School Connectedness Buffers the Effects of Negative Family Relations and Poor Effortful Control on Early Adolescent Conduct Problems

Alexandra Loukas, Lori A. Roalson, and Denise E. Herrera

University of Texas

This study examined the unique and interactive contributions of school connectedness, negative family relations, and effortful control to subsequent early adolescent conduct problems. Data were collected from 476 adolescents when they were initially in the 6th and 7th grades and again 1 year later. Results from hierarchical regression analyses showed that even after controlling for negative family relations, effortful control, baseline levels of conduct problems, and gender, school connectedness contributed to decreasing subsequent conduct problems. Examination of 2- and 3-way interactions indicated that high levels of school connectedness offset the adverse effects of negative family relations for boys and girls and the adverse effects of low levels of effortful control for girls. Findings underscore the role of school connectedness as a protective factor for early adolescent conduct problems.

Due in large part to the simultaneous physical, psychological, and social transitions, early adolescence is a developmental period during which vulnerability for externalizing behavior problems, such as aggression and delinquency, rises (Steinberg & Morris, 2001). Because externalizing behavior problems are highly stable across time and their presence is predictive of later maladjustment (Moffitt, Caspi, Dickson, Silva, & Stanton, 1996), numerous studies have examined the roles of family and individual difference variables in their occurrence. Although early adolescents spend more time at school than in any other context (Roeser, Eccles, & Sameroff, 2000), relatively few studies have examined whether school contextual factors contribute to behavioral functioning. Even fewer studies have examined if early adolescent connections to the school moderate or offset the subsequent consequences of poor quality family relationships and negative individual differences.

Requests for reprints should be sent to Alexandra Loukas, Department of Kinesiology and Health Education, University of Texas at Austin, Bellmont Hall 222, Austin, TX 78712. E-mail: alexandra.loukas@mail.utexas.edu
Defined as students’ experiences of belonging to and closeness with others at the school, research suggests that school connectedness is associated with fewer adolescent externalizing problems, including violence, alcohol use, cigarette and marijuana use, onset of sexual activity (Brookmeyer, Fanti, & Henrich, 2006; Resnick et al., 1997), destroying others’ property, and running away from home (Barber & Olsen, 1997). Results from these studies are consistent with Social Control Theory (Hirschi, 1969), which indicates that adolescents who are attached to a conventional group, such as their school, are likely to strive to meet society’s expectations and for this reason show fewer externalizing problems than their counterparts who are not attached.

To date, most studies examining school connectedness effects have been cross-sectional, limiting our ability to determine temporal precedence between school connectedness and externalizing problems. Moreover, few researchers have considered the contribution of school variables to early adolescent externalizing behavior problems over and above other contextual variables, such as the family and peers, and almost no studies have examined whether school connectedness acts as a moderator variable, protecting youth reporting poor quality family relations or negative individual differences from externalizing problems. An exception is a study conducted by Barber and Olsen (1997), who found that when low levels of positive socialization experiences were provided by one context such as the family, then nonfamily experiences became more important in regard to problem behavior of fifth- and eighth-grade students. These findings suggest that a good connection in one context may compensate for or offset a bad connection in another. However, this cross sectional study did not determine which specific contexts (e.g., family, peer, neighborhood, or school) acted as the protective factor.

The present study aimed to extend Barber and Olsen’s (1997) research by examining if school connectedness offsets the adverse effects of poor quality family relations on early adolescent conduct problems. Given the importance of interpersonal variables in the development of conduct problems (Moffitt et al., 1996), we also examined if school connectedness offsets the adverse effects of low levels of effortful control. Effortful control is a multidimensional construct reflecting biologically based individual differences in the ability to shift and focus attention and to actively control emotional and attentional responses (Capaldi & Rothbart, 1992). Students low in effortful control tend to become easily frustrated and are at elevated risk for peer rejection and for acting out and exhibiting aggressive behaviors (Maszk, Eisenberg, & Guthrie, 1999; Rothbart, Ahadi, & Hershey, 1994). One study showed that the school contextual factors of student cohesiveness and satisfaction with classes protected early adolescents low in effortful control from subsequent conduct problems 1 year later (Loukas & Murphy, 2007). The authors hypothesized that good quality school climates may have offset the risk incurred by students low in effortful control by decreasing the possibility of peer rejection and increasing students’ sense of belonging to the
school (Baker, 1998). The present study directly tested whether sense of belonging or school connectedness acted as a protective factor in the relation between low levels of effortful control and conduct problems.

In summary, the present study tested the independent and interactive effects of school connectedness, negative family relations, and low levels of effortful control assessed when adolescents were in the sixth and seventh grades on conduct problems assessed in the seventh and eighth grades. Guided by Social Control Theory and prior research, the following hypotheses were tested: (1) School connectedness would uniquely predict decreases in conduct problems 1 year later, above and beyond baseline levels of conduct problems, negative family relations, adolescent effortful control, and gender and (2) school connectedness would act as a protective factor, moderating or buffering the detrimental impact of negative family relations and low levels of effortful control on subsequent conduct problems. We also examined if the hypothesized associations varied by gender, as previous findings indicate that interpersonal relationship quality may be a stronger predictor of adjustment problems for girls than boys (Leadbeater, Kuperminc, Blatt, & Hertzog, 1999). The gender analyses were exploratory, however, because the literature is unclear as to whether school contextual influences are similarly protective for adolescent boys and girls (Crosnoe, Erickson, & Dornbusch, 2002).

METHOD

Participants

Participants were 476 10–14-year-old students attending all three middle schools in a suburban school district in central Texas and involved in the first and second waves of a larger study. At Wave 1, students were in the sixth and seventh grades ($M_{age} = 11.69; SD = .76$). Wave 2 occurred 1 year later when students were in the seventh and eighth grades ($M_{age} = 12.76; SD = .72$). Fifty-four percent of these students were female; 77.9% were European American, 16% were Latino, 3.6% were African American, and 2.5% reported another ethnicity. Data from an additional 18 students were eliminated because of substantial amounts of missing information and from another six students because they reported living with a relative or foster parent(s) and, thus, it was not clear that they had adequate contact with their parents, the focus of the negative family relations items.

Procedure

At Wave 1, active parent consent was obtained from 76% ($n = 884$) of all sixth- and seventh-grade students attending the three schools. Because the study was not originally conceptualized to include multiple waves, active parent
consent was reobtained when the decision was made to conduct a second wave of data collection. Although all three schools allowed students to participate at Wave 2, the principal for one school did not allow recruitment of the eighth-grade students (i.e., 130 students who participated at Wave 1 were not eligible to participate at Wave 2) because of their demanding standardized testing schedule for the year. Of the students participating at Wave 1 and who were eligible to participate at Wave 2, 71% received parental permission to participate at Wave 2. Of the 71%, eight students refused participation and 30 students were absent on the day of the survey and one make-up day; consequently, 70% of the original sample participated at Wave 2. A questionnaire consisting of 161 items at Wave 1 and 160 items at Wave 2 was group-administered to participating students in one 40-minute homeroom class. Attrition analyses conducted to determine if students missing Wave 2 data differed from students with complete data at both waves showed that students not participating at Wave 2 reported more Wave 1 conduct problems and lower levels of effortful control and school connectedness. The two groups did not differ on Wave 1 family relations. Thus, the retained students reported better functioning and more connectedness to the school than did their peers.

Measures

**Effortful control.** The short form of the Early Adolescent Temperament Questionnaire-Revised (EATQ-R; see Ellis & Rothbart, unpublished data; Putnam, Ellis, & Rothbart, 2001) was used to assess Wave 1 effortful control. The EATQ-R is a revised and expanded version of the EATQ (Capaldi & Rothbart, 1992). Factor analyses conducted by Rothbart and colleagues (see Putnam et al., 2001) showed that inhibitory control (five items), attentional control (six items), and activation control (five items) comprised the effortful control scale. In the present study, internal consistency reliabilities were adequate only for the attentional control ($\alpha = .65$) and activational control ($\alpha = .59$) subscales, and thus were the only two subscales comprising effortful control. Attentional control measures the ability to focus and shift attention (“It is easy for me to really concentrate on homework problems” [reverse coded]), and activation control assesses the ability to perform an action when there is a strong tendency to avoid it (“If I have a hard assignment to do, I get started right away” [reverse coded]). Items within each subscale were scored on a scale from 1 = *almost always true* to 5 = *almost always untrue* and were averaged so that higher scores reflect more attentional and activational control. The two subscales were then averaged ($r = .49$, $p < .001$) to create the final 11-item scale, with internal consistency reliability of .74.

**Family relations.** Quality of family relations was measured at Wave 1 with six items adapted by Metzler, Biglan, Ary, and Li (1998) from the Family
Environment Scale (Moos & Moos, 1986). Items assessed the degree of warmth (“I really enjoyed being with my parents”), trust (“my parents trusted my judgment”), togetherness (“there was a feeling of togetherness in our family”), and fun (“the things we did together were fun and interesting”) between the adolescent and his/her parents. Responses ranged on a 5-point scale from 1 = never true to 5 = always true. For this study, items were reverse scored and averaged so that higher scores reflect more negative family relations. Internal consistency reliability of the six-item scale was .85.

**School connectedness.** Five items drawn from the National Longitudinal Study of Adolescent Health (McNeely, Nonnemaker, & Blum, 2002) were used to assess school connectedness. Students responded to items such as, “I feel safe at this school,” and “I feel close to people at this school.” The five items were scored on a scale ranging from 1 = strongly agree to 5 = strongly disagree. Items were reverse coded and averaged so that higher scores reflect higher levels of school connectedness. McNeely and colleagues reported good internal consistency reliability for this five-item measure in their large nationally representative sample (α = .79). The internal consistency reliability of the five items for the present sample was .73.

**Conduct problems.** The self-report form of the 25-item Strengths and Difficulties Questionnaire (SDQ; Goodman, Meltzer, & Bailey, 1998) was used to assess adolescent conduct problems at Wave 1 and Wave 2. The SDQ is a brief behavioral screening questionnaire designed to assess conduct problems, prosocial behaviors, emotional symptoms, hyperactivity, and peer problems among 11–16-year-old youth. Only the five-item conduct problems subscale (e.g., “I fight a lot.” “I am often accused of lying or cheating.”) was used in the current study. Each item was scored on a scale ranging from 1 = not true to 3 = certainly true and averaged so that higher scores reflect more conduct problems. The internal consistency reliability of the five-item conduct problems scale was .65 at Wave 1 and .55 at Wave 2.

**RESULTS**

Zero-order correlations, means, and standard deviations (SDs) for all study variables are shown in Table 1. Table 2 shows a series of hierarchical regression analyses used to test study hypotheses. To test the unique contributions of school connectedness to subsequent conduct problems (Hypothesis 1), adolescent gender, Wave 1 conduct problems, negative family relations, and effortful control were entered in Step 1 and school connectedness was entered in Step 2. Given that baseline conduct problems were included in all models, results reflect predictors of change in conduct problems across a 1-year period of time. As shown in Table 2, in addition to Wave 1 conduct problems and negative family relations, school connectedness made a
unique contribution to early adolescent Wave 2 conduct problems. The total main effects model accounted for 26.2% of the variance in Wave 2 conduct problems, $F(5, 470) = 33.31; p < .001$. School connectedness accounted for a small (1.5%) but significant portion of the variance, $F(1, 470) = 9.69; p < .01$ in the outcome over and above the other main effect variables. Early adolescents reporting better quality family relations and more connectedness to the school reported decreases in conduct problems 1 year later.

To determine if school connectedness was a protective factor (Hypothesis 2), two two-way interactions, one between school connectedness and negative family relations and the other between school connectedness and effortful control, were examined. The Three-way interaction was tested with all lower-level two-way interactions and main effects included.

**TABLE 1**
Descriptive Statistics and Zero-Order Correlations Between All Study Variables ($N = 476$)

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
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<tbody>
<tr>
<td>Gender</td>
<td>—</td>
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<td>-0.08</td>
<td>-0.18**</td>
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<td>Negative family relations</td>
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<td>0.38**</td>
<td>0.31**</td>
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<td>-0.44**</td>
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<td></td>
<td></td>
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<td>School connectedness</td>
<td>—</td>
<td>-0.34**</td>
<td>-0.33**</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Wave 1 conduct problems</td>
<td>—</td>
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<td>Wave 2 conduct problems</td>
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<td>$M$</td>
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<td>$SD$</td>
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<td>0.65</td>
<td>0.34</td>
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</table>

**$^**p < .01.**

**TABLE 2**
Predicting Wave 2 Conduct Problems From Gender, Wave 1 Conduct Problems, Negative Family Relations, Effortful Control, and School Connectedness ($N = 476$)

<table>
<thead>
<tr>
<th>Standardized $\beta$ Coefficients</th>
<th>Step 1</th>
<th>Step 2</th>
<th>Step 3</th>
<th>Step 4</th>
</tr>
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<tr>
<td>Gender</td>
<td>.07</td>
<td>.05</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wave 1 conduct problems</td>
<td>.37***</td>
<td>.35***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wave 1 negative family relations</td>
<td>.14**</td>
<td>.10*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wave 1 effortful control</td>
<td>-.07</td>
<td>-.05</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wave 1 school connectedness</td>
<td>-.14**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Connectedness $\times$ Negative Family Relations</td>
<td></td>
<td></td>
<td>-.10*</td>
<td></td>
</tr>
<tr>
<td>Connectedness $\times$ Effortful Control $\times$ Gender</td>
<td></td>
<td></td>
<td>-.13*</td>
<td></td>
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</table>

*Note. Gender is coded 0 = female, 1 = male. Only significant two- and three-way interactions are shown. The Three-way interaction was tested with all lower-level two-way interactions and main effects included.*

* $p < .05$; ** $p < .01$; *** $p < .001$. 
effortful control were individually entered in Step 3 (see Table 2). Centered predictor variables were used in creating all interaction terms to avoid possible multicollinearity (Aiken & West, 1991). The interaction between school connectedness and negative family relations was significant, accounting for 1% of the variance in the outcome, $F(1, 469) = 5.01, p < .05$. Although the amount of variance accounted for by the interaction is small, it is consistent with findings from other nonexperimental studies (see Chaplin, 1991). Probing the interaction using the methods outlined by Aiken and West (1991) indicated that at high levels of school connectedness (1 SD above the mean), the effect of negative family relations on Wave 2 conduct problems was not significant ($\beta = - .13$). However, at low levels of school connectedness (1 SD below the mean), the effect of negative family relations on the outcome was positive and significant ($\beta = .16, p < .01$). These results indicate that high levels of school connectedness protected adolescents from the deleterious effects of negative family relations.

To explore if the unique and interactive effects varied by gender, two- and three-way interactions were tested. Three two-way interactions between gender and the school, family, and effortful control variables were entered separately in Step 3 and two three-way interactions were entered individually in Step 4, with all lower level interactions and main effects included (see Table 2). Not one of the three two-way interactions with gender was significant. The three-way interaction among gender, negative family relations, and school connectedness was only marginally significant ($p = .09$) and therefore was not probed. However, the other three-way interaction among gender, effortful control, and school connectedness was significant, accounting for 1% of the variance in subsequent conduct problems, $F(1, 466) = 4.49, p < .05$. To understand the nature of the three-way interaction, analyses were first conducted to determine if the two-way interaction was significant for boys and/or girls. Results showed that the two-way interaction was significant for girls ($\beta = .16, p < .01$), but not boys ($\beta = - .02$). Probing the significant two-way interaction for girls showed that at high levels of school connectedness, effortful control was not related with subsequent conduct problems ($\beta = .03$). At low levels of school connectedness, high levels of effortful control were related to decreases in conduct problems 1 year later ($\beta = -.24, p < .01$). Thus, school connectedness protected girls low in effortful control from engaging in conduct problems 1 year later.

**DISCUSSION**

The purpose of this study was to examine the unique and interactive effects of school connectedness, negative family relations, and effortful control on change in early adolescent conduct problems 1 year later. Results supported Hypothesis 1, showing that school connectedness uniquely predicted subsequent early adolescent conduct problems, above and beyond that of
negative family relations, effortful control, baseline conduct problems, and gender. Consistent with Hypothesis 2 and extending Barber and Olsen’s (1997) research, findings also indicated that higher levels of school connectedness protected early adolescent boys and girls from the deleterious effects of negative family relations. School connectedness not only contributed directly to decreasing conduct problems across time, but it also compensated for poor quality family relationships. According to Social Control Theory (Hirschi, 1969), adolescents who feel connected to a conventional group, whatever group that may be, are likely to learn and to meet society’s behavioral expectations and, therefore, are less likely than their less connected peers to engage in conduct problems. Interestingly, this contextual variable appeared to play an even more salient role in subsequent early adolescent conduct problems than did the individual difference variable of effortful control. That is, school connectedness, but not effortful control, was uniquely predictive of change in conduct problems across time.

Analyses examining gender differences in the hypothesized associations indicated that most of the main and interactive effects were consistent across the boys’ and girls’ data. Only one difference emerged. School connectedness protected early adolescent girls, but not boys, low in effortful control from engaging in subsequent conduct problems. Feeling connected to the school may minimize the peer conflict and peer rejection for which youth low in effortful control are at elevated risk (Maszk et al., 1999), and in this way decrease the likelihood of acting out (Baker, 1998). School connectedness may be particularly salient for girls due to socialization that emphasizes the importance of interpersonal relationships (Leadbeater et al., 1999). That is, feeling close with people at the school may decrease the possibility that girls low in effortful control will experience conflict and consequently act out.

The present study has a number of strengths, including the prospective research design and the examination of the interactive effects of multiple developmental influences on early adolescent conduct problems. The study also has some limitations. First, all measures were adolescent self-report, and although there was a 1-year lag between the predictor variables and the outcome, the strength of associations were likely inflated. Future studies should triangulate the data source to include reports from parents, teachers, and/or peers. Triangulation would also provide a richer perspective on early adolescent effortful control, conduct problems, and quality of family relations than does the sole perspective of the adolescent. Second, students who participated in both waves of the study reported better baseline behavioral functioning and more connectedness to the school than those who participated only at Wave 1. Therefore, caution should be used in generalizing findings to other early adolescents. Finally, although school connectedness was a unique predictor of change in conduct problems, over and above negative family relations and effortful control, it accounted for only a small amount of the variance in the outcome. The small amount of variance
attributed to school connectedness must be kept in perspective when interpreting study findings.

Despite its limitations, the current study adds to the growing body of research examining the role of school contextual influences in early adolescent behavioral functioning and underscoring the relevance of the school in the socialization process. Findings extend the existing literature by showing that although the amount of variance accounted for was small, adolescent experiences of belonging to and closeness with others at the school may buffer or offset the subsequent negative consequences of poor quality family relations and, for girls, low levels of effortful control. Given these findings, additional research that identifies the factors contributing to early adolescent feelings of school connectedness is warranted. Results from such studies would be particularly important for school-based prevention and intervention efforts aimed at decreasing externalizing behavior problems.

REFERENCES


