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Changes in School Connectedness and Deviant Peer Affiliation among Sixth-Grade Students from High-Poverty Neighborhoods

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Abstract

This longitudinal study examined associations between changes in School Connectedness and changes in Affiliation With Deviant Peers among students from high-poverty backgrounds during the year immediately following the transition to middle school. Sixth-graders (N = 328) attending two middle schools in a large school district completed measures of School Connectedness and Affiliation With Deviant Peers at three points across the year. Results from parallel process modeling showed that students' reports of School Support significantly declined across the school year, School Support and Affiliation With Deviant Peers were negatively associated at the beginning of the school year, and students who reported more declines in School Support were more likely to report growth in Affiliation With Deviant Peers across sixth grade. Gender differences were also found. Findings suggest that School Connectedness may be important for high-poverty students following the transition to middle school.

Keywords

school context, problem/risky/antisocial behaviors, low income, classroom behavior/environment

For many early adolescents, the transition from elementary to secondary school (e.g., middle or junior high school) means adjustment to a new academic environment with more teachers and students, increased academic demands, and a larger, less familiar peer group (Eccles, 2004; Simmons & Blyth, 1987). Such challenges may compel students to reposition themselves socially at the same time that levels of adult oversight and supervision are declining. Simultaneously, the structure and academic demands of secondary school often create less autonomy at a time when autonomy needs take on more importance (e.g., Eccles et al., 1993) resulting in a context that is a poor fit for the young adolescent. Consequently, many students show decreased levels of motivation and engagement and may begin to disconnect from school, seeking more interaction with peers and turning less often to teachers for guidance and support (Eccles, Wigfield, & Schiefele, 1998; Kelly et al., 2012).

Lower School Connectedness has been decisively linked to more risky behavior (e.g., drinking alcohol, stealing) among adolescents (e.g., Catalano, Haggerty, Oesterle, Fleming, & Hawkins, 2004; Rudasill, Reio, Stipanovic, & Taylor, 2010), and there is a well-established connection between adolescent risky behavior and affiliation with peers who engage in risky behavior (e.g., Bray, Adams, Getz, & McQueen, 2003; Simons-Morton & Chen, 2006; for reviews, see Granic & Patterson, 2006; Hawkins & Catalano, 1992). Indeed, Affiliation With Deviant Peers is one of the most robust and consistent predictors of delinquent behavior, substance use, and other forms of risky behavior (for reviews, see Chassin, Flora, & King, 2004; Granic & Patterson, 2006; Hawkins & Catalano, 1992). This association is significant because it suggests that examining Affiliation With Deviant Peers provides information on adolescent risky behavior. Furthermore, it is possible that involvement with deviant peers facilitates growth of risky behavior during adolescence. Deviant peer groups often model and encourage risky behavior and may provide opportunities to engage in such behavior (Dishion, Nelson, Winter, & Bullock, 2004). Results from these studies, and many others, point to the important role of peers' risky behavior in adolescents' behavioral adjustment. Because levels of risky behavior increase in adolescence, School Connectedness in early adolescence may be especially important for deterring Affiliation With Deviant Peers and diverting adolescents from involvement in risky behavior. Students living in poverty are particularly likely to associate with deviant peers (Chung & Steinberg, 2006) and to engage in risky behavior (Bolland et al.,

2007; Mrug & Windle, 2009). The purpose of this study is to examine longitudinal links between students' reports of School Connectedness and Affiliation With Deviant Peers during the school year following the transition to middle school, in a sample of youth from high-poverty neighborhoods.

Theoretical Background

The transition to secondary school may place young adolescents in a social context that is at odds with their growing desire for autonomy and self-determination, creating a developmental mismatch (Eccles et al., 1993). The mismatch between young adolescents' developmental needs and the secondary school environment has direct implications for Affiliation With Deviant Peers and attendant risky behavior. As adolescents feel less connected to school, they are more likely to seek connection with deviant peers (Catalano & Hawkins, 1996), and these peer affiliations are robustly associated with adolescent risky behavior (e.g., Simons-Morton & Chen, 2006). On the other hand, connectedness to school has been inversely related with problem behavior, suggesting that it has a protective effect (Catalano et al. 2004; Denny et al., 2011; Kelly et al., 2012; Kobak, Herres, Gaskins, & Laurenceau, 2012). Furthermore, School Connectedness may be especially important for youth from impoverished families and inner city neighborhoods, where future prospects are often perceived as poor, and access to deviant peers and opportunities for risky behavior are high (Blum, Kelly, & Ireland, 2001; Edwards, Mumford, Shillingford, & Serra-Roldan, 2007).

Theories of delinquent behavior, such as the Social Development Model, suggest that attachment to prosocial people and social contexts (such as teachers and schools) reduces tendencies toward deviant behavior (Catalano & Hawkins, 1996) perhaps by encouraging participation in prosocial behaviors and discouraging relationships with deviant individuals (Catalano et al., 2004). Moreover, school failure and rejection by conventional prosocial peers may increase the risk that youth will gravitate toward deviant peers and become involved in misconduct (Kaplan, 1980; Patterson, DeBaryshe, & Ramsey, 1989). Adolescents with few prosocial ties, such as connections to school, may have little reason to avoid affiliating with deviant peers or engaging in misconduct. Consistent with this perspective, research has established a relationship between School Connectedness and both deviant peer affiliation in early adolescence and adolescent risky behavior (e.g., Denny et al., 2011; Kelly et al., 2012; Kobak et al., 2012; Simons-Morton & Chen, 2009). For example, Simons-Morton and Chen (2009) found that adolescents' substance use increased with their peers' substance use from sixth to ninth grade (approximately age

11-15), but also that growth in school engagement was negatively related to growth in the number of friends who engaged in risky behavior. Similarly, Kelly et al. (2012) reported that School Connectedness and peer drinking networks were inversely related for sixth and eighth-graders, and Roosa et al. (2011) found that attachment to a favorite teacher in fifth grade negatively predicted students' Affiliation With Deviant Peers concurrently as well as their externalizing behaviors 2 years later. In the current study, we examined School Connectedness and deviant peer affiliation across a short but critical developmental window, the year after the transition to middle school.

Gender Differences

Literature suggests that girls perceive their relationships with and support from teachers more positively than boys (Furrer & Skinner, 2003; Wentzel, Battle, Russell, & Looney, 2010), and the greater importance of personal relationships for girls' adjustment compared with boys' (e.g., Rueger, Malecki, & Demaray, 2010) suggests that effects of School Connectedness on deviant peer affiliation might be stronger for girls. However, other work suggests that boys benefit from teacher support and strong connections to school more than girls (Furrer & Skinner, 2003); boys are also more likely than girls to engage in risky behaviors (Blum et al., 2001; Zuckerman, 2007) and to affiliate with deviant peers (e.g., Kelly et al., 2012). To date, research on gender differences in the relationship between School Connectedness and adolescent risky behavior has yielded inconsistent effects. Some studies show stronger relationships for boys than girls (Klein, Cornell, & Konold, 2012; Kuperminc, Leadbetter, Emmons, & Blatt, 1997) but others show few or no gender differences (Colarossi & Eccles, 2003; Kelly et al., 2012; Roosa et al., 2011; Wang & Dishion, 2012) or show gender-specific patterns that depend on the behavioral outcome (Crosnoe, Erickson, & Dornbusch, 2002). Due to the possibility of gender differences in the relationship between School Connectedness and deviant peer affiliation, we included gender as a covariate and then as a moderator in follow-up analyses.

Role of Poverty

Dwelling in high-poverty neighborhoods has been consistently linked to negative health and behavior outcomes (e.g., Leventhal, Dupere, & Brooks- Gunn, 2009; Vazsonyi, Cleveland, & Wiebe, 2006). Adolescents in low-income or high-crime neighborhoods have more exposure to deviant peers, thus increasing the likelihood of engaging in risky behavior (e.g.,

Blum et al., 2001; Brody et al., 2001; Edwards et al., 2007; Mrug & Windle, 2009; Zimmerman & Messner, 2011). Indeed, adolescents in disadvantaged neighborhoods report greater contact with deviant peers than those in more affluent, socially cohesive neighborhoods (Deutsch, Crockett, Wolff, & Russell, 2012; Gottfredson, McNeil, & Gottfredson, 1991) and are more likely to engage in delinquent behavior (Leventhal & Brooks-Gunn, 2000; Leventhal & Dupere 2011). Students from high-poverty backgrounds are also less likely to perceive their relationships with teachers and their connections to school as positive (Crosnoe, Johnson, & Elder, 2004). In a previous study using the same high-poverty sample as used in the current study, we found that students who reported less decline in School Connectedness across sixth grade had higher year-end GPAs than students who reported more decline in School Connectedness (Niehaus, Rudasill, & Rakes, 2012). These findings lend support to the idea that School Connectedness is important for high-poverty students' academic outcomes (see also Battistich, Solomon, Kim, & Watson, 1995; Olsson, 2009) and may also suppress the likelihood of affiliating with deviant peers. However, to date, there has been no investigation of variability in the association between School Connectedness and Affiliation With Deviant Peers among a sample of students living in high-poverty neighborhoods.

Purpose of the Current Study

The purpose of this study is to extend work linking School Connectedness to adolescent outcomes by focusing on students from high-poverty neighborhoods during the first year of middle school, a time of significant transition. We examined covariation between growth in perceptions of School Connectedness and reports of Affiliation With Deviant Peers among students from high-poverty neighborhoods, given the well-established relation between deviant peer affiliation and engaging in risky behavior. Specifically, we expected that School Connectedness and Affiliation With Deviant Peers would be inversely related in the fall of sixth grade, and that changes in School Connectedness would be inversely associated with changes in Affiliation With Deviant Peers across sixth grade. We also explored gender as a moderator of these associations.

Method

Participants

Participants were all sixth-grade students (typically 11-12 years old) in two middle schools in a large, urban school district in the Midwestern

United States. Selected schools (Schools A and B) were identified by school district personnel for inclusion in the study because they served students living in high-poverty neighborhoods within the urban area of the school district. In School A, 151 sixth-grade students (71 boys, 80 girls) were included in this study, 92% of whom were eligible for free or reduced lunch, and more than 50% of whom resided in a zip code where the average annual income is approximately $10,000 (U.S. Census Bureau, 2000). School A contains a competitive magnet program that comprises approximately half of the students in each grade, but magnet program students were not included in the current study.[1] In School B, 177 sixth-grade students (107 boys, 70 girls) were included in this study, 98% of whom were eligible for free or reduced lunch and 87% of whom lived in a zip code with an average annual income of approximately $11,000 (U.S. Census Bureau, 2000).

The survey was administered at three points during the sixth-grade year: fall (Wave 1), winter (Wave 2), and spring (Wave 3). All sixth-grade students present in both schools on the data collection days received surveys. The number of completed surveys varied across the three time points, owing to variations in student attendance, movement to different schools within the year, and simply choosing not to participate. According to district personnel, students in these two middle schools from high-poverty neighborhoods are more transient than their peers in other district schools. Thus, 292 students (89%) completed the survey at Wave 1, 277 (84%) completed the survey at Wave 2, and 250 (76%) completed the survey at Wave 3, for a total of 328 students who completed the survey at least once. Students were racially and ethnically diverse, with 35% identified as White, 58% as Black/African American, and 7% as Hispanic, Asian, or other races and ethnicities.

Measures

School connectedness. School connectedness was measured with an instrument developed with items from three sources: the National Educational Longitudinal Study (NELS 88) tapping students' feelings about teacher-student and student-student interactions and caring (five items); the Need Satisfaction Scale (LaGuardia, Ryan, Couchman, & Deci, 2000) examining students' feelings of connection and closeness in school (six items); and the Scale of Caring Adult Relationships in School (Jennings, 2003) assessing the number of school adults to whom students feel connected (seven items). Items from the NELS 88 study and the Need Satisfaction Scale ranged from 0 = *definitely not true* to 3 = *very true*. Sample items include "When I am at my school I feel cared about" (LaGuardia et al., 2000) and "Most of my teachers really listen to what I have to say"

(NELS 88). The Scale of Caring Adult Relationships in School items were adapted to query students on the number of adults in school to whom they feel connected and to capture more nuances in student-adult interactions (e.g., "At my school, there is a teacher or adult who listens to me when I have something to say" [Jennings, 2003] was adapted to make items reflecting the number of adults who listen to a student in specific situations such as "How many adults in this school do you feel comfortable talking to about problems having to do with other kids?" and "How many adults in this school do you want to tell when something good happens in your life?"). Items ranged from 0 = *no adults* to 4 = *more than 3 adults*. Other sample items include "How many adults in this school do you feel really know you as a person?" and "How many adults in this school do you want to tell when something good happens in your life?"

Because items based on three different sources were included on this instrument, we conducted an exploratory factor analysis (EFA) on the Wave 1 data, followed by confirmatory factor analyses (CFAs) on Waves 2 and 3 data to ensure that the factor solution resulting from the EFA was a good fit for all three time points. For Wave 1, we conducted an EFA with Maximum Likelihood estimation and Geomin rotation (Muthen & Muthen, 1998- 2010). Consistent with current recommendations for EFA, we examined the standard errors of the factor loadings to determine which loadings were significant at the .05 level (Schmitt & Sass, 2011). We also conducted a parallel analysis with 1,000 randomly generated data sets in order to determine the maximum number of factors to retain (Hayton, Allen, & Scarpello, 2004). Results from parallel analysis indicated that we should retain no more than three factors. Thus, we examined the viability of the three-factor solution first. The three-factor solution had seven items that double-loaded (i.e., had significant factor loadings on two factors), so those seven items were eliminated (Stevens, 2002). After running the three-factor solution again with the remaining 11 items, the model would not converge, indicating that the three-factor solution was not a good fit for the data. The two-factor solution was examined next; it contained one item that double-loaded and two items that did not load significantly on either factor. Thus, these three items were removed (Stevens, 2002), and the two-factor model was run again. The resulting two-factor model contained 15 items that all loaded significantly on one of the two factors (i.e., no double loadings) and provided acceptable, but not ideal, levels of model-to-data fit, $\chi^2(76) = 171.107$ ($p < .001$), comparative fit index (CFI) = .885, Tucker-Lewis index (TLI) = .841, root mean square error of approximation (RMSEA) = .065 (90% confidence interval [CI] = [.052, .078]). We proceeded with the two-factor model for the CFAs that were conducted on the other two waves of data. Modifi-

cation indices were inspected and showed that one item double loaded on the two factors, so it was removed. The remaining 14 items loaded significantly on their respective factors (all p values less than .001), and model fit across the three waves ranged as follows: $\chi^2(76) = 139.786$ ($p <$ .001)-155.538 ($p <$ .001); CFI = .895-.928; TLI = .864-.913; RMSEA = .057-.060 (90% CIs = [.043, .073]).

Items from the resulting two-factor solution were averaged to form two subscales: Connection to Adults and School Support. Connection to Adults is a six-item subscale made up of items adapted from the Scale of Caring Adult Relationships in School, all of which were originally scored on a 5-point Likert-type scale. Cronbach's alphas for scores on this subscale ranged from .75 to .80 across the three data collection points. School Support is an eight-item subscale made up of items from the NELS 88 survey and the Need Satisfaction Scale, all of which were originally scored on a 4-point Likert-type scale. Cronbach's alphas for scores on this subscale ranged from .68 to .80 across the three data collection points. See Table 1 for descriptive information on the final subscales and Table 2 for correlations among the final subscales at each wave.

Affiliation with deviant peers. Affiliation with deviant peers in sixth grade was measured with 12 items from the 19-item Risky Behavior Protocol (Conger & Elder, 1994) on which students reported how many of their friends engage in certain risky behaviors, a standard measure of deviant peer affiliation. Seven items from the original measure were dropped at the request of school administrators to reduce the item burden on students. An item was dropped if it captured behavior similar to another item (e.g., "Ridden on a bike without a helmet" was dropped because it is similar to "Ridden in a car without a seatbelt"), or if another item could be shortened to reflect it (e.g., "Taken or stolen something not theirs" was used instead of "Taken or stolen something not theirs worth a lot, like a video game" and "Taken or stolen something not theirs worth a little, like candy"). Students responded to questions such as, "How many of the kids you play with or hang out with have ever . . . ridden in a car without a seatbelt? . . . had a fist fight with another person? . . . smoked a cigarette or used tobacco? . . . drunk a bottle or glass of beer or other alcohol? . . . taken or stolen something not theirs?" Responses were scored on a 3-point Likert-type scale (0 = *none of them*, 1 = *a few of them*, 2 = *almost all of them*). The Affiliation With Deviant Peers variable represents an average of responses to all 12 items (Cronbach's alphas ranged from .80 to .89 across all three waves). See Tables 1 and 2 for further information on Affiliation With Deviant Peers at each time point.

Table 1. Descriptive Statistics for School Connectedness and Affiliation With Deviant Peers Values at Each Wave by Gender.

	Male (n = 178)		Female (n = 150)		Overall (N = 328)	
Variable	*M*	*SD*	*M*	*SD*	*M*	*SD*
Average of fall connection to adults	2.04	1.00	2.06	0.98	2.10	0.99
Average of winter connection to adults	1.97	0.98	1.97	1.00	1.97	0.99
Average of spring connection to adults	1.93	0.98	2.06	1.09	1.99	1.04
Average of fall school support	2.10	0.53	2.17	0.49	2.13	0.51
Average of winter school support	1.96	0.56	2.05	0.51	2.00	0.54
Average of spring school support	1.93	0.55	1.92	0.70	1.93	0.63
Average of fall affiliation with deviant peers	0.56	0.48	0.40	0.40	0.49	0.45
Average of winter affiliation with deviant peers	0.64	0.48	0.45	0.44	0.55	0.47
Average of spring affiliation with deviant peers	0.63	0.48	0.47	0.47	0.55	0.48

Procedure

The University and school district's Institutional Review Boards approved this study. Surveys were distributed to students during the first week of school (fall; Wave 1), in December (winter; Wave 2), and in May (spring; Wave 3) of the sixth-grade year (2008-2009). Homeroom teachers distributed surveys to all present students on the day of survey administration (parental consent was not required). Each teacher was given a list of student names and study identification numbers to use when distributing surveys. Teachers were instructed in writing to tell students not to put their names on the surveys; surveys also included a note to students that numbers, not names, would be used to identify them on surveys. Teachers then collected surveys and returned them, with the lists linking student names to identification numbers, to either school offices (where study investigators immediately collected them) or directly to the study investigators. Surveys were typically completed within 30 minutes.

Table 2. Correlations by Gender Among School Connectedness and Affiliation With Deviant Peers Variables.

Variable	1	2	3	4	5	6	7	8	9
Male**Female**									
1. Fall connection to adults	—	**.43****	**.26****	**.39****	**.25****	**.08**	**−.06**	**−.12**	**−.07**
2. Winter connection to adults	.42**	—	**.64****	**.28****	**.40****	**.41****	**−.07**	**−.04**	**−.32****
3. Spring connection to adults	.20*	.47**	—	**.36****	**.34****	**.52****	**−.16**	**−.10**	**−.28****
4. Fall school support	.40**	.36**	.22*	—	**.45****	**.31****	**−.22***	**−.19**	**−.16**
5. Winter school support	.33**	.39**	.25**	.58**	—	**.65****	**−.21***	**−.26****	**−.42****
6. Spring school support	.11	.31**	.31**	.46**	.51**	—	**−.34****	**−.23***	**−.46****
7. Fall affiliation with deviant peers	.03	−.03	.07	−.24**	−.09	−.08	—	**.45****	**.46****
8. Winter affiliation with deviant peers	−.20*	−.16*	−.03	−.25**	−.25**	−.19*	.45**	—	**.42****
9. Spring affiliation with deviant peers	−.13	−.09	−.09	−.25**	−.13	−.25**	.26**	.49**	—
Overall									
1. Fall connection to adults	—								
2. Winter connection to adults	.42**	—							
3. Spring connection to adults	.23**	.55**	—						
4. Fall school support	.39**	.32**	.29**	—					
5. Winter school support	.29**	.39**	.29**	.53**	—				
6. Spring school support	.09	.36**	.43**	.37**	.57**	—			
7. Fall affiliation with deviant peers	−.01	−.05	−.04	−.24**	−.15**	−.18**	—		
8. Winter affiliation with deviant peers	−.16*	−.10	−.08	−.23**	−.27**	−.20**	.47**	—	
9. Spring affiliation with deviant peers	−.10	−.19**	−.20**	−.22**	−.27**	−.36**	.36**	.47**	—

*$p < .05$
**$p < .01$

Missing Data

Of 328 students, 60% participated in all 3 waves of data collection, 15% participated in Waves 1 and 2, 8% participated in Waves 1 and 3, 7% participated in Waves 2 and 3, 6% participated in Wave 1 only, 3% participated in Wave 2 only, and 1% participated in Wave 3 only. Examination of item-level nonresponse revealed that, of the 9,840 possible responses for each wave of data collection, 19.2% were missing in Wave 1, 24.1% were missing in Wave 2, and 29.8% were missing in Wave 3. Across all waves, 24.4% of the 29,520 possible responses were missing. All 30 variables were missing data for each wave of data collection (i.e., no variables with complete data). To determine the potential for bias due to missing responses, separate variance *t* tests were computed to compare responses on a variable between students who had or had not responded to another variable. For example, responses to Item 20 ("How many of the kids you play or hang out with have ever carried a weapon somewhere?") were compared between subjects who had or had not responded to Item 19 ("How many of the kids you play or hang out with have ever ridden in a car without a seatbelt?"). Responses for each of the 90 items (i.e., 30 items at 3 time points) were analyzed for differences based on whether the child had responded to each of the other 89 items using SPSS 20 Missing Values Analysis. The magnitude of *t* statistics ranged from −19.2 to 17.5, and approximately 11.6% were statistically significant at the .05 level. Little's (1987) multivariate test for missing completely at random (MCAR) was applied to determine whether the patterns of missing data deviated significantly from a completely random pattern. MCAR results were statistically significant, indicating that the missing data pattern cannot be assumed to be MCAR, $\chi^2(18537) = 18944.6$, $p = .018$.

The percentage of missing data did not differ significantly across gender, Cohen's $d = 1.05$ ($SE = .158$), $p > .05$, but did differ significantly across schools, Cohen's $d = 0.136$ ($SE = 0.148$), $p < .05$, with students in School B having more missing data than students in School A for Waves 1, 2, and 3. In addition, although missing patterns by gender were not significantly different, we did not discount the possibility that gender and school interacted to produce patterns of missingness. We therefore included school as an auxiliary variable in the models, as recommended by Graham (2003). Gender was already in the models as a variable of substantive interest.

Full information maximum likelihood (FIML) and multiple imputation (MI) are considered the two "state of the art" techniques for handling data that are not MCAR (Enders, 2006, 2010; Gelman, Carlin, Stern, & Rubin, 2004). However, FIML is preferable to MI when subsequent analyses involve structural equation modeling because there are no es-

tablished principles for pooling model fit indices (e.g., RMSEA, CFI, TLI) across multiple data sets (Enders, 2010; Hancock, 2006). FIML computes results without deleting any responses (such as in listwise or pairwise deletion) and without inflating statistical power (Hancock, 2006). We therefore used FIML to compute all fit indices and model parameters and included gender and school in all analyses.

Data Analysis

Because the purpose of this study was to examine changes in School Connectedness and Affiliation With Deviant Peers over time, as well as how change in School Connectedness was associated with change in Affiliation With Deviant Peers, parallel process models were conducted using a latent growth curve modeling (LGCM) approach. All LGCM analyses were conducted using Mplus 7.0 statistical software (Muthen & Muthen, 1998-2010) with FIML estimation. Because the factor analysis showed that School Connectedness was comprised of two separate factors, we ran two separate LGCM models: one for Connection to Adults and one for School Support (*r*s ranged from .424 to .456; see Table 2).

In each of the parallel process models, latent intercept and slope factors were estimated for the School Connectedness variable (either Connection to Adults or School Support) and for Affiliation With Deviant Peers. These variables were all measured at three time points that were nearly equally spaced across the sixth-grade year (i.e., 4 months from Wave 1 to Wave 2; 4.5 months from Wave 2 to Wave 3). For all variables, time was centered at Wave 1 (fall), such that Wave 1 was coded as 0, Wave 2 was coded as 1, and Wave 3 was coded as 2. Thus, for both School Connectedness and Affiliation With Deviant Peers, the intercept would represent students' perceptions at the beginning of the school year, and the slope would represent their growth across the sixth-grade year. The data contained only three time points per student, so analyses were limited to models of linear growth (Kline, 2011). Gender was examined as a predictor variable prior to examination as a moderator. Although not a variable of substantive interest, School was included in all analyses as an auxiliary variable to address missing data patterns.

Gender and School were each specified to have a direct effect on all of the intercept and slope factors. Consistent with parallel process modeling, correlations were estimated among intercepts and slopes of School Connectedness and Affiliation With Deviant Peers to address how initial levels related to growth of the same and the other variable. We conducted multi-group analyses on both the Connection to Adults and School Support models to determine whether the relationships among the intercept

and slope factors were significantly different for boys versus girls.

To evaluate how well the LGCM models fit the data, we used the chi-square test, the RMSEA, CFI, and the TLI. The chi-square test is more sensitive to sample size than approximate fit indices, so it is generally recommended to consider multiple fit indices to provide additional evidence for model evaluation (Kline, 2011). For the chi-square test, a nonsignificant value is indicative of good fit, whereas RMSEA values below .05 (Browne & Cudeck, 1993) and CFI and TLI values greater than .95 (Hu & Bentler, 1999) are recommended for good model-to-data fit.

Results

Preliminary Analyses

Bivariate correlations for the whole sample, and separately by gender, are shown in Table 2. Connection to Adults and School Support were significantly, positively correlated at all three time points with the exception of the correlation between Connection to Adults at Wave 1 and School Support at Wave 3. Waves 1, 2, and 3 scores for Affiliation With Deviant Peers were significantly, positively correlated. School Support was significantly, negatively correlated with Affiliation With Deviant Peers at all three waves. Connection to Adults was not as consistently correlated with Affiliation With Deviant Peers.

Connection to Adults Model

Results for the parallel process model (shown in Figure 1) indicated that the model had good model-to-data fit, $\chi^2(11) = 9.662$ ($p = .561$), CFI = 1.000, TLI = 1.000, RMSEA = .000 (90% CI = [.000, .052]). Intercept and slope values for Connection to Adults and Affiliation With Deviant Peers are shown in Figure 1. Connection to Adults intercept was negatively related to Connection to Adults slope ($r = -.521$, $p < .001$), indicating that a higher initial level of Connection to Adults was related to decreases in Connection to Adults across the school year. Similarly, Affiliation With Deviant Peers intercept was negatively related to Affiliation With Deviant Peers slope ($r = -.416$, $p = .010$), indicating that higher Affiliation With Deviant Peers in the fall was related to decreases in Affiliation With Deviant Peers across the year. Neither Connection to Adults (slope = −.068, $p = .328$) nor Affiliation With Deviant Peers (slope = −.017, $p = .557$) changed significantly across the year. However, there was significant variability across students in the Connection to Adults slope (residual

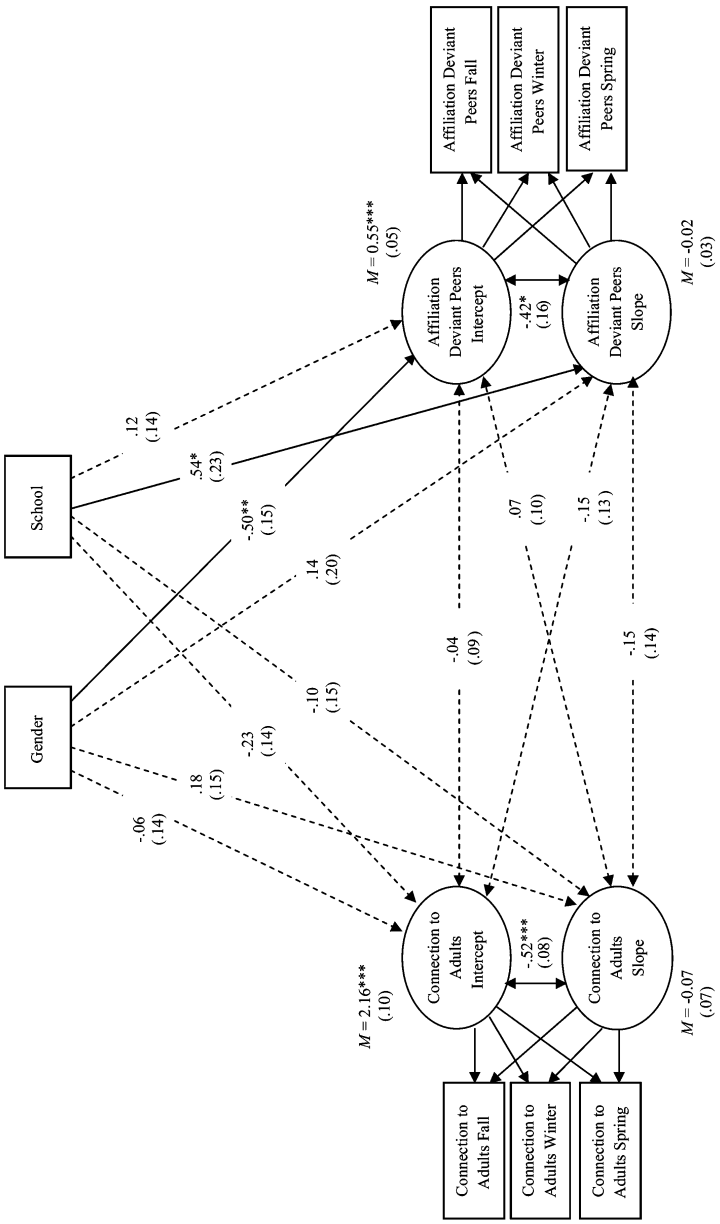

Figure 1. Parallel process model for Connection to Adults. Disturbance terms and model parameterizations were omitted for space and clarity of presentation. All estimates shown for the regression and correlational paths are the standardized coefficients (with standard errors in parentheses). *$p < .05$. **$p < .01$. ***$p < .001$.

variance = .283, $p < .001$) and the Affiliation With Deviant Peers slope (residual variance = .025, $p = .050$). Significant variability across students indicates that some students increased in Connection to Adults and Affiliation With Deviant Peers across the year, some students decreased, and some remained stable. However, when averaged across all students, the slope parameters showed no significant change over time. The intercept of Connection to Adults was not significantly associated with the slope of Affiliation With Deviant Peers, and the intercept of Affiliation With Deviant Peers was not significantly associated with the slope of Connection to Adults. See Figure 1 for full results.

Gender was a significant predictor of Affiliation With Deviant Peers at Wave 1, such that boys reported higher Affiliation With Deviant Peers than girls at the beginning of the year ($\beta = -.498$, $p = .001$). Students at School B tended to report greater increases in Affiliation With Deviant Peers across the year as compared with students at School A ($\beta = .541$, $p = .018$). Gender and School were not significant predictors of any other intercept or slope factors.

School Support Model

Model fit indices suggested that the parallel process model for School Support (shown in Figure 2) fit the data well, $\chi^2(11) = 9.354$ ($p = .589$), CFI = 1.000, TLI = 1.000, RMSEA = .000 (90% CI = [.000, .051]). Intercept and slope values for School Support and Affiliation With Deviant Peers are shown in Figure 2. School Support intercept was negatively related to School Support slope ($r = -.369$, $p = .003$), indicating that a higher initial level of School Support was related to decreases in School Support across the school year. Similarly, Affiliation With Deviant Peers intercept was negatively related to Affiliation With Deviant Peers slope ($r = -.413$, $p = .009$), indicating that higher Affiliation With Deviant Peers in the fall was related to decreased Affiliation With Deviant Peers across the year. Students' perceptions of School Support declined significantly across the sixth-grade year (slope = −.075, $p = .035$), while Affiliation With Deviant Peers did not change significantly over time (slope = −.015, $p = .597$). There was significant variability across students in the School Support slope (residual variance = .057, $p < .001$) and the Affiliation With Deviant Peers slope (residual variance = .026, $p = .035$). Thus, on average, students reported significant decreases in School Support across sixth grade, but some students reported more or less of a decline than others. Likewise, on average, students reported no significant changes in Affiliation With Deviant Peers across the year, although this varied across students with some students increasing, some decreasing, and some remaining stable.

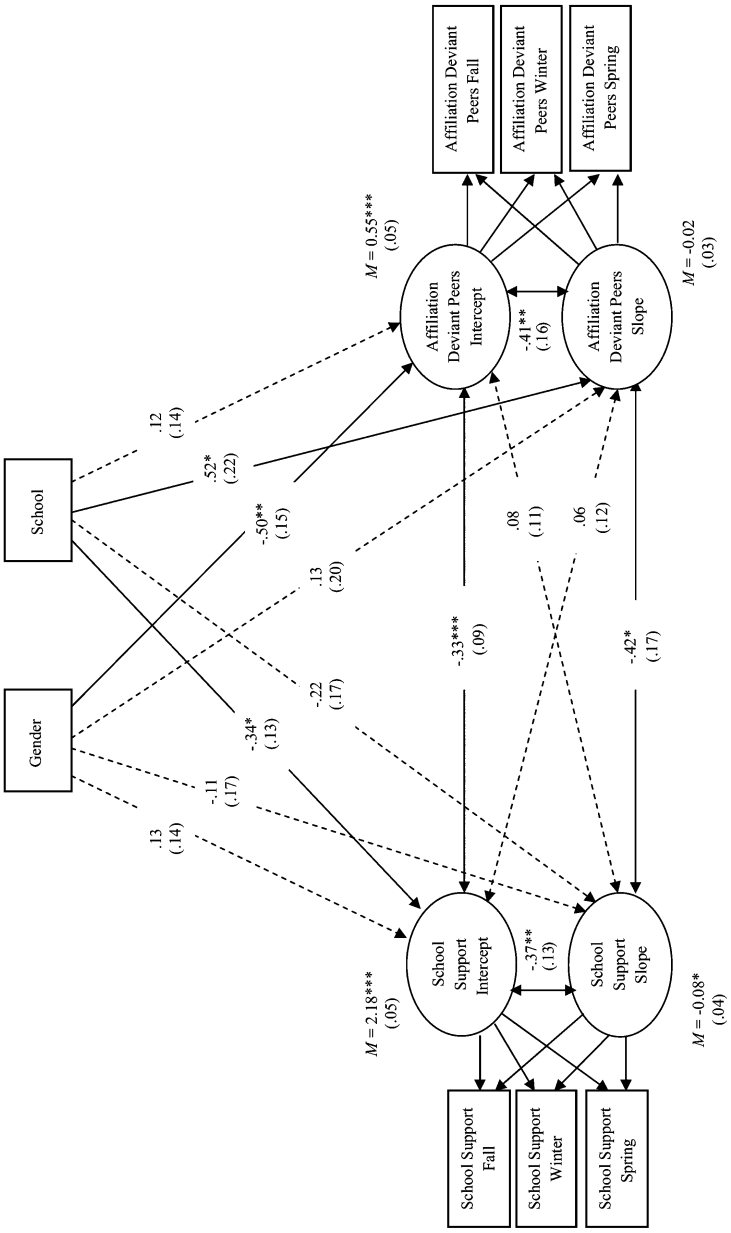

Figure 2. Parallel process model for School Support. Disturbance terms and model parameterizations were omitted for space and clarity of presentation. All estimates shown for the regression and correlational paths are the standardized coefficients (with standard errors in parentheses). *$p < .05$. **$p < .01$. ***$p < .001$.

Results from the parallel process model showed a significant, negative relationship between the School Support intercept and the Affiliation With Deviant Peers intercept ($r = -.328$, $p < .001$), indicating that higher levels of perceived School Support were associated with lower levels of Affiliation With Deviant Peers at the beginning of sixth grade. In addition, results showed a significant, negative relationship between the School Support slope and the Affiliation With Deviant Peers slope ($r = -.420$, $p = .011$). Although students, on average, reported decreases in School Support and no significant changes in Affiliation With Deviant Peers across the year, there was significant variability across students such that students who reported greater decreases in School Support were more likely to report increases in Affiliation With Deviant Peers across sixth grade. The intercept of School Support was not significantly associated with the slope of Affiliation With Deviant Peers, and the intercept of Affiliation With Deviant Peers was not significantly associated with the slope of School Support. Full results are shown in Figure 2.

Gender was a significant predictor of Affiliation With Deviant Peers in the fall (Wave 1), indicating that boys had higher Affiliation With Deviant Peers at the beginning of the year than girls ($\beta = -.495$, $p = .001$). Students at School B perceived lower levels of School Support at the beginning of sixth grade ($\beta = -.340$, $p = .011$) and reported greater increases in Affiliation With Deviant Peers across the year ($\beta = .519$, $p = .019$) compared with students at School A.

Multiple Group Analyses

To examine Gender as a moderating variable, multi-group analyses were conducted with the parallel process models, where Gender differences were tested for the four correlational paths among the intercept and slope values for each model. The Wald chi-square test was used to compare parameter estimates across groups. For the Connection to Adults model, analyses revealed no significant differences between boys and girls in the relationships between Connection to Adults and Affiliation With Deviant Peers. For the School Support model, results showed that Gender significantly moderated one of the relationships between School Support and Affiliation With Deviant Peers. Specifically, there was a significant difference between boys and girls in the relationship between the Affiliation With Deviant Peers intercept and the School Support slope, Wald $\chi^2(1) = 8.256$ ($p = .004$). The parameter estimate for boys ($r = .329$, $p = .028$) was in the opposite direction from the parameter estimate for girls ($r = -.354$, $p = .080$), indicating that boys who had higher Affiliation With Deviant Peers at Wave 1 reported slower decreases in School Support across the year while girls

who reported higher Affiliation With Deviant Peers at Wave 1 reported faster decreases in School Support across sixth grade (although this relationship was not statistically significant for girls). There were no other significant differences between boys and girls in the correlational paths.

Discussion

In this study of students' perceptions of School Connectedness and affiliations with deviant peers during the critical first year of middle school, four main findings emerged. First, students' reports of School Support significantly declined across the school year. Second, as expected, School Support and Affiliation With Deviant Peers were negatively associated at the beginning of the school year; higher perceptions of School Support were associated with lower Affiliation With Deviant Peers. Third, and also congruent with our hypothesis, students who reported more decline in School Support were more likely to report growth in Affiliation With Deviant Peers across sixth grade. Finally, gender effects were detected. Compared with girls, boys reported more Affiliation With Deviant Peers at the beginning of the school year. Also, gender moderated the relationship between Affiliation With Deviant Peers in the fall and changes in perceptions of School Support across the year.

Students' perceptions of School Support decreased significantly across the sixth-grade year. This finding is consistent with Eccles' (1993) notion of developmental mismatch and with empirical studies that show a drop in School Connectedness following the transition to middle school (e.g., Wang & Dishion, 2012). Thus, for some youth, including many in the present sample, the transition to middle school may yield a poor fit for their needs despite the structural changes that middle schools have adopted to reduce this mismatch. The middle school environment may be particularly incongruent with values, priorities, and social demands of a high-poverty neighborhood, thus exacerbating the poor fit inherent in the transition to middle school. Connectedness to school may be especially challenging for these youth who live in neighborhoods where peers engaging in deviant behavior may be abundant. Yet, maintaining connectedness to school may be especially important for these youth as a protective mechanism diverting them from Affiliation With Deviant Peers and involvement in risky behavior.

Students' perceptions of School Support in the fall of sixth grade were linked to their reports of Affiliation With Deviant Peers at the same time point. Specifically, students who reported more support from school at the beginning of sixth grade also reported fewer affiliations with deviant peers at the same time, suggesting that this type of School Connect-

edness may be protective against negative outcomes typically associated with the transition to middle school. Indeed, these findings add to research suggesting that school connection is important for decreasing adolescents' Affiliation With Deviant Peers (Kelly et al., 2012; Roosa et al., 2011; Simons-Morton & Chen, 2009) and, by extension, decreasing their involvement in risky behavior (Catalano et al., 2004; Diaz, 2005; Dornbusch, Erickson, Laird, & Wong, 2001; Resnick et al., 1997; Rudasill et al., 2010; Voisin et al., 2005). Alternatively, it could be that affiliating with deviant peers decreases students' sense of connectedness to school because the goals of deviant peers are discordant with the goals of schools (Kaplan, 1980; Patterson et al., 1989). In the present study, where School Connectedness and Affiliation With Deviant Peers were assessed at the same time points, it is not possible to identify the direction of this relationship.

Importantly, we found that decreases in students' perceptions of School Support were related to increases in Affiliation With Deviant Peers across the school year. These results suggest that increasing students' levels of perceived support from school may depress Affiliation With Deviant Peers during early adolescence. This is congruent with findings from other studies of School Connectedness and Affiliation With Deviant Peers with middle school (Kelly et al., 2012; Simons-Morton & Chen, 2009) and high school students (Roosa et al., 2011), giving traction to the application of the Social Development Model in the school environment and to relational supports that schools may provide. Consistent with the Social Development Model, these results suggest that adolescents who are detached from the school context may gravitate toward deviant peers (Catalano & Hawkins, 1996); likewise, those who gravitate toward deviant peers may move away from prosocial people and conventional institutions, such as teachers and schools. These processes may occur simultaneously and be mutually reinforcing. Furthermore, this study documents the importance of School Support for students who may be particularly at risk for engaging in deviant behavior by virtue of living in high-poverty neighborhoods.

Our findings also indicate that, on the one hand, female students may weather the transition to middle school better than male students in terms of Affiliation With Deviant Peers, as they reported fewer deviant peers at the beginning of the school year. This is congruent with research showing that girls engage in fewer risky behaviors than boys (Blum et al., 2001). On the other hand, boys' higher Affiliation With Deviant Peers at the beginning of the school year was associated with less decline in School Support across the year, whereas for girls, higher Affiliation With Deviant Peers in the fall was associated with more decline in School Support across the year (although this relationship was not statistically significant for girls).

These results suggest that Affiliation With Deviant Peers may be less negative for boys' perceptions of School Support. It could be that, for boys, affiliating with deviant peers is not incongruent with feeling connected to school and may, in fact, make boys feel as though they are more connected and supported by peers in the school environment. Some items in our measure of School Support, such as "when I am at my school, I feel cared about" and "when I am at my school, I feel free to be who I am," do not refer specifically to teachers, so students' responses may reflect feelings of acceptance by peers. Other items, however, are specific to teachers such as "teachers are interested in students at my school," and "most of my teachers really listen to what I have to say." Although all of these items loaded together on a single factor (School Support), it is possible that with a more diverse or larger sample, two factors would emerge, one characterizing support from peers and another support from teachers. Clearly, this finding warrants further study.

Although we expected connection to adults to be related to fewer deviant peer affiliations, this was not the case, and this may reflect a lower value that middle school students place on connections with adults than peers. In a study using similar items to assess connections to adults, Jennings (2003) found that seventh-grade students' perceptions of connections with peers, but not with adults, were associated with GPA. Jennings (2003) posited that this may reflect the declining importance and influence of teachers as students enter adolescence. On the other hand, School Support, which was negatively associated with deviant peer affiliation in the current study, was measured to capture a student's more global perception of connection to school, comprising feeling cared about, comfortable, and competent. So perhaps School Connectedness through adult relationships *only* is not sufficiently salient to middle school students to be related to behaviors or skills. Indeed, in another study with this sample, we found that School Support, but not connection to adults, was positively associated with year-end GPA (Niehaus et al., 2012). However, there is ample support for the importance of teachers to students' academic and social success at the transition to middle school (e.g., Davis, 2006; Furrer & Skinner, 2003; Rudasill et al., 2010; Ryan, Stiller, & Lynch, 1994), pointing to a clear need for further examination of the potential benefits of students' perceptions of connections to school adults.

Limitations

Several limitations of the current study warrant attention. First, we did not have student-level family income data, and thus were not able to examine our findings as a function of variability in income. Nevertheless, the students in this sample heralded from high-poverty neighborhoods

and were, therefore, quite likely to be similar in family income. Even so, results reported here are similar to findings from Simons-Morton and Chen (2009), who examined growth in school engagement and deviant peers from sixth to ninth grade in a sample of students with substantial variability in socioeconomic status (SES). Future research should include comparisons of these constructs across students with different socioeconomic backgrounds. Second, students completed surveys while their teachers were present, and this may have affected the accuracy of reports of School Connectedness and Affiliation With Deviant Peers. Although a strength of the study is the longitudinal nature of our variables, both predictor and outcome variables were based on student report. Another limitation was the somewhat low internal reliability ($\alpha = .68$) for the School Support scale in the fall. Finally, we only sampled from two schools in one school district, and, therefore, caution should be used when generalizing the results of our study to students from other schools and districts in different geographic locations.

Implications and Future Directions

Findings from this study point to the important role that teachers and other school adults have in mitigating students' Affiliation With Deviant Peers following the transition to middle school. Specifically, students who felt supported at school were less likely to affiliate with deviant peers. This finding is particularly important given that perceived School Support declined significantly across sixth grade, which may help explain many of the negative student outcomes that often emerge in the early middle school years. Although we cannot assume a causal relation, it is plausible that School Support is a positive predictor of safer student behaviors, and a reduction in School Support over time may result in more risky student behaviors. Thus, fostering students' feelings of support at school seems to be one avenue by which school personnel can promote better outcomes for students, a particular concern for students at risk for poor outcomes due to poverty conditions.

This study's results, in concert with other work implicating School Connectedness in students' success in middle school (Davis, 2006; Herrero, Estevez, & Musitu, 2006; Roeser, Midgley, & Urdan, 1996; Ryan et al., 1994), inform the content and emphasis of teacher professional development and training programs. Specifically, teacher behaviors that may cultivate students' feelings of support and connection with school, including the behaviors, attitudes, and classroom interactions that convey a supportive environment to students, should be stressed. Future research should also focus on what particular teacher behaviors inside and outside the classroom most strongly contribute to students' feelings of sup-

port at school and their individual success. Similarly, this work could be extended with examinations of school-level variance in students' perceptions of School Connectedness. Although the current study does not include connection to family as a predictor of peer affiliation, the abundant research supporting that link (e.g., Brody et al., 2001; Kelly et al., 2012), together with findings reported here, point to extensions of this work where both family and School Connectedness are considered as predictors of adolescents' peer affiliation and risky behavior.

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Note

1. Magnet programs offer rigorous, focused curriculum in areas such as science and technology, fine and performing arts, or social science.

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