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## POSITIVE PEER RELATIONSHIPS AND ACADEMIC ACHIEVEMENT ACROSS EARLY AND MIDADOLESCENCE

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We explored peer acceptance and friendships during adolescence, and their relationship with subsequent changes in the level of adolescents' academic achievement. Participants were 447 students (51% girls) aged from 11 to 16 years. The students completed sociometric assessments of their peer acceptance and friendships during the autumn semester (Time 1). Academic achievement data were also obtained from students' report-card grades at Time 1 as well as during the spring semester (Time 2) of the same academic year. Regression analysis indicated that peer acceptance positively predicted subsequent academic achievement. This relationship was also moderated by age, with the effect of peer acceptance on subsequent academic achievement being greater during early adolescence than in midadolescence. This research deepens understanding of the mechanisms by which positive peer relationships influence adolescents' academic achievement.

*Keywords:* peer acceptance, sociogram, friendships, early adolescence, midadolescence.

Peers and friends provide companionship, affection, intimacy, instrumental aid, enhancement of self-worth, personal validation, and emotional support as a foundation for identity development (Furman & Buhrmester, 1992), and are particularly important during childhood, adolescence, and young adulthood. In turn, the presence or lack of social interactions among peers has significant short- and long-term consequences on social, emotional, and cognitive well-being and on adjustment across the lifespan (Rubin, Bukowski, & Laursen, 2009).

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However the influence of peer relationships may change relative to the stage of human development. As the individual goes through adolescence, his or her social interest shifts from the family to the peer group (Larson & Richards, 1991). As compared to adolescents who lack positive peer relationships, those who do engage in positive relationships tend to have stronger and more adaptive emotional well-being, self-beliefs, values of prosocial behaviors, social interactions, and a sense of inclusion and engagement at school (Wentzel, 2009). Some of the key behaviors shown in these positive interactions are being generally helpful to their peers, positive school attitudes, being cooperative, and being socially skilled (Gifford-Smith & Brownell, 2003).

The extent to which individuals are actively liked, accepted, or preferred by their peers has emerged as a core indicator for academic success as well as for their social and emotional well-being, and adjustment during adolescence (see e.g., DeRosier & Lloyd, 2011). In particular, researchers have noted that being accepted by other students and having friends at school emerge as important aspects for positive growth in the school environment. Peer acceptance and friendships in the school setting contribute to feelings of belongingness to the school and school liking, which are both key to academic motivation and success (Boulton, Don, & Boulton, 2011; Newman Kingery, Erdley, & Marshall, 2011). Indeed, peer acceptance has been identified as an important marker of successful development that is positively related to social well-being and academic achievement both at a single point in time and over time (Wentzel & Caldwell, 1997). Peer acceptance and friendships have been expounded as key roles for academic achievement as this leads to a feeling of higher connection to school life and extend motivation to get involved in curricular and extracurricular school activities, especially in adolescence (Véronneau, Vitaro, Brendgen, Dishion, & Tremblay, 2010). Likewise it has been proposed that adolescents can even benefit in terms of their academic success from being part of a peer group of academically engaged friends (Véronneau & Dishion, 2011).

Overall, research findings have indicated that the social aspect of individuals' academic achievement cannot be ignored by specialists, especially during adolescence. In this sense, researchers have centered their studies on academic achievement, as represented by marks obtained for school subjects, as this is considered a prerequisite for personal and societal development and these marks are used as criteria for selection for jobs and higher education (Spinath, 2012). Wentzel (1991) points out that school grades indicate the individual's learning within the classroom in a social context. Both theory and findings reported in research have indicated that, given the individual's strong focus on the peer group during adolescence, at this period of development friendships and peer acceptance constitute an especially substantial dimension of social functioning

and, consequently, need to be considered when examining academic outcomes (Eccles & Roeser, 2010).

Despite the importance of peer relationships and their relationship with academic achievement in adolescence that have been shown in research, no studies have been conducted in which consideration has been given to whether or not this relationship may vary across the different developmental stages of adolescence, which is a period characterized by many adjustments, including in the social dimension. It is essential for the adolescent to become an accepted member of the social group to be successful at school, and at the same time to be confident in the fulfilment of the journey that is adolescence (Witkow & Fuligni, 2010). A particularly meaningful period to study peer relationships is early adolescence, when these relationships are at the height of importance for individuals. Later, romantic relationships begin to gain importance relative to friendships; interactions with adults decrease, and interactions with cross-sex peers increase (Phillipsen, 1999).

Based on theoretical considerations and research findings, our aim in the present study was to explore positive peer relationships as measured by peer acceptance and friendships, and the relationship of these with academic achievement during successive stages of the developmental period of adolescence. Besides considering the shift of social focus toward peers during adolescence, we suggested that the relationship between peer acceptance, friendships, and academic achievement might change across the whole period of adolescence, and according to this suggestion we proposed:

***Hypothesis 1a:*** Peer acceptance will positively predict adolescents' subsequent academic achievement.

***Hypothesis 1b:*** Friendships will positively predict adolescents' subsequent academic achievement.

***Hypothesis 2a:*** The effect of peer acceptance on adolescents' subsequent academic achievement will be moderated by age during adolescence, with the effect being stronger among early and midadolescence than among older adolescents.

***Hypothesis 2b:*** The effect of friendships on adolescents' subsequent academic achievement will be moderated by age during adolescence, with the effect being stronger among early and midadolescence than among older adolescents.

## Method

### Participants

Participants were students in the 1st grade through to the 4th grade (equivalent to 7th to 10th grades in the USA) who we recruited in the northeast of Spain. The

sample was selected using multiphase sampling as follows. First, we performed stratified sampling to select the secondary schools (five centers participated in the study). Second, in the first phase, we performed cluster sampling in each of the selected centers, taking as the unit of analysis the student group in a classroom (37 classrooms participated). There were 447 adolescents who participated in the study, of whom 228 were girls (51%), aged between 11-16 years ( $M_{\text{age}} = 14.07$  years,  $SD = 1.23$ ).

### Measures

**Peer acceptance.** Students were given a list of the names of their classmates and asked to respond to the question “Whom do you like the most?” They could choose as many or as few classmates as they wished, including same- and other-sex peers, but they could not choose themselves. The class was the reference group because, under the system that operates in Spanish schools, interactions among same-graders from different classrooms are not feasible during regular classes. For this reason the students in each classroom knew each other well. The students’ peer acceptance score was calculated using CIVSoc software (Barrasa & Gil, 2004). The program procedure used was the number of times a student was included on the list by his or her peers divided by the number of students in class minus one. Hence, the denominator will be always bigger than the numerator (number of acceptances) with the value ranges from 0 (minimum) to 1 (maximum).

**Friendships.** To calculate the number of friends each participant had in the classroom, we recorded reciprocal nominations among students. These raw scores were divided by the number of students in the class minus one. The value ranges from 0 (minimum) to 1 (maximum).

**Academic achievement.** Academic achievement was measured with the students’ grades recorded on the report cards issued by the high school at Time 1 (at the end of the autumn trimester) and at Time 2 (at the end of the spring trimester). Grades are assessed on a continuous scale ranging from 0 to 10, with 10 indicating a perfect score and grades of less than 5 indicating failure to pass the subject. This measure had adequate test–retest reliability from Time 1 to Time 2 ( $r = .88, p < .01$ ).

### Procedure

Data collection was carried out at school during regular class time. Time 1 data, involving all variables, were collected between November and December. The measure of academic achievement at Time 2 was collected approximately 6 months later, between May and June of the same academic year. To ensure there was no bias arising from students having reading difficulties, a member of the research team read each item aloud and explained it to the class, and at least

two assistants remained in the room to monitor students' progress and answer any questions. Before the students completed the sociometric and demographic measures using a computer, we explained that all of their answers were confidential and they did not have to answer any question if they did not want to. Participation in the study required both parental consent and the students' individual assent.

### Statistical Analysis

As preliminary analyses, first, we have presented an overview of the variables, including the means and standard deviations. As age has been treated as a continuous variable with one standard deviation below the mean denoting early adolescents, and one standard deviation above the mean denoting midadolescents, the descriptive analyses of the sample was split for early adolescence, midadolescence, and the total sample.

Next, independent sample *t* tests were conducted to explore whether or not the early and midadolescents differed in their peer acceptance, friendships, and academic achievement at Times 1 and 2. Independent sample *t* tests by gender (dummy coded: girl = 1, boy = 0) were also calculated among the variables of the study. Subsequent bivariate correlations among peer acceptance, friendships, and academic achievement at Times 1 and 2 were calculated. A regression analysis was conducted to examine the degree to which the students' academic achievement at Time 2 could be predicted from their score for peer acceptance and friendships, while taking into account academic achievement at Time 1 and gender. Also, to test for whether or not age moderated the effect of peer acceptance and friendships (independent variables) on academic achievement, we included these two interactions in the analysis. Age was used as a continuous variable. In order to understand these effects, significant interactions were analyzed in more detail and plotted separately by conducting simple slope analyses at values of one standard deviation above (high) and below (low) the means of the predictors (Cohen, Cohen, West, & Aiken, 2003).

## Results

Descriptive statistics for peer acceptance, friendships, and academic achievement at Times 1 and 2 are presented in Table 1. Independent sample *t* tests were also conducted to explore whether students at the developmental stages of early adolescence and midadolescence differed in peer acceptance, friendships, and academic achievement. The results show that early adolescents reached a higher level of academic achievement than midadolescents did at Time 1  $t(445) = 2.05, p = .04$ , but the two groups were equal in level of academic achievement at Time 2  $t(445) = 1.17, p = .24$ . The results also show that midadolescents had

more friendships,  $t(445) = -2.39, p = .02$ , and greater peer acceptance  $t(445) = -2.20, p = .03$ , than early adolescents had.

Table 1. *Descriptive Statistics of Peer Acceptance, Friendships, and Academic Achievement at Times 1 and 2 for Early Adolescence, Midadolescence, and the Total Sample*

	Early adolescence ( $n = 137$ )		Midadolescence ( $n = 308$ )		Total ( $N = 445$ )	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Peer acceptance	0.17	0.11	0.20	0.13	0.19	0.13
Friendships	0.05	0.07	0.08	0.09	0.07	0.09
Academic achievement T1	5.72	1.56	5.39	1.47	5.49	1.51
Academic achievement T2	5.85	1.73	5.65	1.66	5.71	1.68

To examine whether boys and girls differed in peer acceptance, friendships, and academic achievement at Times 1 and 2, independent samples *t* tests were conducted. The results show that girls reached a higher level of academic achievement at both Time 1,  $t(447) = -3.14, p < .01$ , and Time 2,  $t(447) = -3.15, p < .01$  than boys did. The results also showed that, with respect to peer relationships, there was no difference between boys and girls in number of friendships,  $t(447) = -3.49, p = .69$ , or in peer acceptance  $t(447) = -1.64, p = .10$ .

Correlation analyses (see Table 2) revealed a positive relationship between academic achievement variables and peer relationship variables. At both Times 1 and 2 academic achievement was positively related to peer acceptance and friendships.

Table 2. *Correlations Among all Variables for the Total Sample*

Variables	1	2	3	4	5	6
1. Academic achievement T1	–	.88***	.28***	.25***	-.15**	.15**
2. Academic achievement T2		–	.24***	.23***	-.12**	.15**
3. Peer acceptance			–	.56***	.10*	.07
4. Friendships				–	.15**	.01
5. Age					–	-.12*
6. Gender						–

Note. \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .

A regression analysis was conducted to determine the extent to which peer acceptance, friendships, and gender predicted the students' academic achievement, and also to test whether or not developmental stage moderated the effect of peer acceptance and friendships (independent variables) on academic achievement. In Table 3 these results are presented. The overall model for the prediction of academic achievement at Time 2 was significant,  $F(7,437) =$

4.33,  $p = .01$ . As can be seen in Table 3, previous academic achievement, peer acceptance, and stage all predicted academic achievement at Time 2. Only the interaction term age  $\times$  peer acceptance was significant. In order to understand this effect, a simple slope analysis was conducted and plotted separately (see Figure 1) following the procedures of Cohen et al. (2003). This analysis indicates that increments in the students' age reduced the slope that relates peer acceptance to academic achievement. In other words, changes in peer acceptance have a greater impact in the prediction of subsequent academic achievement for early adolescents than for midadolescents.

Table 3. *Regression Analysis Predicting Academic Achievement at Time 2 Compared with Academic Achievement Time 1, Peer Acceptance, Friendships, Developmental Stage, and Gender*

Predictors	<i>b</i>	<i>SE</i>	$\beta$
Intercept	-1.94	0.83	
Gender	.05	0.08	.02
Age	.16	0.06	.11**
Academic achievement T1	.98	0.03	.88**
Peer acceptance	8.75	4.19	.66*
Friendships	3.27	6.29	.17
Age $\times$ Peer acceptance	-.62	0.29	-.69*
Age $\times$ Friendships	-.19	0.43	-.15
Total $R^2$	.79		

Note. \*  $p < .05$ , \*\*  $p < .01$ .

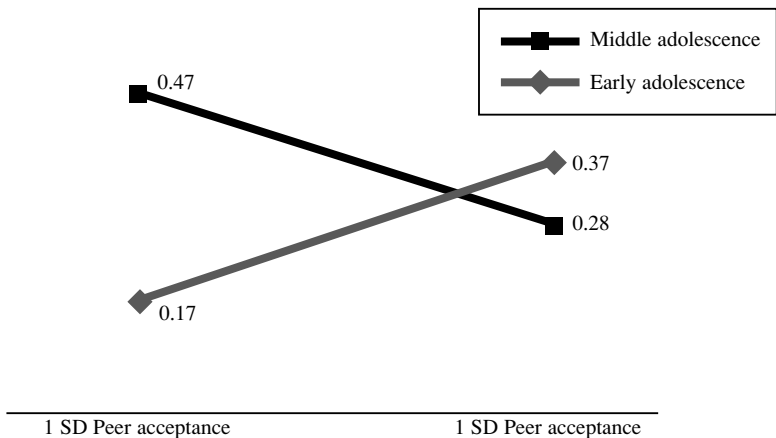


Figure 1. *Interaction between peer acceptance and age predicting subsequent academic achievement throughout adolescence.*



## Discussion

This investigation furthers understanding about the predictive power of positive peer relationships for academic achievement during the developmental stages of the period of adolescence. Our findings are consistent with a conclusion that, during early and midadolescence, positive peer relationships serve varied functions in regard to academic achievement.

Our investigation into stage differences during adolescence provided varied results. Related to academic achievement, early adolescents achieved at a higher academic level than midadolescents did. A result that we did not expect was our finding that there was no difference in level of subsequent academic achievement between the early and midadolescence periods. In regard to peer relationships, there was a difference between the early and midadolescents. In theory, and in findings reported by research scholars, it has been suggested that as the period of adolescence begins, the importance of being accepted in the social group increases (Wigfield, Byrnes, & Eccles, 2006). This is in line with our results, which, as indicated by their assessments of peer acceptance and friendships, showed that midadolescents had more peer relationships than did early adolescents. This result seems to indicate that the shift of focus toward the peer group increases throughout adolescence.

We also tested for gender differences in peer relationships and academic achievement. Our results were in accordance with previous findings ([Huang & Su, 2014](#); [Lubbers, Van Der Werf, Snijders, Creemers, & Kuyper, 2006](#)) of a decrease in gender segregation during the period of secondary schooling, and furthermore, we did not find any difference according to gender in peer acceptance or friendships. However, regarding academic achievement, the girls in our study scored higher than boys did at both testing times. This result is consistent with a meta-analysis by Voyer and Voyer (2014), in which a small but significant and stable female advantage in academic achievement was noted. This may be attributable to the fact that, compared to adolescent girls, it has been found that boys place less importance on academic success ([Berndt & Miller, 1990](#)), and, compared with girls, a higher percentage of boys drop out of school ([Zettergren, 2003](#)).

Beyond these differences, the results of our correlational analysis indicate that peer acceptance and friendships were positively related to academic achievement both at the time of the initial test and over time. These correlations are in accordance with the literature on significance and orientation showing that positive peer relationships and achieving well academically tend to co-occur as well as being related over time (Oberle & Schonert-Reichl, 2013).

Our findings provide clear support for the link of positive peer relationships and academic achievement among adolescents. In particular, our results show

that, beyond the prediction of academic achievement at the time of initial testing (Time 1), peer acceptance added significantly to the prediction of the student's subsequent academic achievement (Time 2). Generally, peer acceptance is recognized as an indicator of propitious progress in relation to both social well-being and academic achievement ([Wentzel, 1991](#); Wentzel & Caldwell, 1997). Furthermore, our finding also coincides with previous findings that peer problems are related to school difficulties, such as poor academic achievement ([Véronneau et al., 2010](#)).

In addition, our finding shows that throughout adolescence the effect of peer acceptance on academic achievement was moderated by developmental stage. This implies that changes in peer acceptance have a greater impact in the prediction of level of academic achievement for early adolescents than for midadolescents. It also shows that adolescence might not be considered as a unique developmental period at least in terms of social aspects considering that our results show different influences of peer relationships on academic achievement depending on stage during adolescence.

Several social mechanisms could account for the capacity of peer acceptance to predict academic achievement, although the different stages of adolescence are not the focus in any of these mechanisms. Those adolescents who are accepted within their peer group have a stronger attachment to their school and schoolwork and can put their social abilities into practice more easily as those close connections provide them with the emotional support necessary to improve their engagement at school ([Wentzel, 2009](#)). [Zettergren \(2003\)](#) suggested that the link between peer acceptance and academic achievement might originate in the cognitive skills of the individual. This author found that the academic achievement and intelligence level of peer-accepted children were higher than the levels of children with less peer acceptance. More research is necessary to gain greater understanding of the process involved in that relationship. Nevertheless as our research findings show, attention should be paid to each of the stages of adolescence separately and not together as it has been treated by previous researchers.

We did not expect the finding we obtained in our study that friendships were not significant in the model after controlling for academic achievement at Time 1. This finding was also contrary to that of previous researchers who have suggested that friendships play a significant role in academic achievement (e.g., [Wentzel & Caldwell, 1997](#); [Witkow & Fuligni, 2010](#)). It is possible that the pattern of our findings resulted from our measuring peer relationships at a single point in time, which may be a poor predictor of changes in level of academic achievement. Indirect support for this view comes from the observation of [Lubbers et al. \(2006\)](#) that "associations between aspects of peer relations and academic achievement appear to become less strong or disappear completely when controlling for prior academic level..." (p. 495). More longitudinal studies are clearly warranted in

which peer relationships are measured as well as academic achievement for longer durations to allow for substantial changes.

Young people who can count on social support to change their social standing will be able to cope with the stressors present in the school settings and will be able to maximize their opportunities for academic achievement. Thus, it may be particularly important to focus intervention efforts on younger adolescents with low peer acceptance in order to increase their social support network. The strength of the links we found between peer acceptance and academic achievement suggest that schools may positively impact students' achievement by introducing programs focused on improving peer relationships. Our results suggest that implementing interventions in relation to the social aspects of the class members could positively influence students' academic achievement

Shortcomings of this study are, first, that the over-time design of the study limits the generalization of the results; that is by having only the two time points limits the generalizability of the findings. Although the analyses conducted in this study were robust, longitudinal analyses should be carried out to evaluate the stability of the effects of peer relationships and stage-related differences during the developmental period of adolescence. We believe it would also be interesting to widen the age range of the sample to explore the whole period of adolescence, including early, mid, and late adolescence, and not only the first two stages. Finally, future researchers need to explore in depth other indicators of social functioning in addition to peer acceptance and academic achievement during early, mid, and late adolescence.

In conclusion, the present study was designed to broaden understanding of peer relationships and academic achievement during adolescence. Our results indicate that peer acceptance plays different roles in adolescents' academic achievement according to the stage of development, with a greater effect in the stage of early adolescence. More research is clearly warranted on the role of social functioning—such as peer acceptance—in understanding academic success during the successive stages of adolescence.

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