The relation between academic performance and popularity in adolescence: The role of school track, class norm and time spending

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Samenvatting

In deze studie is onderzocht (1) in hoeverre academische prestaties samenhangt met populariteit tijdens de adolescentie. Verder is gekeken (2) in welke mate deze relatie gemodereerd werd door schoolniveau en door de norm in de klas en (3) in welke mate tijdsbesteding de relatie tussen academische prestaties en populariteit medieert. De data die gebruikt worden in het onderzoek zijn een onderdeel van het TRAILS onderzoek (Tracking Adolescents' Individual Lives' Survey). Dit is een longitudinaal onderzoek naar de ontwikkeling van (pre)adolescenten, die wonen in vijf Nederlandse Noordelijke gemeenten. Er is gebruik gemaakt van data van 3312 respondenten (49,4% meisje; *M* leeftijd = 13.60, *SD* = 0.66). De hypothesen zijn onderzocht met behulp van een multilevel regressieanalyse. De resultaten laten zien dat er een significante negatieve relatie bestaat tussen academische prestaties en populariteit. Dit geldt vooral voor het "HAVO". Binnen het "Speciaal Voortgezet Onderwijs" is daarentegen de relatie tussen academische prestaties en populariteit positief. Verder blijkt dat tijdsbesteding de relatie tussen academische prestaties en populariteit medieert. Dit betekent dat de invloed die academische prestaties eerst had op populariteit er niet meer is wanneer tijdsbesteding toegevoegd wordt aan het regressiemodel. De resultaten laten geen significante verschillen tussen jongens en meisjes zien. Ten slotte worden alle resultaten besproken, net zoals suggesties voor toekomstig onderzoek.

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During adolescence, popularity plays an important role. Who belongs to the in-group and who does not? In the past few years there has been a rise in the research on status during adolescence. Researchers recognize the importance of children's peer relations and it's influence on their social and emotional development. They found that there is a changing appreciation by peers for academic performance in the period from being a child to being an adolescent. The present research focuses on the relationship between academic performance and popularity in adolescence. Is there really a relationship between the two and could particular conditions, that is, the class norm, school track and time spending, play a role in this relation?

In previous studies about status there is a difference made between likeability and popularity. Likeability refers to adolescents who are well liked among peers. They are characterized by prosocial behavior and the absence of antisocial behavior. Popularity refers to the extent to which adolescents are visible, dominant in their peer group and considered as attractive for affiliation. Popular adolescents are known for their antisocial as well as positive characteristics, such as prosocial behavior, athletic abilities and physical attractiveness (Dijkstra, Lindenberg, Verhulst, Ormel & Veenstra, 2009; LaFontana & Cillessen, 2002; Lease et al., 2002; Luthar & Mc-Mahon, 1996). Despite some overlap, both forms of status are identified as distinct concepts (Parkhurst & Hopmeyer, 1998) but there is a gender difference. For girls the correlation between likeability and popularity is high; for boys this correlation is lower (Cillessen & Mayeux, 2004).

The present study focuses on the notion of popularity. As mentioned earlier, popularity is related to various positive and negative characteristics in adolescence, such as antisocial and prosocial behavior, aggression, attractiveness and athleticism (Dijkstra et al., 2009; LaFontana & Cillessen, 2002; Lease et al., 2002; Luthar & Mc-Mahon, 1996). Popular adolescents' positive characteristics are features that represent health and reproductive success, like athletic abilities, physical attractiveness and prosociality. But popularity is also positively correlated with antisocial behaviors such as substance use, disruptiveness, physical aggression, bullying and relational aggression (Dijkstra et al., 2009). This means that popular adolescents do not have to be well liked to be popular. Previous research has shown that in

both elementary and middle school, popular girls are among the most disliked (Adler, Kless & Adler, 1992; Eder, 1985). They were seen as very athletic, as class leaders but they also manipulate friendships. Popular boys were seen as cool, athletic, antisocial, aggressive and physical competent (Rodkin, Farmer, Pearl & Van Acker, 2000). Again, there is a difference between boys and girls, the link between popularity and relational aggression is stronger for girls than for boys (Rose, Swenson & Waller, 2004).

Popularity is also related to academic performance. During adolescence, popularity is significantly negatively related to academic performance (Anderman, 1999; Gorman, Kim & Schimmelbusch, 2002; Parkhurst & Hopmeyer, 1998). This means that popular adolescents are characterized by low academic performance. Whereas in elementary school children who had an above average academic performance were significantly considered more likeable (Berghout Austin & Draper, 1984; Miller, 1956). If they had a below average academic performance they were significantly more rejected than the children who scored above average. This shows that in elementary school popularity and academic performance are positively related, whereas in adolescence they are negatively related to each other. Apparently, a shift occurs throughout time in the appreciation towards academic performance.

Most of the research that has been conducted on adolescents' academic performance in relation to popularity supports the idea that popular children do not perform very well in school, that is, popularity is negatively related to academic performance (Anderman, 1999; Gorman, et al., 2002; Parkhurst & Hopmeyer, 1998). There are differences and similarities in gender. Popular girls did not show high academic performance and were highly work avoidant (De Bruyn & Cillessen, 2006). For sixth grade African American girls popularity was correlated with low academic performance. These girls showed low effort, high disruptive behavior and did not try to get good grades (Kiefer & Ryan, 2008). This was similar for boys; boys of minority groups nominated low academic achievers as their most admired and respected male peers (Graham, Taylor & Hudley, 1998). However, it is also shown that popular boys score average on academic performance and popular girls score above average on academic performance (Rodkin et al., 2000). Another gender difference is that girls, more than boys, achieve popularity by social success (Eder, 1985).

In sum, it is seen that many studies report that popular adolescents are low academic achievers. However, most of the prior research about this subject has been done in the United

States. The US has a system that allows students from different academic levels to participate in one class. Consequently, we do not know whether predicting popularity with academic performance is different for various school tracks. For example, it could be that the negative relation between academic performance and popularity particularly holds for upper school tracks. Therefore, this research is done in the Netherlands, where children with the same academic level are brought together into the same school track. The aim of this study is to see to what extent academic performance can predict popularity, and to what extent this relation is moderated by school track.

Moreover, the class norm is taken into account when looking at this relation because this could influence the role academic performance plays in predicting popularity. Finally, adolescents' time spending (going out, hanging around with friends, shopping) is taken into account, because this could be a variable that mediates the relation between academic performance and popularly.

Theoretical Frame

Popularity is a primary goal for most adolescents. This idea is a part of the goal framing theory (Lindenberg, 2006). This approach its central idea is that various goals "frame" one's perception. This underlies what they do, how people assess the situation and what alternatives there are. It reasons that people's perception and actions are in favor of the goals they want to achieve. The way in which a goal is achieved, can be influenced by other goals which are activated at the same time. The social context also plays a role in influencing an individual and his or her goals. Our goals influence what we like and dislike; what we like are objects that facilitate our goals and what we do not like are object that stand in the way of our goals. To achieve or maintain a high status position is an important goal for adolescents. To reach this goal adolescents may want to actively distinguish themselves from their peers.

This idea stems from the features theory. The features theory suggests that when an individual has attractive characteristics that others in the social group do not posses (e.g. prosociality), one becomes more attractive to peers (Bukowski, Sippola & Newcomb, 2000). Peers who stand out in easily observable ways are attractive to their peer group.

The question is then what features do contribute to popularity in adolescence? It has been argued that adolescents actively try to reach their popularity goal by bridging the

maturity gap (Dijkstra et al., 2009; Moffitt, 1993). The maturity gap theory reasons that adolescents become biologically mature but are still treated as children by their environment and adults. They try to emphasis their maturity and try to bridge this gap by using antisocial behavior, (under)achieving academically or using alcohol and drugs. Their goal is to obtain the admiration of their peers and show independence towards adults. While trying to fit in with the rest of their peer group, particular behaviors are used when it seems profitable. So, adolescents actively strive to reach their goal (popularity) through actively trying to bridge the maturity gap.

Academic (under)achievement could also be seen by peers as a distinguishing feature that help bridging the maturity gap by challenging parents and teachers authority, which in turn makes adolescents more attractive. Therefore we expect that academic performance is negatively related to popularity, particularly for boys.

However, attraction is also dependent upon the variability in features. When academic performance is taken into account, the adolescents who stand out in an easy observable way, whether this is a low academic achievement when the rest has a high academic achievement or vice versa, will be considered more attractive for affiliation in the peer group. This means whether low or high academic performance is seen as a mean of bridging this maturity gap depends on contextual conditions.

School track and class norm

Previous research concluded that academic performance can influence popularity on the individual level. The group level (the social context) can also influence the popular status of adolescents. Popularity is dependent upon the interaction between the individual and the social context. There has been an increased emphasis on the fit of the features of an adolescent in their social context (Gifford-Smith & Brownell, 2002). Features of the peer group interact with the characteristics of the adolescent to influence social status. This concept is best explained with help of the "person-group dissimilarity" model of Wright, Giammarino and Parad (1986). This model suggests that deviation from the norm in a group might lead to lower acceptance (and in reverse, to higher rejection). The norm in a group is derived from the behavior of all the adolescents in the group: a mean level of a particular

behavior. Most research about this subject used this model to explain acceptance and rejection in the group environment. In the present study the person-group dissimilarity model is applied in two ways: school track and class' norm.

First, we look at the class norm for academic performance. When a particular form of behavior is very present in a class (normative behavior) this becomes the norm. This norm could predict acceptance/rejection, which means that the social norm in the class sets the standard for being accepted by peers. Previous research revealed that when adolescents show similar behavior to that of their peers (the class environment), they were much more likely to be accepted. Vice versa, if one shows dissimilar behavior to that of their peers, the chance of being rejected by the rest of the class increases (DeRosier, Cillessen, Coie & Dodge, 1994). Difference in attitudes in a class could be a strong predictor for rejection from a peer group (Sentse, Scholte, Salmivalli & Voeten, 2007). Although previous studies focused on similarity among peers, the present study argues dissimilarity between peers is related to popularity. When one does not follow the norm in the class one becomes popular. Meaning that adolescents who have easily distinguishing features (those who stand out) are more popular. This follows in the line of the features theory; easily attractive observable features will make one more attractive to peers. Because of this group dynamic, the norm for academic performance in a class could moderate the relation between academic performance and popularity.

Second, we also examine the role of school track. The different tracks of middle school can be seen as the groups that hold a specific norm. School tracks might affect the relation between academic performance and popularity, because the various tracks in a school presumably have different norms for the relation between academic performance and popularity. The norm for academic performance will be higher in the upper school tracks than the norm in the bottom school tracks. This is because academic expectations from teachers and the school are higher in the upper school tracks.

Thus, the social context level (school track) influences the status of an individual as well as the individual level (academic performance). There could be a norm in a group (per school class and/or per school track) to (under)achieve academically which can influence the relation between academic achievement and popularity. Stemming from the features theory, we argue that in the upper levels of school track low academic performance will create

popularity and vice versa. Deviation from the norm in either class or school track creates status. Whereas the upper levels of school track will have a high academic performance norm, the lower school tracks will have a low academic performance norm. Therefore, we expect that increases in school track as well as class norm will strengthen the negative relationship between academic performance and popularity.

Time spending

The general idea in the present research is that academic performance can predict popularity. It seems as if adolescents (in the upper school tracks) are determined to consciously underachieve academically to become popular. But this can also be a side effect of how adolescents spend their time. There is little research done about the effect of time spending on popularity. Most researchers focus on how spare time is spend. Most adolescents treat their social life as their first priority, school comes second. They spend most of their time watching TV and hanging out with friends (De Bruyn & Cillessen, 2008). Popular adolescents engage in behaviors that are valued by their peers and are less likely to take time to do their homework (De Bruyn & Cillessen, 2008). There is also a difference in gender and the activities adolescents undertake which makes them (un)popular. Popular boys preferred to shop and call friends on the phone, whereas they disliked computers, an activity which has a high normative rating for boys. Popularity in girls was predicted by the social factor and negatively predicted by a preference for solitary cultural activities (De Bruyn & Cillessen, 2008). Thus, although there are differences in the particular activities boys and girls undertake, the main comparison between them is that popularity promotes socializing but impedes solitary activities, such as doing homework.

Popular adolescents (boys and girls) prefer engaging in social activities in groups to spending time alone (De Bruyn & Cillessen, 2008). These activities create an opportunity for peer interaction but they also create status and prestige for the individuals in this particular peer group (De Bruyn & Cillessen, 2008). For example, spending a lot of time with friends hanging around in the mall could predict popularity. Adolescents who hang around in the mall all the time are more popular than adolescents who spend most of their time alone (for

example studying). So, social relationships influence activity choices and leisure activities play a role in maintaining relationships.

Going back to the notion of academic performance we see that time spend undertaking activities that are not related to school take time away from doing homework, which, in turn, is likely to affect academic performance. Popular adolescents spend more time undertaking activities like going out or hanging around with friends than spend time doing homework (De Bruyn & Cillessen, 2008). The idea in the present study is that time spending can act as a mediator on the relation between academic performance and popularity. It might show that the relation between academic performance and popularity disappears when time spending is added to the model. If so, the negative relation between academic performance and popularity is explained by time spending.

Also, we expect that there is a difference between supervised and unsupervised time spending. Adolescents want to show their independence and maturity (Moffitt, 1993) so they prefer spending time without adult supervision. Argued here is that time spending without adult supervision is considered more popular in the eyes of peers. It could be an indication for peers whether or not a certain person is attractive. Adolescents will pursue this goal, they want to become popular or maintain their popular position in the peer group, and actively will try to spend more time unsupervised. Summarizing, we argue that the relation between academic performance and popularity is mediated by time spending; particularly by unsupervised time spending.

The Present Study

The aim of this study is to see to what extent academic performance can predict popularity. Second, we want to examine to what extent this is dependent upon the class norm and the school track. This is going to be put in the perspective of the various middle school tracks in the Netherlands. To clarify this idea, the theoretical model used in the present research is depicted in Figure 1. In answering these questions we take gender differences into account. Moreover, we want to assess the unique attribution of academic performance. Therefore, we control for practical support as possible confounding variable. Third, we add time spending to the model to see whether or not time spending mediates the relation between academic performance and popularity. This model is depicted in Figure 2.

Fig. 1: Moderation Model
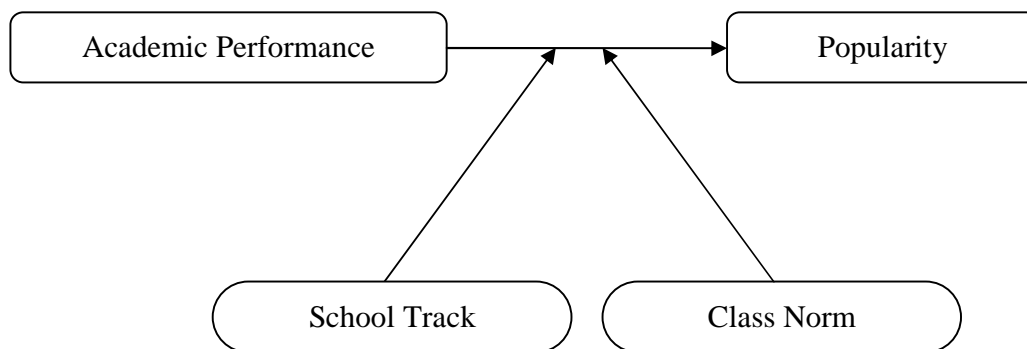
Fig. 2: Mediation Model
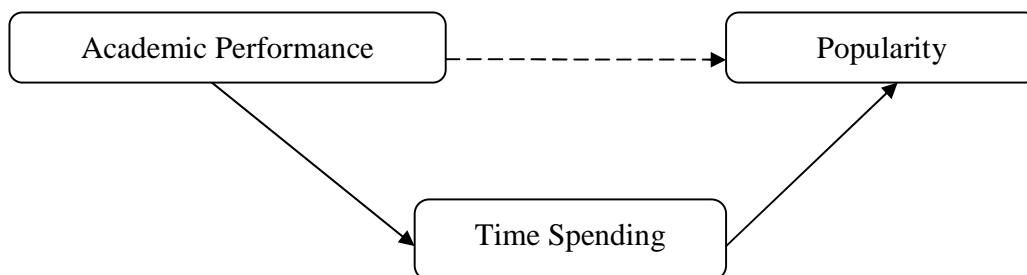
Method

Sample

Measures in the current study are based on a subsample of peer nominations from the TRAILS study (Tracking Adolescents' Individual Lives' Survey). This is a study of Dutch preadolescents living in five Dutch North municipalities (urban and rural areas). They will be measured every two years until they are at least 25 years old. This survey was created to track the development of mental health and social development from adolescents into adulthood. Questionnaires were filled out by the adolescents, their parents and their teachers. All the students from these classes received a letter containing information about the study. They were asked to participate and parents had to agree also. If the students did not want to participate or their parents did not want them to participate they could send in a reply card within ten days of receiving the information letter (98 students, including 3 regular TRAILS participants, did not want to participate).

The peer nominations sub sample was completed by 3312 respondents (1675 boys, 1637 girls). Of them 1007 were regular TRAILS participants, ($M = 14.02$, $SD = .73$). Peer nominations were done in 34 schools; 72 school classes in the first grade and 100 school classes in the second grade of secondary education (in total 172 school classes participated). Peer nominations were collected from both TRAILS participants and their classmates, but only in classrooms with at least three regular TRAILS respondents. Each classroom contained on average 18.39 participating pupils ($SD = 5.99$; range from 7 to 30). For the students that were not regular TRAILS participants, the schools provided the names. The peer nominations were assessed by a TRAILS staff member, who visited the selected schools. These took place during the regular classes and took up 15 minutes of their time. The sub sample consisted out of 87.3% Caucasian, 0.5% Turkish 0.6 Moroccan, 1.7 Surinamese, 1.5% Antillian/Aruban, 2.5% Indonesian, and 4,1% other origin. For 2% of the participating students, information about their ethnic origin was unavailable. The time spending analysis is based upon a smaller sample; this is because these items were only assessed for the regular TRAILS respondents. We use two different scales for time spending: supervised and unsupervised time spending ($N = 934$).

Measures

  Popularity. Popularity was assessed by asking participants to identify the popular members of their grade. This is based upon the number of nominations students received from their peers on the question "who do others want to be associated with?". This way adolescents directly identify popular peers, because for popular adolescents it is not a necessity that one is liked but it is necessary that others want to associate with one (Parkhurst & Hopmeyer, 1998). Students received a list with the names of all their classmates, for every question the students could nominate an unlimited number of peers (nominations were not required). The main idea behind the concept of popularity is that one wants to affiliate or associate with that popular person, they are attractive to their peers. Not asking who they want to belong to was done to prevent respondents to give answers based upon their personal preference, this way a reputation-based assessment of popularity was measured. The nominations were calculated and dived by the number of respondents in the classroom to get a proportion score; this yielded a score from 0 to 1.

  Academic performance. The score for academic performance was based upon peer nominations. This score was derived from the question; "who is a good in learning?". The number of nominations adolescents could make was unlimited and nominations were not required. The peer nominations scores were added up, then, proportion scores were calculated to take class differences into account.

  Practical support. This was again a peer nomination score, which was based upon the question; "which classmate gives you practical support?". The number of nominations one could make was unlimited, also nominations were not required.

School track. This variable consisted out of different levels of middle school in the Netherlands. It is a categorical variable, with values between 1 and 7. The levels are, starting with the lowest and ending with the highest level of middle school: Speciaal voortgezet onderwijs (SVO), (i.e., special secondary education), VMBO (i.e., praktijk-beroeps, kaderberoepsgerichte en theoretische leerweg (preparatory middle-level vocational education, basic profession-oriented learning path, middle management-oriented learning path and theoretical learning path), VMBO gemengd-theoretisch (i.e., preparatory middle-level vocational education mixed theoretical learning path), Heterogene eerste klas VMBO-HAVO-

VWO (i.e., heterogeneous first-class preparatory middle-level vocational education; higher general continued education; pre-university secondary education) HAVO, HAVO–VWO, and VWO.

An overview of the frequencies of these school tracks is presented in Table 1.

Table 1
Frequencies for School Track (N=3312)

School Track	Frequency	Percent
Speciaal Voortgezet Onderwijs	81	2.4
VMBO Praktijk-Beroeps & K-T	785	23.7
VMBO Gemengd-Theoretisch	483	14.6
Heterogene Eerste Klas VMBO-HAVO-VWO	655	19.8
HAVO	241	7.3
HAVO–VWO	481	14.5
VWO	586	17.7

Class norm. A mean score for academic performance was calculated for every school class. This is considered as the norm in every school class towards academic performance.

Time spending. This scale was not based upon peer nominations. Adolescents answered for themselves how much time they spend in a week on given activities. The variable time spending was divided into two subscales: supervised and unsupervised time spending. Supervised time spending consisted out of five variables, these were: time spend on the computer, time spend watching TV/VCR, time spend on hobbies (sports excluded) and time spend indoors with friends. Unsupervised time spending was based upon three variables, these were: time spend shopping, going out and hanging around outside with friends. The scores calculated for these scales were relative scores; a percentage score was calculated for every respondent and activity. Finally, to calculate scores for both scales, the corresponding items were added up.

Analyses

For the present study we performed a multilevel regression analysis. This is done because we analyzed nested data, that is, individuals in school classes. Therefore, multilevel analysis will be used to account for the dependence of the data. First regression analyses were done for only the main predictor, academic performance (this with and without the control variable practical support) Second, the moderators school track and class norm were taken into the analysis, just as their interactions with academic performance. Third, the time spending scales were added to the model. All variables were standardized ($M = 0$, $SD = 1$). In every analysis $p < 0.05$ was considered statistically significant.

Results

Descriptives

First we looked at the mean, the standard deviations and gender differences (t-test) of the main study variables (Table 2). It is apparent that girls score higher on academic performance and practical support. No gender difference was found for popularity.

Table 2
Descriptive Statistics for Boys and Girls Separately for Main Study Variables (N = 3312)

Variable	Mean (SD)		Differences (t-test)
	Boys ($N = 1675$)	Girls ($N = 1637$)	
Popularity	.10 (0.13)	.10 (0.12)	$t(3308) = 0.32$, $p = .75$
Academic Performance	.27 (0.26)	.34 (0.26)	$t(3301) = -7.41$, $p < .01$
Practical Support	.18 (0.11)	.21 (0.11)	$t(3309) = -10.12$, $p < .01$

Note. Degrees of freedom deviant from $N_{boys} + N_{girls} - 2$ reflect test statistics adjusted for unequal variances.

Table 3 presents the correlations between popularity, academic performance, practical support, school track and class norm for boys and girls separately. We see that popularity was significantly negatively correlated with academic performance for both boys and girls. Only for boys popularity was also significantly negatively related to school track. For both boys and girls popularity was significantly positively correlated to practical support. This

emphasizes that controlling for this variable in the regression analyses allows us to examine the unique effect of academic performance on popularity.

Table 3
Correlations between Main Study Variables by Gender (N=3312)

Variable	1	2	3	4	5
1. Popularity	-	-.07**	.17**	-.05	-.00
2. Academic Performance	-.09**	-	.24**	.10*	-.06*
3. Practical Support	.16**	.29**	-	.07**	.02
4. School Track	-.07**	.04	-.03	-	.23**
5. Class Norm	-.04	-.05	-.03	.28**	-

Note. * $p < .05$. ** $p < .01$. Boys' correlations are presented above the diagonal; girls' correlations are presented below the diagonal.

Multivariate Regression Analysis

Academic Performance

First, we tested the hypothesis that academic performance had a negative influence on popularity, especially for boys. A multilevel regression analysis was carried out for this basic model, which is shown in Table 4. There are two steps presented in this table. Step 1 represents the regression analysis without the control variable practical support. Step 2 represents the results when the control variable is added to the model. We see that academic performance had a negative relation with popularity (Table 4; Step 1). This means that when academic performance increases, popularity decreases ($b = -0.07$, $t(3310) = -2.96$, $p < 0.01$). A surprising result here, is that the results showed that gender does not have a significant influence on popularity. Also, the interaction effect between academic performance and gender was not significant. This means there was no gender difference found for popularity and that gender does not influence the relation between academic performance and popularity.

Table 4

Results of Multilevel Regression Analysis Predicting Popularity (N = 3312)

Variable	Step 1			Step 2		
	b	SE	*t*	*b*	SE	*t*
Main Effect						
Gender (1=boys)	-0.004	0.034	-0.12	0.057	0.034	1.68
Academic Performance	-0.071	0.024	-2.96**	-0.124	0.024	-5.17***
AP x Gender	-0.046	0.034	-1.35	-0.050	0.035	-1.43
Control Variable						
Practical Support				0.224	0.027	8.30***
Practical Support x Gender				-0.002	0.035	-0.06
Explained Variance		0.5%			4.1%	
Deviance		9230			9101	
Decrease in Deviance		30*** (*df* =3)			129*** (*df* = 2)	

Note. Decrease in deviance indicates whether or not the model fits the data better than the former model. The decrease in deviance has approximately a chi-square distribution with the degrees of freedom equal to the difference in the number of parameters of the models.

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

When practical support was added to the model, we saw an increased significant negative effect of academic performance on popularity. Before practical support was added to the model academic performance had a slight negative influence on popularity (b = -0.07, $t(3310)$ = -2.96, $p < 0.01$). After practical support is added to the model academic performance has a stronger negative influence on popularity (b = -0.12, $t(3310)$ = -5.17, $p < 0.001$). Practical support itself was also significant in the model (b = 0.22, $t(3310)$ = 8.30, $p < 0.001$). This means that when we controlled for the variable practical support, we had a better predicting model for popularity than when practical support was excluded from the model. This was also seen in the decrease of deviance in Step 2. Adolescents who behave in a

prosocial way and by giving practical support tend to be more popular if they show a low academic performance.

School Norm and School Track

Second, the hypothesis that school track and school norm reinforce the link between academic performance and popularity was tested. First, a multilevel regression analysis was conducted for the class norm but no significant results were found. This means that class norm does not influence the effect of academic performance on popularity. For school track we found a main effect in the regression analysis (b = -.07, $t(3310)$ = -2.34, $p < 0.01$). This is seen in the regression analysis in Table 5. Step 2 from Table 5 represents the results when the interactions with academic performance were added to the model. It appeared the interaction with academic performance was not significant (b = -0.03, $t(3310)$ = -1.59, $p < 0.06$). As a next step we wanted to see if there were particular school tracks that did have a significant interaction with academic performance. Therefore we performed the multilevel regression analysis with dummy school track variables. That is, we performed a multilevel regression analysis that included for every separate school track its interaction with academic performance (Table 6). This way we can see which particular school track moderates the negative relation between academic performance and popularity. In the first step in Table 6 every separate school track was taken into account and in Step 2 their interactions with academic performance were added to the model. The school track "heterogene eerste klas VMBO-HAVO-VWO" serves as a baseline.

Table 5

Results of Multilevel Regression Analysis Predicting Popularity with School Track (N = 3312)

Variable	Step 1			Step 2		
	b	SE	*t*	*b*	SE	*t*
Main Effect						
Gender (1=boys)	0.055	0.034	1.62	0.055	0.034	1.62
Practical Support	0.225	0.027	8.33***	0.226	0.027	8.37***
Practical Support x Gender	-0.004	0.035	-0.01	-0.006	0.035	-0.02
Academic Performance	-0.122	0.024	-5.08***	-0.117	0.025	-4.68***
AP x Gender	-0.050	0.035	-1.43	-0.053	0.035	-1.51
School Track	-0.068	0.029	-2.34*	-0.058	0.035	-1.66
School Track Interactions						
School Track x Gender				-0.016	0.034	-0.05
School track x AP				-0.027	0.017	-1.59
Explained Variance		4.5%			4.6%	
Deviance		9096			9093	
Decrease in Deviance		164*** (*df* = 6)			3 (*df* = 2)	

Note. Decrease in deviance indicates whether or not the model fits the data better than the former model. The decrease in deviance has approximately a chi-square distribution with the degrees of freedom equal to the difference in the number of parameters of the models.

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

From the results in Table 6 we can see that academic performance has a negative relation with popularity (b = -0.10, $t(3310)$ = -2.53, $p < 0.01$). It could also be concluded that the "HAVO" and the "SVO" school track had a moderating effect on the relation between academic performance and popularity. Both school tracks had a significant interaction effect with academic performance. The "HAVO" school track had a significant negative moderating effect on the relation between academic performance and popularity (b = -0.17, $t(3310)$ = -2.04, $p < 0.05$), while the "SVO" school track had a significant positive moderating effect on this relation (b = 0.37, $t(3310)$ = 2.97, $p < 0.01$). This means that the "HAVO" school track strengthens the negative relation between academic performance and popularity. For example, when adolescents' academic performance increases, their popularity decreases. On the other hand, the "SVO" school track influences the relation between academic performance and popularity in a positive way. This means that when adolescents' academic achievement increases, their popularity increases as well.

Table 6

Results of Multilevel Regression Analysis Predicting Popularity with School Track Dummies
(N = 3312)

Variable	Step 1			Step 2		
	b	SE	*t*	*b*	SE	*t*
Main Effect						
Gender (1=boys)	0.048	0.034	1.41	0.044	0.034	1.29
Practical Support	0.229	0.026	8.81***	0.235	0.026	9.04***
Practical Support x Gender	-0.007	0.035	-0.02	-0.018	0.035	-0.51
Academic Performance	-0.126	0.024	-5.25***	-0.101	0.040	-2.53*
AP x Gender	-0.050	0.035	-1.43	-0.060	0.035	-0.17
Dummy Variables						
SVO	0.859	0.162	5.30***	0.804	0.162	4.96***
VMBO PK-KT	0.134	0.086	1.56	0.132	0.086	1.36
VMBO GT	0.171	0.099	1.71	0.165	0.098	1.68
HAVO	-0.010	0.126	-0.08	-0.031	0.125	-0.03
HAVO-VWO	0.039	0.102	0.38	0.031	0.102	0.30
VWO	0.113	0.097	1.16	0.121	0.097	1.25
Dummy Interactions with AP						
SVO x AP				0.371	0.125	2.97**
VMBO PK-KT x AP				-0.007	0.053	1.13
VMBO GT x AP				-0.052	0.061	-0.85
HAVO x AP				-0.173	0.085	-2.04*
HAVO-VWO x AP				0.020	0.054	0.37
VWO x AP				-0.069	0.051	-1.35
Explained Variance	6.4%			6.9%		
Deviance	9071			9053		
Decrease in Deviance	189*** (*df* = 11)			18** (*df* = 6)		

Note. Decrease in deviance indicates whether or not the model fits the data better than the former model. The decrease in deviance has approximately a chi-square distribution with the degrees of freedom equal to the difference in the number of parameters of the models.

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

Time Spending

Finally, the hypothesis that time spending mediates the relation between academic performance and popularity was tested. Firstly, a factor analysis was performed for the two time spending scales: supervised and unsupervised time spending. This showed that we had two reliable and valid scales (supervised time spending: Cronbach's Alpha = 0.72 / unsupervised time spending: Cronbach's Alpha = 0.76).

To show mediation we had to look at three different steps (Baron & Kenny, 1986). First we tested the relation between the independent and the mediator variable, which was done with a Pearson correlation analysis between academic performance and the two time spending scales ($N = 934$). This correlation is presented in Table 7, this shows that supervised time spending ($r(934)= -0.13$, p < 0.01), unsupervised time spending ($r(934) = -0.17$, $p < 0.01$) and academic performance were significantly negatively related to each other.

Table 7
Correlations of Academic Performance and Time Spending (N = 934)

	Supervised Time Spending	Unsupervised Time Spending
Academic Performance	-.125**	-.167**

*Note. * p < .05. ** p < .01.*

The second analysis was a regression analysis, which tested the relation between the independent and the dependent variable: academic performance and popularity. From Table 8 (Step 1) we see that academic performance had a significant negative relation with popularity ($b = -0.11$, $t(932) = -2.28$, $p < 0.05$). So popularity decreases when academic performance increases.

The third analysis was also a regression analysis which tested the relation between the independent and the dependent variable and also the relation between the mediator and the dependent variable. This means that we had to perform a regression analysis which incorporates academic performance, popularity and time spending. We can speak of mediation when the significant relation between academic performance and popularity disappears. These results are shown in the multilevel regression analysis in Table 8. The results showed that when the time spending scales were added to the model, the negative

significant effect academic performance had on popularity disappeared. Academic performance went from being significant in the first step (b = -0.11, $t(932)$ = -.2.28, $p < 0.05$) to being not significant in the second step (b = -0.06, $t(932)$ = -1.22, $p < 0.11$). Table 8 shows that only unsupervised time spending created this result (b = 0.23, $t(932)$ = 6.42, $p < 0.001$).

Table 8
Results of Multilevel Regression Analyses Predicting Popularity with Time Spending (N=934)

Variable	Step 1			Step 2		
	b	SE	t	b	SE	t
Main Effect						
Gender (1=boys)	0.000	0.066	0.00	0.056	0.065	0.86
Practical Support	0.201	0.048	4.19***	0.204	0.046	4.43***
Practical Support x Gender	-0.003	0.070	-0.04	-0.007	0.069	-0.10
Academic Performance	-0.105	0.046	-2.28*	-0.056	0.046	-1.22
AP x Gender	-0.002	0.069	-0.03	-0.017	0.068	-0.03
Time Spending Scales						
Supervised TS				-0.023	0.035	-0.66
Unsupervised TS				0.231	0.036	6.42***
Explained Variance		3.1%			7.3%	
Deviance		2634			2590	
Decrease in Deviance		31*** ($df = 5$)			44*** ($df = 2$)	

Note. Decrease in deviance indicates whether or not the model fits the data better than the former model. The decrease in deviance has approximately a chi-square distribution with the degrees of freedom equal to the difference in the number of parameters of the models.

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

Discussion

The theory discussed in the present study showed us that an interesting aspect of the onset of adolescence is the change in peer value for academic performance. The aim of the present study was to examine the relation between academic performance and popularity. We were especially interested to see to what extent the class norm and school track moderated this relation. Alternatively we examined to what extent this relation was mediated by time spending. Here, the main results of the present study will be discussed.

First of all, we found that academic performance and popularity had a significant negative relation with each other, which was in line with our expectations. One interesting result is that we found no gender differences. Previous research showed, however, that especially for boys the relation between academic performance and popularity was negative. This could be the result of only controlling for practical support in the model. Therefore there is a need for further investigation focusing on the role of gender, because previous investigators have reported differences in academic performance and popularity for boys and girls (De Bruyn & Cillessen; 2006).

The second part of the present research was to see to what extent the class norm and/or school tracks affected the relation between academic performance and popularity. We especially expected that in upper school tracks deviation from the norm to perform well academically might strengthen the negative effect of academic performance on popularity.. We found that the class norm did not moderate the relation between academic performance and popularity. From the results we found no significant interaction effect between class norm and academic performance for popularity. We found that school track does moderate this relation, especially the "HAVO" school track. Moreover, it appeared that the "SVO" school track, a lower academic level, significantly moderated the relation between academic performance and popularity, but in a positive way. Apparently, in the lower school tracks high academic performance is associated with popularity, whereas in the upper school tracks low academic performance is related to popularity.

The third hypothesis we tested was if time spending (especially unsupervised time spending) could make the relation between academic performance and popularity insignificant by adding this variable to the regression analysis. As expected, unsupervised

time spending mediated this relation, whereas supervised time spending did not. Specifically, when unsupervised time spending was added to the model, the relation between academic performance and popularity disappeared. This notion can be linked to Moffitt's maturity gap theory, adolescents want to distance themselves from adults and show that they are independent by spending time unsupervised. Adolescents actively choose their time spending activities to derive their goal: popularity (cf. Lindenberg, 2006).

Strengths, limitations and recommendations.

The first problem we encounter is that we cannot firmly conclude about causality. Academic performance is used as a predictor for popularity. The question remains whether or not the relation between these two variables works this way or the other way around. It could be that popularity serves as predictor of academic engagement. There is also evidence found which supports this view. Schwartz, Gorman, Nakamoto and McKay (2006) showed that popular youth are more likely to have academic difficulties. This means that popularity could also explain academic performance. Popular adolescents derive status from their academic avoidance. This might create social pressure to maintain their academic underachievement. However, this notion is based upon the similarity theory. This theory argues that similar people join each other, which is contrary to the theories we used in the present study. Moreover, the results from the present study show that particular school tracks even reinforce the predicting relation between academic performance and popularity.

A second problem is that the popularity scale has its limitations. The popularity scale used in the present study is somewhat different from that of most other studies. In the present study popularity is defined by asking the respondents "who do others want to be associated with?". The majority of research about this subject defines popularity with questions about who is the most and the least popular in a peer group. This can be seen as a disadvantage because the outcome of the present research is not directly comparable to other studies.

A strong point of the present research is that scores were calculated with the use of peer nominations. These were used for a majority of the measures in the present study, they are well suited to determine the aspects used here; such as popularity, academic performance and practical support. This study focused on the classroom and the school track environment, peer nominations were not assessed in other contexts. A limitation is that adolescents could

only nominate the peers in their own class, not everybody in their school. We used two levels for the multilevel analysis (individual and school class) but a third level could be added to this model, the school environment. The school environment could have an influence upon the other levels. This means that adolescents could have friends outside the classroom. When this level is taken into consideration and added to the peer nomination questionnaire the outcome could be different. An individual is nested within all kinds of different social contexts, the school environment influences the individual level as well as the class level.

Finally, we can conclude that it is important to investigate the notion of "popularity" and "time spending" even further, especially when it is associated with low academic performance and perhaps absenteeism. This way one can identify groups of adolescents who are likely to disengage from the school environment. This present research shows that when adolescents in upper school tracks show a low academic performance, peers value this trait positively. We showed that when academic performance decreases, popularity increases. This could be predictive of deficient school performance (Schwartz, Gorman, Nakamoto & McKay, 2006). To show this relation we used interaction effects to understand in which way academic performance is related to gender, school track and class norm. Although we saw that academic performance was negatively related to popularity, the relation was mediated by unsupervised time spending. Adolescents will actively try to achieve their popularity goal but we also showed that this could be a side effect of time spending. Further research in this field is necessary to create more insight in which way adolescents are popular and how time spending influences popularity.

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