Interpersonal Competence Configurations in Rural Appalachian Fifth Graders: Academic Achievement and Associated Adjustment Factors

Thomas W. Farmer
Pennsylvania State University

Matthew J. Irvin
Adrienne N. Sgammato
Kimberly Dadisman
Jana H. Thompson
University of North Carolina at Chapel Hill

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Abstract

This study examined interpersonal competence configurations in a sample of 315 fifth-grade students (170 girls and 145 boys) from 8 elementary schools in the Appalachian region. Teachers completed the Interpersonal Competence Scale–Teacher (ICS-T) for each student. The ICS-T consists of 18 7-point Likert scales to assess academic achievement, aggression, internalizing behavior, popularity, social skills, and athletic ability/attractiveness. Teachers also completed scales pertaining to social adaptation. Students completed peer behavioral assessments, sociometric surveys, and social network surveys. Nearly 40% of students were in high-competence configurations characterized by high teacher ratings on academic, behavioral, and social adjustment. These configurations were associated with high end-of-year grades and standardized achievement test scores and with positive peer relationships. In contrast, 16% of girls and 27% of boys were in high-risk configurations characterized by high teacher ratings of academic, behavioral, and social difficulties. These configurations were associated with low end-of-year grades and standardized test scores and with social and behavioral difficulties that are predictive of later adjustment problems. We also identified moderate-risk configurations that tended to fall between high-competence and high-risk configurations in terms of their relation to academic achievement and peer relations. Implications for interventions are discussed.

In the current climate of No Child Left Behind, the improvement of student achievement has become a focal point in U.S. public schools (Hill & Harmon, 2005). Recent studies have suggested that students in rural school districts tend to perform as well as or better than their suburban and urban counterparts on standardized achievement tests (Beck & Shoffstall, 2005; Goetz, 2005).

Yet, considerable variability in the performance of rural schools appears to be related to economic, geographic, and student characteristics (Farmer, Leung, et al., 2006). For both Small Rural Schools and Rural Low-Income Schools, difficulties in making adequate yearly progress are linked to the achievement of students living in poverty. However, even within impoverished rural school districts, there appears to be considerable variability in student achievement. Longitudinal research with African American populations in poor rural districts in the deep South has demonstrated that many students have clear patterns of academic success while others show declining or sustained low academic achievement (Estell et al., 2007). Further, school grades tend to be linked to specific configurations of academic, behavioral, and social competence (Farmer, Leung, et al., 2006). As rural school districts work to improve achievement, there is a need to clarify whether distinct configurations are associated with academic success and failure in other rural regions that have high concentrations of poor youth.

Efforts to enhance academic performance in rural districts have involved a variety of strategies, including school reform, identifying and emulating the practices of high-performing schools, implementing more effective curricula and instructional practices, and increasing professional development opportunities and supportive resources for teachers (Crane, Rabinowitz, & Zimmerman, 2004; Hill & Harmon, 2005; Reagle, 2006; Rural School and Community Trust, 2004). Such approaches tend to focus on school characteristics and the student body in general. However, in some cases it may be productive to have a more intensive focus on the students who are at highest risk of experiencing achievement problems. On this score, many schools that do not make adequate yearly progress (AYP) do so because of the performance of small groups of struggling students rather than the performance of the school as a whole (Farmer, Leung, et al., 2006). Consequently, there is a need to identify factors that distinguish high- and low-achieving students in rural schools. By ascertaining configurations of competence and risk that are related to academic success and failure, it is possible to explore developmental processes that may contribute to school adjustment. Such information may help rural schools tailor interventions to support students who are most likely to experience achievement difficulties.

The present study built on a developmental science framework to explore academic success and difficulties in rural Appalachian fifth graders. From this perspective, development involves the contributions of multiple factors both within the individual (i.e., biophysical, cognitive, emotional, psychological) and in the social and ecological context (i.e., community, family, peer group, school) in which he or she functions (Magnusson & Cairns, 1996). Collectively, these factors operate as a transactional system with continuous bidirectional feedback among the various developmental domains (Mahoney & Bergman, 2002; Sameroff, 2000). In this regard, developmental factors tend to form a system of "correlated constraints" that promote continuity in functioning within and access key developmental periods (e.g., childhood, adolescence, and early adulthood) (Cairns, Mahoney, Xie, & Cadwallader, 1998; Farmer, Farmer, Estell, & Hutchins, 2007). However, because correlated developmental factors have a bidirectional influence on each other, change in one factor may promote change in other factors and prompt the reorganization of the entire developmental system (Cairns, 2000; Farmer & Farmer, 2001). In turn, such reorganization may result in the realignment of developmental trajectories (Cairns & Cairns, 1994; Estell et al., 2007; Roeser & Peck, 2003; Zettergren, Bergman, & Wangby, 2006).

The concepts of "correlated constraints"

and systems reorganization have important implications for the development of school-based interventions. Efforts to develop interventions are typically guided by single-factor causation models. From a causation perspective, the goal of intervention research is to identify the cause of the problem and to establish strategies to prevent or ameliorate it. The developmental science perspective is somewhat different. Rather than focusing on finding a single or primary cause, the developmental science perspective focuses on the coalesced contributions of multiple factors that work together to promote and sustain functioning in a particular domain (Cairns & Cairns, 1994; Farmer, Irvin, Thompson, Hutchins, & Leung, 2006). This means that it is necessary to identify key factors that contribute to functioning in the domain of interest and to design interventions that are strategically coordinated to promote change across a system of factors (see Farmer & Farmer, 2001; Farmer et al., 2007; Mahoney & Bergman, 2002).

As indicated above, the developmental science perspective suggests that factors both within the child and within the developmental context contribute to functioning. In the case of academic achievement in rural areas, sociological and ecological factors such as poverty, community resources, social stratification, and parental factors (e.g., educational background, expectations) are likely to contribute to children's outcomes (Duncan, 2001; Dyk & Wilson, 1999; Ley, Nelson, & Beltyukova, 1996; Lichter, Cornwell, & Eggebeen, 1993; Roscigno & Crowley, 2001). Although such factors are important, they are best addressed by policy and community efforts and are typically beyond the purview of school-based interventions (Save the Children, 2002). Further, from a developmental science perspective, multiple correlated factors foster adaptation and allow multiple points of entry for intervention (Cairns et al., 1998; Farmer, Quinn, Hussy, & Holahan, 2001). Thus, it is not necessary to intervene with all the developmental factors. Instead, effective intervention requires identifying factors that are most open to change, central to the organization of the developmental system, and accessible to intervention (Farmer et al., 2007).

Therefore, in the current study, we focused on factors that teachers and related services personnel were able to strategically address in the daily activities of school. In particular, we were interested in the relation between academic achievement and students' competence and functioning in the academic, behavioral, and social domains. Consistent with a developmental science perspective, longitudinal research has shown that problems in a single domain (i.e., academic, behavioral, social) are associated with only modest or moderate risk for later difficulties (Bergman & Magnusson, 1997; Cairns & Cairns, 1994; Farmer et al., 2004). Instead, configurations of teacher ratings of multiple problems across the academic, behavioral, and social domains have been linked to classroom disengagement, low grades, school failure, school dropout, substance use, teen parenthood, and criminal involvement (Cairns, Cairns, & Neckerman, 1989; Estell et al., 2007; Gest, Mahoney, & Cairns, 1999; Roeser, Strobel, & Quihuis, 2002). Likewise, the combination of behavioral and social difficulties in late childhood predicts achievement problems and subsequent adjustment difficulties in adolescence (Farmer, Irvin, et al., 2006; Gest, Sesma, Masten, & Tellegen, 2006; Schwartz, Gorman, Nakamoto, & McKay, 2006; Wentzel, Barry, & Caldwell, 2004).

Collectively, such work suggests that social and behavioral problems foster academic difficulties. In turn, configurations of academic, behavioral, and social difficulties contribute to more serious adjustment problems in the high school and early-adulthood years. From this perspective, it follows that many students who have academic difficulties may also have behavioral and social problems that are linked to their

achievement problems. If this is the case, it would indicate a need for multidomain interventions that go beyond academic instruction. To explore this issue, the goal of this investigation was to examine configurations of competence and risk in relation to academic achievement, interpersonal behavior, and social relationships in a sample of rural Appalachian fifth graders.

Accordingly, this study was guided by five related research aims. The first was to determine whether configurations of competence and risk were associated with academic achievement in rural Appalachian fifth graders. The second aim was to examine the relation between interpersonal competence configurations and teacher ratings of students' social adaptation. The third aim was to examine the relation between interpersonal competence configurations and peer nominations of school adjustment variables. The fourth aim was to examine the relationship between interpersonal competence configurations and sociometric status. The fifth aim was to examine the relation between interpersonal competence configurations and students' peer affiliations.

Method

Participants

Participants were recruited from all fifth-grade classrooms of eight public elementary schools in a rural Appalachian region of two states. The sample comprised 315 students (170 girls and 145 boys). Over 95% of the sample was white. This sample reflected the public school attendance of the region and the general population in the participating schools.

Procedures

The data in the current analysis were collected in the spring when teachers had had ample time to become familiar with the characteristics of participants. Teachers completed ratings on participants and were paid for completing the forms. Grades and standardized achievement test scores were collected from school records at the end of the school year.

Measures

Interpersonal Competence Scale–Teacher (ICS-T). Teachers completed the ICS-T for each participant in their class. The ICS-T is an 18-item questionnaire consisting of seven-point Likert scales (Cairns, Leung, Gest, & Cairns, 1995). The ICS-T yields composite scores on the following subscales: aggression (α = .84; composed of "always argues," "gets in trouble," and "always fights"), popularity (α = .83; composed of "popular with boys," "popular with girls," and "lots of friends"), academic competence (α = .80; composed of "good at math" and "good at spelling"), affiliative (α = .74; composed of "always smiles" and "always friendly"), internalizing (α = .52; composed of "always sad," "always worry," and "very shy"), and Olympian (α = .78; composed of "good at sports," "good-looking," and "wins a lot"). Three-week test-retest reliability coefficients are moderately high (i.e., .80–.92) (Cairns, Leung, Gest, et al., 1995) and are reasonably comparable to other measures involving teacher ratings (e.g., .92 for 15-day test-retest with the Teacher Rating Form: Achenbach, 1991). One-year coefficients range from .40 to .50 and are comparable to 12-month test-retest coefficients for sociometric status and peer behavioral assessments (i.e., Coie & Dodge, 1983). These lower scores are also generally consistent with the 4-month test-retest mean score (.66) of the Teacher Report Form (Achenbach, 1991). It should be noted that test-retests were conducted across grade levels such that both the teacher respondents and the classroom contexts were different across the two assessments (Cairns, Leung, Gest, et al., 1995). Therefore, these annual retest coefficients reflect developmental, respondent, and context variability.

The ICS-T has convergent validity with direct observation, student records (i.e., grades, discipline reports), and peer-nomination measures (Cairns & Cairns, 1994; Cairns, Leung, Buchanan, & Cairns, 1995; Farmer, Irvin, et al., 2006). Composite factors were identified that followed the original factor extraction (see Cairns, Leung, Gest, et al., 1995). We obtained the subscale scores by computing the unweighted averages of the items that made up each factor. The items are positively coded so that a higher score reflects increased levels of the measured construct. For example, a high score on the popularity factor indicates a high level of popularity, whereas a low score on the aggressive factor indicates a low level of aggression.

End-of-year grade average. We obtained end-of-year grades from school records, and these were in the form of a percentage. Participating students' grades at the end of fifth grade for the following subjects were available: math, English/reading, social studies/history, and science. The overall mean across these four subjects was computed for the measure of participants' end-of-year grade average.

Standardized achievement test scores. State-administered standardized achievement test scores for students in fifth grade were obtained from school records. Participating students' scores on the following subjects were available: math, science, social studies, and English. The overall mean across these four subjects was computed for the measure of participants' standardized achievement. The scaled scores were on different metrics by state. Consequently, the average standardized achievement score was standardized within state.

Teacher ratings of social adaptation. This teacher measure focused on specific aspects of social adaptation. Using a seven-point Likert scale similar to the ICS-T, this measure included eight items: "attention problems," "class leadership," "bullied by peers," "manipulates friendships," "involved in extracurricular activities," "liked by peers," "hyperactive," and "bullies peers." A higher score on a social adaptation item indicates a higher level on the designated attribute.

Peer nominations. We used peer nominations to determine classmates' perceptions of peers' social and behavioral characteristics. Students were asked to nominate, from free recall, three classmates who best fit descriptors for 18 items. These items were identical or similar to peer nominations other investigators had used (e.g., Cantrell & Prinz, 1985; Coie & Dodge, 1983; Masten, Morison, & Pellegrini, 1985). Participants were told that they could nominate themselves and that they could nominate the same person for more than one item.

The total number of nominations participants received on each peer-assessment item was divided by the total number of possible nominators (i.e., all participants in the school). Because the denominator was the total number of participants in each school, the resulting proportions were small. To make mean differences clearer, these proportions were linearly transformed by multiplying them by 1,000. We used the following peer-nomination factors in the current investigation: aggression ($\alpha = .85$; consists of "disruptive," "starts fights," "gets in trouble," "starts rumors," and "bully"), prosocial skills ($\alpha = .84$; consists of "cooperative," "good student," and "friendly"), social prominence ($\alpha = .84$; consists of "leader," "athletic," "cool," and "popular"), and internalizing ($\alpha = .57$; consists of "acts shy," "seeks help," "sad," and "picked on").

Sociometric status. Participants were asked to nominate the three classmates they liked the most and the three they liked the least, and we calculated social preference and social impact scores following the criteria Coie and Dodge (1983) described. Specifically, each participant's social preference score was defined by her/his standardized number of nominations received for being most liked minus the student's standardized number of nominations re-

ceived for being least liked. Further, we calculated a social impact score by adding a student's standardized number of nominations received for being most liked and his/her standardized number of nominations received for being least liked.

Students with a standardized social preference score greater than 1.0, a standardized most liked score greater than 0, and a standardized least liked score less than 0 were classified as "popular." Those with a standardized social preference score less than 1.0, a most liked score less than 0, and a standardized least liked score greater than 0 were classified as "rejected." Sociometrically "neglected" participants had standardized social impact scores less than −1.0. Sociometrically "controversial" participants had standardized social impact scores greater than 1.0 and standardized most and least liked scores greater than 0. We classified all other participants as "average."

Social cognitive maps (SCM). For the social cognitive maps measure subjects were asked, "Are there some kids in your classroom who hang around together a lot? Who are they?" Following the procedures Cairns and colleagues (e.g., Cairns et al., 1985) developed, we then instructed students to list from free recall as many groups as they could think of in their classroom. SCM procedures have been used extensively in research on school social networks (e.g., Cairns, Cairns, Neckerman, Gest, & Gariepy, 1988; Cairns, Leung, Buchanan, et al., 1995; Kindermann, 1993; Leung, 1996; Xie, Cairns, & Cairns, 1999). Three-week test-retest reliability coefficients indicate high short-term stability of children's peer groups (i.e., 90% of groups maintain a majority of their members over this period) (Cairns, Leung, Buchanan, et al., 1995). Validity has been established through data demonstrating that students interact more frequently with members of their own group (Gest, Farmer, Cairns, & Xie, 2003), high consistency among students in their reports of group membership (up to 96% in some classrooms) (Cairns, Leung, Buchanan, et al., 1995; Cairns, Perrin, & Cairns, 1985), and relatively high behavioral homogeneity among members of the same peer groups (Cairns & Cairns, 1994; Leung, 1996).

We analyzed the SCM data following the procedures Cairns, Gariepy, Kindermann, and Leung (1996) outlined. Information on peer groups provided by respondents was aggregated to obtain a composite social cognitive map. First, we generated a co-occurrence matrix, a square matrix in which each person occupied a row (and the corresponding column). Co-occurrence was the number of times that a respondent nominated two people, A and B, to the same group. Therefore, the co-occurrence matrix recorded the frequency that each pair of persons was named together in the same group. The main diagonal contained the number of occasions each person was named to any group. The co-occurrence matrix was symmetric (i.e., the area below the main diagonal was a mirror image of the area above the main diagonal). We compared individual co-occurrence profiles to identify peer groups. If two people belonged to the same group, their co-occurrence profiles were expected to be similar because both of them would have a high number of co-occurrences with other members of the same group. This similarity was assessed by the Pearson correlation. We then generated a correlation matrix, with the same dimensions as the co-occurrence matrix, by correlating the rows of the co-occurrence matrix in pairs. People who belonged to the same group would have high correlations between one another. Thus, we identified groups by these correlations plus other information from the co-occurrence matrix. People who did not belong to a group were classified as "isolates."

Data-Reduction Procedures

Behavioral configurations. Consistent with the holistic perspective that forms the foundation of developmental science, it is

TABLE 1. Girls' Behavioral Configurations

ICS-T Factor	Behavioral Configuration			
	Troubled	Aggressive	Sensitive	Model
Aggression	.43 (1.14)	.98 (1.19)	−.05 (.78)	−.56 (.48)
Academic competence	−1.54 (.63)	−.21 (.87)	.18 (.69)	.59 (.63)
Affiliative	−1.00 (.94)	.21 (.91)	−.54 (.72)	.72 (.57)
Popularity	−1.29 (.63)	−.19 (.66)	−.36 (.65)	.88 (.60)
Olympian	−1.47 (.76)	−.18 (.76)	−.18 (.44)	.82 (.61)
Internalizing	1.11 (.75)	−1.05 (.62)	.55 (.62)	−.42 (.74)
Maximum *n* (%)	27 (15.9)	28 (16.5)	49 (28.8)	66 (38.8)

NOTE.—Means are unadjusted *z*-scores; standard deviations are in parentheses.

necessary to use analytic procedures that retain information about patterns of key developmental factors in relation to individual functioning. Leading researchers and methodologists in developmental science have argued for the use of person-oriented procedures (i.e., cluster analysis, pattern analysis) as a way to identify and study the adaptation of individuals who are characterized by homogeneous configurations or patterns on key developmental indices (see Bergman & Trost, 2006; Cairns & Rodkin, 1998; Roeser & Peck, 2003).

For the purpose of this study and following 2 decades of research using these procedures (e.g., Cairns et al., 1988, 1989; Estell et al., 2007; Farmer, Estell, Bishop, O'Neal, & Cairns, 2003; Farmer, Rodkin, Pearl, & Van Acker, 1999; Rodkin, Farmer, Pearl, & Van Acker, 2000), we derived behavioral configurations to determine subtypes of students from the teacher ratings on the ICS-T factors. First, we used the RESIDUE module in SLEIPNER version 2.1 (Bergman, Magnusson, & El-Khouri, 2003) to identify multivariate outliers. This is necessary to ensure homogeneous clusters (see Bergman [1988] for technical and theoretical justifications). This procedure did not identify any residual cases (i.e., multivariate outliers) for girls. Nine (6.2%) boys were multivariate outliers. Consequently, these boys were excluded from the subsequent configural analyses. Behavioral configurations were then initially derived using Ward's (1963) clustering algorithm based on the six ICS-T factors (aggressive, popular, academic, affiliative, Olympian, and internalizing). We standardized these scores by gender and determined configurations separately for boys and girls.

With this method, we measured the similarity between students' profiles by squared Euclidean differences to determine homogeneous subgroups of students. The number of configurations to retain was decided by examining a scree plot of distance coefficients as a function of the number of configurations at each agglomerative step and practical considerations such as cell size, theoretical interpretability, and utility (see Aldenderfer & Blashfield, 1984; Bergman et al., 2003; Milligan, 1981; Milligan & Cooper, 1985). We then used the cluster centers obtained from the initial hierarchical analysis as start or "seed" values in a *k*-means relocation cluster analysis to form more homogeneous subgroups (Aldenderfer & Blashfield, 1984; Bergman et al., 2003). Analyses indicated that a four-cluster solution was optimum for girls and five clusters were optimum for boys. The inclusion of more clusters increased explanatory power only minimally. The clusters are shown in Tables 1 and 2. The clusters that emerged in girls were:

1. Troubled girls: above-average scores on aggression and internalizing; below-average scores on academic competence, affiliative, popularity, and Olympian

TABLE 2. Boys' Behavioral Configurations

ICS-T Factor	Behavioral Configuration				
	Troubled	Low Academic	Tough	High Academic	Model
Aggression	.77 (.84)	−.41 (.72)	1.00 (.64)	−.56 (.69)	−.81 (.46)
Academic competence	−.75 (.78)	−.85 (.64)	.18 (.67)	.91 (.34)	.87 (.57)
Affiliative	−1.09 (.61)	.53 (.53)	.71 (.52)	−.37 (.81)	.83 (.60)
Popularity	−.88 (.74)	−.38 (.68)	.68 (.75)	−.08 (.55)	1.19 (.46)
Olympian	−.61 (.76)	−.69 (.84)	.88 (.56)	−.22 (.49)	1.12 (.53)
Internalizing	.82 (.75)	−.06 (1.03)	−.57 (.58)	.02 (.91)	−.67 (.82)
Maximum *n* (%)	37 (27.2)	27 (19.9)	19 (14.0)	26 (19.1)	27 (19.9)

NOTE.—Means are unadjusted *z*-scores; standard deviations are in parentheses.

2. Aggressive girls: well above-average scores on aggression; average scores on academic competence, affiliative, popularity, and Olympian; below average on internalizing
3. Sensitive girls: above-average scores on internalizing; below-average scores on affiliative; average scores on aggression, academic competence, popularity, and Olympian
4. Model girls: above-average scores on academic competence, affiliative, popularity, and Olympian; below-average scores on aggression and internalizing.

The clusters that emerged in boys were:

1. Troubled boys: above-average scores on aggression and internalizing; below-average scores on academic competence, affiliative, popularity, and Olympian
2. Low academic boys: below-average scores on academic competence and Olympian; above-average scores on affiliative; average scores on aggression, popularity, and internalizing
3. Tough boys: well above-average scores on aggression; above-average scores on affiliative; popularity, and Olympian; below-average scores on internalizing; average on academic competence
4. High academic boys: above-average scores on academic competence; below-average scores on aggression; average scores on affiliative, popularity, Olympian, and internalizing
5. Model boys: above-average scores on academic competence, affiliative, popularity, and Olympian; below-average scores on aggression and internalizing.

Peer-group types. Once students' peer affiliations were identified in the SCM analyses, we characterized each peer group in terms of aggression and popularity. We have developed procedures for classifying peer groups on a single dimension from teacher ratings (i.e., ICS-T) (e.g., Farmer et al., 2003). These procedures determine peer-group types as a function of the proportion of members in the group who are high on the construct of interest, such as aggression or popularity.

First, scores are standardized within gender and, if scores are teacher ratings, they are standardized within gender and rater. Participants are then classified as aggressive if their gender *z*-score is greater than or equal to +.50. If the scores are teacher ratings, then their gender/classroom *z*-score must also be greater than or equal to +.0. This second step is undertaken because particular raters might have tendencies toward one end of the scale. Simply standardizing within rater may mask genuine differences across raters, and this scheme retains between-rater differences while taking into consideration within-rater biases.

Next, each of the peer groups identified via the SCM procedure can be classified according to, for example, the aggression of its constituent members. Within a behavior, four group types can be identified. For ex-

TABLE 3. Achievement, by Girls' Behavioral Configuration

Achievement Measure	Behavioral Configuration				Partial η^2
	Troubled	Aggressive	Sensitive	Model	
End-of-year grade average[a]	81.45_a (5.42)	$85.58_{a,b}$ (7.51)	88.64_b (4.34)	92.11 (5.51)	.31
Standardized test average[b]	$-.75_a$ (.74)	$-.56_{a,b}$ (.99)	$-.10_b$ (.73)	.54 (.92)	.27

NOTE.—Means are raw scores unless otherwise noted. Means in the same row that share subscripts are not significantly different at $p < .05$ in Tukey honestly significant difference comparison. Numbers in parentheses are standard deviations.

[a]Games-Howell test used for post hoc comparisons due to heterogeneity of variance.

[b]Means are *z*-scores.

ample, zero-aggressive groups have no aggressive members. Nonaggressive groups have one or two aggressive members, and more than half are nonaggressive. Mixed-aggressive groups have at least two aggressive and two nonaggressive members. Aggressive groups have no more than one or two nonaggressive members, and more than half of the members are aggressive. We repeated this process to classify peer groups according to the popularity of their constituent members as zero-popular, nonpopular, mixed-popular, and popular groups.

Similar to previous studies that have used this scheme (e.g., Farmer et al., 2003), we incorporated isolates and collapsed the four group types into the two categories: few (associates with few peers with the characteristic of interest) and many (member of a group with many peers with the characteristic of interest). For example, youth who were isolated or were in a zero- or nonaggressive groups were characterized as having few aggressive affiliates. Youth who were in a mixed- or high-aggressive peer group were characterized as being in a group with and having many aggressive affiliates. We repeated this process with popularity to characterize students' peer affiliates along this dimension as having few popular affiliates and many popular affiliates.

Results

Configurations and Achievement

The first aim of this study was to determine whether configurations of competence and risk were associated with academic achievement in rural Appalachian youth. There were significant differences by behavioral configurations on girls' end-of-year grade average, $F(3, 155) = 23.68$, $p < .001$, and standardized test score average, $F(3, 160) = 19.57$, $p < .001$. Post hoc tests showed that model girls had higher scores on both achievement measures than girls in every other behavioral configuration (Table 3). In addition, troubled and aggressive girls had the lowest and comparable end-of-year grade and standardized test score average. Girls in the sensitive configuration had standardized test score averages similar to troubled and aggressive girls but were higher than troubled girls on end-of-year grade average.

There were also significant differences by behavior configurations on boys' end-of-year grade average, $F(4, 126) = 26.65$, $p < .001$, and standardized test score average, $F(4, 124) = 18.34$, $p < .001$ (see Table 4). Model and high-academic boys generally had higher achievement across both measures than boys in all other configurations, but model and tough boys had a similar standardized test score average. Troubled and low-academic boys were significantly lower than model and high-academic boys on both achievement measures. Tough boys' scores and ratings on the achievement measures were usually between those of lower- (i.e., troubled and low academic) and higher- (i.e., model and high academic) achieving youth. However, at times they were similar. Specifically, tough boys were

TABLE 4. Achievement, by Boys' Behavioral Configuration

Achievement Measure	Behavioral Configuration					Partial η^2
	Troubled	Low Academic	Tough	High Academic	Model	
End-of-year grade average[a]	78.51_a (7.58)	$82.25_{a,b}$ (8.38)	85.36_b (5.53)	93.42_c (3.83)	91.58_c (6.07)	.46
Standardized test average[b]	$-.43_a$ (.72)	$-.63_a$ (.87)	$.01_{a,b}$ (.83)	$.87_c$ (.65)	$.63_{b,c}$ (.92)	.37

NOTE.—Means are raw scores unless otherwise noted. Means in the same row that share subscripts are not significantly different at $p < .05$ in Tukey honestly significant difference comparison. Numbers in parentheses are standard deviations.

[a]Games-Howell test used for post hoc comparisons due to heterogeneity of variance.

[b]Means are *z*-scores.

higher than troubled youth on end-of-year grades but not on standardized test score average. Tough boys were also higher than low-academic boys on standardized test performance, but they were lower than high-academic boys on grades and comparable to model boys on standardized test scores.

Configurations and Teacher Ratings of Social Adaptation

The second aim of this study was to examine the relation between interpersonal competence configurations and teacher ratings of social adaptation. Girls' configurations differed on all teacher ratings of social adaptation: attention problems, $F(3, 166) = 21.76$, $p < .05$; class leadership, $F(3, 166) = 31.60$, $p < .05$; bullied by peers, $F(3, 166) = 13.82$, $p < .05$; manipulates friends, $F(3, 166) = 3.63$, $p < .05$; involvement in extracurricular activities, $F(3, 166) = 31.60$, $p < .05$; liked by peers, $F(3, 166) = 49.35$, $p < .05$; hyperactivity, $F(3, 166) = 4.47$, $p < .05$; and bullies peers, $F(3, 166) = 10.96$, $p < .05$ (see Table 5). Post hoc tests indicated that model girls had fewer problems with attention and hyperactivity, were more likely to be rated as class leaders, were bullied by and bullied peers less, manipulated peers less, participated in more extracurricular activities, and were more liked by peers than the girls in most of the other configurations. Troubled and aggressive girls were similar on some aspects of social adaptation in that both groups had more problems with hyperactivity, were not well liked by peers, tended to be bullies themselves, and manipulated friends. These two groups differed in that aggressive girls were higher on class leadership and participation in extracurricular activities than troubled girls.

TABLE 5. Teacher Ratings of Social Adaptation, by Girls' Behavioral Configuration

Teacher Rating	Behavioral Configuration				Partial η^2
	Troubled	Aggressive	Sensitive	Model	
Attention problems[a]	4.59 (1.50)	3.32 (1.78)	2.26_a (1.27)	1.91_a (1.66)	.28
Class leadership	2.00 (1.44)	3.53_a (1.69)	3.22_a (1.75)	5.38 (1.72)	.36
Bullied by peers	3.00 (1.57)	1.64_{ab} (.95)	2.22_b (1.29)	1.45_a (.79)	.20
Manipulates friendships	$3.15_{a,b}$ (1.91)	3.93_a (2.09)	$3.06_{a,b}$ (1.82)	2.54_b (1.82)	.06
In extracurricular activities	2.29 (1.10)	4.43_a (1.62)	3.71_a (1.54)	5.53 (1.66)	.36
Liked by peers[a]	4.18_a (1.30)	$5.00_{a,b}$ (1.30)	5.57_b (1.00)	6.66 (.51)	.47
Hyperactive[a]	$1.85_{a,b}$ (1.54)	2.57_a (1.89)	$1.88_{a,b}$ (1.65)	1.39_b (.93)	.07
Bullies peers[a]	2.89_a (1.67)	2.57_a (2.08)	1.94_a (1.52)	1.27 (.64)	.16

NOTE.—Means are raw scores. Standard deviations are in parentheses. Means in the same row that share subscripts are not significantly different at $p < .05$ in Tukey honestly significant difference comparison.

[a]Games-Howell test used for post hoc comparisons due to heterogeneity of variance.

TABLE 6. Teacher Ratings of Social Adaptation, by Boys' Behavioral Configuration

Teacher Rating	Behavioral Configuration					Partial η^2
	Troubled	Low Academic	Tough	High Academic	Model	
Attention problems	$5.40_{a,b}$ (1.53)	$4.85_{a,c}$ (2.01)	$4.26_{b,c}$ (1.79)	1.54_{d} (1.24)	2.18_{d} (1.79)	.47
Class leadership	2.32_{a} (1.29)	2.85_{a} (1.72)	4.84_{b} (1.77)	4.77 (1.56)	6.00_{b} (1.33)	.48
Bullied by peers[a]	3.19_{a} (1.64)	$2.85_{a,b}$ (1.70)	$2.21_{a,b}$ (1.32)	$2.15_{a,b}$ (1.59)	1.78_{b} (1.28)	.11
Manipulates friendships	3.57_{a} (1.64)	2.52_{a} (1.83)	3.89_{a} (1.79)	2.77_{a} (1.79)	2.44_{a} (1.94)	.09
In extracurricular activities	3.08_{a} (1.64)	3.48_{a} (1.63)	$5.10_{b,c}$ (1.69)	$4.08_{a,b,c}$ (1.67)	5.81_{b} (1.21)	.31
Liked by peers[a]	4.03 (1.25)	5.33_{a} (1.00)	$6.37_{b,c}$ (1.01)	$5.85_{a,c}$ (1.12)	6.78_{b} (.42)	.59
Hyperactive[a]	3.35_{a} (1.75)	$2.44_{a,b}$ (1.87)	3.68_{a} (2.05)	1.58_{b} (1.21)	$2.33_{a,b}$ (2.00)	.15
Bullies peers[a]	3.92_{a} (1.96)	2.15_{b} (1.61)	4.00_{a} (2.08)	2.27_{b} (1.76)	1.70_{b} (1.26)	.24

NOTE.—Means are raw scores. Standard deviations are in parentheses. Means in the same row that share subscripts are not significantly different at $p < .05$ in Tukey honestly significant difference comparison.

[a]Games-Howell test used for post hoc comparisons due to heterogeneity of variance.

In addition, troubled girls were bullied more than aggressive girls.

Boys' configurations were also significantly different on all teacher ratings of social adaptation: attention problems, $F(4, 131) = 29.38$, $p < .05$; class leadership, $F(4, 131) = 30.09$, $p < .05$; bullied by peers, $F(4, 131) = 4.19$, $p < .05$; manipulates friends, $F(4, 131) = 3.34$, $p < .05$; involvement in extracurricular activities, $F(4, 131) = 14.76$, $p < .05$; liked by peers, $F(4, 131) = 33.96$, $p < .05$; hyperactivity, $F(4, 131) = 5.66$, $p < .05$; and bullies peers, $F(4, 131) = 10.15$, $p < .05$ (see Table 6). Post hoc tests revealed that model and high-academic boys had fewer problems with attention, hyperactivity, and bullying peers than tough and troubled boys. In addition, model boys were less apt to be bullied by and bully their peers, and they participated in more extracurricular activities than boys in all other configurations. The high-academic boys were the least hyperactive, had the fewest problems paying attention, tended to be viewed as class leaders, and were liked by their peers. Troubled boys had the most problems paying attention, were least likely to be viewed as class leaders, were most frequently bullied by their peers, tended to manipulate friends, were hyperactive, and bullied peers. Although the tough and troubled boys had several attributes in common, they differed in that tough boys were significantly more often class leaders, participated in more extracurricular activities, and were liked more by their peers. It is interesting to note that the low-academic and troubled boys were similar across some of these teacher ratings in that both groups exhibited many problems with attentiveness, were less likely to be class leaders, were most bullied by peers, and participated in fewer extracurricular activities.

Configurations and Peer Nominations

The third aim of this study was to examine the relation between interpersonal competence configurations and peer nominations of school adjustment variables. Girls' behavioral configurations differed on peer nominations of aggression, $F(3, 166) = 9.61$, $p < .05$; prosocial skills, $F(3, 166) = 18.28$, $p < .05$; social prominence, $F(3, 166) = 18.36$, $p < .05$; and internalizing, $F(3, 166) = 7.16$, $p < .05$ (see Table 7). Post hoc tests revealed that peers perceived model girls as having more prosocial skills and social prominence than girls in all other configurations, lower aggression than aggressive girls, and lower internalizing behavior than troubled and sensitive girls. Troubled and aggressive girls were similar on but had significantly lower prosocial skills and social prominence than model

TABLE 7. Peer Nomination Factors, by Girls' Behavioral Configurations

Peer Nomination	Behavioral Configuration				Partial η^2
	Troubled	Aggressive	Sensitive	Model	
Aggression[a]	29.34_a (49.46)	96.31 (107.35)	30.71_a (40.62)	34.40_a (39.97)	.15
Prosocial skills[a]	60.75_a (46.58)	70.64_a (54.13)	89.29_a (63.16)	187.14 (136.23)	.25
Social prominence[a]	34.62_a (36.71)	55.29_a (45.48)	47.52_a (40.43)	131.42 (106.06)	.25
Internalizing	93.19_a (72.42)	50.43_b (42.32)	$62.82_{a,b}$ (51.74)	36.84_b (53.64)	.11

NOTE.—Means are raw scores. Standard deviations are in parentheses. Means in the same row that share subscripts are not significantly different at $p < .05$ in Tukey honestly significant difference comparison.

[a]Games-Howell test used for post hoc comparisons due to heterogeneity of variance.

girls. However, aggressive girls were more aggressive than girls in every other configuration including troubled girls. In addition, peers perceived troubled and sensitive girls as having more internalizing behavior than model girls. However, the comparison between sensitive and model girls only approached significance ($p = .062$).

Boys' configurations differed on three of the four peer-nomination factors: aggression, $F(4, 131) = 7.88$, $p < .05$; prosocial skills, $F(4, 131) = 10.71$, $p < .05$; and social prominence, $F(4, 131) = 11.85$, $p < .05$ (see Table 8). Also, the internalizing factor approached significance, $F(4, 131) = 2.40$, $p = .053$. Post hoc tests revealed that model boys had more prosocial skills and social prominence than troubled and low-academic boys. In addition, peers perceived model boys as having more prosocial skills than tough boys. Tough boys had similar social prominence to model youth, and they were significantly higher than troubled boys. Tough boys also had significantly higher aggression than boys in the other configurations except for troubled youth. Troubled and low-academic boys had similar aggression, but only troubled boys were significantly more aggressive than model and high-academic boys. Troubled and low-academic boys also had comparable social prominence. In addition, both were significantly lower than model youth, but only troubled boys were significantly lower than boys in the tough configuration. Troubled boys had, in comparison to high-academic boys, higher internalizing behavior, but this difference only approached significance ($p = .076$).

Configurations and Sociometric Status

The fourth aim of this study was to examine the relation between interpersonal competence configurations and sociometric status. Girls' behavioral configurations were related to sociometric status, $\chi^2(12, N = 170) = 37.85$, $p < .001$ (see Table 9).

TABLE 8. Peer Nomination, by Boys' Behavioral Configurations

Peer Nomination	Behavioral Configuration					Partial η^2
	Troubled	Low Academic	Tough	High Academic	Model	
Aggression	$110.19_{a,b}$ (98.40)	$66.23_{b,c}$ (70.98)	153.12_a (93.19)	48.63_c (78.06)	38.32_c (60.76)	.19
Prosocial skills[a]	35.66_a (43.07)	72.40_b (49.48)	$69.82_{a,b,c}$ (59.73)	$109.11_{b,c}$ (64.54)	134.98_c (98.16)	.25
Social prominence[a]	44.84_a (46.90)	$61.97_{a,b}$ (51.58)	$129.20_{b,c,d}$ (98.04)	$73.27_{a,d}$ (64.90)	166.26_c (120.10)	.27
Internalizing	78.96_a (67.99)	67.02_a (53.31)	74.77_a (67.02)	39.03_a (32.21)	46.55_a (69.28)	.07

NOTE.—Means are raw scores. Standard deviations are in parentheses. Means in the same row that share subscripts are not significantly different at $p < .05$ in Tukey honestly significant difference comparison.

[a]Games-Howell test used for post hoc comparisons due to heterogeneity of variance.

TABLE 9. Sociometric Status, by Girls' Behavioral Configurations

Sociometric Status	Behavioral Configuration			
	Troubled	Aggressive	Sensitive	Model
Popular	2** (7.5)	5 (7.7)	14 (13.5)	26** (18.2)
Rejected	6* (2.7)	5 (2.8)	3 (4.9)	3* (6.6)
Neglected	7 (5.4)	7 (5.6)	13 (9.8)	7* (13.2)
Controversial	0 (2.2)	2 (2.3)	0** (4.0)	12*** (5.4)
Average	12 (9.2)	9 (9.6)	19 (16.7)	18 (22.5)

NOTE.—Values are observed counted. Expected count is in parentheses.
*$p < .05$.
**$p < .01$.
***$p < .001$.

Troubled girls were more likely to be rejected (Fisher's exact probability $< .01$) and fewer were popular (Fisher's exact probability $< .01$) than expected by chance. In addition, more model girls were popular (Fisher's exact probability $< .01$) but fewer were rejected (Fisher's exact probability $< .05$) or neglected (Fisher's exact probability $< .05$) than expected by chance.

Boys' behavioral configurations were also related to sociometric status, $\chi^2(16, N = 136) = 39.56$, $p = .001$ (see Table 10). Troubled boys were more likely to be rejected (Fisher's exact probability $< .001$) and fewer were popular (Fisher's exact probability $< .001$) than expected by chance. More model boys were popular (Fisher's exact probability $< .01$) and fewer were rejected (Fisher's exact probability $< .01$) than expected by chance.

Configurations and Peer Affiliates

The fifth aim of this study was to examine the relation between interpersonal competence configurations and peer affiliations. Girls' behavioral configurations were related to aggressive affiliates, $\chi^2(6, N = 122) = 19.03$, $p < .01$ (see Table 11). More troubled girls affiliated with many aggressive peers (Fisher's exact probability $< .05$), and fewer had few aggressive peers (Fisher's exact probability $< .01$) than expected by chance. More model girls affiliated with few aggressive peers (Fisher's exact probability $< .01$) and fewer were in groups with many aggressive peers (Fisher's exact probability $< .05$) than expected by chance.

Boys' behavioral configurations were also related to aggressive peer affiliates, $\chi^2(8, N = 96) = 24.28$, $p < .01$ (see Table 11). More tough boys affiliated with many aggressive peers (Fisher's exact probability $<$

TABLE 10. Sociometric Status, by Boys' Behavioral Configurations

Sociometric Status	Behavioral Configuration				
	Troubled	Low Academic	Tough	High Academic	Model
Popular	3*** (10.9)	7 (7.9)	7 (5.6)	9 (7.6)	14** (7.9)
Rejected	17*** (7.3)	3 (5.4)	4 (3.8)	3 (5.2)	0** (5.4)
Neglected	6 (4.4)	6 (3.2)	1 (2.2)	1 (3.1)	2 (3.2)
Controversial	2 (2.4)	1 (1.8)	2 (1.3)	2 (1.7)	2 (1.8)
Average	9 (12.0)	10 (8.7)	5 (6.1)	11 (8.4)	9 (8.7)

NOTE.—Values are observed counted. Expected count is in parentheses.
*$p < .05$.
**$p < .01$.
***$p < .001$.

TABLE 11. Aggressive Affiliates, by Behavioral Configurations

Configuration	Isolate	Aggressive Affiliates	
		Few	Many
Girls:			
Troubled	2 (.6)	7** (13.1)	10* (5.3)
Aggressive	1 (.7)	11 (14.5)	9 (5.9)
Sensitive	1 (1.2)	28 (25.5)	8 (10.3)
Model	0 (1.5)	38** (31.0)	7* (12.5)
Boys:			
Troubled	5* (2.3)	8** (14.1)	14 (10.7)
Low academic	1 (1.5)	11 (9.4)	6 (7.1)
Tough	0 (1.2)	4 (7.3)	10* (5.5)
High academic	2 (1.6)	11 (9.9)	6 (7.5)
Model	0 (1.5)	16*** (9.4)	2** (7.1)

NOTE.—Values are observed counted. Expected count is in parentheses.
*$p < .05$.
**$p < .01$.
***$p < .001$.

TABLE 12. Popular Affiliates, by Behavioral Configurations

Configuration	Isolate	Popular Affiliates	
		Few	Many
Girls:			
Troubled	2 (.6)	7** (11.8)	0*** (6.5)
Aggressive	1 (.7)	18* (13.1)	2** (7.2)
Sensitive	1 (1.2)	24 (23.0)	12 (12.7)
Model	0 (1.5)	17*** (28.0)	28*** (15.5)
Boys:			
Troubled	5* (2.3)	20 (16.6)	2** (8.2)
Low academic	1 (1.5)	13 (11.1)	4 (5.4)
Tough	0 (1.2)	8 (8.6)	6 (4.2)
High academic	2 (1.6)	13 (11.7)	4 (5.7)
Model	0 (1.5)	5** (11.1)	13*** (5.4)

NOTE.—Values are observed counted. Expected count is in parentheses.
*$p < .05$.
**$p < .01$.
***$p < .001$.

.05) than expected by chance. More model boys affiliated with few aggressive peers (Fisher's exact probability $< .001$) and fewer affiliated with many aggressive associates (Fisher's exact probability $< .01$) than expected by chance. In addition, more troubled boys were isolates (Fisher's exact probability $< .05$) than expected by chance.

Girls' behavioral configurations were related to popular affiliates, $\chi^2(6, N = 122) = 33.65$, $p < .001$ (see Table 12). More troubled and aggressive girls affiliated with few popular peers (Fisher's exact probability $< .01$ and $< .05$, respectively). In addition, fewer troubled and aggressive girls were in groups with many popular members (Fisher's exact probability $< .001$ and $< .01$, respectively) than expected by chance. Finally, more model girls affiliated with many popular peers (Fisher's exact probability $< .001$) and fewer affiliated with few popular peers (Fisher's exact probability $< .001$) than expected by chance.

Boys' behavioral configurations were also related to popular peer group type, $\chi^2(8, N = 96) = 27.67$, $p < .001$ (see Table 12). More model boys were in groups with many popular peers (Fisher's exact probability $< .001$) and fewer affiliated with few popular peers (Fisher's exact probability $< .01$) than expected by chance. Fewer troubled boys affiliated with many popular peers (Fisher's exact probability $< .01$) than expected by chance.

Girls' behavioral configuration was also related to academic affiliates, $\chi^2(6, N = 122) = 34.76$, $p < .001$ (see Table 13). More troubled and aggressive girls affiliated with few academic peers (Fisher's exact proba-

TABLE 13. Academic Affiliates, by Behavioral Configurations

Configurations	Isolate	Academic Affiliates	
		Few	Many
Girls:			
Troubled	2 (.6)	15** (9.3)	2*** (9.0)
Aggressive	1 (.7)	17** (10.3)	3*** (10.0)
Sensitive	1 (1.2)	18 (18.2)	18 (17.6)
Model	0 (1.5)	10*** (22.1)	35*** (21.4)
Boys:			
Troubled	5* (2.3)	15* (9.6)	7*** (15.2)
Low academic	1 (1.5)	8 (6.4)	9 (10.1)
Tough	0 (1.2)	4 (5.0)	10 (7.9)
High academic	2 (1.6)	5 (6.7)	12 (10.7)
Model	0 (1.5)	2* (6.4)	16** (10.1)

NOTE.—Values are observed counted. Expected count is in parentheses.
*$p < .05$.
**$p < .01$.
***$p < .001$.

bility < .01 and < .01, respectively). In addition, fewer troubled and aggressive girls affiliated with many academic peers (Fisher's exact probability < .001 and < .001, respectively) than expected by chance. More model girls affiliated with academic peers (Fisher's exact probability < .001) and fewer affiliated with few academic peers (Fisher's exact probability < .001) than expected by chance.

Boys' behavioral configurations were related to academic affiliates as well, $\chi^2(8, N = 96) = 22.13$, $p < .01$ (see Table 13). More troubled boys affiliated with few academic peers (Fisher's exact probability < .05) and fewer affiliated with many academic peers (Fisher's exact probability < .001) than expected by chance. In addition, fewer model boys affiliated with few academic peers (Fisher's exact probability < .05), whereas more had many academic affiliates (Fisher's exact probability < .01) than expected by chance.

Discussion

By examining interpersonal competence configurations in relation to academic achievement and associated adjustment factors, the current study provides a comprehensive perspective of school success and difficulty for rural Appalachian fifth graders. Nearly 40% of boys and girls were in high-competence configurations (model, high academic) characterized by positive academic, behavioral, and social features. Youth in these configurations tended to have significantly higher academic grades and standardized test scores, were more likely to be socially prominent and accepted by peers, and less likely to have school adjustment problems (e.g., aggression, attention problems, involvement in bullying). In addition, boys and girls in the model configuration were more likely to affiliate with peers who were popular and high in academic competence and less likely to associate with aggressive peers.

In contrast, only 16% of girls and 27% of boys were in high-risk (i.e., problems in three or more domains) configurations (i.e., troubled). These youth had significantly lower end-of-year grades and standardized achievement scores and also appeared to experience significant social and behavioral difficulties. In addition, these high-risk youth were more likely to affiliate with aggressive peers and less likely to associate with popular peers and peers who were high in academic competence. Further, troubled boys were significantly more likely to be socially isolated than were boys in any other configuration.

Forty-four percent of girls and 34% of boys in the sample were in moderate-risk configurations (i.e., aggressive, sensitive, low academic, and tough). These configurations were characterized by moderate risk in one or two domains. These youth tended to fall between high-competence and high-risk youth in terms of end-of-year grades, standardized achievement test scores, and social and behavioral adjustment. However, boys in the low-academic configuration did have low standardized achievement scores that were comparable to those of boys in the troubled configuration.

Collectively, these findings suggest that there are clearly distinguishable levels of academic performance that correspond with distinct configurations of interpersonal competence and risk. A substantial proportion of the Appalachian youth in this sample performed well academically, and their achievement appeared to be supported by competencies in the behavioral and social domains and by affiliations with high-achieving and popular peers. Another substantial proportion of youth had moderate risks, performed near the mean for both school grades and standardized achievement scores, and had patterns of social acceptance and peer affiliation that were relatively nondistinct. However, these youth did appear to have difficulties in at least one domain (i.e., academic, behavioral, emotional, social), suggesting they

may be at risk for future difficulties. A smaller but meaningful proportion of youth in this sample had significant difficulties across three or more interpersonal domains and experienced behavioral, social, and peer-affiliation difficulties that are likely to help support and sustain achievement problems in school. These results are consistent with other research that has examined the relation between academic achievement and other school adjustment factors (Bergman & Magnusson, 1997; Estell et al., 2007; Farmer, Irvin, et al., 2006; Gest et al., 2006; Schwartz et al., 2006; Wentzel et al., 2004) and have important implications for the development of classroom interventions to support the educational success of rural upper-elementary school students.

Implications for Intervention

Building from the intervention implications of a developmental science perspective (see Cairns et al., 1998; Farmer & Farmer, 2001), the current findings suggest that efforts to enhance the performance of rural Appalachian youth should be responsive to levels of achievement, strengths, and needs that are characterized by distinct interpersonal competence configurations. Consistent with current conceptualizations of school-based prevention programs (e.g., Farmer et al., 2007; Greenberg et al., 2003), there is a need for (*a*) universal interventions that support all students including those in high-competence configurations, (*b*) selective interventions that support youth who have moderate risks that place them at an increased probability for experiencing later problems, and (*c*) indicated interventions to promote the adaptation of youth in high-risk configurations who are currently experiencing adjustment problems in school. We briefly discuss each of these levels of intervention.

Universal interventions. Universal prevention refers to interventions that are desirable for everyone and are aimed toward the general public (Mrazek & Haggerty, 1994). As our findings suggest, three general domains (i.e., academic, behavioral, social) within the school context affect each other and collectively contribute to achievement (see also Greenberg et al., 2003). Further, our findings indicate that classrooms typically contain diverse groups of students who represent an extensive array of skills and competencies. Thus, it is necessary to establish instructional approaches that can be tailored effectively to the learning needs of a broad range of students. However, teachers should also use general behavior and classroom social dynamics management strategies that enhance the academic involvement and productive engagement of all students (see Cohen, 2006; Farmer et al., 2003; Hamre & Pianta, 2005).

It is likely that high- and average-competence (i.e., model, high-academic, and sensitive) rural youth are at relatively low risk of performing unsatisfactorily on standardized tests. Nonetheless, such youth can benefit from broad approaches aimed at promoting the academic, behavioral, and social growth of al students (e.g., Crane et al., 2004; Hill & Harmon, 2005; Reagle, 2006; Rural School and Community Trust, 2004). Further, these youth may need instructional content that augments the general curriculum, provides them with opportunity to achieve to their potential, and helps them maintain their interest and motivation to achieve.

Selective interventions. Selective prevention refers to interventions for youth whose risk for developing problems is above average (Mrazek & Haggerty, 1994). From a developmental science perspective, youth who require selective interventions have one or two risks but otherwise experience a system of positive constraints (Farmer & Farmer, 2001). Therefore, selective interventions should focus on preventing such risks from causing the entire developmental system from reorganizing into a system of correlated risks while simulta-

neously supporting and building on the student's strengths to further reduce the likelihood of the negative reorganization of the developmental system.

For example, aggressive girls have high levels of aggression that place them at risk. Thus, they will need individualized interventions to address their aggressive and disruptive behavior. Further, although their academic achievement is in the low-average range, they will need supports to ensure that they do not develop more pronounced academic difficulties. Likewise, whereas these girls are not rejected by peers, they are significantly less likely to associate with popular or high-academic peers. Thus, there is a need to help them foster social relationships that promote their academic and social success and that prevent them from becoming socially marginalized and disengaged in productive school activities.

Low-academic and tough boys also appear to require selective interventions, but in very different ways. Low-academic boys have academic difficulties and do not appear to be very athletically skilled. These youth seem to need more intensive instructional supports that go beyond the general curriculum, and they may also need to develop skills and activities to compensate for their athletic difficulties. Yet, they appear to have fairly positive social skills and peer relationships. Teachers should provide opportunities and supports to ensure that these students maintain productive social roles and peer affiliations along with their prosocial behavior patterns. In contrast, tough boys are highly aggressive but popular and athletic, with relatively high prosocial skills and average academic competence. Although these boys have several strong competencies that need to be supported, teachers view them as socially manipulative leaders who bully peers. Therefore, their peer relations, social roles, and peer influence may support and sustain their problem behavior (Farmer & Xie, 2007). Thus, although there is a need to support their social strengths, there is a need to monitor carefully their social behavior and bullying to ensure that they do not use their influence in ways that hurt others and that lead to deviant peer affiliations and corresponding problematic outcomes (see Farmer et al., 2007).

Indicated interventions. Indicated prevention refers to interventions for youth who manifest multiple problems that are symptomatic of the development of significant adjustment problems (Mrazek & Haggerty, 1994). Such youth need coordinated, individualized multifactored interventions to address multiple risks (Cairns et al., 1998; Farmer et al., 2001; Greenberg et al., 2003). From the perspective of correlated constraints, such efforts should extend beyond the amelioration of specific problems and focus on the reorganization of the child's developmental system (Farmer & Farmer, 2001). This includes examining the interconnections of the various problematic factors, identifying how the different factors support and sustain each other, and developing individualized treatment plans to systematically address the factors as a collective unit (Farmer et al., 2007). Our findings suggest that troubled boys and girls will need comprehensive intervention plans to address academic problems, attention problems, behavioral-relation difficulties, social difficulties, and affiliations with aggressive, nonacademic, and socially marginalized peers. Yet, such interventions should be coordinated carefully and guided by functional behavioral assessments that include a focus on social dynamics (i.e., social roles, peer affiliations) as well as academic activities (Farmer & Xie, 2007).

Limitations

This study has four limitations that must be considered. First, our research focuses on a sample of rural Appalachian youth from eight elementary schools in two states. The findings may not generalize to

rural youth from other regions or to the broader universe of Appalachian youth. Second, this research is with fifth-grade students. It is possible that the current results are not relevant to significantly younger or older students. Third, we used a cross-sectional design. There is a need for longitudinal research that examines the relation between the configurations identified here and students' subsequent academic achievement and school adjustment. Fourth, the research design is correlational. There is a need to establish interventions aimed at addressing these configurations and to experimentally examine whether changes in level of risk are associated with changes in students' academic achievement.

In summary, our investigation indicates that configurations of teacher-rated interpersonal competence are linked to academic achievement in rural Appalachian fifth-grade students. In addition to academic competence, social and behavioral competence also appears to contribute to both end-of-year grades and standardized achievement scores. Further, these configurations are also related to other indices (i.e., peer acceptance, peer affiliations, behavior difficulties) of later adolescent adjustment problems (i.e., school failure, school dropout, teen parenthood, substance use, and delinquency). Accordingly, there is a need for interventions that address the competencies, risks, and needs of youth in different configurations that correspond with universal, selected, and indicated prevention frameworks. In addition, experimental and longitudinal research designs that examine the effects of such programs on students' academic achievement and later school adjustment are needed.

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Correspondence concerning this article should be directed to Thomas W. Farmer, The Pennsylvania State University, College of Education, 227 CEDAR Building, University Park, PA 16802. E-mail: twf2@psu.edu

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