How do individual predispositions and family dynamics contribute to academic adjustment through the middle school years? The mediating role of friends' characteristics

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Abstract

This study examined the mediating effect of friends' characteristics (problem behavior and academic achievement) in the association between students' background (family and individual factors) and later academic adjustment, as operationalized by problem behavior and academic achievement. We recruited 998 participants in three public middle schools and used three annual waves of data collection (Grades 6, 7, and 8). We found that students' own academic achievement and problem behavior are predictors of later adjustment. Friendship choices are identified as a mediation mechanism that contributes to consistent adjustment from the beginning to the end of middle school. Specifically, high-achieving students in Grade 6 tend to associate with high-achieving friends and are unlikely to associate with friends who exhibit problem behavior in Grade 7, which results in continued achievement in Grade 8. Associating with high-achieving friends in Grade 7 also mediated the link between adolescent problem behavior in Grade 6 and academic achievement by Grade 8. Friends' characteristics in Grade 7 did not mediate the effect of any family factor measured in Grade 6. In general, our results suggest friendship selection is central to sustained success throughout the middle school years.

Keywords: middle school students, parent child relation, friendship, academic achievement, problem behavior

How do individual predispositions and family dynamics contribute to academic adjustment through the middle school years? The mediating role of friends' characteristics

Early adolescence is a period during which individuals learn to navigate new experiences with their families, in their peer group, and at school. Youths' ability to adjust to their changing environment can have long-term impacts, for example on their educational outcomes, career opportunities, and social and behavioral adjustment. In the middle school setting, acquiring relevant knowledge and competencies usually results in positive outcomes, such as academic success, social skills development, acquisition of socially appropriate behaviors, and an understanding of responsibilities leading to good citizenship (Chen, Rubin, & Li, 1997; Masten et al., 1995; Zaff, Moore, Papillo, & Williams, 2003). Two major indicators of early adolescent adjustment as they go through middle school are academic achievement and the display of behavior problems in school (Cummings, Davies, & Campbell, 2002). In this study, two types of social influence will be considered to predict adolescents' adjustment. First, family influences, which are most prominent in childhood, are expected to remain important, even though the role of parenting changes as children become teenagers. Second, friendships become increasingly important during adolescence; therefore, we anticipate that they will mediate the impact of both pre-existing individual propensities and family influences on early adolescents' adjustment during middle school.

Components of adolescent adjustment

A first aspect of adolescent adjustment during the middle school period is their level of academic achievement, which is commonly measured using a student's grade point average (GPA). This indicator is especially relevant because it is positively associated with a wide range of measures of well-being, such as low depressive symptoms, high self-esteem, and good physical health throughout adolescence, and even later in adulthood (Adams, 2002; Herzog, Franks, Markus, &

Holmberg, 1998; Mechanic & Hansell, 1987). Adolescents who do well academically are likely to attain a higher educational level, which in turn leads to a better financial situation and higher income than for their counterparts who do not succeed in their studies (Day & Newburger, 2002; Johnson, Brett, & Deary, 2010). This effect can last through generations, as high-achieving adolescents who attained good socioeconomic conditions later on are able to provide better education and other resources for their children, which impacts the latter's own academic achievement (Day & Newburger, 2002; Johnson, Brett, & Deary, 2010; Véronneau, Serbin, Stack, Ledingham, & Schwartzman, 2015).

Conversely, academic failure and subsequently dropping out of high school can lead to many negative outcomes. Adolescents who have interrupted their studies are at greater risk of experiencing social, financial and health problems than those who graduated from secondary school (Janosz, 2000). Compared to students who obtained a diploma, those who dropped out are more likely to display juvenile and adult delinquency, have greater difficulties when integrating into the job market, are more likely to receive welfare or unemployment benefits, and tend to have lower-paying jobs that are less stable and less prestigious (Hartnagel & Krahn, 1989; Janosz, 2000; Orr, 1987; Sewell & Hauser, 1975; Steinberg, Blinde, & Chan, 1984). These socioeconomic difficulties are also linked to physical and mental health problems for dropouts (Chavez, Edwards, & Oetting, 1989; Gage, 1990; Tousignant, Bastien, & Hamel, 1993).

Adjustment in middle school is not limited to students' learning school material or their ability to obtain high grades. In fact, learning to behave appropriately in a complex social context is another dimension that has clear influences on later life outcomes (Farrington, 2005; Moffitt, Caspi, & Harrington, 2002; Patterson, Reid, & Dishion, 1992). Aggressive and hostile behavior can negatively impact learning, because adolescents who act in this way experience peer rejection and

have fewer opportunities to receive help from their peers for schoolwork compared to others who exhibit prosocial behavior and who are more cooperative (Chen, Rubin, & Li, 1997; Wentzel, 1991; Wentzel & Asher, 1995). Therefore, adolescents who display behavior problems at school generally develop a negative attitude toward school, which results in a disinterest in activities related to school and leads to low academic achievement. Furthermore, individuals who exhibit behavioral disorders tend to be at high risk for dropping out of school (Fortin, Royer, Potvin, Marcotte, & Yergeau, 2004). These behavioral issues not only negatively affect students' adjustment during adolescence but also result in negative repercussions on their career in adulthood, such as higher rates of unemployment, career instability or lower income (Masten, Desjardins, McCormick, Kuo, & Long, 2010; Johnson, Brett, & Deary, 2010).

In short, both academic achievement and problem behavior are important indicators of early adolescent adjustment with potential long-term impacts extending into early adulthood (Dishion & Patterson, 2016). Hence, it is important to understand the mechanisms through which factors from several life domains work together to predict adolescent adjustment during the middle school period. This study will thus investigate the combined influence of family dynamics and friends' characteristics to help further current knowledge of the socialization processes that lead to changes in early adolescents' adjustment throughout the middle school period.

Family influences

During middle school years, the relationship between adolescents and their parents changes as youths develop their autonomy. Even if peers gain in importance during this time, parents continue to influence their children by guiding them through social experiences they encounter outside the home (Henry, Tolan, & Gorman-Smith, 2001). Because adolescents spend an increasing amount of time outside the home, it may become difficult for parents to monitor their activities. Parents' awareness

of their adolescents' activities and friendships may decrease, and at the same time adolescents' need for autonomy may generate conflicts in the family. These two crucial aspects of family dynamics during the early adolescent period will be reviewed in turn.

Parental monitoring is a multifaceted construct that encompasses parents' attention to their adolescents' activities and interests, their capability to acquire knowledge on their adolescent's relationships and whereabouts, and their ability to efficiently guide their behaviors (Laird, Criss, Pettit, Dodge, & Bates, 2008). Many studies have confirmed the link between a lack of parental monitoring and behavior problems during adolescence, and this finding has been replicated in different samples and in various contexts (see review by Dishion & McMahon, 1998). Conversely, adolescents reporting high parental monitoring display greater academic achievement and affiliate with better-adjusted peers than those who report low parental monitoring (Criss et al., 2015; Dishion, Bullock, & Kiesner, 2008; Hill & Tyson, 2009; Véronneau & Dishion, 2011). This may be explained by the fact that parents who have a genuine interest in their adolescent's activities are more likely to take an active part in their child's life. They may be in a good position to offer guidance about which friends to choose and to develop an awareness of issues in their child's life, such as academic difficulties, in which they can rapidly intervene. Conversely, low parental monitoring predicts exposure to antisocial peer pressure and is also a risk factor for the development of externalizing problems (Curtner-Smith & MacKinnon-Lewis, 1994; Pettit, Bates, Dodge, & Meece, 1999), which could further exacerbate behavior and academic problems.

Beyond parental monitoring, conflict in the family is another factor that may affect both adolescent adjustment and affiliation with deviant peers. The coercion theory accounts for the process through which family conflict is associated with adolescent emotional distress and aggressive behavior (see Dishion & Snyder, 2016). Family conflict during adolescence exacerbates adolescents'

emotional and behavior problems (Fosco, Caruthers, & Dishion, 2012). Furthermore, adolescents who live in a household where conflicts are frequent (whether it is conflict between the parents or between parents and their children) are at risk of experiencing poor academic performance (Harold, Aitken, & Shelton, 2007). When exposed to high levels of family conflict, adolescents tend to engage in delinquent behavior and to affiliate with deviant peers who can become role models that further encourage their problem behavior, including substance use (Akers, Krohn, Lanza-Kaduce, & Radosevich, 1979).

Although parental monitoring and family conflict are two facets of family dynamics, they have rarely been studied together. Taking them both into account within the same study should help us achieve a fuller understanding of their unique contributions to adolescent adjustment than if we studied them separately. In addition, because of the established connection between problematic family dynamics and difficulties with peers, a better understanding of the social mechanisms underlying adjustment during early adolescence requires that some attention be devoted to peer influence.

The influence of peers

Peers occupy a very important and influential place in adolescents' lives; therefore, it is imperative to investigate friends' characteristics in the context of this study. According to a review by Rubin, Bukowski, and Parker (2006), relationships with peers gain in quantity and quality during adolescence as they become more intimate, deeper, and more frequent than they were in childhood. Friends are an important source of social support, and they can help adolescents overcome stress and difficulties. Overall, adolescent friendships can contribute to a healthy psychosocial adjustment when youths associate with well-adjusted peers.

According to Kandel's (1978) friendship selection theory, friendships are generally formed on

the basis of similarity between two individuals in terms of behaviors, interests, activities, and attitudes. Once the friendship has formed, these similarities may be reinforced through socialization processes occurring between the individuals (Altermatt & Pomerantz, 2003; Hartup, 1989; Kandel, 1978). During adolescence, friends tend to share common social and behavioral characteristics, such as academic success and motivation, dropout rates, teen pregnancy rates, externalizing problems such as aggression, delinquency or drug use, internalizing problems and body image issues (Cairns, Cairns, Neckerman, Gest, & Gariépy, 1988; Carey, Donaghue, & Broderick, 2013; Cillessen & Borch, 2008; Kistner, Balthazor, Risi, & Burton, 1999; Rubin, Bukowski, & Parker, 2006; Urberg, Değirmencioğlu, & Pilgrim, 1997). In other words, adolescents choose their peers according to preexisting characteristics (selection process), and over time their resemblance with these chosen peers may increase and influence their ulterior adjustment (socialization).

Studies have confirmed that the peer group is an important source of influence in relation to adolescents' behaviors, goals and attitudes (Berndt & Keefe, 1995), which can result in either positive or negative consequences for their psychosocial development. Friends' behavioral and academic characteristics can thus impact youths' future academic achievement and social development. For example, associating with peers who present behavior problems and poor academic performance in Grade 6 has been linked to poor academic performance two years later (Véronneau & Dishion, 2011). Chen, Chang, Liu, and He (2008) found that children who belong to a group of academically successful peers become more competent in social activities and exhibit less problem behavior than those who are not affiliated with academically successful peers. In addition, they found that having peers who succeed in school is a protective factor for children who struggle in school, that is, such affiliations decrease their risk of developing problem behaviors. However, adolescents who struggle in school and who also associate with peers who perform poorly academically are more

prone to displaying problem behaviors and to becoming socially maladjusted than low-risk youths who do not have deviant friends (Cairns & Cairns, 1994; Dishion, McCord, & Poulin, 1999). In short, past research suggests that affiliating with peers who share one's values or behavior may serve an important developmental function for well-adjusted adolescents, as such friendships may strengthen the initial dispositions that youths need to be successful in middle school.

This study

Past research on the social influences on middle school students' adjustment has often focused on peer groups while neglecting the potential role of parents (Altermatt, & Pomerantz, 2003; Barnes, 2014; Chen, Chang, & He, 2003). However, the literature also supports the idea that parents may play an important role in relation to adolescents' academic achievement (Rubin, Bukowski, & Parker, 2006; Dishion, Bullock, & Kiesner, 2008; Véronneau & Dishion, 2011). To understand how best friends and parents join forces to shape adolescents' future, both must be taken into account simultaneously within the same study. Furthermore, a well-controlled longitudinal design is necessary to test the temporal ordering of the predictors and outcomes. Few longitudinal studies have been conducted on this topic (Kiesner, Poulin & Dishion, 2010; Véronneau & Dishion, 2010; 2011), and to our knowledge, none have spanned the three years of middle school. This study should therefore make a significant contribution to our understanding of social influences over time on adolescent adjustment.

This study aims at verifying whether certain parental characteristics may influence youths' friendship selection process, beyond expected "selection effects"—that is, adolescents' propensity to associate with similar others. Accordingly, we test the indirect effect of both youth adjustment and family dynamics (parental monitoring and family conflict) on adolescents' ulterior adjustment through their affiliation with friends who possess certain negative or positive characteristics.

Our first hypothesis is that baseline indicators of individual and family adjustment (i.e., academic achievement and parental monitoring) will predict youth association with well-adjusted friends in the next year, that is, with peers who display high academic achievement and who adopt little problematic behavior. Such positive friendships should act as a mediator, in that they help account for participants' sustained achievement by the end of middle school and reduce the likelihood of their involvement in problem behavior. Our second hypothesis is that baseline indicators of individual and family maladjustment (i.e., problem behavior and family conflict) will predict youth association with peers who have poor academic adjustment and exhibit problem behavior. Such negative friendships should also act as a mediator in that they help account for participants' consistent problem behavior until the end of middle school and explain their low academic achievement by then. The theoretical model to be tested is displayed in Figure 1.

Method

Participants

The data presented in this article are provided by the [NAME MASKED FOR REVIEW] dataset, a longitudinal study that was conducted on the west coast of the United States. Participants were recruited among a population of Grade 6 students from three public middle schools in an ethnically diverse metropolitan community. We recruited a sample of 998 participants (91.5% of the target population) and their families, who were asked to complete the initial evaluation in Grade 6. The sample consisted of 526 boys (52.7%) and 472 girls (47.3%). It also comprised 422 European Americans (42.3%), 289 African Americans (29.0%), 68 Latinos (6.8%), 52 Asian Americans (5.2%), and 162 (16.2%) participants of other ethnicities, including mixed ethnicity. Ethnicity data were missing for 5 participants (0.5%). The majority of participants came from middle-class families. As for retention levels, 76.5% of adolescents participated in all three waves of data collection and

91.5% of adolescents participated in at least two waves of data collection. The high retention levels between year 1 and year 3 can be explained by the fact that participants stayed in the same school and because the data were collected during school hours. When participants changed schools, they were followed in their new school for the purpose of the study.

Procedure

Participants completed a self-reporting questionnaire that was adapted from an instrument developed and reported by colleagues at [NAME MASKED FOR REVIEW] (Metzler, Biglan, Ary, & Li, 1998). This questionnaire was completed by adolescents in Grades 6, 7 and 8, and contained questions about problem behavior and family involvement in the school context. Peer nominations were also collected to enable us to identify participants' best friends, and school records were collected to assess academic achievement using students' GPA at the end of their academic year. All participants were assured of the full confidentiality of their answers.

Half of the participants were also randomly assigned to a school-based, family-centered intervention that aimed at preventing substance use (see EcoFIT; Dishion & Kavanagh, 2003; Dishion & Stormshak, 2007 for full details on the intervention). Even though substance use is not a variable of interest in this study, possible moderation effects of treatment assignment are taken into account in our analyses (see details in the Primary Analysis section, under Results).

Measures

Parental monitoring. Parental monitoring was measured in Grade 6 and was based on a four-item scale that asked participants how often their parents knew (a) what they were doing away from home; (b) where they were after school; (c) what their plans were for the next day; and (d) what were their interests, activities, and whereabouts. Each item was scored on a scale ranging from 1 (*never or almost never*) to 5 (*always or almost always*), and a mean score was created on the basis of all four

items (alphas for Grades 6 through 8 ranged from .82).

Family conflict. Family conflict was also measured in Grade 6, and included five items that asked participants to rate how many times various incidents occurred between them and at least one of their parents in the last three months (e.g., "We got angry at each other," "We argued at the dinner table," "I got my way by getting angry"). Each item was scored on a scale ranging from 0 (*never*) to 7 (*more than seven times*), and a mean score was created on the basis of all five items (alphas ranged .81).

Academic achievement. Academic achievement in Grades 6 and 8 was assessed through the students' school records. Their GPA score based on academic subjects ranged from 0 to 4.

Problem behavior. Problem behavior was measured using a nine-item self-report scale administered in Grades 6 and 8. Sample items included "Stayed out all night without parents' permission," "Intentionally hit or threatened to hit someone at school," and "Stole or tried to steal things worth more than $5." Each item was rated on a scale ranging from 1 (*never*) to 6 (*more than 20 times*), and the reference period was during the past month (alphas ranged between .83 and .77).

Peer nominations. The peer nomination procedure (Coie, Terry, Zakriski, & Lochman, 1995) is based on a sociometric questionnaire asking participants to circle the name of their three best friends on a list including all of their grademates who were also participating in the study. Following this step, a mean score is calculated to reflect the average academic achievement of all nominated best friends, and another mean score is created to reflect their average level of problem behavior. Although certain researchers consider that the reciprocity of the friendship nomination is an important criterion when establishing whether a friendship exists between two individuals (Parker, Rubin, Price & DeRosier, 1995; Rubin, Bukowski, & Parker, 1998), others suggest that peers who receive unilateral nominations still provide a considerable source of influence. For example, a study

by Aloise-Young, Graham, and Hansen (1994) on cigarette smoking in college suggests that non-reciprocal friends can be even more influential than reciprocal friends. Therefore, we decided not to restrict our definition of friendship to reciprocal nominations and to recognize all grademates nominated by a participant as their friends.

The peer nomination procedure made it possible to gather information on academic achievement and problem behavior directly from the participants' nominated best friends, instead of using participants' perceptions of their friends. This choice was guided by past research showing that the perception that youths have of their friends' behavior tends to differ from their friends' actual behavior (Prinstein & Wong, 2005). Friends' characteristics (academic achievement and problem behavior) as measured in Grade 7 are used as mediators in our model, which also includes these same variables as measured in Grade 6 for control purposes.

Results

Analytical Strategy

Preliminary analyses consist in examining missing value patterns, descriptive statistics, and bivariate analyses, followed by *t* tests to identify gender differences on variables of interest. Primary analyses consist in structural equation models (SEM) run with Mplus software (version 7.0) to verify whether the data adequately fit the hypothesized model (Figure 1). Mediation effects are handled using the "Model Indirect" command.

The estimator used to run the models is maximum likelihood with robust standard errors, such that analyses are robust to non-normal data. The hypothesized model is first evaluated for fit, and secondary analyses are used to probe possible moderation effects of gender and ethnic group (European American vs. African American) on the overall model. Such differences are examined using multiple group analyses. In fact, because of the tendency of adolescents to choose friends based

on gender and ethnic similarities (Brown, 1990; Kandel, 1978), and because the links between the study variables might differ across genders or ethnic groups, secondary analyses are meant to confirm that the results are generalizable to both genders and across ethnic groups. Missing data were handled using the full information maximum likelihood (FIML) procedure, which enables us to use all available information from each participant, even those who have occasional missing data.

Missing Data

As indicated by a significant Little's Missing Completely at Random (MCAR) test, $\chi^2 = 263.59$, $p < .001$, the data were not MCAR. Thus, we moved forward with our analytic plan under the assumption that missing data followed the "missing at random" (MAR) pattern. Under this assumption, the pattern of missing data can be accounted for by the variables included in the statistical model and can therefore be adequately handled using the FIML procedure. The patterns of missingness were explored by calculating the number of variables with a missing value for each participant. Bivariate correlations revealed that there were more missing data among adolescents who displayed a lower GPA in Grade 6 and in Grade 8 ($r = –.31$, $p < .001$ and $r = – .33$, $p < .001$) and among those whose best friends had lower GPAs in Grade 6 and 7 ($r = –.16$, $p < .001$ and $r = –.14$, $p < .001$). Missing data were also more common in participants who engaged in higher levels of problem behavior in Grades 6 and 8 ($r = .13$, $p < .001$ and $r = .09$, $p = .01$) and whose friends reported high levels of problem behavior in Grade 6 ($r = .09$, $p = .005$). Moreover, missing data were more common in participants who reported lower parental monitoring ($r = –.10$, $p = .002$.

Descriptive Statistics and Correlations

The means, standard deviations and correlations between all variables are presented in Table 1 along with indicators of normality and the number of participants with valid data for each variable. Most variables are normally distributed, as indicated by both adequate skewness (< 2.0) and kurtosis

(< 8.0) levels as defined by Kline (2005). However, adolescents' problem behavior in Grade 6 and Grade 8 and friends' problem behavior in Grade 7 were not distributed normally according to those cutoffs. This issue was handled by using the MLR estimator in Mplus for the primary analyses, which corrects for non-normal data. Correlations are almost all significant and they are in the predicted direction except for family conflict, which was not significantly correlated with friends' problem behavior in Grade 7.

Group Differences

A *t* test was used to examine gender differences in relation to study variables. There were no gender differences for family conflict, but significant differences emerged for all other variables. Girls obtained higher GPAs in Grades 6 and 8 and reported higher parental monitoring than boys. Girls also tended to associate with friends who had high GPAs in Grade 7, compared to boys (all *t*s > 6.52, *p*s < .001), while boys tended to associate with friends who exhibited higher levels of problem behavior more than girls did. They also differed from girls because of their higher levels of problem behavior in Grades 6 and 8 (all *t*s > 2.58, *p*s < .05).

Primary analysis

In SEM, a model has adequate fit when the χ^2 is not significant, when the comparative fit index (CFI) is greater than .95, and when the root mean square error of approximation (RMSEA) is smaller than .06 (Hu & Bentler, 1999). According to those indicators, the hypothesized model demonstrates a good fit to the data, χ^2 (12) = 18.63, p = .10, CFI = .99, RMSEA = .02.

Results are presented in Figure 2. To enhance clarity, correlations among variables measured at the same wave of data collection are not depicted, but they were all significant at p < .001, unless otherwise indicated. In Grade 6, participants' problem behavior correlated with academic achievement at r = –.37, with family conflict at r = .41, and with parental monitoring at r = –.46.

Grade 6 academic achievement correlated with family conflict at $r = -.24$ and with parental monitoring at .33. In addition, family conflict correlated with parental monitoring at $r = -.24$. Friends' adjustment and friends' problem behavior measured in Grade 7 correlated at –.57. Lastly, in Grade 8, participant's problem behavior correlated with academic achievement at $r = -.29$.

Contrary to our expectations, we found no support that parental monitoring in Grade 6 indirectly led to a greater academic performance and to less problematic behavior in Grade 8 through its impact on friendships in Grade 7. In fact, since parental monitoring was not linked to friends' characteristics in Grade 7, no mediation effect was possible. Unexpectedly, we observed that family conflict in Grade 6 was negatively associated with friends' problem behavior in Grade 7, which in turn predicted low academic achievement in Grade 8. However, the mediation effect of associating with friends who exhibit problem behavior was very small and marginally significant ($\beta = .01$, $p = .07$). The effect of friends' problem behavior as a mediator must therefore be interpreted with caution.

We also tested mediation paths starting from participants' baseline levels of academic achievement and problem behavior in Grade 6. We found that affiliation with high-achieving friends in Grade 7 mediates the association between academic achievement in Grade 6 and the same variable in Grade 8 ($\beta = .04$, $p < .01$). In addition, we observed a mediation effect of the association with friends who exhibit problem behavior for the link between academic achievement in Grade 6 and academic achievement in Grade 8 ($\beta = .02$, $p = .029$). The indirect effect involving friends' academic achievement as a mediator between adolescent problem behavior in Grade 6 and academic achievement in Grade 8 was significant as well ($\beta = -.02$, $p = .032$. Finally, the indirect effect involving friends' problem behavior as a mediator between adolescent problem behavior in Grade 6 and academic achievement in Grade 8 was marginally significant ($\beta = -.02$, $p = .08$).

As a final check for the generalization of our model to different subgroups of participants, we examined differences across genders, ethnic groups, and control versus intervention groups, using multiple-group analyses. We compared the fit for unconstrained models (all regression and correlation coefficients free to vary across groups) and constrained models (coefficients constrained to be equal across groups). Because of the large sample size, we used change (Δ) in CFI to test for the significance of the difference in fit between the constrained and unconstrained model. Model fit was considered to be significantly different if ΔCFI was .01 or greater (Cheung & Rensvold, 2002). We confirmed invariance of the model across genders (ΔCFI = .006) and across ethnic groups (ΔCFI = .006) when comparing European Americans and African Americans. In addition, no differences were found between the intervention and the control group (ΔCFI = .008). Thus, we conclude that the model results presented in Figure 2 generalize to both genders, to the two main ethnic groups represented in the sample, and to both the intervention and control groups.

Discussion

This study examined the mediating effect of friends' characteristics in the association between individual and family predictors as measured during students' first year in middle school (Grade 6) and adolescent adjustment at the end of their middle school studies (Grade 8). Our results provide insight into a complex chain of social influences on early adolescents' development and adjustment. Contrary to expectations, high parental monitoring did not predict adolescent affiliation with well-adjusted friends in Grade 7. Nevertheless, students' own academic achievement and problem behavior in Grade 6 predicted their association with high-achieving friends in Grade 7, and this subsequently predicted academic achievement and behavior problems in Grade 8. These results emerged while controlling for friends' characteristics in Grade 6, which further supports the temporal sequence in the links between the variables.

Additionally, adolescents' initial levels of problem behavior predicted their association with friends who presented similar issues, which subsequently predicted a decrease in academic achievement in Grade 8. This significant indirect effect suggests that friends play a major and active role in the increase of problem behavior among youths, above and beyond the mere continuity of such behaviors following middle school entry. Unexpectedly, we found that encountering family conflict in Grade 6 decreases the likelihood that youths would associate with friends who display problem behavior in Grade 7. Friends' problem behavior in Grade 7 is, as expected, associated with a decrease in academic achievement in Grade 8. Our findings thus suggest that peer factors as well as parental factors work together in a more complex manner than we had initially hypothesized; this is described more specifically below.

In general, our findings suggest that both the selection and socialization processes proposed by Kandel (1978) are at work. The fact that participants' characteristics in Grade 6 predict similar characteristics in their friends in Grade 7 after controlling for friends' own characteristics in the previous year supports the existence of a selection effect. Moreover, the fact that friends' characteristics in Grade 7 contribute to Grade 8 academic adjustment after controlling for participants' academic adjustment at middle school entry corroborates the presence of socialization effects. A new finding from our data is that there seems to be a positive spillover effect of friendships with high-achieving peers in middle school, as those friendships also help reduce adolescents' problem behavior over time. This suggests that friends' influence in the middle school context goes beyond the basic principles of selection and socialization, such that positive friendships that are established on the basis of certain traits or behaviors (e.g., studying hard, helping each other with schoolwork, setting high expectations for school success) can eventually have a positive influence on a different aspect of individual behavior (in the case, the involvement in problem behavior). This

finding has relevant implications for interventions aiming at protecting middle school students who are at risk not only for academic failure but also for drifting into delinquency. In fact, promoting contacts with well-adjusted peers, not only in terms of avoiding deviant behavior but also in the academic domain, could have wide-ranging positive impacts on at-risk adolescents. Of course, adults must carefully monitor these contacts in order to avoid negative influences of deviant peers on well-adjusted youth (Dishion, Poulin, & Burraston, 2001).

According to our results, it is youths' individual characteristics, more so than parental practices, which seem to be important with regard to friendship selection. This significant role of individual characteristics during adolescence is also in line with Kandel's (1978) work on socialization and friendship selection. Parents seem to play a less important role in the process of their adolescent's selection of friends than we had expected. In fact, our results revealed that family conflict and parental monitoring had no significant influence on friendship selection, something we had expected. More precisely, in terms of family conflict, past research suggests that high family conflict is linked to adolescents' associations with antisocial peers, which in turn can lead to an increase in the adolescent's own problem behavior (Ary, Duncan, Duncan, & Hops, 1999; Ingoldsby et al., 2006). Surprisingly, rather, we observed that a high level of family conflict negatively predicts youth association with friends who exhibit problem behavior. This is contrary to the coercion theory (Dishion & Snyder, 2016), which proposes that family conflict is associated with adolescent aggressive behavior. One explanation for this counterintuitive finding is that some young adolescents who suffer from elevated levels of conflict in their family may be highly motivated to seek non-aggressive friends. Other adolescents in a similar family situation may already have a tendency to replicate their family's coercive patterns of interactions (Dishion, Patterson, & Griesler, 1994) and be unable to create friendships, even with aggressive peers, because of their behavior problems. We

must, however, be cautious when interpreting these results because the marginal association found in our analyses could be an artifact of the non-normal distribution of problem behavior variables.

Another unexpected result is the lack of association between parental monitoring and academic achievement or friendship selection, because this finding contrasts with past research (Véronneau & Dishion, 2010; 2011; Fletcher, Darling, & Steinberg, 1995). We propose explanations for these unforeseen results in our choice of measure for parental monitoring and a possible underestimation of the importance of friends' influence on adolescents' ulterior academic achievement.

In fact, parents' efforts to monitor their adolescents' behavior and whereabouts may protect them from associating with deviant peers and from developing such problem behaviors as substance use and delinquency. However, Kerr, Stattin and Burk (2010) suggest that measuring parents' knowledge of their children's activities and whereabouts, as we did in this study, is not ideal. Rather, they promote the measurement of the way in which parents collect information about their adolescents' actions during their absence. Kerr and Stattin (2000) distinguish different methods used by parents to gather information on their children, such as adolescents' deliberate self-disclosure, parental solicitation or parental control. Many studies show that adolescents' deliberate self-disclosure is more strongly associated with positive adjustment in comparison to other methods of parental surveillance (Keijsers, Branje, VanderValk, & Meeus, 2010; Kerr & Stattin, 2000; Kerr, Stattin, & Trost, 1999). Consequently, parental knowledge as we measured it may not be the best predictor when considering the affiliation with certain types of peers. Rather, the most important factor may be the presence of a positive, trusting and warm relationship between parents and their children, which would encourage adolescents' voluntary self-disclosure about their activities and their friends, but which we did not measure in this study.

Finally, our results suggest that during the middle school years, the influence of peers might be more significant than the influence emerging from parents. However, we cannot exclude the possibility that a different schedule of measurement would have yielded different results. For example, it is possible that family dynamics in childhood, when peer influences are not yet at their strongest, have a powerful influence on the youths' individual characteristics that we measured in Grade 6. Thus, beginning our study at middle school entry may have obscured the period of maximal parental influence on the outcome of interest. It is also important to keep in mind that our measures of peer characteristics, which were based on students' own reports and on their school records, may be more robust than the self-reported measures of family dynamics. This may also have contributed to underestimating parental influences on their adolescent children. Nevertheless, our results are in line with several studies described earlier, which portray peers as being a fundamental source of influence during adolescence. In comparison with children, adolescents generally spend more time with their peers (Berndt, 1992) and tend to rely more on them than on family members for problem solving (Agnew, 2003), which makes friendships particularly important. Relationships with peers can possibly surpass those with parents in certain areas of youths' lives, making friends one of the main contributors to their well-being (Furman & Buhrmester, 1992) and one of their main socializing agents (Buehler, 2006).

Studies are inconsistent concerning the relative impact of parents and peers during adolescence. While some studies argue that peers have the strongest influence, others claim that the influence of peers might actually be a side effect of parental influence (Madarasová Gecková et al., 2005, Steinberg, 2001). For example, Urberg et al. (1997) showed that relationships with parents influence peer selection. Similarly, Wills and Vaugham (1989) suggest that the influence of peers and parents are in constant interaction, such that adolescents who experience low social support from

parents are more vulnerable to peer pressure. In general, studies tend to point toward the interdependence between family and peers, such as when relationships with peers can buffer for a negative relationship with parents, and vice versa (Criss et al. 2002; Fotti et al. 2006; Lansford et al. 2003; Rubin et al. 2004). Thus, a greater understanding of adolescent development would be achieved by considering a combination of variables reflecting both parent and peer influences, rather than by studying these variables separately.

Strengths and limitations

The present study has many strengths. First, it benefited from a large sample, which provided enough statistical power to identify even small effects and to test for gender and ethnic differences. Second, the longitudinal design of the study enabled us to perform a strong test of family and friends' influence on adolescents' adjustment by controlling for baseline levels of our mediator and outcome variables, and by using properly timed measurements for our mediation models. In fact, the predictor, the mediator, and the outcome were all separated by one-year intervals, which provides a better statistical framework than do cross-sectional designs. In addition, the use of multiple information sources, that is, self-reports, school records, and friends' reports, strengthens our conclusion because our measures are less affected by inflated correlations from single-informant designs. Although some aspects of adolescent behavior may be more strongly influenced by their perceptions of their friends than by friends' actual behaviors and attitudes, using friends' own reports of their problem behavior is still a strength of our study in that it decreases the risk of overestimating selection or socialization effects compared to using adolescents' report of friends' behaviors (Prinstein & Wang, 2005). Additionally, the impact of friends' true behavior (as opposed to perceived behavior) must be understood, because attempts to promote adolescent adjustment by intervening in their peer relationships would be of limited benefit if only participants' perceptions of their friends were

targeted, instead of taking into account friends' actual behaviors and attitudes. Acting on youths' perceptions of their peers and trying to direct them toward peers who enact positive behaviors are two complementary approaches, and this is why friends' actual behaviors deserve special attention, even if they are more complex to measure than participants' perceptions of their friends. Lastly, incorporating two significant aspects of adolescents' social world (parents and peers) as well as two complementary indicators of adjustment in the middle school period (academic achievement and problem behavior) helps to shed a light on complex processes that may differently affect various aspects of early adolescent development.

In spite of its strengths, we must note some of our study's weaknesses. First, although the longitudinal design of this study was mentioned as a strength, it has the drawback of leading to missing data issues. In general, there were more missing data for adolescents who had low GPA than for those who reported low parental monitoring and those who exhibited high problem behavior. Although this suggests that our results could be applicable mostly to youths that are relatively well adjusted, the use of FIML to manage missing data reduces the probability of biased results in comparison to results obtained using other missing data management strategies (e.g., listwise deletion or single imputation; Widaman, 2006). Another limitation of this study is that measures for the relationship between adolescents and their parents are reported only by the adolescents and are therefore based solely on youths' perceptions. It is impossible to know exactly to what extent they reflect objective family dynamics. Caution should also be exercised about generalizing these findings to youths living in other geographical regions, because in our study all participants were from a single urban area.

Conclusion

This study revealed that adolescents' academic achievement, problem behavior, and parental

monitoring at middle school entry all contributed to their academic adjustment by the end of middle school, and this association was mediated through friendship choices. These results underline the importance of promoting not only academic efforts but also healthy relationships with peers in young adolescence to help prevent future school failure and psychosocial maladjustment. Creating safe opportunities that enable students with behavior problems to interact and benefit from the influence of well-adjusted peers in adult-supervised settings can be a good complement to individual interventions targeting at-risk students. In fact, these social opportunities would be less stigmatizing for at-risk students and would have the benefit of creating opportunities to learn and practice social skills. Parents should also pay close attention to their children's adjustment when they enter middle school, as the ensuing years present a good opportunity for them to engage in activities that can solve initial difficulties and set them on the right track for long-term educational success. Future research should examine other factors that influence friendship selection during early adolescence, because associating with the right kind of peers during this crucial period can be an essential element leading to healthy psychosocial adjustment.

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	1	2	3	4	5	6	7	8	9	10
1. Adolescent's academic achievement Grade 6	–									
2. Adolescent's problem behavior Grade 6	-.37*	–								
3. Family conflict Grade 6	-.24*	.41*	–							
4. Parental monitoring Grade 6	.33*	-.46*	-.24*	–						
5. Friend's academic achievement Grade 6	.56*	-.34*	-.15*	.27*	–					
6. Friend's problem behavior Grade 6	-.35*	.36*	.19*	-.22*	-.57*	–				
7. Friend's academic achievement Grade 7	.50*	-.29*	-.11*	.21*	.52*	-.33*	–			
8. Friend's problem behavior Grade 7	-.26*	.23*	.04	-.19*	-.28*	.25*	-.48*	–		
9. Adolescent's academic achievement Grade 8	.70*	-.33*	-.20*	.26*	.44*	-.31*	.46*	-.31*	–	
10. Adolescent's problem behavior Grade 8	-.23*	.40*	.24*	-.25	-.17*	.21*	-.22*	.17*	-.29	–
Mean	2.70	1.41	.91	3.99	2.81	1.43	2.77	1.37	2.58	1.34
SD	.88	.59	1.03	.96	.67	.41	.75	.38	1.02	.44
n	986	992	990	989	966	966	740	740	845	826
Skew	-.34	2.83	1.85	-1.14	-.23	2.23	-.38	2.30	-.61	2.39
Kurtosis	-.77	10.77	3.89	.72	-.66	11.01	-.46	7.33	-.20	7.97

Table 1. Descriptive Statistics and Bivariate Correlations Note *$p < 0.001$

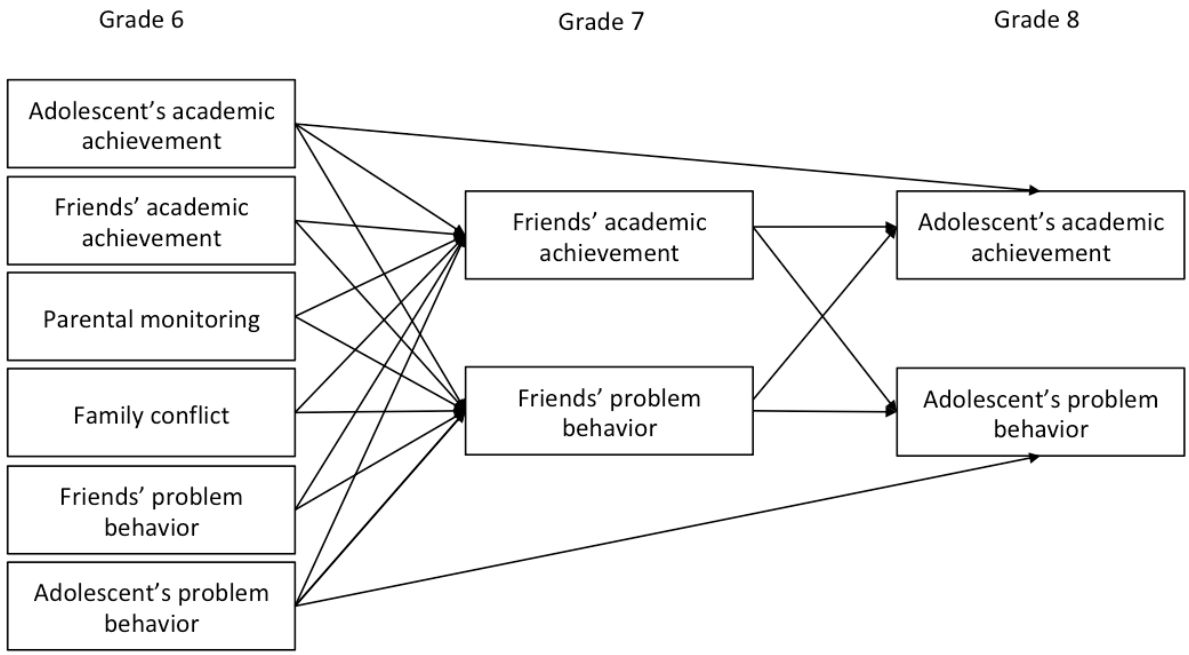

Figure 1. Hypothesized Model. Correlations among variables measured at the same wave of data collection were included in the model but are not depicted here to enhance the clarity of the figure.

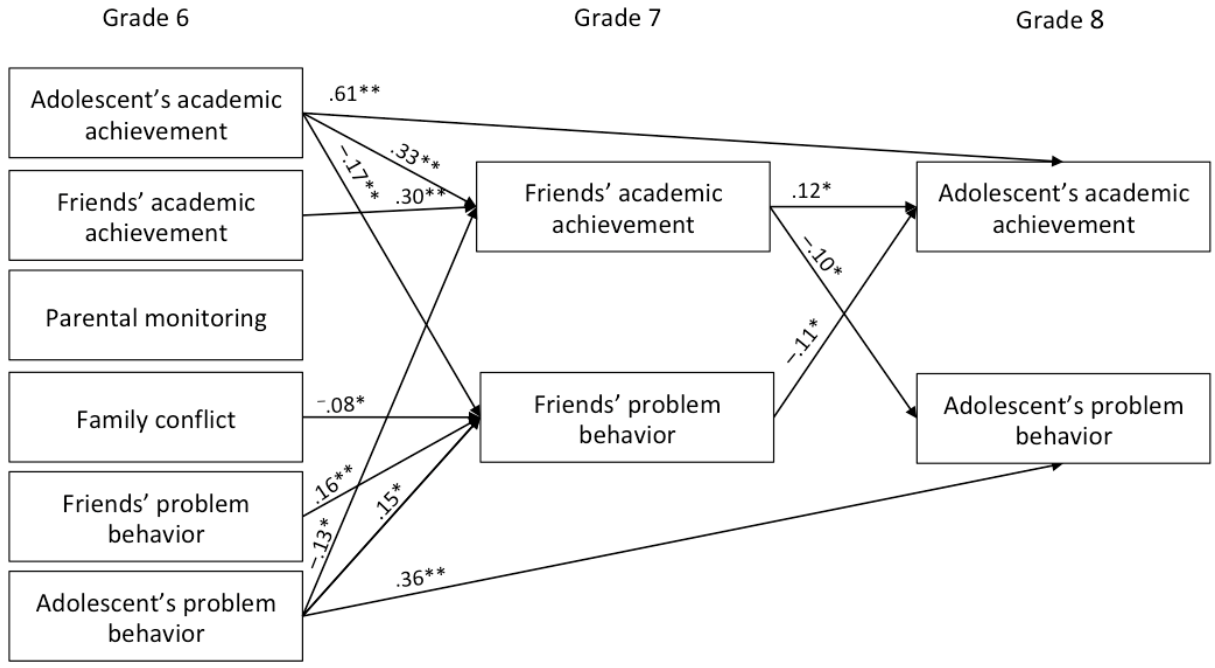

Figure 2. Model results (regression paths). Coefficients are standardized. Correlations among variables measured at the same wave of data collection are omitted from the figure, but they were all significant. Non-significant paths from the initial model (see Figure 1) were maintained in this model but are not depicted here to enhance the clarity of the figure.

*$p < .05$, **$p < .001$.