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Sense of Relatedness as a Factor in Children's Academic Engagement and Performance

Carrie Furrer and Ellen Skinner
Portland State University

Children's sense of relatedness is vital to their academic motivation from 3rd to 6th grade. Children's (n = 641) reports of relatedness predicted changes in classroom engagement over the school year and contributed over and above the effects of perceived control. Regression and cumulative risk analyses revealed that relatedness to parents, teachers, and peers each uniquely contributed to students' engagement, especially emotional engagement. Girls reported higher relatedness than boys, but relatedness to teachers was a more salient predictor of engagement for boys. Feelings of relatedness to teachers dropped from 5th to 6th grade, but the effects of relatedness on engagement were stronger for 6th graders. Discussion examines theoretical, empirical, and practical implications of relatedness as a key predictor of children's academic motivation and performance.

When explaining motivational dynamics in school, psychologists frequently point to differences in children's underlying beliefs and capacities. Decades of research show that children's self-perceptions, such as self-efficacy, goal orientations, or autonomy, are robust predictors of motivation and performance in school, both concurrently and over many years (for reviews, see Eccles, Wigfield, & Schiefele, 1998; Stipek, 2002). At the same time, however, researchers note the centrality of social factors in children's motivation (Connell & Wellborn, 1991; Deci & Ryan, 1985; Eccles et al., 1998; Goldstein, 1999; Juvonen & Wentzel, 1996; Resnick et al., 1997; Weiner, 1990). Research from multiple traditions demonstrates the impact on children's motivation and learning of relationships with parents (Steinberg, Darling, & Fletcher, 1995), teachers (Stipek, 2002), and peers (Hymel, Comfort, Schonert-Reichl, & McDougall, 1996).

Recently, these two general lines of thinking, one about self-perceptions and one about interpersonal relationships, have converged in the study of the motivational consequences of children's sense of self in relationships. Studied under a variety of labels, such as social cognitive views of motivation (Weiner, 1990), internal working models (Bretherton, 1985), relationship representations (Ryan, Stiller, & Lynch, 1994), classroom climate (Anderson, 1982), and perceived social support (Wentzel, 1999), the core notion is that a history of interactions with specific social partners leads children to construct generalized expectations about the nature of the self in relationships. Also referred to as a sense of relatedness (Connell, 1990), connectedness (Weiner, 1990), or belonging (Goodenow, 1993), these organized self-system processes include views about the self as lovable (or unworthy of love) and about the social world as trustworthy (or hostile). Children rely on these beliefs when predicting, interpreting, and responding to social exchanges, and these exchanges can in turn be used to confirm or revise children's beliefs.

A sense of relatedness may function as a motivational resource when children are faced with challenge or difficulties. In times of stress, children who experience trusted others as "backing them up" respond with more vigor, flexibility, and constructive actions. A *sense of relatedness* is the focus of the present study. Building on the growing body of work on the role of relationship representations, we attempted to explore the effects of a sense of relatedness, both generally and toward specific social partners, on children's academic motivation and performance during middle childhood.

Sense of Relatedness

The basic idea underlying the notion of relatedness has been described from many theoretical perspectives. Perhaps the best known developmental constructs derive from theories of attachment and have been posited to explain the long-term effects of secure versus insecure attachments to caregivers (Ainsworth, 1979; Bowlby, 1969, 1973). Within this tradition, relationship representations are referred to as *internal working models of attachment figures* (Bretherton, 1985; Crittenden, 1990). Children with a history of secure attachments to their caregivers (based on sensitive and responsive interactions) have been shown to function well throughout childhood and adolescence in a variety of life domains, including peer relations, school performance, and the establishment of healthy relationships with nonfamilial adults. Research suggests that secure attachments and their corresponding internal representations function as a safe haven, allowing children the freedom to explore and to engage constructively in activities and interactions with others.

Work on the concept of social support, including research with children, is based on the assumption that having alliances with trusted others functions as a resource in times of trouble (Sandler, Miller, Short, & Wolchik, 1989). Recently, research on social support has revealed the centrality of the target individual's experience or perceptions of social contact as supportive (Cohen &

Carrie Furrer and Ellen Skinner, Department of Psychology, Portland State University.

Correspondence concerning this article should be addressed to Ellen Skinner, Department of Psychology, Portland State University, P.O. Box 751, Portland, Oregon 97207-0751. E-mail: skinnere@pdx.edu

Wills, 1985; Dakof & Taylor, 1990; Sarason, Pierce, & Sarason, 1990). Over and above the effects of actual support, it seems that the perceived availability of trusted others acts as a buffer, allowing people to show more self-reliance, vigor, and tenacity in the face of obstacles.

Educational research has also begun to explore the impact of students' sense of belonging in their classrooms and schools (Anderman, 1999; Anderman & Anderman, 1999; Battistich, Solomon, Kim, Watson, & Schaps, 1995; Eccles & Midgley, 1989; Goodenow, 1993; Roeser, Midgley, & Urdan, 1996; Wentzel, 1998, 1999). Feelings of relatedness tapped by measures of school climate and quality of teacher–student relationships, as well as feelings of belonging, inclusion, acceptance, importance, and interpersonal support, have been linked to important academic outcomes, including self-efficacy, success expectations, achievement values, positive affect, effort, engagement, interest in school, task goal orientation, and school marks.

Several motivational models explicitly posit that people have a basic need to be connected or related to others. For example, in a wide-ranging review, Baumeister and Leary (1995) argue for the "belongingness hypothesis," which states "human beings have a pervasive drive to form and maintain at least a minimum quantity of lasting, positive, and significant interpersonal relationships" (p. 497). Attachment theorists also assume that infants come biologically prepared to form attachments, and research shows that humans are innately predisposed to be interested in, responsive to, and comforted by contact with others. The *relational zone* has been coined as a term to communicate the centrality of interpersonal caring to children's participation and learning in the zone of proximal development (Goldstein, 1999).

One explicit formulation of this thesis is contained in the self-system model of children's motivational development, which suggests that fundamental human needs, such as for belonging, autonomy, or competence, are the basis for the construction and development of children's self-system processes (Connell, 1990; Connell & Wellborn, 1991; Deci & Ryan, 1985, 2000; Grolnick & Ryan, 1992; Skinner, 1995). Accordingly, key self-system processes, such as a sense of relatedness, are hypothesized to have energetic functions; they are considered catalysts for engagement or disaffection. Engagement is a key construct in motivational models because it is considered a primary pathway by which motivational processes contribute to learning and development (Wellborn, 1991).

Engagement in the Classroom

Consistent with the self-system model of motivational development, the target dependent variable in the present study was engagement versus disaffection. *Engagement* refers to active, goal-directed, flexible, constructive, persistent, focused interactions with the social and physical environments. In contrast, patterns of *disaffection*, in which individuals are alienated, apathetic, rebellious, frightened, or burned out, turn people away from opportunities for learning. Engagement in school is an important academic outcome in its own right. It improves performance and validates positive expectations about academic abilities (Skinner, Zimmer-Gembeck, & Connell, 1998). Moreover, engagement seems to serve as an important social signal, eliciting supportive reciprocal reactions. For example, when children are engaged, they are provided with more motivational support by their teachers (Skinner & Belmont, 1993). In contrast, children with low motivation become even more disaffected over time, especially when confronted with challenges or transitions (Eccles et al., 1998).

Engagement is also a good predictor of children's long-term academic achievement (Skinner et al., 1998) and their eventual completion of school (Connell, Spencer, & Aber, 1994). A variety of markers of children's enthusiastic participation in academic activities (as reported by both students and teachers) predicts their school success; these include constructs like "work orientation" (a component of psychosocial maturity that focuses on pleasure in work and capacity to exert effort; Steinberg, Elmen, & Mounts, 1989), some facets of "intrinsic motivation" (such as preference for challenge, mastery, and interest; Ginsberg & Bronstein, 1993; Harter, 1978; Harter & Connell, 1984), and other operationalizations of "classroom engagement" (e.g., Fincham, Hokoda, & Sanders, 1989; Steinberg, Lamborn, Dornbusch, & Darling, 1992) and academic behaviors (Blumenfeld, 1992; Pintrich & de Groot, 1990; Wagner & Phillips, 1992).

Relatedness as a Predictor of Children's Engagement and Learning

Relatedness should promote engagement. Feeling special and important to key social partners is hypothesized to trigger energized behavior, such as effort, persistence, and participation; to promote positive emotions, such as interest and enthusiasm; and to dampen negative emotions, such as anxiety and boredom. In contrast, children who feel unconnected to key social partners should find it harder to become constructively involved in academic activities; should more easily become bored, worried, and frustrated; and should be more likely to become disaffected. The quality of children's day-to-day involvement in academic activities is, in turn, the route to their long-term learning, socialization, and development in school.

Consideration of relatedness as a self-system factor underlying children's engagement and school performance is relatively new. Only a handful of studies have directly examined perceived relatedness as a predictor of school success. However, all of them have shown positive effects. More specifically, children who report a greater sense of relatedness or belonging also feel more confident, work harder, cope more adaptively, show more positive affect, and perform better in school (Anderman, 1999; Anderman & Anderman, 1999; Connell & Wellborn, 1991; Lynch & Cicchetti, 1992; Ryan et al., 1994; Skinner & Snyder, 1999). Research on relatedness and children's school performance has typically examined the effects of children's feelings of connectedness to particular social partners, specifically, to teachers, parents, and peers.

Teachers

Most studies focus, not surprisingly, on the effects of children's relationships with the adults who actually participate in the classroom, namely, teachers. Building on decades of research showing that teachers can influence student motivation through classroom reward structure (e.g., Ames & Ames, 1984), classroom organization (e.g., Rosenholtz & Wilson, 1980), and curriculum (e.g., Renninger, Hidi, & Krapp, 1992), recent work shifts attention to

the quality of the teacher–child relationship, as conveyed by such constructs as "pedagogical caring" (Wentzel, 1997).

Citing work from attachment theory, social support, school climate, and parenting, researchers highlight the importance of caring and closeness in student–teacher relationships (Birch & Ladd, 1996, 1997, 1998; Connell & Wellborn, 1991; Deci, Vallerand, Pelletier, & Ryan, 1991; Goldstein, 1999; Lynch & Cicchetti, 1992; Pianta, 1994; Ryan & Powelson, 1991; Wentzel, 1997, 1999). Teacher's ratings of closeness in their relationships with individual students have been found to be good predictors of kindergartners' school performance, school liking, and self-directedness (Birch & Ladd, 1997).

In elementary school, children's reports of the quality of their relationships with teachers predict their perceived control, positive coping, relative autonomy, and engagement in school (Ryan et al., 1994). In early adolescence, children's feelings of teacher support predict achievement expectancies and values as well as effort, engagement, and performance (Goodenow, 1993; Murdock, 1999). In middle school, students' reports of teacher caring predict changes in motivational outcomes over 2 years, even after controlling for previous academic performance and perceived control (Wentzel, 1997). Relationships to teachers are considered especially potent because of the many roles teachers play, for example, as a potential attachment figure, as a pedagogue, as a disciplinarian, and as the final arbiter of a student's level of performance.

Parents

Decades of research exploring the connection between children's academic success and parenting support the conclusion that academic motivation is one pathway through which parents can influence children's school performance (Connell & Wellborn, 1991; Ginsberg & Bronstein, 1993; Gottfried, Fleming, & Gottfried, 1994; Grolnick & Ryan, 1989, 1992; Grolnick, Ryan, & Deci, 1991; Grolnick & Slowiaczek, 1994; Steinberg et al., 1989). Studies of relatedness (Connell, 1990; Connell & Wellborn, 1991; Lynch & Cicchetti, 1997; Ryan et al., 1994) suggest that students' feelings of connection to their parents may play a role in the link between parenting and children's academic motivation and performance.

Although much of the evidence on the effects of relationship representations involves children's internal working models of parents, the connection between a child's sense of relatedness to parents and his or her engagement in school is not particularly well documented or straightforward. It is possible that relatedness to parents is just a marker for the quality of the parent–child relationship and has no independent causal impact on children's motivation in school. Research shows that the quality of parenting shapes other self-system processes, like perceived competence (Skinner et al., 1998) and self-regulatory style (Deci & Ryan, 1985), and it is possible that these self-system processes are the primary predictors of motivation. If so, then relatedness to parents should not impact engagement beyond the effects of other self-perceptions.

It is also possible that a sense of relatedness to parents has an impact on children's classroom behavior primarily because it shapes the kind of relationships children construct with their teachers. Children with secure and caring parental relationships may form closer ties to teachers, whereas children with problematic parental relationships may find it more difficult to develop close ties to teachers. If so, then a sense of relatedness to parents would not predict children's engagement above and beyond children's sense of relatedness to teachers. However, given the research on the importance of parent involvement to children's school success, it is also possible that relatedness to parents plays a unique role in children's academic motivation.

Peers

Although decades of research document the effects of adults on children's academic achievement, studies have only recently begun to examine the influence of peers (for reviews, see Birch & Ladd, 1996; Hymel et al., 1996; Wentzel, 1999). Several lines of research suggest that peers play a role in children's school participation and completion. Studies show that children who are rejected by their peers, who experience more loneliness and social isolation, and who affiliate with more disaffected peers are themselves more likely to become disaffected from academic activities and eventually leave school (Hymel et al., 1996; Sage & Kindermann, 1999; Wentzel, 1999).

An especially influential factor seems to be children's perceptions of the support they receive from peers. A number of studies have demonstrated a link between children's perceptions of peer social and emotional support and their academic goals, engagement, and self-concept (DuBois, Felner, Brand, Adan, & Evans, 1992; Felner, Aber, Primavera, & Cauce, 1985; Harter, 1996; Murdock, 1999; Wentzel, 1994, 1997, 1998). Children who report more peer support also find the transition to middle school easier compared with students who are lonely and dissatisfied with their peer relations (McDougall & Hymel, 1998). In fact, Steinberg, Dornbusch, and Brown (1992), although acknowledging the critical role parents play in students' long-term educational goals, state that "peers are the most potent influence on their [students'] day-to-day behaviors in school (e.g., how much time they spend on homework, if they enjoy coming to school each day, how they behave in the classroom)" (p. 727).

Recent studies have directly examined children's feelings of connectedness to peers. Although few in number, they are consistent in finding positive effects (Connell & Wellborn, 1991; Goodenow, 1993; Lynch & Cicchetti, 1997; Ryan et al., 1994; Skinner & Snyder, 1999). For example, in a study of about 600 seventh and eighth graders, Ryan et al. (1994) found that adolescents who reported higher felt security with their peers also showed higher identity integration and general self-esteem. It should be noted, however, that the extent to which relatedness to peers has a direct effect on academic outcomes is still an open question. In analyses examining the effects of relatedness to peers over and above the effects of parent and teacher relatedness, Ryan et al. (1994) found no unique effects for peer relatedness on academic outcomes, such as coping, autonomy, perceived control, or engagement. In a similar study, Goodenow (1993) found that child-reports of their peer support predicted academic expectancies, but not teacher ratings of effort or performance outcomes (see also Murdock, 1999).

Study Hypotheses

A study was conducted to examine relatedness as a self-system resource in children's academic motivation and performance. The

study was guided by four main goals, each of which organized a set of hypotheses.

Role of Relatedness in Classroom Engagement and Performance

The first goal was to examine a set of hypotheses about the link between a sense of relatedness and children's academic engagement and school performance. First, because children's self-system processes are posited to have an impact on their academic outcomes through the motivational mechanism of engagement versus disaffection, we expected engagement to mediate the relationship between children's feelings of relatedness and their academic performance. Second, a sense of relatedness was expected to predict engagement over and above the effects of perceived control. Perceptions of self-efficacy, ability, academic competence, and control are robust self-system predictors of children's engagement in school and their eventual learning, academic performance, and achievement (for reviews, see Bandura, 1997; Dweck, 1999; Eccles et al., 1998; Skinner et al., 1998; Stipek, 2002). If a sense of relatedness showed a unique effect on children's engagement over and above perceived control, it would establish relatedness as a basis of motivation in its own right.

Third, consistent with the proposition that relatedness exerts a causal influence on engagement, we expected a sense of relatedness to predict changes in children's engagement across time. This prediction is also in line with the assertion that this effect is not just temporary but is part of a cycle of context, self, and action. According to this motivational model, children who feel more connected to social partners will show higher engagement, which will in turn elicit more motivational support from the social context, confirming their sense of relatedness.

Unique Contributions of Relatedness to Specific Social Partners

The second goal of the study was to examine the effects of relatedness to specific social partners. Children act at the intersection of a variety of social relationships, and it may be useful to study these influences simultaneously (Cooper, 1999; Kurdek, Fine, & Sinclair, 1995; Phelan, Davidson, & Cao, 1991; Wentzel, 1998). Thus, the fourth hypothesis was that individual social partners (parents, teachers, and peers) would each show unique effects on children's engagement. Ryan et al. (1994) concluded that relatedness to parents and to teachers each had a unique effect on multiple school outcomes, and that the unique effects of relatedness to peers was limited to nonacademic, albeit important, outcomes. To extend this study, an important dependent variable was added, namely, children's emotional engagement in the classroom; this represented an academic outcome likely to be predicted uniquely by relatedness to peers.

Differences as a Function of Age and Gender

The third goal was to examine gender and age differences in the effects of relatedness to specific social partners. Although relatedness reflects a fundamental need for children of all ages and both genders, there are indications that relatedness may be more central in predicting school engagement for certain subgroups. The fifth hypothesis held that girls' engagement would be more sensitive to the effects of relatedness. Girls typically report higher relatedness to adults, and teachers generally report that girls show higher behavioral and emotional engagement than boys (e.g., Goodenow, 1993). However, given that boys tend to have rockier relationships with teachers, we also considered it possible that relatedness might be a more salient predictor of engagement for boys. Regarding age differences, it is often assumed that younger children are more influenced by their interpersonal relationships and that a basic developmental trend is for children to become more independent and self-reliant. In line with this reasoning, the sixth hypothesis was that the effects of relatedness would be more pronounced for younger compared with older children (Goodenow, 1993).

Profiles of Relatedness to Specific Social Partners

The final goal was to examine the differential, cumulative, and compensatory effects of relatedness to different social partners. Although we expected that children who reported high relatedness to all three social partners would be more behaviorally and emotionally engaged in the classroom relative to children who reported low relatedness to all three, it was also of interest to examine the effects of other combinations of relatedness. Hence, the seventh hypothesis states that relatedness to parents, teachers, and peers should show a pattern of "cumulative risk," such that for each additional social partner to whom children reported low relatedness, decrements in their engagement would be found. Moreover, consistent with the notion that relatedness to each partner is critical to children's motivation, the eighth hypothesis stated that among risk groups with low relatedness to the same number of partners, no differences would be found in engagement as a function of *which* specific partners (parents, teachers, or peers) were low.

Next, we considered whether high relatedness to some social partners could compensate for low relatedness to others. For the ninth hypothesis, because the dependent variable is children's engagement in the classroom, we reasoned that children who felt connected to classroom partners (teachers and peers) would, despite low relatedness to parents, not differ in engagement from children who reported high relatedness to all three social partners. However, we hypothesized that high relatedness to only parents would still be better than low relatedness to all three partners.

Given the centrality of the teacher in the classroom, the 10th hypothesis held that it would not be possible to compensate for low relatedness to teachers. Hence, we expected that children who reported low relatedness to teachers, even if they had high relatedness to parents and peers, would show lower engagement than children who reported high relatedness to all three partners. Moreover, children who reported high relatedness only to teachers would be significantly more engaged than children who reported low relatedness to all three partners.

Finally, the 11th hypothesis was based on the expectation that peers would be the least influential social partner on school engagement. Consistent with this hypothesis, Hymel et al. (1996) found that neglected children (i.e., rated by their classmates as neither liked nor disliked) do well in school as long as adults like them. Hence, we expected that children who reported high relatedness to parents and teachers, even if they had low relatedness to peers, would not differ in engagement from children who reported high relatedness to all three partners. Moreover, children who

reported high relatedness only to peers would not be significantly more engaged than children who reported low relatedness to all three partners.

In sum, a study was conducted to examine the centrality of children's feelings of relatedness as a predictor of their behavioral and emotional engagement in school during middle childhood, both compared with another key self-system process, perceived control, and over the course of the school year. Variation in mean level and the effects of relatedness across third through sixth grades and between boys and girls were also examined. Of special interest were cumulative, differential, and compensatory effects of relatedness to parents, teachers, and peers. The central issue was whether a sense of relatedness could be considered a motivational resource for children in school.

Method

Participants

The sample for this study was part of a longitudinal project examining children's motivation and coping in the academic domain (see Skinner et al., 1998, for details). The sample was equally divided by gender and included children in third though sixth grades. The children attended elementary school in a suburban–rural school district comprised of mostly middle-class and working-class families. Approximately 95% of the families were Caucasian, and the remaining 5% were Hispanic, African American, Asian, or mixed race or other.

At the third time point (fall of the second year of the longitudinal project), there were 948 participants. This study focused on a subset of 641 children with complete data (less than 5% missing) on the variables of interest. Because data collection took place at school over 3 days, only children in attendance on all 3 days were included in the sample. Thus, attrition was mainly due to attendance, which is likely correlated with academic engagement. To investigate this, the 641 participants with complete data were compared with those having more than 5% missing data ($n = 307$). Although the two groups did not differ on measures of self-reported engagement, relatedness to social partners (parents, teachers, and peers), or perceived control, participants remaining in the study did have significantly higher teacher-reports of behavioral (sample mean = 3.13 and excluded mean = 3.00), $t(820) = -2.16$, $p < .05$, and emotional (sample mean = 3.36 and excluded mean = 3.26), $t(820) = -2.18$, $p < .05$, engagement.

Approximately three fourths of the children with complete data in the fall also had complete data for computing engagement scores in the spring of that same school year. This subsample ($n = 469$) was compared with children with complete data at the fall time point only ($n = 172$). The children with complete data for both time points did not differ from those with complete data only in the fall on measures of self-reported engagement. Participants remaining in the study had significantly higher teacher-reports of behavioral (sample mean = 3.19 and excluded mean = 2.96), $t(639) = -3.61$, $p < .01$, and emotional (sample mean = 3.39 and excluded mean = 3.25), $t(639) = -3.00$, $p < .01$, engagement than those who were not retained.

Procedures and Measures

Students completed self-report questionnaires administered by trained interviewers in three 45-min sessions. In their normal classrooms, students marked answers to questionnaire items as they were read aloud by one interviewer; a second interviewer monitored understanding and answered questions. Teachers were not present; for the most part, they filled out their questionnaires while students were being tested. Questionnaires were administered in the fall (October) and again in the spring (May).

Students reported on their relatedness to specific social partners, their perceived control in the academic domain, and their engagement versus disaffection in the classroom. Teachers reported on each student's engagement versus disaffection in the classroom. If a student had multiple teachers, students were assessed by teachers who claimed to "know him or her the best." School marks were collected from student records for approximately one fourth of the sample. Table 1 contains measurement properties for all variables.

Each scale contained positively and negatively worded items. Composite scores were determined by calculating the average of the positive and negative items, reverse coding the negative items' average, and averaging the positive items' average with the reverse-coded negative items' average. Resulting scores ranged from 1 to 4, with higher scores indicating more of the respective construct.

Relatedness. Students completed 20 self-report items tapping a sense of belonging or relatedness to five social partners: mother, father, teacher, classmates, and friends. For each item, the stem was as follows: "When I'm with my mother (father, teacher, etc.)." Each scale contained the same items for each social partner: "I feel accepted," "I feel like someone special," "I feel ignored" (reverse coded), and "I feel unimportant" (reverse coded). The mother and father subscales were averaged in order to create the relatedness to parents scale. Similarly, the classmates and friends subscales were combined to create the relatedness to peers scale. To create an indicator of overall relatedness, all five relatedness subscales were averaged.

Perceived control. The Control Beliefs subscale of the Student Perceptions of Control Questionnaire (SPOCQ; Skinner, Chapman, & Baltes, 1988; Skinner, Wellborn, & Connell, 1990) was used for these analyses. The SPOCQ was designed to measure children's beliefs about strategies for success and failure in school and their capacities to execute those strategies. The Control Beliefs subscale assessed students' generalized expectancies about the extent to which they can achieve success and avoid failure in school. Examples of items include "I can do well in school if I want to" and "I can't get good grades, no matter what I do" (reverse coded; Skinner et al., 1990, 1998; Wellborn, 1991).

Engagement versus disaffection: Teacher-reports. Students' teachers completed measures of student behavioral and emotional engagement in

Table 1
Properties of Measurement Instruments

Measure	Number of items	α	*M*	*SD*
Relatedness Aggregated	20	.86	3.30	0.50
Relatedness to Parents	8	.76	3.48	0.53
Relatedness to Teachers	4	.79	3.08	0.77
Relatedness to Peers	8	.81	3.35	0.59
Perceived Control	6	.63	3.44	0.51
Academic Performance	2	.85	8.86	1.69
Total Student Engagement (teacher-report)	16	.94	3.24	0.59
Student Behavioral Engagement (teacher-report)	6	.91	3.13	0.71
Student Emotional Engagement (teacher-report)	10	.90	3.36	0.53
Total Student Engagement (child-report)	24	.89	3.18	0.46
Student Behavioral Engagement (child-report)	9	.75	3.26	0.49
Student Emotional Engagement (child-report)	15	.86	3.11	0.53

Note. Scales could range from 1 (*not at all true for me–this student*) to 4 (*very true for me–this student*). Academic performance scores could range from 1 (F) to 12 (A). Indented constructs are aggregated to form the construct immediately above them.

the classroom. The behavioral scale was designed to tap teachers' perceptions of students' effort, attention, and persistence during the initiation and execution of learning activities. Examples of items include "When we start something new in class, this student participates in discussions" and "In my class, this student does just enough to get by" (reverse coded). The emotional scale tapped teachers' perceptions of students' emotional involvement during learning activities. Examples of items include "In my class this student is enthusiastic" and "When working in my class, this student appears frustrated" (reverse coded). The behavioral and emotional engagement scales were also combined to form a total engagement—teacher-report score.

Engagement versus disaffection: Child-reports. Students reported on their own behavioral and emotional engagement in the classroom using a measure mirroring the teacher-report of engagement versus disaffection described previously. The behavioral scale tapped students' perceptions of their effort, attention, and persistence while initiating and sustaining learning activities. Examples of items include "I participate when we discuss new material" and "In class, I just act like I'm working" (reverse coded). The emotional scale was designed to measure students' emotional involvement during learning activities. Examples of items include "When we start something new in school, I feel interested" and "When working on classwork, I feel mad" (reverse coded). The behavioral and emotional scales were combined to form a total engagement—child-report score.

Academic performance. Student records provided grades (marks) for 251 students. Letter grades were converted to numbers ranging from 1 (F or U–) to 12 (A or V). Grade scores were formed by averaging children's grades from classes focusing on verbal performance (reading, language, and/or spelling) and math performance.

Results

Descriptive Information

All analyses were performed using SPSS 10.0. Table 1 contains means and standard deviations for all variables. Average scores for all variables were above the midpoint for their respective scales. For example, the mean score for relatedness was 3.31, which is above the midpoint of 2.50 (for a scale ranging from 1 to 4). The children in this sample felt connected and competent at school, were actively engaged in the classroom, and were performing well academically. Average school marks fell between a B and a B–.

Correlations among variables can be found in Table 2. As expected, all correlations were positive and significant (at least $p < .01$). Teacher- and child-reports of student engagement were moderately related ($r = .39$). Compared with teacher-reports, children's reports of their own engagement were more highly correlated with reports of their self-system processes, relatedness, and perceived control. Teacher-reports of student engagement were more highly correlated with student's academic performance than were children's reports of their classroom engagement.

The Relationship Between Relatedness and Engagement

The first goal was to establish the relationship between children's general sense of relatedness and overall engagement. First, it was hypothesized that children's total engagement (emotion and behavior scales aggregated) would mediate the relationship between relatedness (aggregated across parents, teachers, and peers) and their academic performance (school marks). Two mediator models were analyzed (one for each reporter of engagement, teacher and child) using the three-step procedure recommended by Baron and Kenny (1986). Teacher-reports of students' total engagement mediated the relationship between overall relatedness and academic performance, $R^2 = .35$, $F(2, 248) = 67.06$, $p < .01$; the beta between relatedness and academic performance was reduced from .25 to .09 (*ns*). Children's self-reports of total engagement mediated the relationship between relatedness and academic performance, $R^2 = .09$, $F(2, 248) = 11.84$, $p < .01$; the beta between relatedness and academic performance was reduced from .25 to .11 (*ns*). Because of its potential role as a motivational mechanism, student engagement (teacher- and child-report) was used as the target variable in subsequent analyses.

Second, we tested the hypothesis that relatedness would uniquely account for variance in engagement beyond other self-beliefs such as perceived control. Two regressions were calculated using perceived control and relatedness as predictors of teacher- and child-reports of student engagement. As expected, both perceived control ($\beta = .33$, $p < .01$) and relatedness ($\beta = .14$, $p < .01$) were significant unique predictors of teacher-reports of students' engagement, $R^2 = .18$, $F(2, 638) = 67.65$, $p < .01$, and of child-reports of their own engagement (perceived control, $\beta = .33$, $p < .01$, and relatedness, $\beta = .46$, $p < .01$), $R^2 = .52$, $F(2, 638) =$

Table 2
Correlations Among Central Variables

Variable	1	2	3	4	5	6	7	8	9	10	11	12
1. Relatedness aggregated	—											
2. Relatedness to Parents		—										
3. Relatedness to Teachers		.38	—									
4. Relatedness to Peers		.50	.42	—								
5. Perceived Control	.54	.47	.39	.44	—							
6. Academic Performance	.25	.25	.16	.20	.34	—						
7. Total Student Engagement (teacher-report)	.31	.27	.25	.23	.40	.59	—					
8. Student Behavioral Engagement (teacher-report)	.29	.25	.23	.23	.41	.57		—				
9. Student Emotional Engagement (teacher-report)	.29	.26	.25	.20	.34	.53		.80	—			
10. Total Student Engagement (self-report)	.65	.49	.55	.50	.61	.28	.39	.39	.35	—		
11. Student Behavioral Engagement (self-report)	.57	.49	.44	.42	.60	.33	.40	.40	.36		—	
12. Student Emotional Engagement (self-report)	.61	.39	.55	.48	.51	.19	.31	.30	.28		.62	—

Note. All correlations were significant (at least $p < .01$). Indented variables were aggregated to compute the variable immediately above them; correlations between indented variables and their aggregate were not computed.

350.84, $p < .01$. Interestingly, relative to perceived control, relatedness was a stronger predictor of *children's* self-reports of total engagement, uniquely accounting for 15% of the variance.

Third, it was hypothesized that relatedness would predict changes in engagement from fall to spring. Two regressions were calculated using overall relatedness in the fall to predict total engagement in the spring after controlling for total engagement in the fall. Though the correlation between teacher-reports of engagement in the fall and spring was quite high ($r = .77$), relatedness in the fall was a significant unique predictor ($\beta = .08$, $p < .01$) of engagement in the spring, $R^2 = .61$, $F(2, 466) = 364.517$, $p < .01$. Likewise, relatedness in the fall ($\beta = .12$, $p < .01$) was a unique predictor of changes in child-reports of engagement from the beginning to the end of the school year, $R^2 = .59$, $F(2, 466) = 333.91$, $p < .01$, despite the strong relationship between engagement at the two time points ($r = .76$).

Unique Effects of Relatedness to Specific Social Partners

The second goal of the study was to examine the unique effects that relatedness to each social partner have on different features of engagement. Accordingly, all subsequent analyses use relatedness to specific social partners (parents, teachers, and peers). Descriptive statistics and correlations for relatedness to different partners are presented in Tables 1 and 2. As can be seen, relatedness to all partners was moderately high, with relatedness to parents higher than to peers, which was in turn higher than relatedness to teachers. Note also that the standard deviation of relatedness to teachers was also higher than that of relatedness to parents or peers. The moderate correlations among relatedness to different social partners suggested that, although an overall core sense of relatedness could be inferred, overlap among relatedness to different social partners was not sufficient to suggest that they were simply alternative indicators of the same construct.

To further explore the hypothesis suggesting that relatedness is an especially important predictor of the emotional features of children's engagement, teacher- and child-reports of total engagement were broken down into behavioral and emotional features (see Tables 1 and 2). Teacher-reports of student behavioral engagement were highly correlated with their reports of student's emotional engagement, and children's reports of their own behavioral engagement were highly correlated with reports of their emotional engagement. Teacher- and child-reports of behavioral engagement were more strongly correlated than were their reports of emotional engagement.

The fourth hypothesis stated that individual social partners (parents, teachers, and peers) would have unique effects on children's engagement. Four regressions were conducted using relatedness to parents, teachers, and peers as predictors of the behavioral and emotional features of engagement, as reported by teachers and children as dependent variables. As expected (see Table 3), feelings of relatedness toward each social partner uniquely predicted behavioral and emotional engagement for both reporters, with the exception that relatedness to peers did not uniquely predict teacher-reports of emotional engagement.

Gender and Grade Effects on the Relationship Between Relatedness and Engagement

The third goal of the study was to examine gender and age differences in the effects of relatedness to specific social partners. Comparisons in mean level of relatedness for three social partners (parents, teacher, and peers) and behavioral and emotional features of engagement as a function of age and gender appear in Table 4. No significant differences were found between boys and girls on mean levels of relatedness to parents and peers, but girls felt significantly more related to their teachers than did boys. In terms of grade differences, relatedness to all social partners increased significantly between third and fifth grade. However, following the transition to middle school in sixth grade, children's sense of relatedness to teachers dropped significantly. The same general trend was found for behavioral and emotional features of engagement (both teacher- and child-reports).

To examine grade and gender differences in the effects of relatedness, we created interaction terms by multiplying relatedness to each social partner by grade or by gender. Results of the hierarchical regression models (each social partner predicting each feature of engagement, behavioral and emotional, as reported by teachers and children) are presented in Table 5. The fifth hypothesis, that girls' engagement would be more sensitive to the effects of relatedness, was not supported. However, as seen in the patterns of significance for the interaction terms, several gender differences

Table 3
Regression Results for Relatedness to Specific Social Partners

	Student Engagement											
	Teacher-report						Child-report					
	Behavioral			Emotional			Behavioral			Emotional		
Relatedness to:	F[a]	β	Unique R^2	F[a]	β	Unique R^2	F[a]	β	Unique R^2	F[a]	β	Unique R^2
Parents	21.66***	.15**	.02	22.21***	.18**	.02	104.45***	.31**	.07	136.32***	.11***	.01
Teacher		.14**	.01		.17**	.02		.26**	.05		.40***	.12
Peers		.11*	.01		.04	<.01		.16**	.02		.26***	.05
Total R^2			.09			.10			.33			.39

* $p < .05$. ** $p < .01$. *** $p < .001$.
[a] dfs = 3 and 637.

Table 4
Descriptive Statistics for Relatedness to Social Partners and Features of Engagement by Gender and Grade

	Girls (n = 314)		Boys (n = 327)		Grade							
					3 (n = 93)		4 (n = 223)		5 (n = 77)		6 (n = 248)	
Measure	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Relatedness to Parents	3.52	0.52	3.45	0.54	3.33	0.55_{a}	3.48	$0.54_{a, b}$	3.58	0.49_{b}	3.51	0.53_{b}
Relatedness to Teachers	3.20	0.77	2.96	0.76***	2.97	0.84_{a}	3.13	$0.80_{a, b}$	3.29	0.80_{b}	3.00	0.69_{a}
Relatedness to Peers	3.36	0.59	3.34	0.59	3.23	0.62_{a}	3.32	$0.59_{a, b}$	3.51	0.59_{b}	3.38	$0.57_{a, b}$
Student Behavioral Engagement (teacher-report)	3.20	0.66	3.06	0.75*	3.18	0.62_{a}	3.16	$0.76_{b, c}$	3.34	0.68_{b}	3.13	$0.71_{a, c}$
Student Emotional Engagement (teacher-report)	3.42	0.51	3.29	0.54**	3.43	$0.48_{a, b}$	3.36	$0.57_{a, c}$	3.57	0.36_{c}	3.26	0.53_{b}
Student Behavioral Engagement (child-report)	3.34	0.46	3.18	0.50***	3.14	0.49_{a}	3.30	0.45_{a}	3.43	0.48_{b}	3.21	0.50_{a}
Student Emotional Engagement (child-report)	3.16	0.48	3.06	0.57*	3.11	$0.55_{a, b}$	3.19	$0.51_{a, c}$	3.33	0.52_{b}	2.97	0.51_{c}

Note. All scales could range from 1 (*not at all true for me–this student*) to 4 (*very true for me–this student*). Means in the same row that do not share subscripts differ at $p < .05$ in the Bonferroni post hoc difference comparison.
* $p < .05$. ** $p < .01$. *** $p < .001$.

were found. For relatedness to *teachers* and gender, significant interactions were found for teacher-reports of behavioral and emotional engagement as well as for child-reports of emotional engagement. The form of the interactions was similar: The effect of relatedness to teachers on engagement was more pronounced for boys (average $\beta = .42$); girls' engagement varied to a lesser extent as a function of their relatedness to their teachers (average $\beta = .24$). A similar interaction was found such that the effect of relatedness to peers on emotional engagement (as reported by teachers) was more pronounced for boys ($\beta = .27$, $p < .01$). Girls' emotional engagement (teacher-reports) did not vary as a function of their relatedness to peers ($\beta = .10$, *ns*).

Table 5
Regression Results Examining Interactions Between Relatedness to Social Partners and Gender and Grade

	Student Engagement							
	Teacher-report				Child-report			
	Behavioral		Emotional		Behavioral		Emotional	
Predictor	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β
Step 1	.08***		.09***		.26***		.19***	
Gender		.08*		.10**		.13***		.07
Grade		−.11**		−.13**		−.04		−.18***
Parent		.25***		.26***		.48***		.41***
Step 2	>.01		.01		<.01		<.01	
Parent × Gender								
Parent × Grade								
Step 1	.07***		.08***		.20***		.32***	
Gender		.06		.08*		.10**		.01**
Grade		−.08*		−.10**		.01		−.14***
Teacher		.22		.24***		.43***		.55***
Step 2	.02**		.03***		<.01		.01*	
Teacher × Gender		−.62**		−.85***				−.38*
Teacher × Grade		.43*		.35				.22
Step 1	.07***		.07***		.20***		.28***	
Gender		.09*		.12**		.16***		.08*
Grade		−.10**		−.12**		−.04		−.19***
Peer		.24***		.21***		.42***		.50***
Step 2	<.01		.01*		<.01		<.01	
Peer × Gender				−.58*				
Peer × Grade				.32				

Note. Betas are standardized partial regression coefficients reported from each significant step of the regression equation.
* $p < .05$. ** $p < .01$. *** $p < .001$.

In addition, no support was found for the sixth hypothesis, which held that the effects of relatedness would be more pronounced for younger compared with older children. The only significant interaction for grade involved relatedness to teacher, and teacher-reports of students' behavioral engagement such that the relationship between relatedness to teachers and engagement was stronger for older students.

Low Relatedness to Specific Social Partners as Cumulative Risk

The final goal was to examine the differential, cumulative, and compensatory effects of relatedness to different social partners. A person-centered approach was adopted to examine whether low levels of relatedness to parents, teachers, and peers within a single person were associated with poor engagement outcomes. Rather than analyzing variables and their interactions for the entire sample, we computed relatedness *profiles* for each child containing information about children's perceptions of their relationships with their parents, teachers, and peers. Each of the three relatedness scores (parents, teachers, and peers) was split at its median to create two groups, low and high. Each participant was assigned to one of eight relatedness profiles that included all possible combinations of low and high levels of relatedness to parents, teachers, and peers ($2 \times 2 \times 2$ groups). See Table 6 for a description of the groups. For example, the low–low–high relatedness profile group consisted of children who scored below the median on relatedness to parents and teachers but above the median on relatedness to peers.

The eight profiles were combined into four cumulative risk groups: no low (no relatedness scores below the median), one low (any single relatedness score below the median), two low (any two relatedness scores below the median), and all low (all three relatedness scores below the median). The students in the one-low cumulative risk group, for example, had lower relatedness to at least one social partner, suggesting that these students were more at risk for engagement difficulties as compared with the students in the no-low cumulative risk group (who had high relatedness to all three social partners).

Table 6
Descriptive Statistics for Relatedness Profile Groups

		Parents		Teachers		Peers	
Group	*n*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Cumulative Risk Groups for Relatedness to Specific Social Partners							
All Low	158	2.88	0.44	2.38	0.47	2.77	0.43
Two Low	144	3.40	0.47	2.86	0.73	3.09	0.52
One Low	160	3.65	0.37	3.15	0.73	3.60	0.43
No Low	179	3.92	0.13	3.79	0.26	3.86	0.18
Relatedness Profiles (parent–teacher–peer)							
LLL	158	2.88	0.44	2.38	0.47	2.77	0.43
HLL	58	3.83	0.16	2.48	0.67	2.92	0.33
LHL	48	3.08	0.14	3.56	0.31	2.83	0.54
LLH	38	3.16	0.32	2.54	0.53	3.67	0.21
HHL	42	3.86	0.16	3.64	0.27	3.05	0.46
HLH	68	3.85	0.15	2.48	0.58	3.79	0.19
LHH	50	3.21	0.30	3.66	0.31	3.80	0.16
HHH	179	3.92	0.13	3.79	0.26	3.86	0.18

Note. All scales could range from 1 (*not at all true for me–this student*) to 4 (*very true for me–this student*). L = low; H = high.

To test the seventh hypothesis, which stated that relatedness to parents, teachers, and peers should show a pattern of cumulative risk or increasing decrements in engagement, we conducted two multivariate analyses of variance (MANOVAs; using the Wilks's lambda estimate) for each reporter of engagement (teacher and child), with behavioral and emotional engagement as dependent variables. Figure 1 depicts the mean engagement scores for each cumulative risk group. Univariate analyses of variance were inspected for significant group differences on each of the features of engagement separately, with Bonferroni post hoc comparisons to determine between-group differences. Significant multivariate effects were found for both teacher-reports, $F(6, 1272) = 10.15$, $p < .01$, and child-reports, $F(6, 1272) = 56.33$, $p < .01$, of engagement. In general, engagement significantly decreased as cumulative risk increased. For both teacher- and child-reports, all four cumulative risk profile groups were significantly different on behavioral and emotional engagement, with two exceptions. First, children in the two-low (highly related to only one social partner) group did not differ from those in the one-low (highly related to two social partners) group in teacher-reports of behavioral and emotional engagement. Second, children in the one-low group were marginally different ($p = .08$) from those in the no-low group on teacher-reports of behavioral engagement.

Partial support was found for the eighth hypothesis, which stated that among risk groups with low relatedness to the same number of partners, no differences would be found in engagement as a function of which partner (parents, teachers, or peers) was low. The homogeneity of the one-low and two-low cumulative risk groups was tested using the same analytic strategy described previously (e.g., MANOVA, univariate *F* tests, and Bonferroni post hoc comparisons). As stated earlier, the one-low and two-low cumulative risk groups each contained three relatedness profiles. First, the three relatedness profiles in the one-low cumulative risk group (low parent vs. low teacher vs. low peer) were compared. A significant multivariate effect was found for child-reports of engagement, $F(4, 312) = 2.87$, $p < .05$, the significant effect being in children's reports of their own emotional engagement, $F(2, 157) = 5.87$, $p < .01$. More specifically, children who felt low relatedness to their teachers (and high relatedness to peers and parents) reported being less emotionally engaged than children with low relatedness to their parents (and high relatedness to peers and teachers). Children having a one-low relatedness profile did not differ on teacher reports of engagement.

Second, the three relatedness profiles in the two-low cumulative risk group (e.g., low teacher and peer vs. low parent and peer vs. low teacher and parent) were compared. A significant multivariate effect was found for child-reports of engagement, $F(4, 280) = 3.74$, $p < .01$. The relatedness profiles differed on child-reports of emotional, $F(2, 141) = 3.28$, $p < .05$, but not behavioral engagement. More specifically, children who felt highly related only to their teacher (low parents and peers) reported being more emotionally engaged than children who felt highly related only to their parents (low teachers and peers). Children having a two-low relatedness profile did not differ on teacher-reports of engagement.

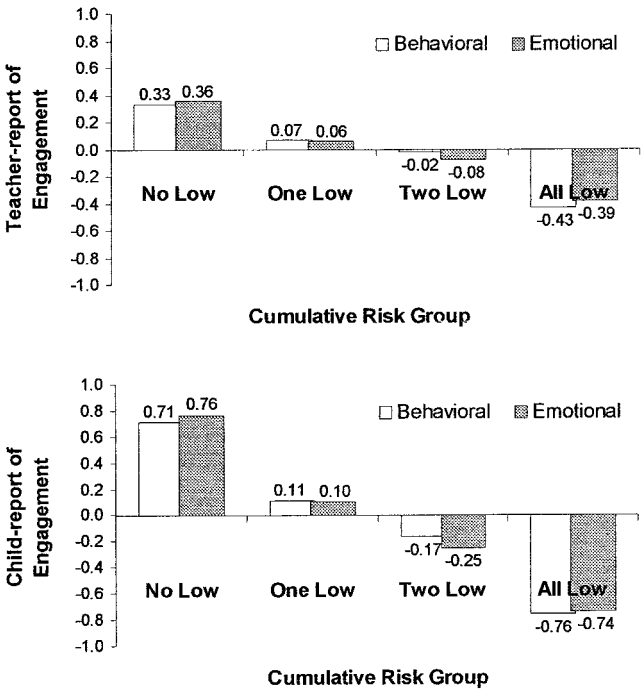

Figure 1. Mean differences in teacher- and child-reports of student engagement between cumulative risk groups (*z* scores). All cumulative risk groups were significantly different, with the exception of the one-low and two-low groups on teacher-report of both features of engagement. No low = no relatedness scores below the median; One low = any single relatedness score below the median; Two low = any two relatedness scores below the median; All low = all three relatedness scores below the median.

Compensation Among Social Partners

Using the same analytical strategy described previously, we aimed to determine whether relatedness to a particular social partner could compensate for low relatedness to other social partners with the final set of analyses. Results are presented in Table 7. The ninth hypothesis focused on parents, specifically, whether high relatedness to classroom partners (peers and teachers) could compensate for low relatedness to parents. Significant multivariate effects were found for both teacher-reports, $F(6, 880) = 9.90$, $p < .01$, and child-reports, $F(6, 880) = 59.23$, $p < .01$, of engagement. Consistent with hypotheses, children who were highly related to classroom social partners (high teacher and peers but low parents) did not differ from children who felt highly related to all three social partners on teacher-reports of engagement but contrary to expectations had significantly lower self-reports of behavioral and emotional engagement. Also as expected, children who felt highly related to only their parents (but less related to their teachers and peers) did not differ from children with low relatedness to all three social partners in teacher- and child-reports of *emotional* engagement but had significantly higher teacher- and child-reports of behavioral engagement.

The centrality of relatedness to teachers was the focus of the 10th hypothesis. Significant multivariate effects were found for both teacher- and child-reports of engagement, $F(6, 896) = 9.83$, $p < .01$, and $F(6, 896) = 56.33$, $p < .01$, respectively. As hypothesized, children with low relatedness to their teachers (even when highly related to parents and peers) had significantly lower teacher- and self-reports of behavioral and emotional engagement than children who felt highly related to all three social partners. Further, children who felt highly related to their teachers (even when relatedness to their parents and peers was low) had significantly higher child-reports of behavioral and emotional engagement, though no differences were found for teacher-reports of engagement.

The 11th hypothesis was based on the notion that peers would be the least influential social partner on school engagement. Significant multivariate effects were found for teacher-reports, $F(6, 824) = 10.57$, $p < .01$, and child-reports, $F(6, 824) = 58.08$, $p < .01$, of engagement. Partially supporting our hypothesis was the finding that children who reported low relatedness to their peers (as long as they were highly related to their teachers and parents) did not differ from children who felt highly related to all three social partners on teacher-reports of both features of engagement but self-reported significantly lower behavioral and emotional engagement. Contrary to our hypothesis, children who were highly

Table 7
Compensatory Relatedness Profile Mean Differences in Engagement

Relatedness profile (parent–teacher–peer)		Student Engagement			
		Teacher-report		Child-report	
		Behavior	Emotion	Behavior	Emotion
All Low	LLL	2.82	3.15	2.89	2.72
Low Teacher–Peer	HLL	3.11_a	3.31	3.23_a	2.87
Low Parent–Peer	LHL	3.04	3.26	3.20_b	3.10_b
Low Parent–Teacher	LLH	3.21_c	3.39_c	3.06_c	3.00_c
No Low	HHH	3.37	3.54	3.60	3.52
Low Parent	LHH	3.19	3.39	3.35_a	3.30_a
Low Teacher	HLH	3.10_b	3.31_b	3.27_b	3.03_b
Low Peer	HHL	3.31	3.51	3.33_c	3.21_c

Note. The first three profiles were each compared with the LLL relatedness profile, and the second three profiles were each compared with the HHH relatedness profile. A subscript denotes a significant difference between that profile and its relevant comparator (LLL or HHH) for each dependent variable. L = low; H = high.

related to their peers but less related to their parents and teachers had significantly higher teacher- and child-reports of behavioral and emotional engagement (teacher-reports of behavioral engagement was marginally significant, $p = .07$).

Discussion

The findings of this study, taken together with other work on relationship representations, lead to the conclusion that children's sense of relatedness plays an important role in their academic motivation and performance. Consistent with the contention that students' feelings of connectedness or belonging represent a key self-system process, children who reported a higher sense of relatedness also showed greater emotional and behavioral engagement in school, as captured by both self- and teacher-ratings. Moreover, children's sense of relatedness made a unique contribution to their engagement over and above the effects of a strong self-system predictor of motivation, namely, student's perceived control. Consistent with hypothesized causal effects, students' relatedness in the fall predicted changes in their engagement from fall to spring, despite the high stability of children's engagement over the school year. These findings are consistent with other research documenting the link between children's feelings of connection or belonging, and their school motivation and success (Anderman, 1999; Anderman & Anderman, 1999; Battistich et al., 1995; Eccles & Midgley, 1989; Goodenow, 1993; Roeser et al., 1996; Wentzel, 1998, 1999).

Findings also contributed to an understanding of the effects of relatedness to specific social partners, namely, parents, teachers, and peers (Connell & Wellborn, 1991; Lynch & Cicchetti, 1992; Ryan et al., 1994). Moderate overlap among feelings of relatedness to these three social partners is consistent with the notion of an underlying core sense of relatedness, without implying that the three are simply alternative indicators of the same construct. In fact, unique effects of relatedness to each social partner were generally found in predicting both self- and teacher-reports of students' behavioral and emotional engagement. Using a cumulative risk framework, we examined the differences between groups of children with different profiles of relatedness, which showed that, in general, a sense of relatedness to each social partner counts in promoting students' motivation. Comparisons of risk groups, with profiles reflecting the loss of relatedness to one additional social partner, showed significant decrements in children's own reports of their emotional and behavioral engagement. Also lending support to the notion that each social partner counts was the relative homogeneity between the various relatedness profiles contained within the one-low and two-low risk groups.

As predicted, girls reported higher relatedness than boys, especially to teachers. However, contrary to expectations, the effects of relatedness on engagement (although significant for girls) were more pronounced for boys, and especially on teacher-report indicators of emotional engagement. The increased salience of relatedness for boys was also found for relatedness to peers but was especially strong for relatedness to teachers. Consistent with other research on the effects of the transition to middle school, older children reported drops in relatedness to teachers. However, at the same time and contrary to assumptions, relatedness to teachers was a more salient predictor of engagement for older, compared with younger, children.

Engagement as a Potential Pathway of Influence

A key goal of the study was to explore a possible mechanism through which feelings of relatedness make a difference to children's actual academic achievement. Taken together, the pattern of mediational findings suggests that children's motivation, specifically their engagement in the classroom, is one likely pathway. Feelings of belonging may have an energetic function, awakening enthusiasm, interest, and willingness to participate in academic activities. It seems to be more fun for children to be involved in activities with people that they like and by whom they feel liked in return. Relatedness may also buffer against negative emotions, minimizing feelings of boredom, anxiety, pressure, or frustration.

Moreover, some of the results suggest that relatedness may be a psychological resource that children can, to some extent, take with them into new situations. Significant in this regard were findings about relatedness to parents, who do not participate in the classroom and so are not part of the school context in which engagement takes place. Nevertheless, relatedness to parents was a significant unique predictor of all four indicators of children's engagement. Together with previous research (Connell & Wellborn, 1991; Lynch & Cicchetti, 1992; Ryan et al., 1994), these findings suggest that relationship representations, like internal working models, may function as self-system resources in new contexts.

The findings of this study suggest that relatedness does more than improve the short-term motivational and psychological state of children in the classroom. Children high in relatedness did indeed start out the school year higher in engagement than children low in relatedness, but they also improved more over time. Children low in relatedness were not simply lower in enthusiasm and persistence in the fall; they also showed deteriorating motivation over time. We subscribe to the view that one reason that high relatedness is connected with improvements in engagement over the school year, and possibly with positive trajectories of engagement over longer periods of time, is that it marks children who are involved in a positive motivational dynamic. Children who are high on relatedness are more likely to show enthusiastic participation in school activities and fewer negative emotions, leading to greater opportunities for actual learning and school success; the combination of constructive engagement and higher performance elicits more support from teachers, parents, and peers, which confirms or promotes children's feelings of belonging and connectedness. In contrast, children who feel unimportant or rejected by key partners are more likely to become frustrated, bored, and alienated from learning activities, which in turn interferes with their academic progress; poor performance coupled with disaffection erodes social support, leading children to feel further estranged. Future studies, which include indicators of the quality of actual social interactions, as well as multiple measurement points, might begin to capture some of these motivational dynamics more fully.

Relatedness to Parents, Teachers, and Peers

In general, during middle childhood, relatedness to specific social partners seems to promote children's motivation in school. However, unique effects of relatedness to parents, teachers, and peers as well as subtle differences in the patterns of predictions

from relatedness profiles suggested that relatedness to specific partners might be exerting their effects on somewhat different features of children's motivation. The findings of the present study contributed to a more complex picture of relatedness to specific social partners.

Relatedness to peers. Some of the most noteworthy findings from this study were the unique effects of relatedness to peers. In general, research incorporating similar constructs has found few (or no) effects of relatedness to peers on academic outcomes. For example, Ryan et al. (1994) found that, after the effects of relatedness to parents and teachers were controlled, relatedness to peers made no unique contribution to engagement (or other academic outcomes). In a similar vein, Goodenow (1993) found that, after controlling for perceived teacher support, perceived peer support contributed to students' expectancies for success but not to their achievement values nor to teacher-reports of student effort or performance.

Several differences between earlier research and the present study could account for the different findings. First, different assessments of relatedness (relationship representations or belonging) were used. However, psychometric information did not suggest obvious problems with any of the other measures; and in each study the peer subscales did relate to other key outcomes, just not academic engagement. Second, the samples in the other two studies were older than the children in the present sample. However, there is little reason to believe that peers would become less salient as relatedness partners as children grow older; no such age trends were found in the Goodenow study (1993; comparing sixth, seventh, and eighth graders) or in our data. The most likely explanations revolve around the specific peers and the target features of engagement. In our data, the unique effects of peers were the most clear for students' reports of their own engagement and for the emotional feature of engagement.

Closer examination of the relatedness profiles also suggested that for some groups, the loss of relatedness to peers did not have serious consequences for children's engagement (at least as reported by teachers). Specifically, children with the one-low relatedness profile that consisted of low relatedness to peers (but high relatedness to parents and teachers) did not differ from children who had high relatedness to all three social partners. Perhaps children who experience satisfying relationships with adults may fare well academically despite poor peer relationships. One possibility, as suggested by Hymel et al. (1996), is that these children are neglected rather than rejected by their peers. It should be noted, however, that decrements in motivation were found for children with a low-peers profile (compared with the no-low profile) when the dependent variables were self-reports of emotional engagement. The loss of relatedness to peers, even when relatedness to parents and teachers were high, did seem to affect children's emotional experiences in the classroom.

Relatedness to parents. As expected, relatedness to parents exerted a unique effect on all of the target measures of engagement (Grolnick & Ryan, 1992; Grolnick et al., 1991). These results suggest that relatedness to parents does more than act as a template for the construction of new relationships with the teacher and classmates. The unique effects of relatedness to parents suggest that it acts as a motivational resource, beyond its role in shaping relatedness to others.

One suggestion about how parents may influence children's classroom motivation comes from the fact that relatedness to parents seems to be especially salient as a predictor of children's behavioral engagement. Children with high relatedness to parents may enter the classroom with a "readiness to be socialized" (Maccoby & Martin, 1983), that is, with a willing attitude and the desire to concentrate on the classroom agenda; children with low parental relatedness may come to school unready or unwilling to meet the motivational demands of the classroom.

Relatedness to teachers. The most striking example of differences in relative salience of effects was found for relatedness to teachers and for children's (self-report) emotional experience in the classroom. Emotional engagement, although uniquely predicted by relatedness to all three specific social partners, seemed to depend most heavily on relatedness to teachers. Children who felt appreciated by teachers were more likely to report that involvement in academic activities was interesting and fun and that they felt happy and comfortable in the classroom. In contrast, children who felt unimportant or ignored by teachers reported more boredom, unhappiness, and anger while participating in learning activities. Close inspection of relatedness profiles also reaffirmed the salience of relatedness to teachers. Each relatedness profile including low relatedness to teachers showed significant decrements in student engagement.

Relatedness to teachers seemed particularly salient for boys and for children beginning middle school. Although relatedness to peers also had a bigger effect on engagement for boys, the strongest effects were found for relatedness to teachers. Boys, who in general reported lower mean levels of relatedness to teachers than girls, nevertheless showed stronger effects of teacher relatedness on their classroom engagement. Given that boys generally showed less involvement and enjoyment of academic activities than girls, it was as if interpersonal ties to the teacher could provide them with a bigger motivational boost.

Study Limitations

Future research would benefit from more elaborated measures of relatedness and of academic performance than the ones used in the present study. The four-item relatedness subscales showed robust effects and mapped well onto the target construct of "self in relationships." Nevertheless, scales with expanded item breadth and correspondingly improved psychometric properties would be useful in more clearly identifying the construct domain. Moreover, future studies could examine a wider range of academic outcomes, distinguishing, for example, performance in specific subject areas, and including other markers of school success, such as attendance or participation in extracurricular activities.

In addition to the issues of measurement and design mentioned previously, one of the main limitations of this study was the sample. Although representative for the school district, the sample was predominantly Caucasian and middle to working class. As demonstrated by the mean levels of the variables, the children in this study were generally doing well, reporting high relatedness to all social partners, and showing constructive engagement and good school achievement. For example, in the median splits for relatedness profiles, all of the cut-offs were above 3.25 (on a 4-point scale). Interpretations of the findings should bear this in mind.

The examination of the effects of relatedness in more diverse and disadvantaged samples is an important next step. For children who are marginalized by the system, a sense of relatedness to teachers may be an even more important source of motivation. Alternatively, if feelings of relatedness to authority figures are limited, then feelings of connectedness to peers may be more important to motivation than they would be for children who have access to secure relationships with important adults (Steinberg et al., 1995; Wasserstein & La Greca, 1996). Moreover, it is likely that the majority of children in this sample felt a solid sense of being welcome in their school. For more diverse students and in less well-functioning schools, feelings of belonging in school might prove to be as important, or even more important, than the features of relatedness examined in this study (Battistich, Solomon, Watson, & Schaps, 1997).

Implications for Practice

This research suggests that a priority for schools should be building the quality of children's relationships. Moreover, it suggests that interventions cannot target relatedness to only one social partner. Relatedness to parents, teachers, and peers each play a unique role. Research from the areas of parenting, teaching, and parent–child and teacher–child interactions suggests that qualities such as warmth, caring, sensitivity, dedication of attention and time, and emotional availability may be important to the development of secure relationships with adults. More research is needed to discover how children achieve a sense of connectedness to peers and how schools can facilitate this process. In crafting interventions, it is important to note that promoting the quality of relationships in the classroom does not need to detract from academic goals (Midgley & Edelin, 1998).

The present study also suggests that, although interventions may wish to target many features of children's engagement in the classroom as mediators of the effects of relatedness on academic achievement, one aspect that seems particularly sensitive is children's emotional experience when involved in learning activities. Children's enthusiasm, interest, happiness, and comfort during new and ongoing academic tasks seem to be shaped by their sense of relatedness to others; likewise, feelings of boredom, frustration, sadness, and anxiety in the classroom are exacerbated when children feel alienated from others. Although teachers provide valid reports of student effort, persistence, and attitudes toward classroom participation, the results of this study suggest that children's own accounts of their behavior and emotion in the classroom add vital information about children's motivation.

Taken together with previous research, this study underscores the idea that the classroom, and schools in general, can be considered a "relational zone" (Goldstein, 1999) in which "pedagogical caring" (Wentzel, 1997) and the quality of relationships with classroom companions matters to children's participation and academic success (Birch & Ladd, 1996, 1997, 1998; Pianta, 1994). From this perspective, feeling connected and important is not just a by-product of doing well in school; a sense of belonging or relatedness plays an integral role in children's motivational development.

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