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Journal of School Psychology 48 (2010) 483–510

Journal of  
**School  
Psychology**

# Relatedness with teachers and peers during early adolescence: An integrated variable-oriented and person-oriented approach

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Received 26 February 2009; revised in revised form 29 July 2010; accepted 16 August 2010

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## Abstract

The primary aims of the present longitudinal study were to examine (a) patterns of early transition relatedness with teachers and peers in 6th grade, (b) whether pre-transition behavior in 5th grade predicted early transition relatedness in 6th grade, and (c) how unique indicators of early transition relatedness with teachers and peers and patterns of early transition relatedness were associated with school adjustment among 383 rural, lower- to middle-class, White youth. Results suggest that behavioral characteristics in elementary school may contribute to early transition patterns of relatedness with teachers and peers in middle school. Findings also indicate that having a pattern of poor relationships with the primary social partners in the school context is negatively associated with adjustment above and beyond the independent indicators of relatedness. Implications for school practice are discussed.

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*Keywords:* Teachers; Peers; Relatedness; School adjustment; Person-oriented approach

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Educational practitioners and researchers have long recognized the importance of supportive peer and teacher relationships for the school adjustment of young adolescents (Doll & Cummings, 2008). Youth who experience support from teachers and peers enjoy,

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ACTION EDITOR: R. Floyd.

value, and bond with school more, are more engaged in class, have higher academic achievement, are less lonely, and feel better about themselves (Crosnoe, Johnson, & Elder, 2004; Furrer & Skinner, 2003; Gest, Welsh, & Domitrovich, 2005; Goodenow, 1993; Ladd, Birch, & Buhs, 1999; Maddox & Prinz, 2003; Parker & Asher, 1993). These relationships may be compromised during the transition to middle school—a period of increased complexity and developmental demands in the form of an expanded group of peers and teachers and greater academic expectations and demands (Eccles et al., 1993; Felner et al., 2001). Better understanding of the factors related to the middle school transition could guide educational practices designed to facilitate positive student adjustment. In the present study, our goal was to determine whether youths' pre-transition behavioral styles predicted their early transition relatedness with teachers and peers and whether early transition relatedness predicted adjustment across middle school.

We integrated variable-oriented and person-oriented approaches to these issues. Variable-oriented analyses are useful in describing overall associations between variables in a population; for example, linear regression models can quantify the proportion of variance in a youth adjustment outcome that is explained by constructs of relatedness with teachers and with peers. However, variable-oriented approaches have limitations when associations among variables vary across different subgroups within a population. For example, if different subgroups of youth display different patterns of teacher and peer relatedness that are related to adjustment in unique ways, then a population-level correlation between a dimension of relatedness and a measure of adjustment could be misleading. In contrast, person-oriented approaches are designed to identify subgroups of a population characterized by a particular profile or pattern on a set of variables and to illuminate how these patterns are related to adjustment (Bergman & Magnusson, 1997; Von Eye, & Bergman, 2003; Graber & Brooks-Gunn, 1996). We viewed these two approaches as complementary and integrated them in our analytic strategy.

### **1. Relationships with teachers and peers as resources across the middle school transition**

Eccles et al. (1993) articulated a stage–environment fit perspective on early adolescence that highlights the mismatch between the developmental needs of adolescents and the school environments they must negotiate. Young adolescents have needs for autonomy, competence, and relatedness (Kuperminc, Blatt, Shahar, Henrich & Leadbeater, 2004; Lerner & Steinberg, 2004; Ryan & Deci, 2000), and although they become increasingly peer-oriented (Wigfield, Eccles, Mac Iver, Reuman, & Midgley, 1991), their need for positive relationships with non-familial adults remains important (Eccles, 1999; Zimmer-Gembeck, Chipuer, Hanisch, Creed, & McGregor, 2006). Yet, the transition to a larger, more complex middle or junior high school environment typically involves more evaluative grading, more competition, greater emphasis on teacher control and discipline, and fewer opportunities for student decision-making, choice, and self-management. Such an environment may undermine a sense of community and exacerbate feelings of alienation and loneliness (Eccles et al., 1993;

Graber & Brooks-Gunn, 1996). This mismatch between adolescents' developmental needs and the characteristics of middle school environments may account for declines in feelings of self-worth, academic motivation, and school performance (Eccles & Midgley, 1989; Fenzel, 2000; Roeser & Eccles, 1998; Simmons & Blyth, 1987). The effect of the transition to middle school, however, depends on both the personal characteristics that students bring to the new school setting (Ladd, 1996) and the specific opportunities afforded to them in the new setting, including relational opportunities with teachers and peers (Eccles et al., 1993; Felner et al., 2001; Ladd, 1996).

Close, supportive teacher–student relationships are associated with developmental benefits for youth from kindergarten through high school (Crosnoe et al., 2004; Decker, Dona, & Christenson, 2007; Furrer & Skinner, 2003; Goodenow, 1993; Hughes, Cavell, & Willson, 2001; Ladd et al., 1999; O'Connor & McCartney, 2007). Across elementary school, teacher–student relationships characterized by more closeness and lower conflict have been linked to more positive perceptions of school (Ladd, 1996), higher academic skills and classroom adjustment (Baker, 2006; Pianta & Stuhlman, 2004), classroom motivation (Wentzel, 1998), and positive social engagement (Gest, Welsh & Domitrovich, 2005). There is some evidence that teachers have the potential to prevent the normative declines in motivation typically observed across the transition to middle school. In one study, students who moved from unsupportive teachers in elementary school to supportive teachers in junior high school showed an increase in academic motivation (Eccles et al., 1993). In the present study, we considered young adolescents' supportive relationships with teachers an important aspect of their interpersonal relatedness and, potentially, a critical resource as they transition to middle school.

Positive peer experiences are also an important component of interpersonal relatedness during early adolescence. Peer acceptance (i.e., being liked by peers) provides youth with a sense of relatedness and connection to the classroom that empowers them to engage in, rather than withdraw from, class activities (Buhs & Ladd, 2001) and promotes a sense of belonging (Goodenow, 1993). In contrast, peer rejection (i.e., being disliked by peers) predicts greater loneliness and lower perceived peer competence (Gest, Welsh, et al., 2005; Kingery & Erdley, 2007; Parker & Asher, 1993). More generally, being preferred by peers (i.e., receiving more “liked” than “disliked” nominations) is positively associated with better grades (Ladd, Buhs, & Troop, 2002; Wentzel & Caldwell, 1997) and future academic progress (Lubbers, Van der Werf, Snijders, Creemers, & Kuypers, 2006), and negatively associated with later school drop-out, psychopathology, and criminal activity (Parker & Asher, 1993). Indeed, Wentzel (2003) found that children who were rejected by peers in 6th grade displayed relative declines in prosocial behavior (i.e., being nice and being helpful behavior towards others) and relative increases in irresponsible behavior by 8th grade. Youth who are disliked and unaccepted may have fewer opportunities to learn and practice valued and adaptive interpersonal skills, and given the social context of many learning activities, they may also miss out on opportunities for academic learning.

In sum, based on a stage–environment fit perspective, we assumed that youths' school adjustment would be optimal when their experiences with teachers and peers were supporting their needs for relatedness. We expected that supportive relationships with teachers and peers would buffer the stressful challenges associated with the new middle school environment and help to meet youths' needs for interpersonal relatedness.

## 2. Associations between youths' relationships with teachers and with peers

Youths' relationships with teachers and with peers may be interrelated due to multiple processes, including common antecedents and both positive and negative interdependencies.

### 2.1. Common antecedents

Youths' relationships with teachers and peers may share common antecedents such as prosocial or aggressive–disruptive behavioral styles (Ladd, 1996; Ladd et al., 2002). Youth who display helping, sharing, and cooperative behavior tend to have positive relationships with teachers (Ladd et al., 1999) and with peers (Chen, Li, Li, Li, & Liu, 2000; Coie, Dodge, & Kupersmidt, 1990). Prosocial youth may provide distinct social benefits to peers (e.g., a listening ear) and to teachers (e.g., a positive response to an assignment) that promote positive, supportive relationships. In contrast, children who display aggressive or antisocial behavior are less likely to be accepted by peers (Asher & Coie, 1990; Stormshak, Bierman, Brushi, Dodge, & Coie, 1999) or to have close relationships with teachers (Birch & Ladd, 1997; Gest, Welsh, et al., 2005; Ladd & Price, 1987). These youth impose distinct social costs on peers (e.g., disrupted peer activities) and on teachers (e.g., disrupted lessons). In the present study, we examined whether prosocial and aggressive behavior before the transition to middle school (i.e., pre-transition behavior) predicted relatedness in the first year of middle school.

### 2.2. Positive interdependencies

There also may be interdependencies in youths' relationships with peers and teachers because both sets of relationships unfold in the same setting. For example, youth who establish more supportive and less discordant relationships with teachers are more socially accepted by peers (Ladd et al., 1999). In an informative study, Hughes et al. (2001) found that when a student was perceived by peers to have a supportive, positive relationship with a teacher, that student was perceived more favorably by peers, even when controlling for that child's aggression. This suggests that children pay attention to their peers' relationships with the teacher and may use this information to inform their social preferences. Close, supportive relationships with teachers may provide youth with a sense of confidence that fosters increased classroom engagement, which in turn may be viewed positively by classmates and contribute to peer acceptance (Hughes & Kwok, 2006). The reverse pattern may also be true. Peer acceptance and competence could foster teacher–student closeness, such that teachers find it easier to be close to youth who are not causing classroom management challenges related to peer conflicts.

### 2.3. Negative interdependencies

A negative interdependency also may exist in relationships with peers and with teachers if youth compensate for weaknesses in one relational context by strengthening or depending more heavily on the other relational context. This sort of negative interdependency has been

documented in research on teacher–child and parent–child relationships. For children with less close parent–child relationships (i.e., parents who endorsed more authoritarian and less child-centered parenting beliefs), there was a positive correlation between a supportive teacher–child relationship and the child’s academic outcomes (Burchinal, Peisner-Feinberg, Pianta & Howes, 2002). In the middle school context, youth who do not establish close relationships with teachers may turn to peers for support and advice. Conversely, it is possible that youth who struggle to achieve peer acceptance may seek out close relationships with teachers to satisfy their relational needs. Such interdependency has not received much theoretical or empirical attention, yet it is a possibility for some youth. Negative interdependencies would limit the magnitude of associations between relationships with peers and with teachers that would otherwise result from their shared antecedents and positive interdependencies.

### 3. Additive and configural associations with school adjustment

A few studies have examined the combined impact of positive relationships with teachers and with peers on youths’ adjustment in middle school (Wentzel, 1998), but most of this research has focused on additive effects using variable-oriented methods. For example, several research groups explored the importance of a good fit between the values and norms of teachers and peers using analysis of covariance (e.g., Battistich, Schaps & Wilson, 2004) or multiple regression (e.g., Goodenow, 1993). Reinforcing messages of positive norms and values across multiple levels (e.g., school, teachers, peers, and families) appear to promote more positive adjustment in early adolescence. These findings support the use of a variable-oriented approach to demonstrate how, on average, youths’ relationships with teachers and peers both contribute to positive adjustment.

Teacher and peer relationships could also combine to influence youths’ adjustment in non-additive ways. Positive experiences in one relational context, for example, may buffer the impact of negative relational experiences in the other context, consistent with a protective effect (Luthar, Cicchetti, & Becker, 2000). Alternatively, negative experiences in one relational context may amplify the impact of negative experiences in another context, consistent with a vulnerability model (Luthar et al., 2000). Furrer and Skinner (2003) conducted one of the few studies to test for such *configural* effects, using self-reported items that assessed youths’ relatedness to parents, peers, and teachers. The researchers found that when relatedness to parents and peers was low, children who felt high relatedness to teachers had higher behavioral and emotional engagement compared to children who had low teacher-relatedness. Children who reported high relatedness to peers, but less relatedness to parents and teachers, had higher behavioral and emotional engagement compared to children who were less related to all social partners. These findings illustrate the potential utility of a person-oriented approach to clarifying how patterns or configurations of relatedness may be associated with youth adjustment. In the present study, we expanded on Furrer and Skinner’s person-oriented work by using multi-informant reports of relatedness (i.e., from youth, peers, and teachers) and by using a model-based procedure to determine the optimal profile structure in the data. In addition, we used a variable-oriented approach to examine additive effects of

relationships with teachers and with peers on youths' adjustment. The combination of these two approaches adds to our understanding of previous teacher–peer relatedness research, in which, typically, one approach or the other is used.

#### 4. Study aims and hypotheses

In the present study, we (a) identified patterns of early transition relatedness in the fall of the first year of middle school (6th grade); (b) examined how pre-transition behavior (fall of 5th grade) was associated with early transition relatedness; and (c) integrated variable-oriented and person-oriented approaches to study how indicators and patterns of early transition relatedness were associated with school adjustment (i.e., academic skills, academic self-concept, school bonding, loneliness, and self-worth), concurrently and one and a half years later (spring of 7th grade).

Based on the literature reviewed (e.g., Eccles, 1999; Hughes et al., 2001; Ladd et al., 1999), we hypothesized three patterns of relatedness: positive relationship experiences with both teachers and peers (High Relatedness), negative relationship experiences with both teachers and peers (Low Relatedness), and high peer relatedness in the context of low teacher relatedness (Peer-Oriented Relatedness). In light of the research reviewed on links between youths' behavior and their relationships with teachers and peers (e.g., Ladd et al., 2002; Gest, Welsh, et al., 2005), we expected pre-transition behavior to be associated with patterns of early transition relatedness. We hypothesized the High Relatedness pattern to be associated positively with prosocial behavior and negatively with aggression, the Low Relatedness pattern to be associated negatively with prosocial behavior and positively with aggression, and the Peer-Oriented pattern to be associated positively with both prosocial behavior and aggression.

Given the substantial variable-oriented evidence of associations between relatedness with teachers and peers and youths' adjustment (Goodenow, 1993; Wentzel, 1998), we hypothesized that the three 6th-grade indicators of early transition relatedness would be associated positively with youths' academic skills, academic self-concept, school bonding, and self-worth, and negatively with loneliness, concurrently, and in the spring of 7th grade. From a person-oriented perspective (Furrer & Skinner, 2003; Luthar et al., 2000), we hypothesized that patterns of early transition relatedness would predict concurrent and longitudinal adjustment above and beyond the unique, additive effects of the continuous indicators of relatedness. Specifically, we expected youth reflecting a Low Relatedness pattern to demonstrate the poorest overall adjustment, and we expected High Relatedness youth to have similar subjective well-being (i.e., self-worth and loneliness), but higher academic adjustment than Peer-Oriented youth.

#### 5. Method

##### 5.1. Participating students and community characteristics

Data collection for the larger study began in the fall of 2001 with students who were enrolled in 3rd, 4th or 5th grade at the participating public elementary school, which served youth from a rural, working class community in the northeastern United States. Data

collection concluded for each grade cohort in May of 7th grade. Of the 443 students who were enrolled in the targeted grades in fall 2001, 427 (96%) provided data on at least two of the first five assessment occasions; the remaining 4% either did not receive parental consent or moved from the District after the first assessment. The 427 youths serve as the core sample for the larger longitudinal research study, from which the present study sample is drawn. Of these 427 students, the present study focused on 383 students (170 girls, 213 boys) who had data on at least two of the three early transition relatedness indicators in the fall of 6th grade. The 44 students who did not meet this criterion did not differ significantly from the 383 participants in terms of gender or on any of the independent or dependent variables used in the study. The larger number of boys in the sample reflected the percentage in the overall school population.

The participating school district had one elementary school, one middle school, and one high school. Almost all students in the district (99%) were White, reflecting the demographics of the larger community. Schoolwide achievement levels were comparable to state-level figures. For example, on the statewide reading and mathematics tests, similar percentages of 4th-grade students were classified as Proficient or better (i.e., Reading: 82% for school vs. 80% for state; Mathematics: 73% for school vs. 70% for state), despite the fact that 40.6% of the students were classified by the state as low-income. Approximately one-third of all school-aged children in the United States attend public schools in rural areas or small towns of fewer than 25,000 people, with poverty rates in such rural areas consistently exceeding those in urban areas (Beeson & Strange, 2003). This community is demographically similar to rural areas throughout the upper Midwest and Northeast U.S. in its mostly White population.

## 5.2. Measures

All alphas and correlations reported for the measures below are for the study sample.

### 5.2.1. Pre-transition prosocial and aggressive behavior (fall of 5th grade)

Following widely recommended practices in the peer relations literature (Cillessen & Bukowski, 2000), students identified classmates whom they liked most and least and identified classmates matching behavioral descriptors. Students were provided with a roster containing the names of children in their class (in 5th grade) or grade (in 6th and 7th grade) and were asked to list as many or as few classmates as they wished in response to each item. Scores on each item could range from zero (no nominations received) to the total number of nominators in the class or grade. Such “unlimited nomination” procedures reduce the skew that is typical of peer nomination items when students are forced to rate peers on a particular behavior on a 1 to 5 Likert scale (Terry, 2000). Means listed in the sentences that follow indicate how many nominations students received, on average, for the particular peer nomination item. Both same-sex and other-sex nominations were tallied. Raw scores were standardized within class and sex to account for varying class size and sex distribution. As used in other studies (e.g., Masten, Morison, & Pellegrini, 1985), two items described youths’ Prosocial Behavior: “Always does nice things for others” ( $M=2.08$ ,  $SD=2.19$ ), and “Helps other kids a lot” ( $M=1.91$ ,  $SD=2.16$ ). The two items were highly correlated ( $r=.83$ ) and were averaged to compose

the peer-rated prosocial behavior composite score in the fall of 5th grade. This composite was nearly normally distributed (skew=.72), and stable from the fall to spring of 5th grade,  $r=.69$ . Similar to previous peer relations research (e.g., [Mayeux & Cillessen, 2008](#)), Peer-nominated Aggression was computed as the standardized average of two standardized and highly correlated items ( $r=.81$ ) in the fall of 5th grade: “Starts fights” ( $M=1.16$ ,  $SD=2.68$ ) and “Picks on other kids a lot” ( $M=.97$ ,  $SD=2.25$ ). The resulting index was moderately positively skewed (skew=1.56) and stable from fall to spring of 5th grade,  $r=.63$ .

#### 5.2.2. Early transition relatedness (fall of 6th grade)

As used in previous research (e.g., [Gest, Domitrovich, et al., 2005](#)), Teacher–Student Closeness was measured with three teacher-rated items: “This student trusts me,” “This student has a secure relationship with me,” and “This student avoids contact with me” (reversed). These three items were selected from the Closeness subscale of the Student–Teacher Relationship Scale (STRS; [Pianta, 1992](#)) to match its conceptual focus on trust, security, and closeness, while excluding items from the original STRS that may be developmentally inappropriate for youth in the middle school grades (e.g., “This child is uncomfortable with affection from me”). Each item was rated on a 5-point Likert scale (1 = *strongly disagree* to 5 = *strongly agree*). The 3-item scale was internally consistent ( $\alpha=.82$ ;  $M=4.29$ ,  $SD=.72$ ). Following standard practice in studies of peer relations ([Asher & Coie, 1990](#)), Peer Social Preference was computed as the difference between the number of times a student was nominated as “liked most” ( $M=4.11$ ,  $SD=3.06$ ) and as “liked least” ( $M=2.20$ ,  $SD=3.24$ ) when standardized within grade. The resulting peer social preference score was standardized within grade (skew=-.46) and was highly stable from fall to spring,  $r=.79$ . In line with previous research (e.g., [Gest, Domitrovich, et al., 2005](#)), Perceived Peer Competence was measured with four items assessing social self-concept, which were drawn from the Self-Perception Profile for Children ([Harter, 1982](#)). Students chose which of two opposing statements was more true for them, then indicated whether that statement was *sort of true* or *really true* for them, yielding a 4-point scale (e.g., “Some kids find it easy to make friends, but other kids have a hard time making friends”). These items formed an internally consistent composite score ( $\alpha=.80$ ;  $M=3.30$ ,  $SD=.73$ ). Scores were standardized within grade.

#### 5.2.3. Middle school adjustment (6th and 7th grades)

Three measures described youths’ academic adjustment in the fall of 6th grade and spring of 7th grade. Consistent with previous research (e.g., [Gest, Welsh, et al., 2005](#)), homeroom teachers rated students’ Academic Skills on four items regarding competence in academic subjects (i.e., math, reading, science, and writing). Items were drawn from the Social Health Profile ([Conduct Problems Prevention Research Group, 1999](#)) and were rated on a 5-point Likert scale (1 = *strongly disagree* to 5 = *strongly agree*). Items formed an internally consistent composite scale ( $\alpha=.85$ ,  $M=3.71$ ,  $SD=.98$  in 6th grade;  $\alpha=.91$ ,  $M=3.30$ ,  $SD=.83$  in 7th grade). Consistent with previous research (e.g., [Gest, Welsh, et al., 2005](#)), youth responded to four statements corresponding to positive Academic Self-Concept that were drawn from the Self-Perception Profile for Children ([Harter, 1982](#)) described previously. Students chose which of two opposing statements was more true for

them, then indicated whether that statement was *sort of true* or *really true* for them, yielding a 4-point scale (e.g., “Some kids feel they are very good at their school work, but other kids worry about whether they can do the school work assigned to them”;  $\alpha = .75$ ,  $M = 3.18$ ,  $SD = .73$  in 6th grade;  $\alpha = .83$ ,  $M = 3.04$ ,  $SD = .77$  in 7th grade). Students described their School Bonding using five items rated on a 5-point Likert scale (1 = *never* to 5 = *always*): “I feel sure about schoolwork,” “Kids in our school have a good chance in the future,” “I like going to school,” “Doing well in school is important to me,” and “I like class activities.” These five items demonstrated the highest factor loading on a previously published 8-item scale (Murray & Greenberg, 2000). The internal consistency for this scale was moderately acceptable ( $\alpha = .63$ ,  $M = 3.95$ ,  $SD = .60$  in 6th grade;  $\alpha = .73$ ,  $M = 3.65$ ,  $SD = .65$  in 7th grade), primarily due to ceiling effects on several items.

Two indicators described youths’ subjective well-being. Loneliness was assessed with three items (i.e. “I feel lonely,” “I feel left out,” and “I feel alone”) rated on a 5-point Likert scale (1 = *never* to 5 = *always*). Parker and Asher (1993) found that this 3-item scale strongly correlates ( $r = .83$ ) with the full 24-item measure of Loneliness and Social Disaffection (Guay, Boivin, & Hodges, 1999). These three items formed an internally consistent scale ( $\alpha = .86$ ,  $M = 1.62$ ,  $SD = .91$  in 6th grade;  $\alpha = .87$ ,  $M = 1.68$ ,  $SD = .89$  in 7th grade). Finally, youth responded to four statements corresponding to their sense of Self-Worth that were drawn from the Self-Perception Profile for Children (Harter, 1982) described previously (e.g., “Some kids aren’t very happy with the way they do a lot of things, but other kids think the way they do things is just fine”;  $\alpha = .78$ ,  $M = 3.30$ ,  $SD = .83$  in 6th grade;  $\alpha = .83$ ,  $M = 3.30$ ,  $SD = .69$  in 7th grade).

### 5.3. Procedures

This project originated as a component of a Safe Schools/Healthy Students grant obtained by the school district. All research procedures, including those for consent, were approved the authors’ University Institutional Review Board. Early in the fall, parents were mailed a letter describing the project with a form to sign and return if they did not wish their child to participate. At each assessment, students whose parents did not return a form exempting them from the project were invited to participate. Written informed assent forms were distributed and read aloud to these students. Students and teachers who chose to participate in the project signed the informed assent form and completed surveys in October and May of each school year. Surveys contained the same measures in October and May. October surveys ensured that students and teachers had 6 to 8 weeks to settle into the school routine and become familiar with each other, which is a standard procedure in research involving peer nominations. Research assistants guided students through the group-administered surveys and were available to answer student questions as needed.

All 5th-grade teachers completed surveys for each student in their classroom. All 6th- and 7th-grade teachers completed surveys for each student in their homeroom class. The homeroom teacher served as the main contact person for students and parents at both middle school grade levels. In 6th grade, students stayed with the same teacher for most subjects and transitioned from one teacher to another only occasionally, whereas the 7th grade was more of a traditional junior-high model, in which students changed classes each

period and experienced multiple teachers across the day. Still, in 7th grade, students spent a 45-minute class period with their homeroom teacher. Further, correlations between teacher-ratings and peer nominations for the same attribute were very similar at all three grade levels, indicating that teachers provided similar ratings of students' behaviors, regardless of how much class time they actually spent with students. For example, correlations between teacher and peer ratings of children's academic skills were .59, .59, and .58, in the fall of 5th, 6th, and 7th grade, respectively.

#### 5.4. Data analysis

##### 5.4.1. Preliminary analyses: patterns of early transition relatedness

We used latent profile analysis in Mplus (Muthén & Muthén, 1998–2008) to identify youth with similar response patterns for Teacher–Student Closeness, Peer Social Preference, and Perceived Peer Competence in the fall of 6th grade. Latent profile analysis, a type of mixture modeling, assumes that the data are generated by a heterogeneous mixture of underlying probability distributions for  $K$  subsamples (or clusters), such that each cluster distribution is characterized by its own unique set of parameters. We chose a normal mixture modeling approach because, unlike other person-oriented approaches, (a) it is a model-based procedure to determine the optimal profile structure in the data using maximum likelihood or Bayesian procedures (Whiteman & Loken, 2006), and (b) it provides indices of statistical fit (e.g., Akaike Information Criterion, AIC, and Bayesian Information Criteria, BIC), which aid the researcher in determining the optimal number of profiles in the data.

We relied on full-information maximum likelihood estimation (FIML), as implemented in Mplus, so that data from all cases were included in the identification of the membership probabilities. Before analyzing the data, the relatedness indicators were standardized in order to interpret the resulting profiles on the same metric. Because indicators roughly approximate a normal distribution, estimating more profiles than the number of indicators (in our case, a four- or five-profile solution) was not appropriate (Loken & Molenaar, 2008). In line with previous empirical work (Amato et al., 2008; Ventura, Loken, & Birch, 2006), we chose the best profile solution based on the following criteria: (a) the lowest AIC and sample-adjusted BIC fit criteria; (b) an adequate sample size (i.e., where profiles contained more than 10% of the total sample); (c) the solution made intuitive sense; and (d) the solution was determined to be sufficiently stable. To create profiles for the remaining analyses, we used membership probabilities to assign each individual to one profile, thus allowing follow-up analyses, including multiple imputation of missing data, to be computed within a regression framework in SPSS and NORM. We chose this strategy because the average latent profile probabilities for profile membership were acceptable.

##### 5.4.2. Missing data

After classifying the teacher–peer relatedness groups, we conducted multiple imputation with NORM software to handle missing data for all variables among the target sample in 5th, 6th, and 7th grades (Schafer, 1997; Graham, Cumsille, & Elek-Fisk, 2003; Graham, 2009) for our follow-up analyses, which we conducted in SPSS. This

process involves imputing  $m$  data sets, such that each data set contains a different imputed value for every missing value, analyzing the  $m$  data sets and saving the parameter estimates and standard errors from each, and combining the parameter estimates and standard errors to arrive at a single set of parameter estimates and corresponding standard errors (see Graham et al., 2003 for a detailed description of NORM). Missing data ranged from 0 to 14% for the variables included in analyses (see Table 1). We included the independent and dependent variables in the missing data model, as well as gender and 15 relevant variables from the spring of 5th and 6th grade and the fall of 7th grade (i.e., teacher-rated Academic Skills, Academic Self-Concept, Loneliness and Self-Worth, and School Bonding) to improve estimates of the missing cases (Graham et al., 2003). We imputed 40 datasets and retained these for the primary regression analyses (Graham et al., 2003).

#### *5.4.3. Follow-up analyses: prediction of early transition relatedness from pre-transition behavior and prediction of school adjustment from early transition relatedness*

To address our second research aim, we conducted a multinomial logistic regression using SPSS NOMREG to assess prediction of membership in one of the early transition relatedness profiles in the fall of 6th grade on the basis of youths' pre-transition behavior in the fall of 5th grade. The resulting parameter estimates and standard errors from the 40 imputed datasets were stacked and analyzed in NORM. To address our final research aim, we tested a series of hierarchical linear regression models in NORM to examine the unique and additive contribution of (a) the continuous indicators of early transition relatedness with teachers and peers and (b) the early transition relatedness profiles on youths' adjustment in the fall of 6th grade and the spring of 7th grade.

## **6. Results**

### *6.1. Inter-correlations among behavioral characteristics, relatedness, and adjustment*

Sample inter-correlations, means, and standard deviations for the indicators of early transition relatedness in the fall of 6th grade, youths' pre-transition behavior in the fall of 5th grade, and school adjustment in the fall of 6th grade and spring of 7th grade were computed as maximum-likelihood estimates from expectation maximization (EM) estimation. Correlations among the indicators of early transition relatedness (i.e., Teacher–Student Closeness, Peer Social Preference, and Perceived Peer Competence) were weak and ranged from .09 to .29 (see Table 1). Correlations for Aggressive Behavior and indicators of early transition relatedness were in a negative direction and ranged from  $-.00$  to  $-.32$ . Correlations for Prosocial Behavior and the indicators of early transition relatedness were in a positive direction and ranged from .23 to .42. Correlations between the indicators of early transition relatedness and four of the school adjustment outcomes (i.e., Academic Skills, Academic Self-Concept, School Bonding, and Self-Worth) were in a positive direction and ranged from .06 to .58. Correlations between the indicators of early transition relatedness and Loneliness were in a negative direction and ranged from  $-.04$  to  $-.46$ .

Table 1  
 Inter-correlations for pre-transition behavior, indicators of early transition relatedness, and school adjustment ( $N=383$ ).

Measure	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	<i>M</i>	<i>SD</i>	
1. Prosocial behavior	1																.05	.99
2. Aggressive behavior	-.25 ***	1															.02	.98
3. Tch-Std closeness	.23 ***	-.17 **	1														4.12	.83
4. Peer social preference	.42 ***	-.32 ***	.29 ***	1													.01	.97
5. Perceived peer competence	.23 ***	-.00	.09	.28 ***	1												3.28	.74
6. Academic skills	.42 ***	-.20 ***	.27 ***	.21 ***	.19 **	1											3.71	.98
7. Academic self-concept	.26 ***	-.11	.20 ***	.16 **	.54 ***	.43 ***	1										3.18	.73
8. School bonding	.08	-.14 *	.22 ***	.10	.17 **	.13 *	.24 ***	1									3.95	.60
9. Loneliness	-.11	.08	-.06	-.16 **	-.46 ***	-.10	-.38 ***	-.31 ***	1								1.62	.91
10. Self-worth	.17 **	-.15 **	.14 *	.16 **	.58 ***	.26 ***	.70 ***	.29 ***	-.40 ***	1							3.38	.66
11. Academic skills	.43 ***	-.25 ***	.27 ***	.29 ***	.04	.58 ***	.35 ***	.12	-.05	.22 ***	1						3.30	.83
12. Academic self-concept	.24 ***	-.13 *	.23 ***	.08	.32 ***	.37 ***	.60 ***	.19 **	-.22 ***	.42 ***	.43 ***	1					3.04	.77
13. School bonding	.05	-.13 *	.19 **	.06	.13 *	.11	.23 ***	.42 ***	-.14 ***	.17 **	.18 **	.40 ***	1				3.65	.65
14. Loneliness	-.15 **	.16 **	-.04	-.26 ***	-.32 ***	-.09	-.27 ***	-.15 **	.38 ***	-.29 ***	-.07	-.37 ***	-.22 ***	1			1.68	.89
15. Self-worth	.16 **	-.16 **	.16 **	.17 **	.43 ***	.27 ***	.51 ***	.25 ***	-.29 ***	.54 ***	.25 ***	.63 ***	.36 ***	-.50 ***	1		3.30	.69
% Missing data	4	4	<1	0	4	2	4	<1	1	4	14	11	11	11	11			

Note. Correlations among variables were computed as maximum-likelihood estimates from EM estimation. Tch-Std closeness=teacher–student closeness.

\*  $p < .05$ .

\*\*  $p < .01$ .

\*\*\*  $p < .001$ .

### 6.2. Early transition teacher–peer relatedness

We identified three patterns of early transition teacher–peer relatedness using latent profile analysis in Mplus (Muthén & Muthén, 1998–2008). For each of the early transition relatedness indicators, relatively low scores were 1/3 of a standard deviation or more below the mean; average scores were within 1/3 of standard deviation from the mean; and relatively high scores were 1/3 of a standard deviation or more above the total mean. As evident in Table 2 and Fig. 1, Profile 1 ( $n=168$ ) was characterized by low Teacher–Student Closeness, low Peer Social Preference, and low Perceived Peer Competence (Low Relatedness). Profile 2 ( $n=93$ ) was characterized by average Teacher–Student Closeness and high Peer Social Preference and Perceived Peer Competence (Peer-Oriented). Profile 3 ( $n=122$ ) was characterized by high Teacher–Student closeness, high Peer Social Preference, and high Perceived Peer Competence (High Relatedness; see Fig. 1). Average probabilities for membership in the most likely latent profile were high for the Low Relatedness (.95), Peer-Oriented (.82), and High Relatedness profiles (.89). Boys and girls were equally distributed among the three early transition relatedness profiles. The Low Relatedness profile consisted of 76 girls and 92 boys, the Peer-Oriented profile consisted of 41 girls and 52 boys, and the High Relatedness profile consisted of 53 girls and 69 boys. All subsequent analyses were conducted in SPSS.

### 6.3. Associations between 5th grade behavior and 6th grade patterns of relatedness

Next, we conducted a multinomial logistic regression analysis using SPSS NOMREG to assess prediction of membership in one of the three early transition relatedness profiles based on youths' pre-transition behavior in the fall of 5th grade. Results indicated that the odds of being in the Peer-Oriented profile as compared to the Low Relatedness profile in the fall of 6th grade increased with increasing Prosocial Behavior in 5th grade, odds ratio (OR)=1.63, 95% confidence interval (CI)=1.22, 2.17,  $p<.001$ . Similarly, the odds of being in the High Relatedness profile as compared to the Low Relatedness profile increased with increasing Prosocial Behavior, OR=1.70, CI=1.33,

Table 2  
Standardized means (standard deviations) for indicators of teacher–peer relatedness profiles ( $N=383$ ).

Relatedness indicator	Early transition relatedness profiles (fall of 6th grade)			$F(2, 382)$
	Low relatedness ( $N=168$ )	Peer-oriented ( $N=93$ )	High relatedness ( $N=122$ )	
Teacher–student closeness	-.53 (.97) <sup>a</sup>	-.18 (.64) <sup>b</sup>	1.01 (.11) <sup>c</sup>	166.45 ***
Peer social preference	-.44 (1.05) <sup>a</sup>	.51 (.65) <sup>b</sup>	.36 (.75) <sup>b</sup>	45.44 ***
Perceived peer competence	-.65 (1.01) <sup>a</sup>	.80 (.26) <sup>b</sup>	.33 (.64) <sup>c</sup>	126.20 ***

Note. <sup>a,b,c</sup>Means in each row that share superscripts do not differ significantly.

\*\*\*  $p<.001$ .

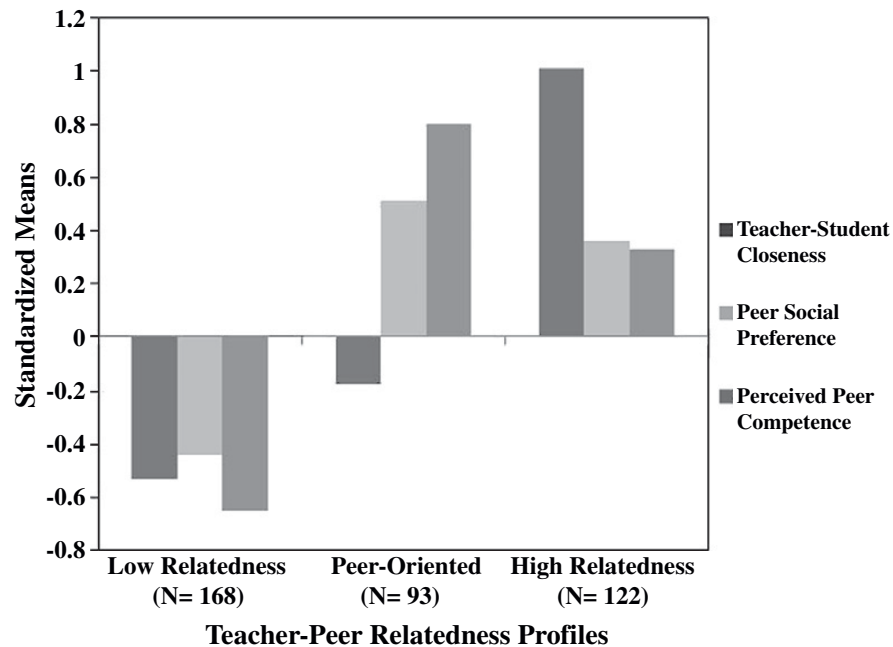


Fig. 1. Means for early transition relatedness indicators by patterns of teacher–peer relatedness. Standardized means for early transition relatedness indicators (teacher–student closeness, peer social preference, and perceived peer competence) by teacher–peer relatedness profiles (Low Relatedness, Peer-Oriented, and High Relatedness) identified using latent profile analysis in Mplus.

2.27,  $p < .001$ . With a one unit increase in Prosocial Behavior in the fall of 5th grade, the odds of being in the Peer-Oriented profile in the fall of 6th grade were 1.63 times greater relative to the Low Relatedness profile, and the odds of being in the High Relatedness profile were 1.70 times greater relative to the Low Relatedness profile. The odds of being in the High Relatedness profile as compared to the Low Relatedness profile in 6th grade decreased with increasing Aggression in 5th grade,  $OR = -.71$ ,  $CI = -.96, -.55$ ,  $p = .016$ . With a one unit increase in Aggression in the fall of 5th grade, the odds of being in the High Relatedness profile in the fall of 6th grade were .71 times less relative to the Low Relatedness profile. Means and standard deviations for pre-transition behavior by early transition relatedness profile are summarized in Table 3.

#### 6.4. Associations of early transition relatedness with concurrent and 7th grade adjustment

We tested a series of hierarchical linear regression models to examine the effect of early transition relatedness indicators and patterns on each of the school adjustment outcomes in the fall of 6th grade (concurrently) and the spring of 7th grade. For each 6th grade model, the unique indicators of early transition relatedness were entered at the first step, and the dummy variables for the patterns of early transition relatedness were entered at the final step (Table 4). In this manner, we could determine whether significant variance was explained initially by the unique indicators of early transition relatedness, and then subsequently by patterns of early transition relatedness. It was not possible to test the effects of the three profiles simultaneously because doing so would create

Table 3

Means (standard deviations) for pre-transition behavior (fall of 5th grade) by early transition relatedness profiles (fall of 6th grade) ( $N=383$ ).

Pre-transition behavior (fall of 5th grade)	Early transition relatedness profiles (fall of 6th grade)			Profile differences	
	Low relatedness ( $N=168$ )	Peer-oriented ( $N=93$ )	High relatedness ( $N=122$ )	LR vs. PO: $t(383)$	LR vs. HR: $t(383)$
Prosocial behavior	-.21 (.83) <sup>a</sup>	.23 (1.08) <sup>b</sup>	.32 (.95) <sup>b</sup>	3.39 ***	3.93 ***
Aggressive behavior	.21 (1.11) <sup>a</sup>	-.04 (.95) <sup>ab</sup>	-.17 (.70) <sup>b</sup>	-1.05	-2.42 *

Note. LR=low relatedness. PO=peer-oriented. HR=high relatedness.

<sup>a,b</sup>Means in each row that share superscripts do not differ significantly.

\*  $p=.016$ .

\*\*\*  $p<.001$ .

multicollinearity (i.e., status on any combination of two profiles determines status on the third profile). We also were interested in using both the High Relatedness and Peer-Oriented profiles as reference groups (i.e., testing how each of these groups differed from each other and from the Low Relatedness profile). Consequently, Model 1 for each adjustment outcome includes the Low Relatedness and Peer-Oriented dummy variables, and Model 2 includes the Low Relatedness and High Relatedness dummy variables. The 7th grade models were the same as the 6th-grade models except that individuals' 6th-grade scores on the adjustment outcome under consideration were entered at the first step in order to provide a stringent test of the degree to which early transition relatedness in 6th grade predicted changes in academic adjustment and subjective well-being between 6th grade and 7th grade (final model presented in Table 5).

#### 6.4.1. Academic adjustment and subjective well-being in 6th grade

First, we tested the effects of the early transition relatedness indicators and patterns on youths' concurrent academic adjustment: Academic Skills, Academic Self-Concept, and School Bonding. Teacher–student closeness was associated positively with concurrent Academic Skills in the fall of 6th grade,  $t(383)=3.81$ ,  $b=.26$  (.07),  $p<.001$ . In addition, membership in the Low Relatedness profile was marginally associated with lower Academic Skills compared to membership in the High Relatedness profile,  $t(383)=-1.93$ ,  $b=-.33$  (.17),  $p=.053$  and significantly associated with lower Skills compared to membership in the Peer-Oriented profile,  $t(383)=-2.18$ ,  $b=-.35$  (.16),  $p=.030$ . Teacher–Student Closeness was associated positively, but marginally, with concurrent Academic Self-Concept,  $t(383)=1.74$ ,  $b=.08$  (.04),  $p=.082$ , and Perceived Peer Competence was associated positively with Academic Self-Concept in the fall of 6th grade,  $t(383)=6.75$ ,  $b=.30$  (.04),  $p<.001$ . In addition, membership in the Low Relatedness profile was marginally associated with lower Academic Self-Concept compared to membership in the High Relatedness profile,  $t(383)=-1.93$ ,  $b=-.22$  (.11),  $p=.053$ , and significantly associated with lower Academic Self-Concept compared to youth in the Peer-Oriented profile,  $t(383)=-3.00$ ,  $b=-.32$  (.11),  $p=.003$ . Finally, Teacher–Student Closeness was associated positively, but marginally, with School Bonding in the fall of 6th grade,  $t(383)=1.89$ ,  $b=.09$  (.05),  $p=.059$ . Membership in the Low Relatedness profile was marginally associated with lower School Bonding compared to youth in the High Relatedness profile,  $t(383)=-1.67$ ,  $b=-.19$  (.12),



Table 5  
Associations between early transition relatedness in the fall of 6th grade and adjustment in the spring of 7th grade (N=383).

	School adjustment: spring 7th grade									
	Academic skills		Academic self-concept		School bonding		Loneliness		Self-worth	
	Model 1 $\beta$	Model 2 $\beta$	Model 1 $\beta$	Model 2 $\beta$	Model 1 $\beta$	Model 2 $\beta$	Model 1 $\beta$	Model 2 $\beta$	Model 1 $\beta$	Model 2 $\beta$
1. Constant	3.23 *** (.09)	3.30 *** (.09)	3.02 *** (.09)	3.12 *** (.08)	3.61 *** (.08)	3.67 *** (.08)	1.71 *** (.11)	1.72 *** (.11)	3.35 *** (.08)	3.37 *** (.07)
Characteristic in fall of 6th	.47 *** (.04)	.47 *** (.04)	.42 *** (.05)	.42 *** (.05)	.25 *** (.04)	.25 *** (.04)	.23 *** (.06)	.23 *** (.06)	.25 *** (.04)	.25 *** (.04)
Teacher–student closeness	.06 (.05)	.06 (.06)	.11 * (.05)	.11 * (.05)	.08 (.05)	.08 (.05)	.03 (.07)	.03 (.07)	.05 (.05)	.05 (.05)
Peer social preference	.16 *** (.04)	.16 *** (.04)	-.05 (.04)	-.05 (.04)	-.03 (.04)	-.03 (.04)	-.13 * (.05)	-.13 * (.05)	.00 (.04)	.00 (.04)
Perceived peer competence	-.06 (.05)	-.06 (.05)	.02 (.06)	.02 (.06)	.02 (.05)	.02 (.05)	-.19 * (.07)	-.19 * (.07)	.12 * (.05)	.12 * (.05)
2. Profile dummy variables										
Low relatedness	.09 (.14)	.02 (.13)	-.05 (.13)	-.14 (.25)	-.00 (.13)	-.06 (.12)	-.10 (.17)	-.12 (.16)	-.10 (.12)	-.13 (.11)
Peer-oriented	.07 (.12)		.09 (.11)		.06 (.11)		.02 (.15)		.03 (.10)	
High relatedness		-.07 (.12)		-.09 (.11)		-.06 (.11)		-.02 (.15)		-.03 (.10)

Note. Teacher–peer relatedness profiles were dummy-coded and entered in each model after the inclusion of the individual indicators of relatedness: teacher–student closeness, peer social preference, and perceived peer competence. For each outcome, the profile reference group in Model 1 is “High Relatedness,” and the profile reference group in Model 2 is “Peer-Oriented.” Parameter estimates for each effect represent unstandardized beta-weights from the final model of hierarchical linear regression analyses of the imputed data sets. Standard errors are in parentheses.

\*  $p < .05$ .

\*\*\*  $p < .001$ .

$p=.10$ , and compared to youth in the Peer-Oriented profile,  $t(383)=-1.91$ ,  $b=-.21$  (.11),  $p=.059$ .

Next, we tested the effects of the early transition relatedness indicators and patterns on youths' concurrent subjective well-being: Self-Worth and Loneliness. Perceived peer competence was associated negatively with concurrent Loneliness,  $t(383)=-6.55$ ,  $b=.38$  (.06),  $p<.001$ , and positively with Self-Worth,  $t(383)=7.70$ ,  $b=.30$  (.04),  $p<.001$ , in the fall of 6th grade. In addition, membership in the Low Relatedness profile was associated negatively with Self-Worth compared to membership in either the High Relatedness profile,  $t(383)=-2.05$ ,  $b=-.21$  (.10),  $p=.041$ , or the Peer-Oriented profile,  $t(383)=-2.30$ ,  $b=-.22$  (.10),  $p=.021$ .

#### 6.4.2. Academic adjustment and subjective well-being in 7th grade

We then tested the effects of the early transition relatedness indicators and patterns on youths' academic adjustment in the spring of 7th grade. Teacher–Student Closeness no longer predicted Academic Skills in the spring of 7th grade, but Peer Social Preference in the fall of 6th grade predicted 7th grade Skills,  $t(383)=3.66$ ,  $b=.16$  (.04),  $p<.001$ , over and above the effect of Academic Skills in the fall of 6th grade,  $t(383)=10.78$ ,  $b=.47$  (.04),  $p<.001$ . Teacher–Student Closeness in the fall of 6th grade predicted Academic Self-Concept in the spring of 7th grade,  $t(383)=1.98$ ,  $b=.11$  (.05),  $p=.048$ , over and above the effect of Academic Self-Concept in the fall of 6th grade,  $t(383)=8.58$ ,  $b=.42$  (.05),  $p<.001$ . No relatedness indicators predicted School Bonding in the spring of 7th grade over and above the effect of School Bonding in the fall of 6th grade,  $t(383)=6.73$ ,  $b=.25$  (.04),  $p<.001$ .

Finally, we tested the effects of early transition relatedness on youths' subjective well-being in the spring of 7th grade. Perceived peer competence predicted Loneliness in the spring of 7th grade,  $t(383)=-2.57$ ,  $b=-.19$  (.07),  $p=.011$ , over and above the effect of Loneliness in 6th grade,  $t(383)=4.00$ ,  $b=.23$  (.06),  $p<.001$ . Peer Social Preference also predicted Loneliness in 7th grade,  $t(383)=-2.45$ ,  $b=-.13$  (.05),  $p=.014$ . Perceived Peer Competence predicted Self-Worth in the spring of 7th grade,  $t(383)=2.44$ ,  $b=.12$  (.05),  $p=.015$ , over and above the effect of self-worth in the fall of 6th grade,  $t(383)=5.68$ ,  $b=.25$  (.04),  $p<.001$ . The 6th-grade teacher–peer relatedness profiles did not predict academic adjustment or subjective well-being in 7th grade. Collectively, results indicated that unique indicators of early transition relatedness were associated with school adjustment across middle school and that patterns of early transition relatedness were associated with concurrent adjustment over and above the independent effects.

## 7. Discussion

Youth exhibited three distinct patterns of early transition teacher–peer relatedness immediately after the transition to middle school that could be characterized as High Relatedness, Peer-Oriented and Low Relatedness. As expected, pre-transition prosocial behavior positively predicted membership in the High Relatedness and Peer-Oriented profiles, whereas pre-transition aggressive behavior predicted membership in the Low Relatedness profile. In line with previous variable-oriented studies (e.g., Goodenow, 1993; Wentzel, 1998), each indicator of early transition relatedness was uniquely

associated with at least one indicator of concurrent or future school adjustment. Consistent with previous person-oriented research, even after taking these linear associations into account, being in the Low Relatedness profile was additively associated with a range of adjustment problems in 6th grade, including lower Academic Skills, Academic Self-Concept, School Bonding, and Self-Worth (Furrer & Skinner, 2003; Luthar et al., 2000). Collectively, findings support the view (a) that interpersonal relatedness in middle school has antecedents in elementary school patterns of social behavior, is associated with multiple domains of adjustment and “fit” in the middle school environment (Eccles et al., 1993) and (b) that variable- and person-oriented analytic strategies can make unique contributions to clarifying these patterns. Further, these findings have important implications for practice in school settings.

### *7.1. Patterns of early transition teacher–peer relatedness*

On average, youth in the High Relatedness profile scored about one-third of a standard deviation above the mean on Social Preference and indicated that making friends easily and being well-liked was “sort of” to “really true” for them. This positive relational pattern may have resulted from the shared behavioral antecedents of teacher and peer relationships. For example, 5th grade Prosocial Behavior was associated with membership in the High Relatedness profile, consistent with a broad literature linking positive teacher and peer relationships with helping and cooperative behavior (Chen et al., 2000; Coie et al., 1990; Ladd et al., 1999, 2002). When youth demonstrate prosocial behavior, such as offering to help the teacher with technology issues, voluntarily pushing in chairs, recommending a book a classmate might enjoy, or demonstrating compassion to a peer with hurt feelings, they are likely to invite positive responses from their teachers and peers, which in turn promote close, supportive relationships with these social partners. There may also be positive interdependencies linking teacher and peer relationships. Peers may use information about youths’ positive relationships with teachers to inform their favorable opinions about them (Hughes et al., 2001; Hughes & Kwok, 2006). Overall, these youth experienced a positive relational context that promoted feelings of support and connectedness in the school environment, including feelings of competence regarding their social skills (Crosnoe & Needham, 2004; Furrer & Skinner, 2003).

In contrast, youth in the Low Relatedness profile scored approximately one-half a standard deviation below the sample average on all three measures of relatedness, placing them close to the midpoint of the scales measuring Teacher–Student Closeness and Perceived Peer Competence. In line with previous research (Birch & Ladd, 1997; Gest, Welsh, et al., 2005; Stormshak et al., 1999), 5th grade Aggression was associated with membership in this profile in contrast to the High Relatedness profile. When youth are mean or pick fights with other peers, they disrupt the classroom climate. This behavior may evoke negative reactions from teachers and peers and contribute to a negative pattern of relational experiences that carries over to middle school. Positive interdependencies linking teacher and peer relationships may affect the pattern of relational experiences for these youth: Peers may use available information about Low

Relatedness youths' poor relationships with teachers to inform their own negative opinion about these youth (Hughes & Kwok, 2006).

Youth in the Peer-Oriented profile represented an interesting, mixed pattern of teacher–peer relatedness. As expected, Peer-Oriented youth scored well above the mean for Peer Social Preference and Perceived Peer Competence, but in contrast to our expectations, they scored only slightly below the mean for Teacher–Student Closeness, indicating that teachers tended to agree (although not strongly) that they had a close relationship with the students. These youth were sociable 6th graders, well-liked by peers and confident about their social skills, yet they did not necessarily turn away from teachers for support and guidance (Eccles, 1999; Petersen, 1988). Fifth-grade Prosocial Behavior predicted membership in the Peer-Oriented profile in contrast to the Low Relatedness profile, supporting previous findings regarding associations between positive teacher and peer experiences and kind and helpful behavior (Chen et al., 2000; Ladd et al., 1999, 2002).

Interestingly, we did not observe a Teacher-Oriented profile, such that some youth demonstrated low Perceived Peer Competence and Peer Social Preference, but high Teacher–Student Closeness. The lack of such a profile is not terribly surprising given the limited theoretical and empirical attention toward youth who exhibit such a pattern of relatedness. Still, Furrer and Skinner (2003) found that youth with low parent and peer relatedness were more emotionally engaged when they had high, rather than low teacher relatedness. Future studies using a latent profile analysis approach and more than three indicators of relatedness may identify a small subgroup of youth who fit a Teacher-Oriented Profile.

## *7.2. Concurrent and longitudinal correlates of relatedness*

### *7.2.1. Concurrent academic correlates of relatedness*

Concurrent associations between Teacher–Student Closeness and academic adjustment were consistent with previous research (Baker, 2006; Eccles et al., 1993; Goodenow, 1993; Ladd, 1996) and suggested that relationships with teachers continued to have a significant impact on youth adjustment (Crosnoe et al., 2004; Furrer & Skinner, 2003; Zimmer-Gembeck et al., 2006). The association between Perceived Peer Competence and Academic Self-Concept supports previous research (Gest, Domitrovich, et al., 2005) and may reflect an association between two important developmental tasks (i.e., academic achievement and success with peers) of early adolescence (Masten & Coatsworth, 1998). Alternatively, the association between these variables may have been due to shared method variance because the variables were drawn from the same self-perception profile. However, because they were only moderately correlated, they likely reflected distinct domains of youths' self-competence.

Above and beyond the independent indicators of relatedness, patterns of teacher–peer relatedness were related to concurrent academic adjustment, as well: Youth in the High Relatedness and Peer-Oriented profiles had higher Academic Skills, Academic Self-Concept, and School Bonding compared to youth in the Low Relatedness profile. Contrary to expectations, Peer-Oriented youth did not have worse academic adjustment than High Relatedness youth. This finding was likely due to the fact that, although Peer-

Oriented youth had high Social Preference and Perceived Peer Competence, they did not have poor relationships with teachers. Instead, these youth had moderately close relationships with teachers, relationships that were significantly closer compared to their Low Relatedness peers. In contrast to the unsupportive relational context experienced by Low Relatedness youth, Peer-Oriented youths' positive experiences with peers and their relatively close relationships with teachers likely facilitated a supportive relational context that promoted positive academic adjustment (Goodenow, 1993; Furrer & Skinner, 2003).

### 7.2.2. *Concurrent social correlates of relatedness*

Consistent with theoretical models of self-worth development (Harter, 1987, 1993), Perceived Peer Competence in the fall of 6th grade was associated concurrently with youths' overall feelings of contentment with the way they were leading their life. High Relatedness and Peer-Oriented youth had higher Self-Worth compared to Low Relatedness youth, as well. Collectively, configural effects suggested that the combination of low relatedness experiences exacerbated a less-than-stellar relational context for some youth. Specifically, having a pattern of poor relational experiences with teachers and peers was worse than the straight additive effects of the unique indicator of relatedness. Findings were consistent with a "vulnerability and reactive" model, in which risk factors enhance the negative effects of other risk factors that are present (Luthar et al., 2000), and they suggested that a lack of positive experiences with the primary social partners in school indicated youth at risk for maladjustment.

Interestingly, youth in the Peer-Oriented and High Relatedness Profiles appeared to be doing pretty well (and similarly well) academically and socially in the fall of 6th grade, especially compared to the Low Relatedness Profile. Although these two profiles were not vastly different on the adjustment outcomes, they did differ on the measure of peer-nominated Aggression in 5th grade. It is possible that these youth differed in aggression in middle school, as well, although we did not explore this in the present study. Peer-Oriented youth may be more likely to engage in risky behavior (e.g., risky sexual and drinking behavior) in high school, when more youth begin to engage in such behaviors as they turn more from adults to peers. Therefore, it may be quite valuable to distinguish these two groups and to follow them beyond the middle school years.

### 7.2.3. *Longitudinal academic correlates of relatedness*

Close, supportive relationships with teachers had a lasting influence on youths' perceptions of their academic skills (Eccles, Wong, & Peck, 2006) because experiencing a supportive relationship with a person who is in a position to grade one's work may constitute a particularly meaningful source of evaluative feedback that fosters academic confidence (Harter, 1998). Although academic self-concept can, in turn, foster improved academic performance, such self-concept effects are typically not strong (Gest, Rulison, Davidson, & Welsh, 2008; Marsh & Craven, 2006). Interestingly, Social Preference was not associated with concurrent Academic Skills in 6th grade, but it had an effect on Academic Skills after a time lag in measurement occasions. Being liked by peers provides youth with an accepting climate to practice and engage in effective peer interaction strategies. Among this sample, such a climate may have provided youth with

more opportunities to engage in collaborative classroom learning experiences, which may have enhanced their academic skills across middle school.

#### *7.2.4. Longitudinal social correlates of relatedness*

The longitudinal predictive power of Peer Social Preference in our study indicated that this measure of liking contributed to youths' social adjustment (i.e., feelings of loneliness) over time (Kingery & Erdley, 2007; Parker & Asher, 1993) as well as to their academic adjustment (Ladd et al., 2002; Furrer & Skinner, 2003; Wentzel & Caldwell, 1997). Young adolescents spend substantial waking hours with peers, and being liked and accepted by those peers contributes to an overall positive school experience (Goodenow, 1993). When youth are disliked and unaccepted by their peers, they are not given ample opportunities to learn and practice effective interpersonal skills. Repeatedly using ineffective peer interaction strategies likely contributes to feelings of loneliness and ostracism over time. Longitudinal associations between indicators of peer relatedness in 6th grade and social adjustment in 7th grade were in line with our expectations and suggested the importance of peer experiences in facilitating youths' feelings of overall self-worth (Harter, 1985; Fenzel, 2000) and connectedness (Kingery & Erdley, 2007) during middle school.

#### *7.2.5. Integrating variable- and person-oriented approaches to study relatedness*

In sum, integrating a variable-oriented and a person-oriented analytic approach revealed interesting findings that would not have been captured had we solely used one approach. Patterns of teacher–peer relatedness were associated with all concurrent academic and social outcomes except for one, even when controlling for the additive effects of the relatedness indicators. These findings support the notion that relevant characteristics of relatedness must be considered simultaneously as they interact in different ways for different youth (Bergman & Magnusson, 1997; Bergman & Trost, 2006; Von Eye & Bergman, 2003). However, whereas a person-oriented approach is useful in its ability to describe different experiences for different profiles of youth, used exclusively, it does not reveal associations between variables that still apply to all youth. In the present study, the sole use of this approach would not have revealed some of the interesting concurrent and longitudinal associations between unique indicators of relatedness and adjustment. Only the unique indicators of early transition relatedness predicted adjustment in 7th grade. Specific teacher and peer experiences may be more strongly linked to particular adjustment outcomes (e.g., loneliness) than any particular pattern of interpersonal relatedness. Another possibility is that relatedness is not a static trait and that configurations of relatedness change over time. For example, we measured relatedness with one 6th grade teacher in the fall, but by 7th grade, students had developed relationships with at least 7 new teachers, and students may have experienced very different patterns of relatedness over this 17-month period. This explanation may apply to youths' relationships with classmates across the middle school years, as well. The likelihood that relatedness is dynamic supports the fact that we found more concurrent than longitudinal associations between relatedness and adjustment, and it points to the desirability of capturing broader experiences of relatedness at school over time.

### 7.3. Limitations and future directions

Several features of the present study limit its generalizability. Due to the homogeneity of the rural school district in which the study was conducted, the sample included almost exclusively White, lower- to middle-class youth. Studying the effects of teacher–peer relatedness in more ethnically and economically diverse and urban school settings is an important next step. For youth with limited opportunities to develop close and meaningful relationships with teachers in some large, urban schools, experiences with peers may be particularly important for their adjustment in school. On the other hand, when youth are marginalized because of their race or socio-economic status (SES), a close relationship with a teacher may be especially important or protective, even when youth have negative peer experiences (Crosnoe et al., 2004).

We were limited by our lack of several variables in our study. We did not have extensive demographic information on the teachers who completed the surveys for each student, and, therefore, were not able to examine the potentially important roles of teachers' gender or years of teaching experience. The fact that we were not able to include youths' SES as a covariate in our analyses is another limitation of our study. Given the importance of SES to multiple aspects of youth adjustment (McLoyd, 1998), future studies would benefit from including this variable in analyses of links between relatedness and school adjustment. Also, the items comprising our measure of school bonding were only moderately reliable. Given the relatively weak prediction of this measure by the indicators and patterns of relatedness in the fall of 6th grade, it is possible that this variable was not adequately tapping students' perceptions of bonding to school. In addition, the measures of school bonding, perceived peer competence and self-worth, and teacher–student closeness, tended to have a restricted range of scores (with most of the scores stacked on the positive end of the scale). This range restriction may have reduced the identification of statistically significant associations in our study.

Another limitation of our study was our classification of individuals into three mutually exclusive teacher–peer relatedness categories based on the results of our latent profile analysis, in order to conduct our subsequent analyses in NORM and SPSS. Given that latent profile analysis is a probabilistic clustering approach, which allows for individuals to be assigned probabilities of group membership rather than assigned to mutually exclusive groups, future studies on patterns of teacher–peer relatedness could conduct all analyses in Mplus to use membership probabilities as opposed to mutually exclusive categories.

Future studies on patterns of relatedness during early adolescence could include more specific measures of experiences with reciprocated friends (Hartup, 1996), as well as with other authority figures with whom youth are in relationships in the school setting (Eccles, 1999; Zimmer-Gembeck et al., 2006) and measures of youths' relatedness with parents (Furrer & Skinner, 2003). Given the prominence of teachers and peers in the school context and the important developmental task of establishing positive relationships with these social partners (Gest, Welsh, et al., 2005; Kuperminc et al., 2004), studying youths' teacher–peer relatedness and its association with behavioral characteristics and adjustment highlights key antecedents and consequences of relational experiences during early adolescence.

This study is unique in that it integrates variable-oriented and person-oriented analyses to examine experiences with both teachers and peers across the transition into middle school. The use of a person-oriented approach allowed for the identification of unique patterns of teacher–peer relatedness that were associated with earlier behavioral characteristics and concurrent adjustment above and beyond the independent indicators of relatedness. A better understanding of how experiences with teachers and peers are connected in different ways for different youth will allow educators to better serve this early adolescent population.

#### *7.4. Implications for educational practitioners*

The middle school transition provides normative developmental challenges for many youth as they adapt to a larger and more diffuse peer environment and fewer opportunities to form close attachments to teachers (Eccles et al., 1993). This transition has been associated with declines in students' reports of school liking, academic motivation, and connectedness to teachers (Eccles & Midgley, 1989; Simmons & Blyth, 1987). These challenges may be particularly difficult for youth who are already experiencing problems with relatedness to teachers and peers or for those from high-risk backgrounds (Knapp et al., 1995). It is noteworthy that in our sample, a substantial portion of youth (>40%) was identified as being Low Relatedness in the fall of 6th grade. It is possible that the large percentage of Low Relatedness youth is unique to this sample of rural, lower- to middle-class youth. Indeed, previous research has shown that despite perceptions of rural life as idyllic, rural youth experience rates of adversity that are comparable to those experienced by their urban counterparts, particularly in economically stressed communities. For example, rates of poverty are higher and access to mental health services is lower for rural than urban youth (Carlson, 2006). Further, the fact that teachers perceived a lack of connectedness with these youth underscores that middle schools can create relatedness problems for teachers as well, in that they have more students to teach and less time to develop positive relationships with each. We argue that it is critically important to identify low relatedness youth and promote the quality of their relationships with teachers and peers, particularly around the time of the middle school transition. The complex data analytic techniques used to identify low relatedness youth in our study would probably be impractical for most educational practitioners; however, teachers, counselors, and administrators could administer an easy-to-score middle school survey early in the academic year, on which students complete a few questions about their relatedness with multiple partners in the school environment. Teachers could complete a similar survey about their relational experiences with each student. Students identified as fitting a low relatedness profile on these surveys could be targeted for intervention in the fall of the first year of middle school (Doll & Cummings, 2008).

Interventions designed to minimize negative outcomes associated with the middle school transition have focused on building social–emotional competencies and strengthening relationships with parents and teachers (Elias, Zins, Graczyk, & Weissberg, 2003; Lochman, Wells, & Murray, 2007). Several promising relationship-focused intervention approaches have been developed and evaluated. These interventions

have been successful at improving academic performance (Murray & Malmgren, 2005) and increasing attendance and engagement in high-risk middle school youth (Anderson, Christenson, Sinclair, & Lehr, 2004; Sinclair, Christenson, Evelo, & Hurley, 1998), through the cultivation of strong and consistent youth–adult bonds. The adults in these studies included both teachers and specially hired “mentors” as implementers; presumably, other school personnel, such as guidance counselors, administrators, and social workers could assume these roles. The studies cited above involved youth in urban schools, and it is unclear what kinds of adaptations to relatedness interventions might be most effective for rural youth; however, it seems likely that these interventions could have positive impacts on the school engagement, academic performance, and school attendance of youth in rural schools. For example, prominent figures in the local, rural community, including adults and respected high school students, could serve as mentors for youth identified as high-risk. Such an intervention may facilitate youths’ feelings of relatedness in the school environment, as well as in the larger community.

### Acknowledgements

We are grateful to the youth and teachers who participated in this project, and to the Tyrone area school district. We thank Kelly Rulison and John Graham for their assistance in conducting this investigation. Funding was provided by a Safe Schools/Healthy Students Grant.

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