

AFFILIATIVE MOTIVATION, SCHOOL ATTACHMENT, AND AGGRESSION IN SCHOOL

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School attachment is a robust predictor of adjustment in children and youth. Previous research has demonstrated effects of school context on student attachment, but individual-level contributions have not been explored. Our study examined the role of affiliative orientation in school attachment and aggressive behavior in children and youth from Grades 3 through 12. A total of 834 students in three school districts completed self-report measures of affiliative motivation, attachment to school, and frequency of physically and relationally aggressive acts. Results supported the hypothesis that students high in affiliative orientation reported higher levels of school attachment and lower levels of physical and relational aggression. Path analysis indicated that the relation of affiliative orientation to aggression was mediated by school attachment, but that the mediational effect was moderated by sex. Male students, and students of both sexes with low affiliative motivation, may receive special benefit from practices designed to increase school attachment. © 2006 Wiley Periodicals, Inc.

Several decades of research have demonstrated that student attachment to school is consistently associated with positive social, emotional, and academic adjustment (Anderman, 2002; Goodenow, 1993; Hawkins, Doueck, & Lishner, 1988; Liska & Reed, 1985; Najaka, 2001; Resnick et al., 1997; Wiatrowski, Griswold, & Roberts, 1981). Effects of school attachment, an emotional feeling of affection toward and enjoyment of school, are robust and have been demonstrated across different races and ethnicities in the United States (Bullerdick, 2000; Cernkovich & Gior-dano, 1992; Erkut & Tracy, 2002) as well as across nationalities (Junger & Marshall, 1997; Zhang & Messner, 1996). Much of the literature on school attachment has come from sociology (Catalano & Hawkins, 1996; Hirschi, 1969) or community psychology (Battistich, Solomon, Watson, Solomon, & Schaps, 1989; Felner, Ginter, & Primavera, 1982) and has focused on the effects of school and classroom environment on student attachment to school. Numerous interventions have demonstrated that improving school climate results in higher school attachment and lower rates of delinquency (Hawkins et al., 1988), substance abuse (Najaka, 2001), and school disorder (Gottfredson, 1988). We know less, however, about the role of individual differences in the development and expression of school attachment. Some recent studies have considered school attachment from a motivational perspective (Anderman, 2002; Eccles et al., 1993), as an expression of the fundamental human need to be connected or to belong. Others have noted relations between attachment to school and attachment to family (Dornbusch, Erickson, Laird, & Wong, 2001) as well as to peers and neighborhood (Barber & Olsen, 1997); however, we know little about the antecedents of student attachment and how to explain individual differences within the same or similar school environments. One possible antecedent is affiliative orientation, a stable and enduring tendency to want to be close to others and to form and maintain relationships (Baumeister & Leary, 1995; Griner & Smith, 2000). In this article, we present results of a study exploring the contribution of affiliative orientation to school attachment. We also explore the importance of both school attachment and affiliative orientation to our understanding of aggressive behaviors in school. Although low school attachment has been shown to be reliably associated with delinquency (cf. Arthur, Hawkins, Pollard, Catalano, & Baglioni, 2002), there has been surprisingly little information about its contribution specifically to physical aggression and no information on its contribution to relational aggression. Similarly, whereas there have been a number of studies about the

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effect of affiliative or prosocial cognitions and goals on aggressive behavior within specific situations (Erdley & Asher, 1999; Herlache, 1995; Pellegrini, 2002), there has been little about the enduring personality variables in children that may give rise to those cognitions and resulting aggressive behaviors.

Influences on School Attachment

Social control theory, the dominant theoretical context in which school attachment has been explored, holds that attachment arises when students are rewarded for positive involvement in school (Hirschi, 1969). Ample research, both basic and applied, has provided evidence for the association of perceived rewards for positive involvement with school attachment. Interventions designed to increase school attachment and based on this model, for example, focus on increasing opportunities for positive involvement, developing the skills needed to take advantage of opportunities for involvement, and consistently rewarding involvement when it occurs. Classroom-level practices such as interactive teaching methods, small-group work, and regular reinforcement of positive involvement through teacher warmth and support have been shown to result in increased school attachment over time (Gottfredson, 1988; Hawkins et al., 1988). Similarly, school-level changes such as increased opportunity to participate in extracurricular activities and greater community support of schools also have resulted in higher levels of school attachment (Gottfredson, 1988). The social development model, a developmental elaboration of Hirschi's social control theory, proposes that individual-level differences also should affect the perceived rewardingness of involvement and thus school attachment (Catalano & Hawkins, 1996). The individual differences specified in the model are limited to cognitive ability and physiological arousal level; however, other theoretical models provide a rationale for considering personality factors that also might play a role in the perception of satisfaction and reward in a school context.

In contrast to the social control model, Eccles and colleagues (1993) approached school attachment from a motivational perspective, considering it a function of the match between students' need for relatedness and autonomy and the degree to which schools meet those needs, or the "stage-environment fit." In this model, which is grounded in the person-environment fit theory of Hunt (1975), attachment to school reflects an emotional response and engagement related to having affiliative needs satisfied. Research using this model has demonstrated that attachment decreases in middle school, when school characteristics are such that developmental needs for relatedness outside the home are less likely to be fulfilled (Eccles, Lord, & Buchanan, 1996); however, students' affiliative needs in this model are presumed, and individual differences in the need for relatedness contributing to student attachment have not been explored. Instead, research on stage-environment fit, like research on social bonding, has focused on attributes of school and classroom environment, rather than of the individual, to explain variability in school attachment levels.

In part because of these different historical roots, there is a wide variety in theoretical and methodological approaches to operationalizing school attachment (Hill, 2005; Jimerson, Campos, & Greif, 2003; Libbey, 2004). Variables representing the construct of school attachment include school connectedness, school engagement, school bonding, school belonging, commitment to school, and sense of community (O'Farrell & Morrison, 2003). Some of these measures appear to differ widely in the constructs they assess, with items in various measures related to peer attachment, teacher attachment, academic competence, feelings of belonging, achievement motivation, perception of school climate, or a combination of some or all of those constructs. In line with recent brief assessments of school attachment in the social control tradition (Catalano & Hawkins, 1996) and the stage-environment model (Eccles et al., 1996), we have limited our construct to students' emotional connection specifically to their school.

In sum, both the social control model and the stage-environment fit model assume that (a) individual-difference variables will affect the degree to which students experience school as rewarding and satisfying, and (b) in turn, levels of reward and satisfaction will affect the degree to which students feel attached to school. Furthermore, the stage-environment fit model proposes that needs for affiliation contribute directly to students' attachment to schools.

Affiliative Motivation in Children

Motivation may be described as a coherent set of higher order goals and needs that help us select and interpret situations and direct and organize our behaviors (Dweck & Leggett, 1988). Motivational constructs enable us to understand both stable personality traits and variability in individual behavior across situations (Grant & Dweck, 1999). For example, a person motivated by a need to impress others through achievement may be reliably expected to exert a great deal of effort to succeed in tasks when the results are quantifiable and public (e.g., graded assignments). The same person may exert less effort on the same tasks when results are private or not quantifiable. In the developmental literature, some researchers have focused on stability of behavior across time and situation through study of temperament (Kagan & Snidman, 1990) or, less frequently, through study of personality traits (Digman, 1997; Mervielde & De Fruyt, 2000; Shiner, 2000). In recent decades, social cognitive theorists have emphasized the understanding of universal processes and mechanisms, including goals, that explain behavior within situations (Crick & Dodge, 1994; Dodge, 1993); however, fewer researchers in the social cognitive tradition have examined motivation in children as an explanation for behavior both within and across situations.

To the extent that motivation has been studied in children, the focus has been primarily on academic motivation; most notably intrinsic (or mastery or task) motivation versus extrinsic (or competitive or performance) motivation (Anderman & Midgley, 1998; Deci, Koestner, & Ryan, 1999; Dweck & Leggett, 1988; Eccles, Roeser, Wigfield, & Freedman-Doan, 1999; Smiley & Dweck, 1994). For example, intrinsic motivation has been associated with a number of positive adjustment outcomes in children including academic achievement (Church, Elliot, & Gable, 2001), lower likelihood of cheating (Murdock, Hale, & Weber, 2001), and enhanced creativity (Koestner, Ryan, Bernieri, & Holt, 1984). Other motivational variables, such as affiliative orientation, have been studied extensively in adults for several decades (Griner & Smith, 2000; McAdams & Constantian, 1983; Murray, 1938; Winter et al., 1998), but infrequently explored in the developmental literature.

Affiliative orientation may be conceptualized as a stable tendency to want to form and sustain close relationships with others. The motivation to affiliate has been considered on multiple levels, from a fundamental, biologically based and evolutionarily adaptive need (Bowlby, 1958) to a social-cognitive description of stable sets of goals and desires (Emmons, 1997). Longitudinal data from a national survey showed that affiliative motivation is stable over a 20-year span (Veroff, Reuman, & Feld, 1984). Research also has shown that affiliative orientation is linked to emotional well-being in both adults (Baumeister & Leary, 1995) and children (Currie, 2001), and that frustration of the need to affiliate has negative consequences for both mental and physical health (Baumeister & Leary, 1995). In this article, we explore the relation of affiliative orientation in children to two adjustment outcomes: school attachment, which we discussed earlier, and aggressive behavior.

Role of Affiliative Orientation in Aggression

Aggression represents an attempt to harm others, either overtly (e.g., physical harm such as hitting, shoving, kicking) or covertly (e.g., manipulation of a relationship through gossip or exclusion). Children's aggressive behaviors result in their having lower levels of acceptance by peers as

well as more negative relationships with adults (Conduct Problems Prevention Research Group, 1992). The perceptions and behaviors of people high in affiliative motivation are directed and organized by relationship goals. Since engaging in aggression conflicts with these relationship goals, people higher on affiliative orientation should be on average less aggressive than those low on affiliative orientation. Some past research supports a relation of affiliation and aggression: Students rated as aggressive by their teachers placed a lower value on affiliative goals within specific situations than their nonaggressive peers (Lochman, Wayland, & White, 1993). Conversely, children who endorsed relationship goals in hypothetical situations were less likely to select aggressive strategies to obtain their goals than children who endorsed self-interested or vengeful goals (Delveaux & Daniels, 2000). Both studies, in the tradition of social cognitive research, report on situation-specific affiliative goals rather than on a general affiliative motivation. Currie (2001) reported that children who rated themselves as high on affiliative motivation relative to dominance motivation were rated by their teachers as significantly lower on externalizing behavior. A search of the literature did not reveal any studies examining the relation of affiliative motivation to enactment of aggressive behaviors toward peers; however, it is reasonable to expect both rationally and on the basis of these related studies that children high on affiliative orientation will be less likely to engage in aggressive behaviors.

School Attachment and Aggression

As noted earlier, the bulk of the research on school attachment has focused on its association with delinquent or deviant behavior. Delinquency in these studies is defined variously. Many studies (Free, 1994; Liska & Reed, 1985; Williams, Ayers, Abbott, Hawkins, & Catalano, 1999) have distinguished between minor acts of delinquency (e.g., vandalism, petty theft, lying), major acts of delinquency (e.g., breaking and entering, grand theft, joyriding), and violent crimes against persons (e.g., assault; rape, use or threatened use of weapons); other studies consider all these behaviors together in a single delinquency index (Cernkovich & Giordano, 1992). Regardless of how it is measured, the violent behavior assessed in delinquency measures differs from aggressive behavior as generally studied in the context of school. Although early aggression may indicate later development of delinquency and violence in some children (Loeber, 1990), aggressive children vary in their developmental trajectories, and many will not become delinquent. Nevertheless, their aggressive behaviors pose serious short- and long-term problems for their teachers, peers, parents, and themselves. Measures of delinquency also do not capture problematic aggressive behaviors of many younger children, and they miss the covert forms of aggression that girls may be more likely to engage in (Flanagan, Bierman, Kam, & Conduct Problems Prevention Research Group, 2003). Some studies have reported negative associations of school attachment with school misbehavior or conduct problems (Bryant, Schulenberg, Bachman, O'Malley, & Johnston, 2000; Murray & Greenberg, 2001), but not specifically with aggression. Thus, demonstrating a relation of in-school aggressive behaviors to school attachment in both young children and adolescents represents an important addition to the literature on school attachment.

Although children who are highly affiliative may be less aggressive in general, affiliative motivation is unlikely to be the only influence or even the most direct influence on aggressive behavior. Instead, we expect that effects of affiliative motivation are tempered by situational and contextual variables and by how children interpret those variables. Affiliative children have many opportunities to satisfy their relationship goals in the context of school. When those affiliative goals are met (i.e., school is experienced as rewarding and fulfills important, enduring individual needs), the result is likely to be greater affective engagement with the school. In turn, we expect that higher affective engagement with school should result in less aggression in school. In other words, we expect that attachment to school is a more proximal determinant of behavior in school

than affiliative orientation, and that the hypothesized relation of affiliative orientation to aggressive behaviors will therefore be mediated by attachment to school.

In sum, our mediational model represents three related hypotheses. The first study hypothesis was that affiliative orientation would be positively related to school attachment. The second was that affiliative orientation would be negatively associated with aggression. The third was that school attachment also would be negatively associated with aggression and would account for the effect of affiliative orientation on aggression. Finally, we examined whether the first three hypotheses held true for both boys and girls and across grade levels and ethnicities.

METHOD

Sample

Participants attended public elementary, middle, and high schools in three school districts in the rural Northwest United States. With the exception of one school in which the principal elected not to have 12th graders take the survey, all students in Grades 3 through 12 were invited to participate. Of a possible total of 928 students, 834 (90%) completed the survey. The remaining 10% either refused to participate, had parents who denied consent, or were absent on the day of the study.

A total of 416 boys and 362 girls as well as 56 additional students who did not report gender completed the survey. Ninety-nine students (12% of the full sample) did not complete the race/ethnicity information. Of the students who completed race/ethnicity information, 531 (72%) students reported their race/ethnicity as "White or Caucasian or European," 181 (25%) as "Spanish or Hispanic or Latino," and 23 (3%) as other ethnicities, including American Indian, Asian American, Pacific Islander, and African American. For the purposes of this study, ethnicity was divided into two categories only (Latino and non-Latino White) since the small number of students of other ethnicities or of those who claimed more than one race or ethnicity (e.g., both Latino and African American) did not allow for analysis.

Missing Data

One hundred fifty-six (20%) students had missing data on at least one of the three variables used in the analyses (affiliative orientation, school attachment, and aggression). Univariate tests indicated that there were no significant mean differences on any of these variables between the group with no missing data and the group with at least one missing data point. There also were no sex or ethnic differences in missing-data versus non-missing-data groups. Students in the high-school group were more likely to have missing values than those in the elementary- or middle-school groups (elementary: 19%; middle: 16.5%; high: 25%). Sample size and normality of variable distribution permitted maximum likelihood estimation (MLE), which maximizes the probability that estimated coefficients based on sample covariances reflect population parameters. MLE also is considered a satisfactory method of compensating for missing data, resulting in less biased estimates than listwise deletion (Byrne, 2001).

Consent and Procedure

Data collection was conducted in classrooms. For the elementary students (Grades 3–5), homeroom teachers administered questionnaires by reading items aloud. Students in middle and high school read questionnaires to themselves and completed them at their own pace. Students with special needs were identified in advance and assisted by classroom and special education teachers in completing the survey. Spanish-language surveys were provided for students who preferred to take the survey in Spanish; however, all but 2 students chose to complete the

English-language version. These two surveys were not included in the analyses for the present study as psychometric analysis of the Spanish version was not possible with such a small sample. Students were told that their responses were confidential, that they were not required to fill out the survey, and that they could stop participating at any time. All procedures were reviewed and approved by the Institutional Review Board of Washington State University.

Analytic Strategy

Confirmatory factor analysis (CFA) was used to test measurement models for each of the three scales used in the study and then for the structural model of the study's mediational hypothesis. CFA also was used to test for factorial invariance of the scale across sex and ethnicity. All analyses used the full sample of students in Grades 3 to 12.

Goodness of fit in CFA was evaluated using both the comparative fit index (CFI) and the root mean square error of approximation (RMSEA) and its 90% confidence interval (CI). The CFI is an incremental index of fit of the hypothesized model relative to the null model. The RMSEA represents a discrepancy between optimal fit of the hypothesized model to the population covariance matrix. The RMSEA takes into account model degrees of freedom and is therefore sensitive to model complexity (Byrne, 2001). In addition, use of the CI provides information about the precision of the estimate: Small RMSEA but a large CI indicates lack of precision. Criteria used for acceptable model fit were $CFI > 0.95$ and $RMSEA < 0.08$ (Hu & Bentler, 1999). Structural equation modeling was used to test the hypothesized mediational model and factorial invariance across sex and ethnicity. Comparative fit of nested models in the testing of factorial invariance was evaluated with the χ^2 difference test (Byrne, 2001).

Measures

Motivational orientation. Affiliative orientation was measured using a scale developed and validated by Currie (2001). The scale has eight items and uses a 5-point Likert-type scale, with possible responses of "YES!" "Yes," "Maybe," "No," and "NO!" (Slavin, Madden, & Leavey, 1984) assessing agreement or disagreement with each statement. CFA of the scale indicated an adequate fit of the measurement model, $\chi^2 = 18.0$, $df = 5$, $p < .003$. Fit indices also were adequate, with a CFI of 0.99 and an RMSEA of .08 (90% CI: 0.04–0.12). Table 1 presents scale items and structure coefficients.

Currie (2001) reported psychometrics on the Affiliative Orientation scale for Grades 5 through 8 only; thus, we explored psychometric properties of the scale for elementary-, middle-, and high-school groups. In this study, Cronbach's alpha was .87 overall, .74 in elementary-school students (Grades 3–5), .86 in middle-school students (Grades 6–8), and .87 in high-school students (Grades 9–12).

School attachment. We piloted items from three school-attachment scales on a sample of 35 students across a range of grades: a two-item school-relatedness scale reported by Eccles and colleagues (1993), a four-item school-bonding scale reported by Hawkins, Guo, Hill, Battin-Pearson, and Abbott (2001), and the five-item Add Health school-attachment scale reported by Barber and Olsen (1997). We selected four items with an affective component related specifically to school, but not to people in the school: "I am happy to be at this school" and "I feel safe in my school" (Barber & Olsen, 1997), and "Most mornings I look forward to going to school" and "I like my school" (Eccles et al., 1993; Hawkins et al., 2001). We included an additional item derived from focus groups with students about their attachment to school: "I am proud to be at this school." Further details and a full psychometric analysis of the school-attachment scale are presented in Hill (2005). Response options were the same as those for the affiliation scale. In piloting

Table 1
Item Means and SDs, Factor Coefficients, Scale Reliabilities, and Correlations for All Variables

Scales and items	<i>M</i>	<i>SD</i>	Standardized structural coefficient	α	Correlations		
					AFF	SA	AGG
Affiliative orientation (AFF)	3.62	0.66		0.87			
It is important to me to be close to other people	3.73	1.01	0.75				
It is important to cooperate with others	4.01	0.90	0.63				
It is important to me to play with other kids	3.77	1.02	0.63				
I really like to work with other kids in a group	3.74	0.98	0.50				
I like to do things with other people most of the time	3.93	0.89	0.63				
I have more fun when I do things on my own than with others ¹	3.80	1.06	-0.19				
I often want to work with others	3.64	0.96	0.49				
It is important to me to be with other people most of the time	3.44	1.01	0.61				
It is important to share things about myself with others							
School attachment (SA)	3.69	0.75		0.87			-0.27*
I am proud to be at this school	3.83	0.90	0.87				
I am happy to be at this school	3.80	0.89	0.89				
I feel safe in my school	3.95	0.87	0.71				
Most mornings I look forward to going to school	3.09	1.10	0.69				
I like my school	3.79	0.87	0.89				
Aggression (AGG)	1.50	0.61		0.84			
How often <i>this semester</i> did you:							
Exclude someone you didn't like from group activities	1.88	0.94	0.50				
Start a fist fight or shoving match	1.21	0.63	0.64				
Ignore someone or stop talking to someone because you were mad at the person	2.03	1.04	0.45				
Spread rumors about someone you didn't like	1.32	0.76	0.69				
Hit someone because you didn't like what the person said or did	1.42	0.89	0.68				
Insult someone or make fun of someone	1.14	0.61	0.67				
Damage or destroy someone's property or belongings (books, locker) on purpose	1.36	0.81	0.72				

¹This item, which was reverse scored, was dropped from the scale due to its low factor loading.

* $p < .001$.

and in the current study, this five-item school attachment scale (SA) had an alpha of .87. Cronbach's alpha for elementary students was .83; for middle-school students, .89; and for high-school students, .86. CFA indicated a good fit of the measurement model ($\chi^2 = 0.2$, $df = 1$, $p < .69$). Fit indices also were good, with a CFI of 1.0 and an RMSEA of 0.00 (95% CI: 0.00-0.09) (see Table 1 for items and structure coefficients).

Assessment of aggression. Self-reports of aggression were obtained using seven items selected from a larger scale originally developed by MacDonald and O'Laughlin (1997) and revised most recently by Werner and Nixon (2005). Participants indicated how often over the course of the current school semester (students were surveyed 3 months into the semester) they engaged in a series of behaviors, rated on a scale of 1 (*never*) to 5 (*at least once per day*). The scale assessed aggressive behaviors in school. The items assessed both relational aggression (two items for

elementary-school students and three items for others; e.g., “How often this semester have you spread rumors that weren’t true”) and physical aggression (four items; e.g., “How often in the past semester have you started a fist fight or shoving match”) (see Table 1). MacDonald and O’Laughlin documented convergent and criterion validity of the scale by finding that relational and physical aggression were associated in predicted ways with indicators of social and psychological maladjustment. In the present study, the reliability of the aggression scale was 0.84 overall and 0.75, 0.87, and 0.81 for elementary-school, middle-school, and high-school students, respectively. CFA of the scale indicated a good fit of the measurement model, $\chi^2 = 8.7$, $df = 5$, $p < .12$. Fit indices also were good, with a CFI of 0.99 and an RMSEA of 0.04 (95% CI: 0.00–0.09).

RESULTS

Descriptive Statistics

We present mean-level differences and effect sizes for the entire sample by gender, ethnicity, and grade level in Table 2. Each of the three school districts had a different breakdown of grades by building: One district’s configuration was Grades 1 through 6, Grades 7 and 8, and Grades 9 through 12; a second was Grades 1 through 6 and Grades 7 through 12; and a third was Grades 1 through 8 and Grades 9 through 12. We conducted analyses by building as well as by grade and found no consistent pattern of significant building-level differences; because the configurations are so different from one another, it is unlikely that building-level differences would be meaningful in any case. Therefore, we grouped children by grade level rather than by building. We classified those in Grades 3 through 5 as elementary-age students; those in Grades 6 through 8 as middle-school-age students; and those in Grades 9 through 12 as high-school-age students.

Boys and girls differed significantly ($p < .001$) on all measures. Girls were higher on affiliative orientation and school attachment; boys were higher on aggression. Effect sizes (calculated as Cohen’s d) for sex differences on all variables were small to moderate (Cohen, 1988): 0.47 for affiliation, 0.31 for school attachment, and 0.30 for aggression. Differences between Latino and non-Latino students on all variables also were significant with small effect sizes: Latino students were higher on school attachment ($d = 0.27$) and aggression ($d = 0.40$) and lower on affiliation ($d = 0.28$). Finally, there were significant differences across grade levels of small to moderate magnitude in affiliative motivation ($d = 0.61$) and school attachment ($d = 0.47$), but not in aggression.

Relation of Affiliative Orientation to School Attachment and Aggression: Mediation Model

In keeping with procedures for testing mediational models outlined by Baron and Kenny (1986), we tested the model in three steps. A first condition of mediation is that the dependent

Table 2
Mean Differences By Gender, Ethnicity, and Grade Level for All Scales Used in Study

	Overall ($N = 834$)	By gender		By ethnicity		By grade level		
		Boys ($n = 379$)	Girls ($n = 332$)	Latino ($n = 188$)	Non-Latino ($n = 475$)	Elementary ($n = 231$)	Middle ($n = 236$)	High ($n = 315$)
Affiliation	3.62 (.66)	3.48 (.64)	3.78 (.64)	3.51 (.67)	3.70 (.64)	3.33 (.50)	3.72 (.69)	3.73 (.67)
School attachment	3.69 (.75)	3.59 (.79)	3.82 (.68)	3.84 (.79)	3.64 (.68)	3.55 (.52)	3.89 (.85)	3.63 (.75)
Aggression	1.50 (.61)	1.58 (.69)	1.41 (.49)	1.66 (.69)	1.43 (.49)	1.56 (.68)	1.50 (.64)	1.46 (.02)

Note. SDs are given in parentheses.

variable (aggression) must be related to the independent variable (affiliative orientation). A second condition is that there must be a significant link between the independent variable and the mediator (aggression). A third condition specifies that a significant link should exist between the mediator (school attachment) and the dependent variable (aggression), when the independent variable (affiliative orientation) is included in the model. In this third step, the direct relation of the independent to the dependent variable should then decrease or disappear (i.e., the regression coefficient should drop to zero for full mediation or decrease and become nonsignificant for partial mediation). We used structural equation modeling to test these relations. In the overall test of mediation, we controlled for grade level, sex, and ethnicity. Subsequently, we tested for factorial invariance across sex and ethnicity separately.

Mediation model. The path coefficient describing the relation between aggression and affiliative orientation was significant ($\beta = -0.51, p < .001$), as was the relation between the mediator (school attachment) and affiliative orientation ($\beta = 0.62, p < .001$). In the full mediational model, the coefficient for the relation of affiliative orientation to aggression in this test decreased from -0.51 to -0.08 (n.s.), supporting the mediational hypothesis (see Figure 1).

Test for factorial invariance across sex and ethnicity. As a first step in testing for factorial invariance, goodness of fit was examined for boys and girls separately. All indices for both groups met criteria for acceptable model fit (Boys: $\chi^2 = 872.92, df = 226, CFI = 0.97, RMSEA = 0.08, CI 0.08-0.09$; Girls: $\chi^2 = 834.20, df = 205, CFI = 0.97, RMSEA = 0.09, CI 0.08-0.09$). Next, a two-group model, in which parameters were unconstrained, served as a baseline for comparison of a nested model, in which factor loadings were constrained to be equal across groups. The difference in chi-square between baseline and fitted models, when significant, indicates that constraining parameters results in a model that differs significantly from the baseline model (i.e., that the model is not invariant across groups). As shown in Table 3, the change in chi-square was nonsignificant, indicating that parameters for the mediational model were invariant across sex.

The same procedure was applied to examination of factorial invariance across groups of Latino and non-Latino students. Testing of groups individually indicated acceptable model fit for both ethnic groups (Latino: $\chi^2 = 503.00, df = 205, CFI = 0.97, RMSEA = 0.09, CI 0.08-0.10$; non-Latino: $\chi^2 = 1199.70, df = 205, CFI = 0.97, RMSEA = 0.09, CI 0.09-0.10$). The test of

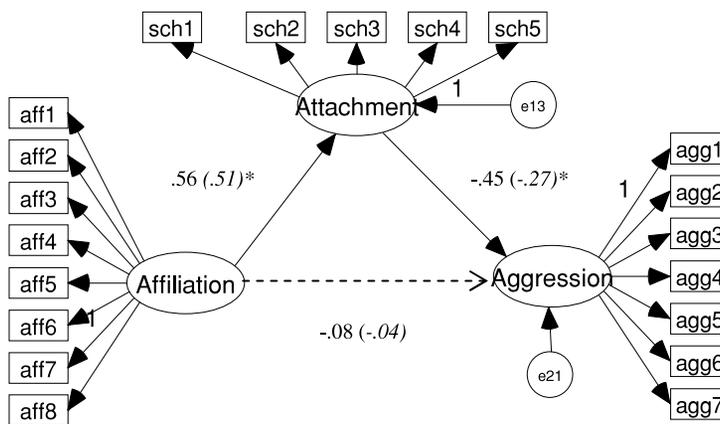


FIGURE 1. Path analytic model: Mediation of the relation of affiliative orientation to aggression by school attachment. Unstandardized and standardized path coefficients (standardized coefficients in parentheses). * $p < .001$.

Table 3
Test of Factorial Invariance Across Sex

Models	<i>df</i>	χ^2	CFI	RMSEA	(90% CI)	Δdf	$\Delta\chi^2$	<i>p</i>
Factorial invariance across sex								
Unconstrained model	410	1768.96	0.97	0.06	0.06–0.07			
Path parameters constrained to be equal	413	1776.17	0.97	0.06	0.06–0.07	3	7.21	<.07
Factorial invariance across ethnicity								
Unconstrained model	410	1702.77	0.97	0.07	0.06–0.07			
Path parameters constrained to be equal	413	1708.20	0.97	0.07	0.06–0.07	3	5.43	<.14

chi-square change from unconstrained to constrained models was nonsignificant, indicating that the school-attachment measure also was invariant across ethnicity (see Table 3).

Mediational models by sex and ethnicity. Examination of model parameters within sex and ethnic groups revealed different patterns of interrelations among variables. Specifically, school attachment appeared to serve as a mediator for both Latino and non-Latino students, but not for boys and girls. In other words, the mediational effect of school attachment was moderated by sex, an effect known as *moderated mediation* (Baron & Kenny, 1986). To further explore this interaction, we conducted a median split on school attachment and examined aggression scores by sex and ethnicity across high and low school-attachment groups (also formed by median splits). As can be seen in Figure 2, among students in the low school-attachment group, highly affiliative students have lower aggression scores than students with low affiliation, and tests of the slopes (Frazier, Tix, & Barron, 2004) indicate that the relation of school attachment to aggression is significant for both boys ($B = -0.27, p < .001$) and girls ($B = -0.32, p < .001$) in this low affiliation group. Among students in the high school attachment group, however, the relation of affiliation to aggression is significant for boys ($B = -0.13, p < .02$), but not for girls ($B = 0.00, p < .98$).

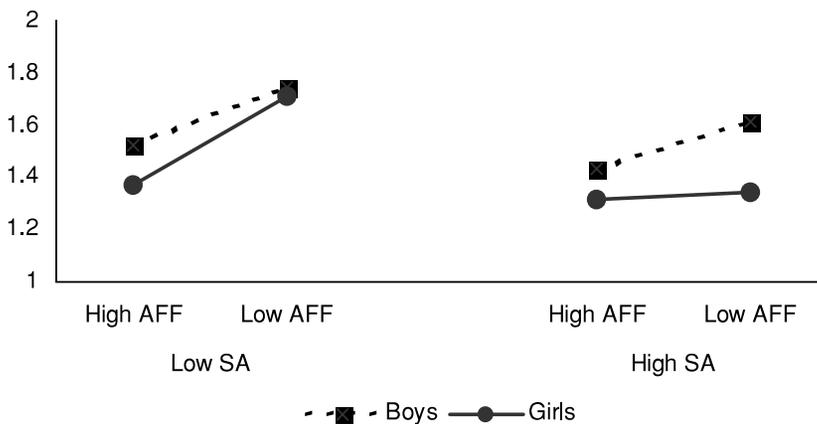


FIGURE 2. Plot aggression scores in high and low affiliative groups, by school attachment group and sex. AFF = affiliative motivation; SA = school attachment.

DISCUSSION

Our study explored the relations of affiliative orientation, school attachment, and aggressive behavior in school. As hypothesized, children's affiliative motivation was positively associated with school attachment and negatively associated with aggression. Results of the overall mediational model we tested indicate that school attachment is one process through which affiliative orientation may be related to aggressive behavior: After accounting for effects of school attachment, the direct relation of affiliative orientation with aggression decreased substantially and became nonsignificant; however, this mediational effect was moderated by sex. Next we discuss possible interpretations of these results, the strengths and limitations of the study, and practical implications of the findings.

Links Among Affiliative Orientation, School Attachment, and Aggression

A first goal of the study reported here was to demonstrate links between logically related constructs that have not previously been empirically tested. As predicted, affiliative motivation was directly related to both school attachment and aggression. Most previous literature has considered school attachment as a function of various contextual factors. Our finding extends the literature by demonstrating a strong link between an individual-level personality factor and attachment to school. The link between affiliative orientation and school attachment provides support for a motivational approach to understanding school attachment as a transactional phenomenon: on one hand, a function of individual goals and needs; on the other hand, the degree to which the environment satisfies those needs (Eccles et al., 1993).

Our findings also provide empirical support for one theoretical assumption of stage-environment fit theory: that needs for relatedness will be associated with school attachment. Research on stage-environment theory has indirectly demonstrated this proposition developmentally by showing that attachment decreases at ages when school context provides less opportunity for attachment needs to be satisfied. The present study, to the best of our knowledge, is the first to examine the association of affiliative needs and school attachment from an individual-differences perspective. A further extension of stage-environment fit theory should include exploration of the relative contributions of school contextual factors and individual-level factors over time, and specifically as children move from elementary to middle school, when mean levels of school attachment typically decrease. Are highly affiliative children less susceptible to decreases in school attachment, or do elements of the school context override the effects of general motivational goals? Conversely, are highly affiliative children more susceptible to decreases in school attachment when transitioning to school environments that provide fewer opportunities for relational goals to be satisfied? Finally, does affiliative orientation change over time; if so, how do those changes relate to both school contextual factors and school attachment?

The findings of the present study also demonstrated a link between affiliative orientation and aggression. Children who demonstrate aggressive behaviors consistently across situations and over time also are consistent in the cognitive processes that precede aggressive behaviors. When presented with ambiguous situations, aggressive children are more consistent in their attributions of hostile intent, in their description of instrumental rather than relational goals within situations, and in their selection of aggressive behaviors to achieve those goals (for a review, see Crick & Dodge, 1994). Social information processing models of aggression propose that an individual's knowledge base and past history contribute to the cognitive processes that precede aggressive behavior. The "possession" of a particular knowledge base and history presumably explains individual stability of social information processes to some degree. Affiliative motivation may influence the development of a knowledge base as well as its relation to components of social information

processing. For example, children high on affiliative motivation should on average be less likely to make hostile attributions across situations and across time than children low on affiliative motivation. They also should be more likely to hold relational goals across situations and time and less likely to select aggressive strategies to attain their goals. Consequently, their personal relationships should be more positive than those of aggressive individuals, leading to a base of experience that confirms a tendency toward benign attributions. However, the magnitude of affiliative effects on aggression for other groups was small in our study, suggesting that factors other than overarching motivational goals are more important determinants of aggressive behavior.

Our findings indicate that one such possible determinant is school attachment. School attachment was directly related to aggression, and it mediated the relation of affiliative orientation to aggression in the overall sample. Because the focus of much previous literature on school attachment has been on delinquency outcomes, effects on noncriminal aggressive behaviors occurring in school and directed toward peers have not been thoroughly documented. Use of aggression rather than delinquency as an outcome allows for exploration of effects of school attachment in younger children. In addition, use of both relational and physical forms of aggression as outcomes may capture effects of school attachment on girls' adjustment better than use of delinquency outcomes (for a review, see Crick et al., 1999).

However, there was an interaction of sex with school attachment, and the link between affiliation and aggression was therefore both mediated (by school attachment) and moderated (by sex). Exploration of aggression scores indicated that the moderational effect of sex was a function of differences between boys and girls in the group of students with high school attachment: In this group, affiliative orientation appeared to serve as an additional protective factor for boys, but not for girls. That is, there was no significant difference in aggression among high and low affiliative girls in the high school-attachment group. Among students in the low attachment group, affiliative orientation served as a protective factor for both boys and girls. Girls also had significantly higher levels of both affiliative orientation and school attachment. It is conceivable that the strength of each of these factors independently is sufficient "protection" against aggression. Because boys have lower levels of affiliation to begin with, school attachment may have a more important buffering role, as conceptualized by social control theory.

STUDY LIMITATIONS

The study reported in this article is cross-sectional. Thus, although we can say that affiliative orientation is associated with school attachment and aggression, we cannot say that it predicts development of school attachment or enactment of aggressive behaviors over time nor can we be certain of the directionality of effects (Cole & Maxwell, 2003). Important questions for future research include examination of longitudinal trends, which would provide more solid evidence of causal effects. The study also reported data from self-report only. This is not a problem for demonstrating an association of affiliative orientation with school attachment since we were interested in children's descriptions of their own goal dispositions and how they related to feelings about school. In other words, we attempted to describe a relation of internal thoughts and feelings, and self-report is an appropriate source of description for this question. Self-reports of aggression, however, are likely vulnerable to systematic biases resulting from social desirability. Recent studies have demonstrated that self-reports of aggression yield information about social-cognitive processes and adjustment that is generally consistent with peer and teacher reports of aggression (Little, Jones, Henrich, & Hawley, 2003; Zelli, Dodge, Lochman, Laird, & Conduct Problems Prevention Research Group, 1999). Nevertheless, the conclusions would be strengthened by use of a multi-informant approach to the assessment of aggression. Finally, the study is limited in its

demographic characteristics. All school districts were rural, and the sample's ethnic diversity was limited.

Summary and Recommendations

The utility of motivational constructs in understanding development has been demonstrated in the rich literature on intrinsic and performance motivation. The present study extended our thinking about motivation and personality in children to a less-studied construct, affiliative motivation. As our results demonstrate, assessing affiliative motivation may provide a window onto individual differences in levels of school attachment within the same or similar school environments. This adds to the already substantial literature on contextual influences on school attachment. Understanding of differences in affiliative motivation also may contribute to our understanding of children's differences in attachment to school, significant others, and other institutions over time as well as to our understanding of intra-individual stability in these attachments.

The strong association of school attachment to aggression for all groups and age levels has important implications for school personnel, administrators, and prevention researchers. The instruments presented here are brief and easy to administer across a wide age range, enabling assessment of and intervention with children who may be at greater risk for developing aggressive behaviors in school either because of low affiliation, low school attachment, or both. Traditionally, school attachment has been considered a protective factor for violent and delinquent behaviors in adolescence. The present study demonstrates that it also is a protective factor for aggressive behaviors in school, for younger children as well as for adolescents. Thus, teaching and administrative practices that lead to positive school climate and foster school attachment are likely to be effective in reducing aggression in elementary schools as well as aggression and delinquency in older grades. Notably, many of these practices, such as cooperative learning, group projects, and teacher warmth (Hawkins et al., 1988) also are likely to nurture and reinforce the development of affiliative behaviors. Study results suggest that intervention to increase school attachment may be especially effective in reducing aggression for boys with low affiliative motivation. It is possible that this type of intervention, by its nature, also may result in higher levels of affiliative motivation by providing greater opportunity for positive peer and teacher interactions.

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