
M linear slope	0.012	0.012	0.012
Sex on intercept	–0.074	–0.074	–0.074
Sex on slope	0.028	0.028	0.028
Loneliness			
M intercept	1.490	1.342	1.834
M linear slope	–0.012	–0.012	–0.012
Sex on intercept	–0.024	–0.024	–0.024
Sex on slope	0.063***	0.063***	0.063***

* $p < .05$.

** $p < .01$.

*** $p < .001$.

time compared to boys. For girls, this reflects 0.19 points in Grade 11, which is equal to 0.25 standard deviation in initial levels of behavioral disaffection.

For emotional engagement, the unconstrained multigroup model was compared to a fully constrained model and did not reveal a significant decrease in model fit ($\Delta\chi^2(8) = 6.03, p = .644, \Delta CFI = 0.004$). The fully constrained model had acceptable model fit, $\chi^2(40) = 85.61, p < .001, RMSEA = 0.066, CFI = 0.907$. As can be seen in Fig. 2C, all students decreased in their emotional engagement over time. Furthermore, we found no significant differences between boys and girls in emotional engagement. Also for emotional disaffection, the

unconstrained multigroup model was compared to a fully constrained model and did not reveal a significant decrease in model fit ($\Delta\chi^2(8) = 6.08, p = .638, \Delta CFI = 0.004$). The fully constrained model had good model fit, $\chi^2(38) = 38.86, p = .431, RMSEA = 0.009, CFI = 0.998$. Fig. 2D shows that all adolescents reported stable levels of emotional disaffection over time. In addition, there were no significant differences between boys and girls in emotional disaffection.

For peer-related loneliness, the unconstrained multigroup model was compared to a fully constrained model, revealing a significant decrease in model fit ($\Delta\chi^2(8) = 81.60, p < .001, \Delta CFI = 0.134$). More stringent testing revealed that classes differed in their intercept, but not in their slope ($\Delta\chi^2(6) = 5.66, p = .462, \Delta CFI = 0.000$ for the final model compared to the fully constrained model). This final model had good model fit, $\chi^2(39) = 43.32, p = .292, RMSEA = 0.020, CFI = 0.992$. Fig. 3 shows the differences in peer-related loneliness for the three peer status classes. Adolescents in the *unpopular-disliked* status class showed the highest levels of loneliness followed by the *normative* and the *popular-liked* class, respectively. Furthermore, we found in all peer status classes that girls had steeper increases in loneliness over time compared to boys. For girls, this increase in loneliness represents 0.25 points in Grade 11, which is equal to 0.48 standard deviation in initial levels of loneliness.

3.4. Sensitivity analysis

In order to examine the internal robustness of the peer status profiles, the latent class growth analysis was replicated in a random split-half dataset (Milligan & Hirtle, 2003). For both split-half datasets, the four-cluster solution generally showed a better fit to the data compared to the two- and three-cluster solutions (Table 1). Moreover, the distribution across trajectory groups in the sensitivity analysis was roughly similar to the distribution observed in the total sample. Furthermore, the sensitivity analyses yielded similar intercept and slope means of acceptance, rejection, popularity, and unpopularity. In addition, as our longitudinal accelerated designs has three overlapping measurements in Grade 9, and thus more participants, we examined whether changing the intercept from Grade 7 to Grade 9 would yield different peer status profiles (cf. Biesanz, Deeb-Sossa, Papadakis, Bollen, & Curran, 2004). We found no differences in model fit or parameter estimates, indicating that the four peer status profiles were robust in our sample.

Furthermore, latent class growth analysis estimates an average growth curve of the peer status dimensions across grades for each class. As a result, it might be that different peer status profiles emerge when

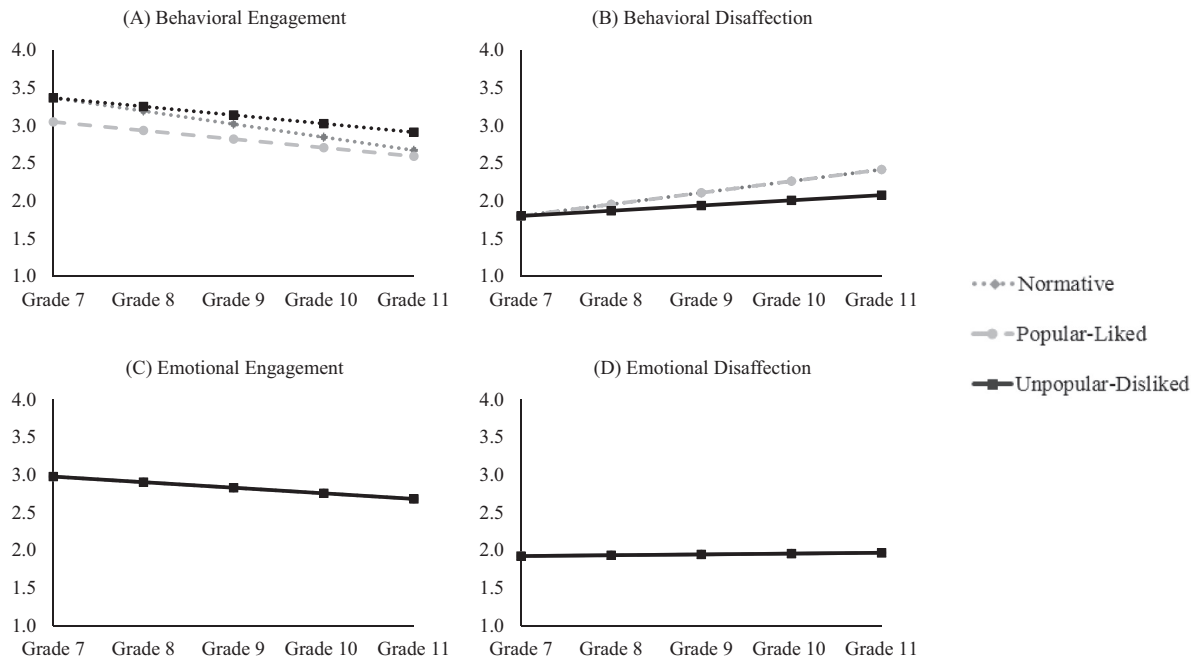


Fig. 2. Trajectory of school engagement dimensions for the three peer status profiles.

peer status dimensions are examined separately for each grade. To further examine this possibility, we performed latent class analysis for each grade separately. These analyses are included as supplemental material. The results indicated that a three-class solution was favored over a four-class solution in all grades, except for Grade 11. In general, classes of *normative*, *popular-liked*, and *popular-disliked* emerged from the data. In Grade 11, however, a four-class solution was preferred over a three-cluster solution. Yet, we found no evidence of separate classes for accepted and popular students. In contrast, results revealed *normative*, *popular-liked*, *unpopular-disliked*, and *moderately popular-liked* classes.

4. Discussion

Researchers have stressed the need for additional longitudinal studies designed to unravel the developmental pathways of peer status (Cillessen et al., 2011; van den Berg et al., 2015). We addressed this call by (a) using longitudinal person-centered analyses (i.e., latent class growth analyses) to investigate the developmental trajectories of peer status dimensions throughout adolescence, (b) investigating how peer status profiles are related to adolescents' development, (c) focusing on both academic and psychosocial functioning, and (d) distinguishing between multiple dimensions of school engagement. By doing so, the

study provided useful information for interventions aimed at promoting students' academic and psychosocial development for students with maladaptive peer status profiles.

Our longitudinal person-centered analyses revealed that during secondary school (Grades 7 to 11) three peer status groups could be identified, that is, *popular-liked*, *normative*, and *unpopular-disliked* status. Within adolescents both positive peer status dimensions, that is, being liked and being popular, seemed to co-occur, leading to one group of popular-liked adolescents. Thus, despite differences found within the group of popular students (Cillessen & Rose, 2005), most popular students in our sample seemed to be highly liked as well. It might be that popular-liked students achieve high popularity as well as high likeability by showing high levels of prosocial behavior (Cillessen & Rose, 2005). Also, we found a group of normative status adolescents who are moderately liked by their classmates, but have no high status in terms of popularity. These normative adolescents are also not highly rejected or seen as unpopular by their classmates. Furthermore, results revealed a group of unpopular-disliked adolescents. This suggests that adolescents with low social power and prestige tend to evoke also negative affective reactions from their peers (Gorman et al., 2011). The peer status profiles found in our study were consistent with the profiles found in younger age groups (Grade 3/4 to Grade 7) in the study by van den Berg et al. (2015). Yet, unlike van den Berg et al. (2015) in Grade 8

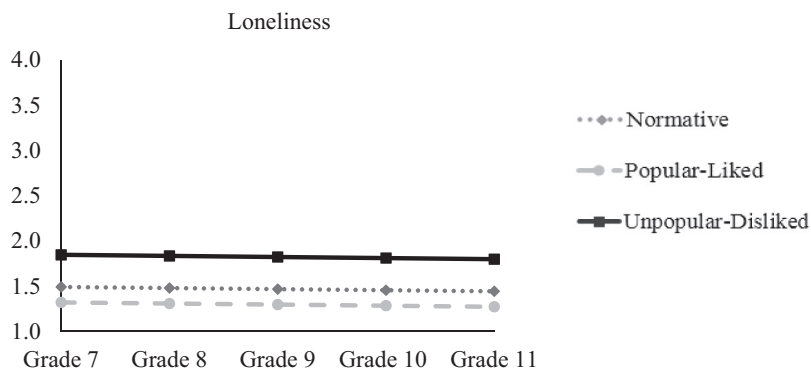


Fig. 3. Trajectory of loneliness for the three peer status profiles.

and Pouwels et al. (2018) in middle childhood, we found no evidence for distinct groups of accepted and popular students. Consequently, it seems that being accepted and being popular are compatible social roles in our sample. Nevertheless, it should be noted that the participants in our sample were highly adjusted in terms of their engagement in school and peer-related loneliness, and were characterized as having high levels of socio-economic status (i.e., parental educational level), which may explain the absence of separate profiles of accepted and popular adolescents as found by prior research (Pouwels et al., 2018; van den Berg et al., 2015).

In addition, our study revealed developmental differences in academic and psychosocial functioning between the peer status groups. Results indicated that popular-liked students had the lowest levels of behavioral engagement and loneliness at the start of secondary education compared to the other peer status profiles. The finding that popular-liked students showed less behavioral engagement may be explained by the maturity gap theory (Moffitt, 1993), which implies that these students assert their autonomy through non-compliance to adult-like behaviors. In turn, many adolescents may be attracted to such non-normative peers and mimic their behaviors, such as being disengaged from school, which gives these peers a certain power, reputation, and prestige, reinforcing their non-normative behavior. Consequently, popular-liked students may show less engaged behavior as a strategy to obtain and maintain a high social status (Kindermann & Gest, 2009). It seems that the lower behavioral investment in school of popular-liked students was not associated with lower emotional investment in school, which indicates that they enjoyed school and learning activities as much as other students. One possible explanation for this finding is that emotional states are not directly observable for outsiders, and therefore, do not necessarily contribute to power and prestige in the peer group to the same degree as displaying low behavioral engagement does (Moffitt, 1993). Also, having social prestige and power in the peer group may contribute to students' positive emotional experiences in school. Although popular-liked adolescents had maladaptive levels of academic functioning, they reported beneficial levels of psychosocial functioning in terms of less loneliness. This finding suggests that academic and psychosocial development are not always in line with each other. Popular-liked adolescents might have lower levels of loneliness because of their prosocial behavior, which may stimulate positive peer contact (Woodhouse et al., 2012), or have a large social impact on their peers, which enhances their feelings of belongingness (Bukowski et al., 1993).

Furthermore, we expected that unpopular-disliked adolescents would be associated with maladaptive engagement trajectories possibly due to a lack of belongingness and security. However, our study revealed that unpopular-disliked adolescents were associated with *higher* levels of behavioral engagement in Grade 7 compared to popular-liked adolescents. Moreover, students with a low peer status were associated with less steep increases in behavioral disaffection over time compared to popular-liked and normative students. Although these results are in contrast to our expectations, they are consistent with the reasoning that unpopular-disliked status peers may invest more time in academic work, because they are less engaged in social activities (Bellmore, 2011), which might suggest that academic and social goals of adolescents are competing during adolescence (Wentzel, 2000). Our results further show that their stronger behavioral investment in school did not go hand in hand with more positive feelings about school and greater enthusiasm about learning. This might be due to their low status in the peer group affecting their feelings of relatedness and belonging, which could hamper their emotional investment in learning activities and school (Bukowski et al., 1993). Consistent with this reasoning, our study revealed that unpopular-disliked status adolescents also showed more maladaptive levels of loneliness during secondary education.

Normative status adolescents showed steeper decreases of behavioral engagement compared to unpopular-disliked and popular-liked adolescents. This finding could be due to regression to the mean (Gottman

& Rushe, 1993). Normative adolescents also start with higher levels of behavioral engagement compared to the other students, and consequently cannot increase as much in their behavioral engagement as other students. Therefore, this negative effect should be interpreted with caution. In general, the downward trajectories of behavioral and emotional engagement and upward trajectories of behavioral disaffection were in line with previous research (e.g., Fredricks et al., 2004). Moreover, normative status adolescents were associated with moderate levels of loneliness compared to popular-liked and unpopular-disliked adolescents. Although researchers found that loneliness is slightly increasing during the adolescent years (Danneel, Maes, Vanhalst, Bijttebier, & Goossens, 2017; Mahon et al., 2006), we found no evidence for this trend in the different peer status groups.

In addition, we found sex differences in academic and psychosocial development, but we found no evidence for sex differences between peer status classes. First, we found that girls had higher levels of behavioral engagement in Grade 7 and less steep decreases in behavioral engagement over time. Second, girls had less steep decreases in behavioral engagement compared to boys. Third, girls had steeper increases in loneliness compared to boys. These findings were generally in line with previous research (Wang, Willett, & Eccles, 2011) and imply that boys are more at-risk for showing maladaptive academic trajectories and girls for showing maladaptive psychosocial trajectories.

In general, our study suggests that there might be a trade-off for adolescents between securing one's position in the peer group, on the one hand, and investing in school, on the other hand, as higher levels of academic involvement in school and higher levels of loneliness seem to align with each other. However, in order to further investigate this possible trade-off, more research is needed. For instance, researchers could further examine students' academic goals in relation to their social goals. Furthermore, results revealed differential effects of peer status on the different engagement dimensions by showing that peer status is predominantly associated with behavioral components of engagement and not with emotional aspects. For example, we found no difference between the peer status profiles regarding emotional engagement and disaffection, which could indicate that emotional engagement and disaffection might be more related to teacher- or task-characteristics, such as having a positive relationship with the teacher and level of autonomy during learning activities. Alternatively, feelings regarding school and learning activities might be the result of both behavioral investment and social relationships at school, which could neutralize each other. For example, despite the behavioral investment in learning of unpopular-disliked adolescents, they do not report higher emotional engagement in school, which could be due to the lack of positive peer relationships at school.

In sum, our study builds on prior research on peer status by identifying three peer status profiles during adolescence. In general, findings for the current study denote that some peer status dimensions tend to change over time, whereas others remained more stable. Consequently, this study heeded the call to unravel the unique developmental pathways of peer status dimensions during adolescence and helped to build a developmental theory of peer status (Cillessen et al., 2011; van den Berg et al., 2015). Furthermore, different peer status profiles were differentially related to trajectories of school engagement and loneliness, implying that adolescents might experience a trade-off between being social and securing one's position in the peer group, and investing in school.

4.1. Limitations

With this large-scale longitudinal study covering five years of secondary education, we provided insights into how different peer status dimensions function synergistically to create peer status profiles and investigated how these profiles are related to trajectories of adolescents' academic and psychosocial functioning. However, some limitations are worth noting. First, the development of adolescents' academic and

psychosocial functioning might be subject to other factors than peer status, such as characteristics of learning activities, the relationship with the teacher, and the quality of friendships. Consequently, future research should investigate this possibility by including additional classroom-based relationships and/or task-characteristics. Second, we had missing data in our sample due to the 60% participation criterion regarding the peer status measures and a small amount of attrition, which might have induced small parameter biases in the analysis. Nevertheless, differences between participants with and without missing data were small to medium. Moreover, applying the strict 60% criterion was necessary to obtain reliable peer status measures (Marks et al., 2013). Third, we used student self-reports of school engagement as an indicator of academic functioning. Other indicators of academic functioning, such as GPA and office referrals (i.e., being suspended from class) might yield a more objective measure of students' academic functioning. Especially, combining self-reports as a subjective measure of engagement with other more objective measures could provide a more complete picture of students' engagement in school and forms an interesting direction for future research (Azevedo, 2015; Sinatra, Hedly, & Lombardi, 2015). In addition, other aspects of adolescents' psychosocial functioning besides peer-related loneliness should be considered in future research in order to examine the possible trade-off in greater detail. Fourth, we used a rather homogenous sample characterized by high average levels of engagement and low average levels of loneliness. Associations between social status and academic and psychosocial functioning could be more pronounced in heterogeneous or at-risk samples (e.g., Wentzel, 2009), which could be examined in future research. Fifth, this study did not examine the direction of effects between adolescents' peer status and school engagement or loneliness, but focused on how different profiles of peer status are associated with different developmental trajectories of academic and psychosocial functioning. As only limited research has been aimed at examining the transactional associations of peer status and school engagement or loneliness (e.g., Engels et al., 2016; Weyns, Colpin, De Laet, Engels, & Verschueren, 2017), future research could explore this possibility in more detail.

4.2. Practical implications

Extending prior research, we found evidence for developmental differences between normative, popular-liked, and unpopular-disliked peer status profiles in trajectories of both academic and psychosocial functioning. The findings imply that practitioners should be aware of the consequences of peer status for students' development. For instance, by creating positive academic values and socially supportive environments, schools can help students to identify themselves with and develop personal reasons for academic and social goal pursuit, which will contribute to their academic accomplishments (Wentzel, 2000) and well-being at school (Murray-Harvey, 2010). In addition, given the relatively stable trajectories of peer status dimensions, this study stresses the importance of interventions at the start of secondary education. Specifically, results showed that difficulties in peer relationships at the start of secondary school persist in later years, which calls for early interventions targeting students' peer status in order to prevent maladaptive developmental trajectories. Nevertheless, evidence-based interventions specifically aimed at students' peer status in secondary school are scarce. However, interventions such as the Raising Healthy Children intervention (Hawkins, Guo, Hill, Battin-Pearson, & Abbott, 2001) or the Fast Track Project (Conduct Problems Prevention Research Group, 1992) focus on positive youth development and successfully increase students' social acceptance, school attachment, focus, and achievement, and improve the classroom atmosphere (Catalano, Berglund, Jean, Heather, & Hawkins, 2004). In addition, our study revealed that boys are at-risk for showing maladaptive academic trajectories, whereas girls are more likely to have maladaptive psychosocial trajectories. Consequently, it is important that educators closely

monitor boys' academic development, for instance by looking at signs of disengagement from school, and girls' psychosocial development, for instance checking for signs of social withdrawal.

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Declaration of competing interest

The authors declare that they have no conflict of interest. All procedures performed in studies involving human participants were in accordance with the ethical standards of the Institutional Review Board of the Faculty of Medicine at KU Leuven. Informed consent was obtained from all individual participants included in the study.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.lindif.2019.101759>.

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