



Published in final edited form as:

J Abnorm Child Psychol. 2010 November ; 38(8): 1125–1137. doi:10.1007/s10802-010-9431-0.

Predicting Change in Early Adolescent Problem Behavior in the Middle School Years: A Mesosystemic Perspective on Parenting and Peer Experiences

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Abstract

The transition into middle school may be a risky period in early adolescence. In particular, friendships, peer status, and parental monitoring during this developmental period can influence the development of problem behavior. This study examined interrelationships among peer and parenting factors that predict changes in problem behavior over the middle school years. A longitudinal sample (580 boys, 698 girls) was assessed in Grades 6 and 8. Peer acceptance, peer rejection, and their interaction predicted increases in problem behavior. Having high-achieving friends predicted less problem behavior. Parental monitoring predicted less problem behavior in general, but also acted as a buffer for students who were most vulnerable to developing problem behavior on the basis of being well liked by some peers, and also disliked by several others. These findings highlight the importance of studying the family–peer mesosystem when considering risk and resilience in early adolescence, and when considering implications for intervention.

Keywords

Behavior problems; Social acceptance; Friendship; Parenting; Protective factors

Introduction

In most western societies, students go through an important transition during early adolescence as they transfer from elementary to secondary school. Many American students experience this transition at 11 years old when they start Grade 6 in a new “middle school.” Most students thus enter adolescence during middle school, with ensuing transformations in their relationships with parents and peers (Dishion et al. 2004a; Paikoff and Brooks-Gunn 1991). Peers become more important (Furman and Buhrmester 1992), and parents allow their children to spend unsupervised time with friends (Mayseless et al. 1998). From a bioecological perspective (Bronfenbrenner and Morris 2006), parents and peers are the two aspects of adolescents’ microsystem that are most likely to generate socialization influences through frequent interactions at a sensitive time of development.

Because of these changes in the peer and family environment, it is not surprising that in early adolescence there is also an increased prevalence of problem behavior (Lacourse et al. 2002). Problem behavior in adolescence, especially if it starts at a young age, is a reliable

predictor of substance use, criminality, and police arrests in adulthood (Dishion and Patterson 2006). The primary goal of this research is to understand the peer and family experiences that serve as risk and protective factors in the first year of middle school, with regard to subsequent increases in problem behavior over the ensuing two years of middle school.

Risks in the Peer Group

Peer rejection and affiliation with antisocial peers are peer experiences that appear to work together in the development of problem behavior. Although problem behavior itself contributes to peer rejection (e.g., Dodge 1983), peer rejection appears to exacerbate aggressive tendencies in school children (Dodge et al. 2003). Peer rejection may also induce adolescents to drift into a deviant peer group, further promoting escalations in problem behavior within the venue of interactions with deviant friends (Dishion and Patterson 2006). Selection and socialization thus occur in tandem to create a peer context in which deviant behavior is the norm (Capaldi et al. 2001; Reitz et al. 2006). In addition, observations of microsocial processes occurring within antisocial youth dyads showed that verbal and nonverbal approval of deviant conversations and actions (e.g., laughter, nodding, making an antisocial statement) predicted increases in problem behavior in adolescence and early adulthood beyond what could be predicted by students' own adjustment and peer rejection (Dishion et al. 2004b). However, a longitudinal study by Laird et al. (2001) did not support a direct link between peer rejection and deviant peer clustering, thus suggesting that the peer dynamics of acceptance, rejection, and peer clustering are more complex than simple main effects.

An important aspect of the middle school peer experience is the extent to which students are liked by their peers in general. Acceptance and rejection are independent dimensions of peer status (Bukowski and Hoza 1989). Rejection reflects the extent to which members of the peer group hold negative feelings toward an individual, and acceptance is the extent to which they hold positive feelings toward the same individual. A social preference score based on the difference between the number of positive and negative nominations can be computed, but one drawback is that the social preference scores of controversial students—those who receive large numbers of both positive and negative nominations—are undistinguishable from those of neglected students who receive very few of both. A meta-analysis conducted by Newcomb et al. (1993) showed that students in the controversial sociometric category were the most aggressive, suggesting that they may be at highest risk of becoming antisocial.

Being liked by peers in middle school can also carry some risk for engaging in problem behavior. Two studies suggest that both acceptance and rejection predicted youth involvement in deviant peer groups from late childhood to adolescence (Bagwell et al. 2000; Dishion et al. 2005). Allen et al. (2005) found that higher peer acceptance was related to minor (but not to serious) deviant behaviors.

Positive Experiences in the Peer Group

The effects of having well-adjusted friends on adolescents' problem behavior have received little attention, which is unfortunate given the potential role of well-adjusted friends as a compensatory or protective factor for at-risk youth. We propose that students who feel rejected and marginalized in school and those who have deviant friends may still remain connected to school to some extent and refrain from engaging in delinquent behavior if they have high-achieving friends who accept them, support them, and offer them a positive model that can counterbalance peer rejection and antisocial peer group affiliation. The negative covariation between adolescents' levels of academic achievement and problem behavior is

well established (see review by Farrington 2005); yet, the question as to whether having friends who do well in school can offset the impact of peer rejection and associating with antisocial friends remains to be answered.

Parental Monitoring

One significant but often overlooked premise of the bioecological model (Bronfenbrenner and Morris 2006) is that interaction effects are potentially more important to understanding human development than are main effects. Significant interaction effects between peer experiences and family relationships, for example, suggest that the two socialization contexts combine to form a superordinate context referred to as a *mesosystem*. Relevant to our study is the notion that in spite of peers' increased importance in early adolescence, parents remain a major source of influence. The importance of parental influence, however, is perhaps most salient for early adolescents who are exposed to risky peer experiences. Monitoring has been hypothesized to be a crucial aspect of parenting that is germane to the development of problem behavior in the teenage years. Laird et al. (2008) introduced the phrase *monitoring knowledge* to refer to parents' knowledge of how, where, and with whom their adolescent spends time. The importance of monitoring knowledge in the study of problem behavior was supported by Lahey et al. (2008), who found a negative relationship between monitoring knowledge and adolescents' delinquency, after controlling for the initial level of delinquency and for parents' active limit setting.

We could expect that parental monitoring is most crucial when children are at higher risk of becoming antisocial, on the basis of their associations with deviant friends. This hypothesis is in line with the idea that the peer environment and the parental context interact to create a unique mesosystem. In other words, parents' monitoring would be a protective factor for these adolescents. Results of empirical studies that have tested this hypothesis are inconsistent, however. Some have supported it (Dishion et al. 2004a; Laird et al. 2008; Svensson 2003); others failed to do so (Vitaro et al. 2000). More research is needed on parental monitoring as a protective factor for at-risk adolescents. Clearer results may emerge when considering the possibility that the success of parenting practices that protect youth from maladaptation depends not only on the adolescents' behavioral history, but also on the peer context that amplifies or discourages problem behavior.

Participants' Academic Achievement and School Engagement

To provide a strong test of the contribution of peer experiences to the change in adolescents' antisocial behavior during the middle school years, it is necessary to control for potential confounds. Because we are interested in the contribution of peer experiences in the school setting, other major aspects of school adjustment that can potentially cause problem behaviors should be included in the model for control purposes. A low level of academic achievement is an established correlate of antisocial behavior (Farrington 2005), but according to Finn (1989), low academic achievement is closely associated with students' disengagement from school activities. This lack of school engagement could further increase the likelihood of problem behaviors and should also be taken into account in the model.

Gender Differences

Rose and Rudolph (2006) suggested that boys spend more time in large peer groups than do girls, and Lewin et al. (1999) found that stressors at the group level (peer rejection) affect boys more than they affect girls. In contrast, girls focus on close friendships. Well-adjusted friends at school may therefore be a stronger protective factor for at-risk girls than for at-risk boys. The self-validation function of close friendships could be a double-edged sword for girls who may feel pressured into problem behaviors to protect their friendships with deviant peers, although van Lier et al. (2005) found that deviant peer affiliations affect girls'

behavior less than boys' behavior. Parent-child relationships are also likely to differ in terms of the child's gender. Parental monitoring is applied more strongly for girls than for boys (Webb et al. 2002). Svensson (2003) also found that parental monitoring is a stronger moderator of deviant peer influences for girls than for boys, but Crosnoe et al. (2002) did not find such a moderating effect.

This Study

Our main objective was to identify moderators of the change in problem behavior occurring in early adolescence. We hypothesized that peer acceptance, peer rejection, and having antisocial friends would predict increases in problem behavior from Grades 6–8, above and beyond what can be predicted from participants' gender, initial level of problem behavior, academic achievement, and school engagement. Participants with a controversial profile, assessed by an interaction between peer acceptance and rejection, were hypothesized to increase their behavior problems beyond what could be predicted by either acceptance or rejection alone. We hypothesized that high levels of parental monitoring knowledge (that is, parents' knowledge of their children's whereabouts and activities) and having high-achieving friends would buffer against increased problem behavior associated with risk factors found in the peer group. We also explored gender differences in the main effects and interaction effects (i.e., buffering effects) of peer experiences on problem behavior.

Method

Participants

The study sample included 1,278 participants recruited in eight middle schools in a suburban area of the northwest region of the United States. No information was gathered about family income, but most participants lived in middle-class families. The first assessment took place in Grade 6 (mean age: 12 years, 2 months). A follow-up took place in Grade 8 (mean age: 13 years, 11 months). The proportion of targeted students who participated in the study was 74%. The rate of retention from Grade 6 to Grade 8 was 82%. The sample included 45.4% male participants. Participants were primarily European American (78.2%). Minorities included Hispanics/Latinos (4.5%), American Indians (3.3%), Asian Americans (3.1%), Pacific Islanders (1.5%), African Americans (1.2%), mixed ethnicity (4.7%), and other or unknown ethnicity (3.6%). Most participants lived in two-parent families (70.8%), 13.9% lived in single-parent households, 13.1% lived in shared custody arrangements, and 2.1% lived in other arrangements.

Instruments

All predictors and control variables were assessed in Grade 6. The outcome variable (problem behavior) was assessed in Grade 6 and again in Grade 8.

Problem Behavior—Participants completed an 11-item scale from the Student's Self-Report Survey (SSRS; Dishion and Stormshak 2001). They were asked how many times in the past three months they had engaged in specific problem behaviors (e.g., *lie to your parents about where you have been or whom you were with; intentionally hit or threaten to hit someone at school; carry or handle a weapon, such as a gun or knife [not including hunting]*). Participants answered on a 6-point scale ranging from 0 (*never*) to 5 (*more than 20 times*). This scale also included items about cigarette and alcohol use in the past month, on a 6-point scale ranging from 0 (*none*) to 5 (*11 or more packs*) for cigarettes and from 0 (*none*) to 5 (*11 or more drinks*) for alcohol. A mean score based on all items was computed, so participants' total scores ranged from 0 to 5, with a reliability of $\alpha=0.83$ in Grade 6 and $\alpha=0.84$ in Grade 8.

Academic Achievement—Grade point average (GPA) on a scale from 0.0 to 4.0 was obtained from official school records. Students' grades were registered at each semester. The GPA score was computed from final grades in Grade 6, based only on academic subjects.

School Engagement—Participants completed a five-item scale from the SSRS (Dishion and Stormshak 2001) asking participants how often they demonstrate engagement in their schooling (e.g., *complete my homework and assignments on time; participate in sports or another organized activity; cooperate with teachers*). Participants answered on a 5-point scale ranging from 0 (*never, almost never*) to 5 (*always, almost always*). The mean score on all five items was computed, so participants' total scores ranged from 0 to 5, with a reliability of $\alpha=0.73$.

Parental Monitoring Knowledge—Youth reported on their perceptions of their parents' knowledge of their activities on a four-item scale included in the SSRS (Dishion and Stormshak 2001). These items asked the participants how often during the past three months did at least one of their parents: *know what [the participant] was doing when [he/she] was away from home; know where [the participant] was after school; have a pretty good idea about [the participant's] plans for the coming day; have a pretty good idea about [the participant's] interests, activities, and whereabouts*. Participants answered on a 5-point scale ranging from 0 (*never/almost never*) to 4 (*always/almost always*). The mean score on all four items was computed, so participants' total scores ranged from 0 to 4, with a reliability of $\alpha=0.82$.

Peer Acceptance, Peer Rejection, and Their Interaction—These variables were measured with the Social Nomination questionnaire (SONOM; Coie et al. 1995). Participants were provided with two rosters that included the names of all their grademates who agreed to participate in the study in their own school ($M=159.75$; $SD=35.80$). One roster was used to collect an unlimited number of positive nominations and the other was used to collect an unlimited number of negative nominations. The raw number of positive peer nominations for each student was converted into a proportion score based on the total number of students who participated in the peer nomination task in each school, which yielded a peer acceptance score ranging from 0 (no positive nominations) to 0.32. The same procedure was used to convert the raw number of negative nominations into a peer rejection score, which ranged from 0 to 0.57. We also created an interaction by multiplying the peer acceptance and the peer rejection scores. High scores on this interaction term are associated with social experiences within the peer group that are very similar to those experienced by children who are classified in the *controversial* sociometric category, which is defined by a very high number of both positive and negative peer nominations (Coie et al. 1982). In contrast to the categorical status defined by Coie et al. (1982), however, the interaction term preserves the richness of our continuous data.

Best Friendship Nominations—The peer nomination instrument (SONOM; Coie et al. 1995) also included a roster on which participants indicated the name of their three best friends, which allowed us to identify participants' friends if they participated in the study. Using Grade 6 measures of academic achievement and problem behavior, we computed an average score based on all nominated best friends. A study by Aloise-Young et al. (1994) on cigarette use in middle school suggests that nonreciprocated friends can be more influential than reciprocated friends in terms of deviant behaviors, possibly because students' imitative behavior is an attempt to show desired friends their willingness to conform to their norms and to enter their clique. We thus decided not to restrict our measure to reciprocated best

friends, and to acknowledge as a friend all classmates nominated by each participant (maximum three).

Procedure

After gaining school principals' approval, a consent form providing information about the study was sent by the school to the parents (or guardians) of potential participants. Parents and their child were asked to sign and return the form. Questionnaires were administered by research assistants who explained the study to groups of participating students in the classrooms and informed them of the confidential nature of their data. Teachers were asked to leave the room. At each wave of data collection, each participant was paid \$30 for completing the survey.

Results

Analytic Strategy

Because we were interested in several interaction effects, we performed hierarchical linear regressions that included main effects, two-way interactions, and three-way interactions. To facilitate the interpretation of interaction effects, all variables were mean-centered.

Preliminary Analyses

Table 1 presents the results of *t*-tests performed to detect gender differences, means, and standard deviations for our measures. Significant gender differences emerged for all variables, including problem behavior, which was higher for boys than for girls.

Correlations—Table 2 presents correlations among study variables. They were all significantly intercorrelated at $p < 0.001$ in the expected direction, with the exception of a nonsignificant relationship between peer acceptance (Grade 6) and problem behavior in Grade 8.

Missing Data Analysis—We reached different levels of completion for different measures. Students' absence for the data collection affected the completion of self-reported measures. The consent of friends' parents affected the collection of information about participants' friends. Participants changing schools affected our capacity to collect GPAs and to measure problem behavior in Grade 8. For problem behavior in Grade 8, we had complete data for 87.19% of participants. For peer acceptance and rejection (Grade 6), the rate was 87.95%. For all self-reported variables in Grade 6 (i.e., problem behavior, school engagement, and parents' monitoring knowledge), the rate was 80.59%. We obtained GPA data (Grade 6) for 79.58% of our participants, and we could compute the average score of academic achievement and problem behavior of participants' best friends in 77.62% of cases. Overall, 63.54% of participants had complete data on all of our measures. A series of *t*-tests revealed significant differences between participants who had some missing data and those who did not, the latter presenting better academic, social, and behavioral adjustment. However, no significant differences emerged for parental monitoring knowledge, gender, and our outcome variable, problem behavior in Grade 8.

We used multiple imputations to replace occasional missing values. We expected that our data were not missing completely at random (MCAR), but we assumed that values were missing at random (MAR), which makes multiple imputations an adequate method to deal with missing data (Allison 2001). Missing data were imputed using the Markov Chain Monte Carlo algorithm in SAS version 9.2 (SAS Institute Inc 2008). We created 10 datasets and averaged the imputed values across all datasets to create one complete dataset to be used in our regression analyses.

Intraclass Correlation Coefficient (ICC)—Because participants were attending more than one middle school, there could be group-level effects on our outcome measure, and ICCs were used to assess the magnitude of potential group-level effects. In this study, only 2% of the change in antisocial behavior from Grade 6 to Grade 8 was attributable to differences across schools, which is a small school-level effect, according to Hox (2002). The multilevel framework is thus unlikely to yield results different than those from regular regression analyses. Furthermore, the small number of schools included in this study ($N=8$) may yield biases within a multilevel framework (Maas and Hox 2005), which further justified our choice to run regular, single-level regressions.

Structure of the Hierarchical Linear Regression

We first entered the initial level of problem behavior and individual characteristics in the model for control purposes. Then, we entered all main effects associated with peer variables (peer acceptance, peer rejection, friends' problem behavior, friends' academic achievement) and parental monitoring knowledge, followed by the Peer Acceptance \times Peer Rejection interaction term that represented participants' controversial peer experience. Together, these main and interaction effects represent the core model that remained the same across all subsequent models, in which gender differences and buffering effects were tested.

Gender Differences—We created 5 two-way interactions by multiplying each of the peer experiences, as well as parental monitoring knowledge, by gender, and we created a three-way interaction to explore gender difference related to the Peer Acceptance \times Peer Rejection variable. The change in R^2 for two-way and three-way interactions was not significant, $R^2\Delta=0.01$, $F(5, 1,262)=1.67$, *ns*, and $R^2\Delta=0.00$, $F(1, 1,261)=0.22$, *ns*, respectively.

Testing for Buffering Effects—The next step was to test our hypothesis that having high-achieving friends and high levels of parental monitoring knowledge would protect against risks present in the peer group. We created 4 two-way interaction terms by multiplying our risk factors (peer rejection, friends' problem behavior) by each of our protective factors (parental monitoring knowledge, friends' academic achievement). The change in R^2 associated with the inclusion of all 4 two-way interactions was not significant, $R^2\Delta=0.00$, $F(4, 1,263)=1.20$, *ns*. We also created three-way interactions by multiplying the Peer Acceptance \times Peer Rejection term by each of our protective factors, and we kept in the model the appropriate lower level two-way interactions for control purposes. The change in R^2 associated with the three-way interactions was significant, $R^2\Delta=0.02$, $F(2, 1,261)=12.22$, $p<0.001$. However, only one of the three-way interactions was significant, namely, Peer Acceptance \times Peer Rejection \times Parental Monitoring.

Final Model¹—The final model included the previously described core model (all of the main effects, regardless of their significance, and the Peer Acceptance \times Peer Rejection interaction), and the significant interaction we found when looking for buffering effects (i.e., Peer Acceptance \times Peer Rejection \times Monitoring). For control purposes, we also included two lower level two-way interactions that were part of the three-way interaction (i.e., Peer Acceptance \times Parental Monitoring; Peer Rejection \times Parental Monitoring), which will not be interpreted. Results of this model are presented in Table 3.

In Step 1, elevated levels of problem behavior in Grade 6 are the strongest predictor of problem behavior in Grade 8, with an effect size close to the moderate range according to

¹Given that the multilevel framework was not appropriate for this sample, we re-ran the final model after including seven dummy variables representing different schools to account for school-level effects, and our results were confirmed. All significant predictors remained at least marginally significant, and none of the nonsignificant predictors became significant.

Cohen's (1988) standards of 0.10 for small, 0.30 for medium, and 0.50 for large effect sizes. High levels of peer acceptance predicted an increase in problem behaviors that was steeper than expected, whereas more parental monitoring knowledge predicted levels of antisocial behavior in Grade 8 that were lower than expected. The main effects for these two variables are small, but significant. Very small but significant "effects" were found for several other predictors: academic achievement and friends' achievement predicted levels of problem behaviors in Grade 8 that were lower than expected, whereas peer rejection and being a male predicted an increase in problem behavior that was greater than expected. None of these main effects was substantially different in size after the interaction between peer acceptance and peer rejection was included, to represent the controversial peer experience, which had a small but significant effect (see Fig. 1). Participants who had low levels of peer rejection were very stable in their level of problem behavior. The likelihood of engaging in levels of problem behavior that were higher than expected in Grade 8 increased when participants were more rejected by their peers, but this increase was only significant for participants who had medium or high levels of peer acceptance. The steepest increase in problem behavior was observed in participants who had high levels of both peer acceptance and peer rejection (i.e., a controversial profile), as predicted by our hypotheses.

The most important part of Step 2 are the "moderators" (see Table 3), especially the significant interaction between peer acceptance, peer rejection, and parental monitoring knowledge. As shown in Fig. 2, the relative increase in problem behavior associated with the controversial peer experience can be inhibited by high levels of parental monitoring knowledge. The top panel shows a significant increase in problem behavior among controversial participants under conditions of low parental monitoring knowledge. This increase is still significant but much less steep under average levels of parental monitoring knowledge, and the level of antisocial behavior in Grade 8 is no higher than expected when controversial students report high levels of parental monitoring knowledge.

Discussion

This study examined the influence of risk and protective factors in the family and peer contexts during the first year of middle school on the progression of early adolescent problem behavior by the end of middle school (two years later). These analyses and findings are particularly relevant to prevention programming because they show that youth who are about to escalate in problem behavior at a critical time in their development can be readily identified, and thus perhaps their at-risk trajectories can be diverted. In line with the bioecological perspective, we found that a combination of parenting and peer factors worked together as a unique mesosystem. This finding provided insights into the process leading to an escalation in problem behavior, and into possible solutions.

We hypothesized that two positive aspects of the microsystem, namely, having high-achieving friends and high levels of parental monitoring, would protect against harmful elements of the same microsystem, including antisocial friends, peer acceptance, peer rejection, and the interaction between peer acceptance and peer rejection (controversial peer experience). In partial support of our hypothesis, peer acceptance, peer rejection, and their interaction predicted increases in antisocial behavior, whereas parental monitoring buffered against the harmful "effect" of the high-risk controversial peer experience. These findings are in line with the results of a recent prevention study that showed that high-risk middle school students who were randomly assigned to the Family Check-Up intervention experienced a relative decline in early adolescent problem behavior, and that these effects were mediated by improvements in parental monitoring practices (Dishion et al. 2003).

Individual Characteristics

Not surprisingly, problem behavior in Grade 6 was the strongest predictor of problem behavior in Grade 8. This outcome is in line with empirical research revealing that the level of problem behavior is relatively stable during adolescence (O'Connor et al. 1998). Similarly, the significant contribution of low academic achievement confirms that it is important to control for this well-established predictor of problem behavior when new predictors are being tested. In contrast, participants' school engagement was not a significant predictor. Therefore, it appears more advisable to use objective measures of students' school adjustment, such as GPA, to control for academic factors.

Regarding the role of gender in this model, we found that levels of problem behavior were higher in males than in females in Grades 6 and 8, but we did not find any gender difference regarding the contribution of peer experiences to the change in problem behavior across the middle school years. In other words, this study does not support the hypothesis that boys react more strongly to risk factors at the group level than do girls or that close friends have a greater influence on girls' problem behavior than on boys' problem behavior. Similarly, we found that girls report more parental monitoring knowledge than boys do, but we did not find any gender difference regarding the contribution of monitoring as a compensatory factor, nor as a protective factor for youth who are exposed to risky peer experiences.

Peer Group Dynamics

Peer acceptance and peer rejection were found to be independent predictors of increased problem behavior, as suggested in past research (e.g., Dishion et al. 2005). Peer rejection has long been known to be an antecedent of problem behavior, and speculations about this relationship are not new (see review by Kupersmidt and DeRosier 2004). Being rejected may reduce accessibility to well-adjusted peers with whom adolescents could learn and practice coping skills, self-control, and social competence. As a result, rejected youth may feel angry or resentful and become more aggressive. They may also become friends with other less adjusted peers who may model deviant behaviors.

Explanations for the main effect of peer acceptance on problem behavior have not been explored as extensively, but our study supports Allen et al.'s (2005) proposal that adolescents with high levels of peer acceptance may experience support from peers for experimenting with minor rule-breaking behavior. Such behavior may further increase their social status at an age when adolescents seek to test limits imposed by adults and become more autonomous.

Of particular importance, we found that the significant interaction between peer acceptance and peer rejection predicted problem behavior beyond what was predicted when each of these variables was considered independently. On the one hand, the nonsignificant increase in problem behavior for rejected students who have low levels of peer acceptance (see Fig. 1) suggests that peer rejection, albeit frustrating and painful, can hardly translate into distinct problem behavior when no connection has been established within the peer group to build up and enact significant deviancy. On the other hand, considering that the peer context is itself divided among several subcultures (e.g., cliques and crowds; Brown 1990), the Peer Acceptance \times Peer Rejection interaction can be interpreted as reflecting mesosystemic influences within the peer domain. Perhaps participants who feel disliked and challenged by numerous peers, but who can also count on social connections and moral support from a large number of peers, are caught up in a unique mesosystem that makes it more likely that they will engage in problem behavior than will other students, including popular ones. Such behaviors can be used to show that they are not intimidated by the possibility of negative consequences associated with their deviant acts, and thereby establish their dominance. This

multiplicative effect of peer liking and disliking highlights the risks of aggregating positive and negative peer nomination scores using traditional methods (i.e., social preference scores).

The high level of problem behavior for controversial students may also be the result of their being embedded in extremely complex social networks. Dishion et al. (2008) proposed the social augmentation hypothesis to explain and predict youth movement through social networks that influence their social and emotional adaptation. Because interpersonal rejection is a powerful experience that even elicits reactions from the areas of the brain associated with physical pain (i.e., the dorsal anterior cingulate cortex; Eisenberger et al. 2003), being rejected by a social group may augment the reinforcement value of alternative interactants. Problem behavior of the variety that meshes well with the norms of other, more deviant peer clusters may be the “membership card” that promotes acceptance in these groups. For example, smoking in early adolescence could be used as a strategy to promote peer interactions in the transition from middle to high school (Dishion et al. 1995). To truly study the social augmentation hypothesis, it may be necessary to use multiple assessments throughout a school year to track movement of a youth through salient peer clusters, and to better understand how some youth emerge as both highly accepted and rejected.

Our results concerning controversial youth also bring attention to the notion of “perceived popularity,” which is not measured by like-most nominations, but rather by peer nominations of individuals who correspond to such characteristics as popular, “cool,” or influential in the peer group. This construct is clearly different from peer acceptance (sometimes called *sociometric popularity*) assessed in this study. These two constructs tend to be unrelated in adolescence (e.g., Košir and Pečjak 2005); however, controversial students are often perceived by their peers as popular and socially dominant (Lease et al. 2002). Higher levels of perceived popularity are associated with higher levels of overt and relational aggression (Hoff et al. 2009), which coheres with our finding concerning controversial students. Future studies are needed to verify whether the interaction between peer acceptance and peer rejection contributes to predicting problem behavior beyond the contribution of perceived popularity, because the hypothesized underlying mechanisms of establishing dominance among peers by breaking rules established by adults appear to be similar.

From a practical viewpoint, our findings suggest that the widely held assumption that rejected students are at highest risk for future adjustment might be incorrect. In fact, students who have high levels of peer acceptance are more likely to engage in problem behavior than are average students. Furthermore, controversial youths seem most likely to engage in an antisocial developmental pathway, but they can hardly be identified by usual social preference scores. We recommend that these youths be closely monitored by school staff and parents.

Antisocial Friends

Affiliating with antisocial friends in Grade 6 did not predict increases in participants’ own problem behavior by the end of middle school. Furthermore, none of the interaction terms involving this variable was significant, which means that the lack of significance for the “main effect” was not hidden by possible gender differences or by the protective effect of parental monitoring knowledge or friendship with high-achieving friends.

This lack of significant results goes against our predictions and it contrasts with a number of aforementioned studies that supported the relationship between deviant friendships and an increase in problem behavior during early adolescence. Yet, there exist two crucial differences between this study and most of the previous work on this topic. First, we used

best friends' own reports of their problem behavior in order to overcome the problem described by Prinstein and Wang (2005), that is, adolescents' tendency to overestimate the similarity between their own behavior and their peers' behavior. This tendency may have led to erroneously high correlations between participants' problem behavior and that of their friends reported in past studies. Second, in addition to antisocial friendships, we included two other types of peer experience that were significant predictors of problem behavior, namely, peer acceptance and peer rejection. Intercorrelations among these factors increase the likelihood of third variable effects when omitting one of these theoretically important predictors. The possibility that friends' problem behavior would have predicted increases in participants' problem behavior had we included only deviant friendships as a predictor (and not peer acceptance and peer rejection) cannot be ruled out. The almost identical magnitude of the correlation between problem behavior and some of these peer-related factors makes this possibility very likely (see Table 2).

The failure to confirm some of our hypotheses regarding the contribution of dyadic friendships to problem behavior in Grade 8 may also be attributed to an imperfect assessment of the complex friendship construct. A different approach to studying peer influence is the identification of cliques, which are small, intimate peer groups that tend to be homogeneous in terms of behaviors and attitudes (Brown 1990). Members of the same clique do not necessarily consider each other as friends, but they can regularly influence each other when they spend time with their common friends. Past research has shown that being a member of a deviant clique increases the risk of becoming antisocial (Dishion et al. 2008). Furthermore, Bagwell and colleagues (2000) found that the most aggressive youths are more likely to be central members of deviant cliques, and could be powerful in terms of shaping the behavioral norms to be followed by all members. The antisocial norms to which students can be exposed in cliques may not be captured through traditional methods of friendship identification.

High-achieving Friends and Parental Monitoring Knowledge

The two hypothesized protective factors in this model proved to play a positive role in the middle school students' development. Having high-achieving friends did not buffer against negative peer influences as predicted, but the significant and negative relationship between this variable and change in problem behavior suggests that having high-achieving friends is more than a "protective factor"; rather, it seems to be a "compensatory factor" that benefits all students, regardless of their risky peer experiences. Parental monitoring knowledge also played a compensatory role in this model, as revealed by its significant main effect: all participants benefited from it. Yet, its significant interaction with our Peer Acceptance \times Peer Rejection variable suggests that it is also a protective factor for controversial students. This finding is crucial because parental monitoring can be improved with appropriate interventions (Dishion et al. 2003), and thereby could help reduce risks for controversial youths. A word of caution must be made to the effect that several interactions reflecting various combinations of risk and protective factors were tested, thereby increasing the likelihood of a type I error, especially in the context of our large sample size, which offered high statistical power.

Strengths and Limitations

This study has several strengths. Its large sample size provided enough statistical power to assess all relevant main effects and interactions and to make sound comparisons across genders. The longitudinal data collection achieved at the beginning and at the end of middle school made it possible to capture changes in problem behavior occurring during a crucial period of human development. The peer-reported data for peer acceptance and rejection and friends' own reports about their problem behavior represent improvements over participants'

self-reports and over asking teachers to report on the social world of students that they observe without being actively involved in it. Also, the inclusion of several subtypes of peer experiences relevant to peer status and friendships helped disentangle the relative contribution of correlated factors, such as peer acceptance versus peer rejection, or peer rejection versus friends' problem behavior.

Nevertheless, there are some weaknesses to this study. First, the number of schools from which participants were recruited was too small to allow for multilevel analyses. Also, our assessment of parental monitoring had a few shortcomings, one being that our measure would have been more complete had we combined it with parents' own reports about their knowledge of their child's whereabouts, and another being that the specific mechanisms through which parents acquire this knowledge were not investigated. Kerr and Stattin (2000) highlight the necessity of conducting studies that would help identify specific family processes that constitute the true buffer against negative developmental outcomes. For example, future research should verify whether parents showing high levels of monitoring knowledge are those who create a safe climate at home, allow for open communication with their children, and foster emotional attachment to the family.

In addition, because the community from which this sample was recruited was predominantly European American, it was impossible to assess whether these findings generalize to ethnic minorities. The experience of close friendships may be different for participants from minority groups who may not be able to develop the same level of intimacy in their friendships as they would with peers from their own culture. Similarly, like-most and like-least peer nominations may be biased against out-group members. The recruitment of participants upon middle school entry also made it impossible to evaluate whether a disruption in their patterns of peer relationships after the transition to a new school increased their risk for maladjustment. Likewise, future studies should assess whether changes in the peer and parental domains would be stronger predictors of the increase in problem behavior over the middle school years than their initial state in Grade 6.

A few notes of caution should also be made about the meaning of certain terms used throughout this paper. This study was not experimental, so it is not possible to draw causal inferences. Any reference to peers' or parents' "influence," or to the "effect" or "impact" of certain variables should be interpreted with caution. Also, the meaning of "problem behavior" for this particular age group refers to deviant behaviors that tend to be on the rise, but which have not yet reached full-blown proportions (Lacourse et al. 2002). What we described as higher levels of problem behavior in this study is relatively low when taking into account the full range of the scale. These higher scores rarely reflected high-risk, antisocial, or criminal behaviors. Our speculations about the limit-testing nature of problem behavior does not imply that such behaviors are not problematic and do not deserve attention and intervention from responsible adults. On the contrary, early signs of problem behavior should be carefully addressed, because they are more amenable to change by early intervention or targeted or indicated prevention.

Conclusion

This study showed that peer acceptance, peer rejection, and the controversial peer experience (i.e., the interaction between these two variables) predict an increase in problem behavior during early adolescence beyond established individual risk factors. The significance of the interaction between peer acceptance and peer rejection brings attention to the importance of measuring peer status carefully, because certain computations (e.g., social preference score) may lead one to overlook certain at-risk youths, especially controversial ones. Fortunately, we found that parental monitoring was a protective factor for controversial youths. Antisocial friends did not have a detrimental influence, but having

high-achieving friends appeared beneficial for most students. Risky peer processes seemed to influence girls' and boys' problem behavior equally.

Future research should examine whether peer experiences in middle school can predict problem behaviors in middle-to-late adolescence, at their highest lifetime prevalence. The value of simple peer nominations as a screening tool to identify at-risk middle school students should be considered. Also, pairing of early adolescents at risk for problem behavior with high-achieving students in the context of adult-supervised activities should be evaluated in the specific context of preventing adolescents' problem behavior. Further studies investigating the mediation processes that may explain the association between peer experiences and problem behavior are warranted. Specifically, microsocial processes, such as parent-child interactions that underlie different levels of monitoring, would contribute to the design of adequate interventions for at-risk adolescents.

Acknowledgments

The preparation of this manuscript was made possible by a postdoctoral fellowship awarded to Marie-Hélène Véronneau by the Social Sciences and Humanities Research Council of Canada, and by grants DA 07031 and DA 13773 from the National Institute on Drug Abuse at the National Institutes of Health to Thomas J. Dishion. We acknowledge the contribution of The Next Generation staff (Peggy Veltman, Trina McCartney, Barb Berry, Carole Dorham, and Nancy Weisel), Eugene School District 4J, 4J Counselor Anne McRae, and the participating youth and families. We also wish to acknowledge Cheryl Mikkola for her editorial assistance in the preparation of this manuscript, and Gregory Fosco, Kristina Hiatt Racer, and Amber McEachern for their comments on an earlier version of this manuscript.

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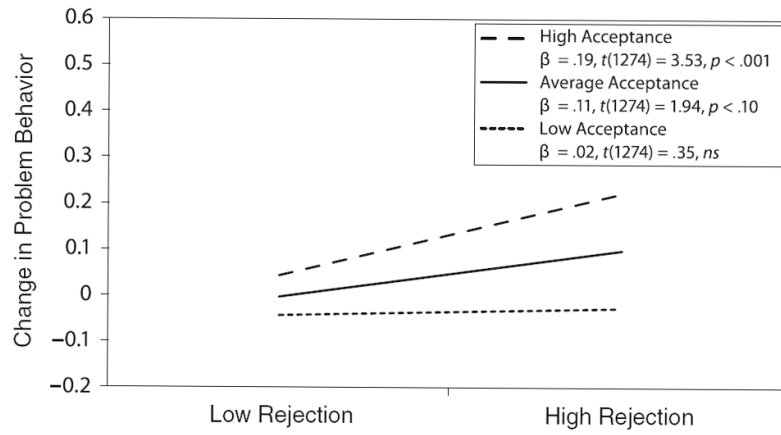


Fig. 1. Participants' mean-centered problem behavior in Grade 8 (controlling for problem behavior in Grade 6) as a function of peer rejection, at different levels of peer acceptance

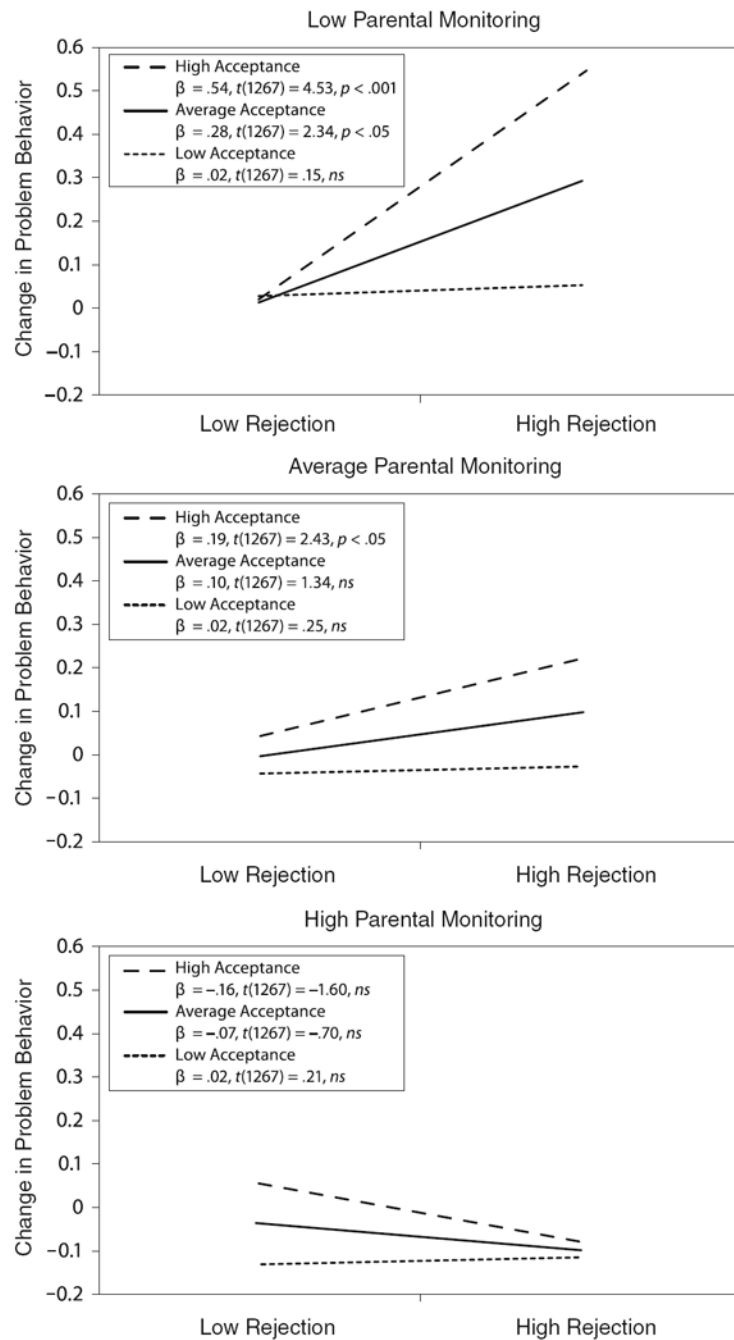


Fig. 2. Participants' mean-centered antisocial behavior in Grade 8 (controlling for problem behavior in Grade 6) as a function of peer rejection, at different levels of peer acceptance, when parental monitoring knowledge is low (*top panel*), average (*middle panel*), or high (*bottom panel*)

Table 1

T-tests for Gender Differences and Descriptive Statistics for Each Variable

Variable	<i>t</i> -test for gender differences		Full sample		Girls		Boys		
	<i>t</i> (<i>df</i>)	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Problem behavior (Grade 8)	5.48 (1,276)	0.36	0.53	0.29	0.43	0.45	0.61		
Problem behavior (Grade 6)	6.40 (1,276)	0.16	0.32	0.11	0.25	0.22	0.38		
Academic achievement (Grade 6)	-4.96 (1,276)	3.14	0.64	3.22	0.60	3.05	0.67		
School engagement (Grade 6)	-7.92 (1,276)	3.38	0.58	3.50	0.50	3.25	0.64		
Peer rejection (Grade 6)	5.88 (1,276)	0.11	0.08	0.10	0.07	0.12	0.08		
Peer acceptance (Grade 6)	-3.77 (1,276)	0.08	0.06	0.08	0.05	0.07	0.06		
Friends' problem behavior (Grade 6)	5.04 (1,276)	0.14	0.23	0.12	0.20	0.18	0.24		
Friends' academic achievement (Grade 6)	-4.48 (1,276)	3.22	0.46	3.27	0.44	3.16	0.48		
Parental monitoring knowledge (Grade 6)	-5.08 (1,276)	3.52	0.65	3.61	0.59	3.42	0.70		

All *t*-tests were significant at $p < 0.001$. Gender is coded 0 for males and 1 for females

Table 2

Correlations Among All Study Variables

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
1. Problem behavior (Grade 8)	–									
2. Problem behavior (Grade 6)	0.41	–								
3. Academic achievement (Grade 6)	–0.20	–0.21	–							
4. School engagement (Grade 6)	–0.24	–0.40	0.42	–						
5. Peer rejection (Grade 6)	0.15	0.23	–0.24	–0.31	–					
6. Peer Acceptance (Grade 6)	0.02 ^{ns}	–0.13	0.29	0.26	–0.28	–				
7. Friends' problem behavior (Grade 6)	0.15	0.22	–0.19	–0.27	0.19	–0.17	–			
8. Friends' academic achievement (Grade 6)	–0.17	–0.17	0.45	0.22	–0.17	0.26	–0.18	–		
9. Parental monitoring knowledge (Grade 6)	–0.34	–0.51	0.25	0.49	–0.21	0.19	–0.22	0.17	–	
10. Gender (Grade 6)	–0.15	–0.18	0.14	0.22	–0.19	0.11	–0.14	0.12	0.14	–

All correlations are significant at the $p < 0.001$ level, unless otherwise indicated. ^{ns} $p > 0.05$. Gender is coded 0 for males and 1 for females

Table 3
Results of the Hierarchical Linear Regression Predicting Antisocial Behavior in Grade 8

Variable	Step 1: Core model only				Step 2: Including the significant buffering effect			
	B	SE B	β	t	B	SE B	β	t
Core model								
Constant	0.04	0.02	-	2.08 ^a	0.04	0.02	-	2.01 ^a
Problem behavior	0.47	0.05	0.29	9.69 ^c	0.44	0.05	0.27	9.04 ^c
Gender	-0.06	0.03	-0.06	-2.31 ^a	-0.06	0.03	-0.06	-2.38 ^a
Academic achievement	-0.08	0.03	-0.09	-3.05 ^b	-0.07	0.03	-0.08	-2.64 ^b
School engagement	0.00	0.03	0.00	0.03	0.00	0.03	0.00	-0.13
Peer rejection	0.47	0.20	0.07	2.36 ^a	0.61	0.20	0.09	3.03 ^b
Peer acceptance	1.69	0.27	0.18	6.29 ^c	1.54	0.27	0.16	5.66 ^c
Best friends' problem behavior	0.06	0.06	0.03	1.15	0.09	0.06	0.04	1.49
Best friends' academic achievement	-0.09	0.03	-0.08	-2.66 ^b	-0.09	0.03	-0.08	-2.72 ^b
Parental monitoring knowledge	-0.13	0.03	-0.16	-5.28 ^c	-0.17	0.03	-0.21	-6.16 ^c
Peer Acceptance × Peer Rejection	7.30	3.47	0.06	2.11 ^a	9.27	3.61	0.08	2.57 ^b
Moderators								
Parental Monitoring × Peer Rejection	-	-	-	-	-1.51	0.32	-0.21	-4.69 ^c
Parental Monitoring × Peer Acceptance	-	-	-	-	-0.86	0.44	-0.06	-1.93
Peer Acceptance × Peer Rejection × Parental Monitoring	-	-	-	-	-28.82	5.89	-0.22	-4.90 ^c

All predictors were measured in Grade 6. For Step 1, $R^2=0.23$, adjusted $R^2=0.23$, $F(10, 1,267)=38.07$, $p<0.001$. For Step 2, $R^2=0.25$, adjusted $R^2=0.24$, $\Delta R^2=0.02$, $F(3, 1,264)=9.06$, $p<0.001$. Gender is coded 0 for males and 1 for females.

^a $p<0.05$;

^b $p<0.01$;

^c $p<0.001$