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Effect of Trajectories of Friends' and Parents' School Involvement on Adolescents' Engagement and Achievement

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Abstract

In a sample of 527 academically at-risk youth, we investigated trajectories of friends' and parents' school involvement across ages 12–14 and the joint contributions of these trajectories to adolescents' age 15 school engagement and academic achievement. Girls reported higher levels of friends' and parents' school involvement than boys. Both parents' and friends' school involvement declined across ages 12–14. Combined latent growth models and structural equation models showed effects of the trajectories of friends' and parents' school involvement on adolescents' age 15 school engagement and academic achievement, over and above adolescents' prior performance. These effects were additive rather than interactive. Strategies for enhancing parent involvement in school and students' affiliation with peers who are positively engaged in school are discussed.

Early adolescence, a period encompassing the middle school grades, is characterized by rapid biological, cognitive, and emotional changes in the child as well as changes in the family, school, and peer contexts. Coinciding with these changes, many youth become disengaged from school and achieve less academically (Wang & Eccles, 2012a). Because low levels of school engagement and achievement during this developmental period predict poor long-term educational attainment (notably school dropout; Neild, Stoner-Eby, & Furstenberg, 2008; Rumberger & Rotermund, 2012), it is important to identify environmental resources that may help protect adolescents from school disengagement and low achievement.

Relationships with friends and with parents are two contexts that have the potential to facilitate or undermine adolescents' commitment to school and subsequent educational attainment. Although prior research has documented the influence of friends and parents on early adolescents' academic engagement, little is known about the joint influence of these two contexts on school engagement and achievement during this developmental period. This

study investigates how changes in these two contexts across age 12–14 work together to shape adolescents' engagement in school and academic achievement.

Student Engagement in Early Adolescence

School engagement is a multidimensional construct that includes, at minimum, behavioral, emotional, and cognitive components (Fredricks, Blumenfeld, & Paris, 2004). Specifically, behavioral engagement refers to one's active involvement in learning and includes effort expended on academic tasks (e.g., doing one's homework, paying attention in class, and working hard) as well as participating in school activities and following school rules. Emotional engagement refers to a student's liking for, interest in, and sense of belonging to school. Cognitive engagement includes one's self-regulated behaviors associated with learning, such as goal setting and monitoring one's school work. Each type of engagement is associated with academic achievement (Fredricks et al., 2004; Wang & Eccles, 2012b). The behavioral and emotional dimensions of school engagement are the focus of this study.

Behavioral and emotional engagement in school often decline in early adolescence (Niehaus, Rudasill, & Rakes, 2012; Wang & Eccles, 2012a). Researchers have attributed this decline to a mismatch between (1) the psychological needs of early adolescents for relatedness, competence, and autonomy and (2) the ability of middle schools to meet those needs (Eccles et al., 1993). Students who perceive school as meeting these psychological needs are less likely to decrease their school engagement (Wang & Eccles, 2013). Declines in behavioral and emotional engagement in adolescence are associated with lower grades and performance on tests of academic achievement (Niehaus et al., 2012; Wang & Eccles, 2013; Wang & Sheikh-Khalil, 2014) and are strong predictors of dropping out of school (Fall & Roberts, 2012).

Friends' Characteristics and Adolescents' Academic Engagement and Achievement

Adolescence is a time of increased susceptibility to the influence of one's peers, especially one's close friends (Berndt, 1999). This influence is understood as a result of multiple developmental changes taking place in adolescence, including an increased desire for autonomy from parents and the formation of a clearer sense of identity (Erikson, 1968). Furthermore, in early adolescence, youth spend increasing amounts of time interacting with peers and increasingly follow the model set by peers on values and behaviors (Hardway & Fuligni, 2006).

Researchers investigating peer influences on academic engagement and achievement have studied different types of peer relationships, including peer acceptance, peer friendships, and peer groups (typically defined as frequent interaction partners). These different peer relationships influence adolescents' academic and behavioral adjustment in different but interrelated ways (Kindermann & Skinner, 2012). The characteristics of one's friends and peer group are important determinants of adolescents' academic motivation and achievement (Espinoza, Gillen-O'Neel, Gonzales, & Fuligni, 2013; Wang & Eccles, 2012b). For example, middle school students who perceived their friends as positively engaged in school increased

in their own positive school involvement from the fall to the spring of the year (Berndt & Keefe, 1995).

The similarity between adolescents and their friends on a number of characteristics is likely a result of both selection and socialization effects. Students choose to associate with friends who are similar to them; they are also influenced by their friends' attitudes and behaviors (Wentzel, Donlan, & Morrison, 2012). Modeling, information and emotional support, and the communication of expectations for achievement are key processes through which one's friends influence students' achievement, for better or for worse. Evidence of the importance of these interpersonal processes is provided by a study finding that one's friends' prosocial behavior (i.e., high engagement in school; low problem behavior) at Grade 6 was more predictive of changes in students' achievement at Grade 8 than friends' actual achievement (Véronneau & Dishion, 2011).

Studies assessing adolescents' peer group affiliations, defined in terms of a student's frequent interaction partners, also predict changes in academic outcomes (see Kindermann & Gest, 2009). Peer groups may influence adolescents' behaviors through reinforcement and punishment for adhering to or rejecting peer group norms (Sage & Kindermann, 1999). Recent research suggests the effects of friendships and frequent interaction partners have similar effects on students' academic engagement (Kindermann & Skinner, 2012).

Parent Involvement in School and Adolescents' Academic Engagement and Achievement

Parent involvement in school is a multidimensional construct, and different types of parent involvement are more or less beneficial at different ages (Wang, Hill, & Hofkens, 2014). During early adolescence, indirect forms of parent involvement in school (e.g., parent–child communication about school, discussing educational aspirations) are more strongly associated with achievement than are direct forms, such as helping with homework (Fan & Chen, 2001; Hill & Tyson, 2009). Hong and Ho (2005) found that parent–child communication regarding school activities and parents' educational aspirations at Grade 8 more consistently predicted adolescents' achievement four years later than did parent behavioral involvement (e.g., attending a school meeting, checking homework). In a study of high school students, parent academic socialization (i.e., communicating educational aspirations and discussing educational plans) in the fall of Grade 10 predicted students' school engagement at the end of Grade 11.

Staying informed about one's child's school activities is an indirect form of parent involvement in school. This study assessed adolescents' perceptions of parent knowledge of their school activities (e.g., parent awareness of when the child has a quiz at school or a school assignment). Similar student-report measures of parent knowledge of school activities have been consistently associated with positive academic outcomes (Hong & Ho, 2005). Various processes may account for the effect of parent school knowledge on youths' academic outcomes. Presumably, student perception of parent knowledge of school activities is based on discussions between the parent and youth about school activities, during which the importance of academic success is conveyed to the youth (Cheung, Pomerantz, & Dong,

2013). When parents are knowledgeable about school activities, they can respond in a variety of potentially helpful ways, such as helping their child study for a test, locating materials for an upcoming presentation, or structuring time for homework. Parent–youth discussions around school activities may also promote discussions about the youth's educational aspirations.

Joint Effects of Parents and Friends

Interactions with friends and with parents constitute two critical microsystems that form part of an adolescent's larger ecology. When considered simultaneously, support for academic success in each context may make separate (additive) contributions to adolescents' academic engagement and achievement, suggesting that improving either context would have positive effects on student academic adjustment. Alternatively, the parent and peer contexts may have interactive effects, such that parent school knowledge buffers adolescents from the negative effect of disengaged friends. Through parent–child discussion of school events, parents may communicate to the child the value of education, which may counter negative values and attitudes toward educational attainment received from disengaged friends.

To the best of the authors' knowledge, no study has examined whether parent school knowledge buffers adolescents from the effect of having friends with low school involvement (i.e., high negative school behaviors or low positive school behavior) on students' school engagement and achievement. However, studies of adolescent problem behaviors (e.g., substance use, delinquency) have found that the negative effect of having a deviant friend is minimized when the youths' parents monitor their activities (Dishion, Nelson, & Bullock, 2004; Véronneau & Dishion, 2010). Presumably, parents who are knowledgeable about their adolescents' out-of-school activities and friendships limit unsupervised time with deviant friends, thereby reducing the opportunity for negative peer influence. Studies examining the effects of parent affective support and friends' school involvement and achievement also report interactive effects on school engagement and educational aspirations (Marion, Laursen, Kiuru, Nurmi, & Salmela-Aro, 2014). In a study of Mexican American adolescents, affiliating with friends with low academic orientation was associated with lower educational aspirations only among adolescents who reported low levels of parental warmth (Espinoza et al., 2013).

Demographic Differences in Parent and Friends' School Involvement

Relative to boys, adolescent girls report higher levels of parent general monitoring of their activities and lower levels of friends' positive school engagement (Véronneau & Dishion, 2010; Wang & Eccles, 2012a). Despite these gender differences in level of parent and peer academic support, gender does not appear to moderate the effects of parent and friend academic support on academic outcomes (Kerr, Stattin, & Özdemir, 2012; Véronneau & Dishion, 2010).

Ethnic minority and low SES students report lower levels of parent involvement in school (Henry, Cavanagh, & Oetting, 2011; Hill et al., 2004). However, results have been inconsistent regarding ethnic group moderation of parent involvement on students'

engagement and achievement (Hill & Tyson, 2009; Witkow & Fuligni, 2011). With respect to friends' school involvement, African American and Latino students (especially males) are less likely than their Euro-American counterparts to prefer high-achieving peers and more likely to perceive their friends as having low school engagement and achievement (Crosnoe, Cavanagh, & Elder, 2003; Graham, Taylor, & Hudley, 1998). However, the relationship of one's friends' academic adjustment to one's own academic achievement appears to be similar across ethnic groups (Shin, Daly, & Vera, 2007; Witkow & Fuligni, 2011).

Current Study Goals and Hypotheses

This study investigated the relationships between trajectories of friends' school involvement and trajectories of parent school knowledge across ages 12–14 on adolescents' self-reported and teacher-reported behavioral engagement in school, student-reported school belonging, and scores on a nationally standardized measure of reading and math achievement at age 15. By investigating trajectories of both friend and parent school involvement, it is possible to determine the effect of both the initial level and growth or decline in each relationship on youths' outcomes, controlling for prior performance on that outcome. We expected that girls relative to boys would report higher levels of perceived school involvement in each relationship context and that school involvement in each context would decline for both genders average across ages 12–14. We expected students with smaller amounts of decline in friends' school involvement and parent school knowledge would be more engaged in school and achieve more at age 15 relative to students whose friends and parents declined more on these dimensions. Such a finding would support interventions that target those socialization contexts during this developmental period.

We tested both additive and interactive effects models. Additive models imply that the effect of each predictor is constant over all of the values of the other predictor, whereas interactive models imply that a different effect of the predictor is obtained at each value of the other predictor. A finding of additive (separate) effects would suggest that interventions to improve academic outcomes could potentially target either one's friends' school involvement or parents' school knowledge. In contrast, interactive effects would suggest that simultaneous targeting of both relationship contexts might be required to improve academic outcomes. Based on studies finding that diverse types of parent support (i.e., parent affective support and general parent monitoring) buffer youth from the adverse effect of deviant or academically disengaged friends (Espinoza et al., 2013; Véronneau & Dishion, 2010), we expected that the associations between parent school knowledge and achievement at age 15 would be stronger for students whose friends exhibit low school involvement.

These goals were pursued using an ethnically diverse, predominantly low socioeconomic status (SES) sample of adolescents who scored below average on a measure of literacy at entrance to first grade (see Participants). Given persistent ethnic and income disparities in educational attainment (Chapman, Laird, Ifill, & KewalRamani, 2011), the study sample is an important one for identifying the potential roles of parent school knowledge and friends' school involvement in early adolescence on students' subsequent academic motivation and achievement. Low-SES, low-achieving students are at a high risk for school dropout prior to

graduation from high school. We also investigated whether ethnicity moderated the effects of either friends' school involvement or parental knowledge on outcomes.

METHODS

Participants

Participants were 527 (55.4% male) students originally recruited in the fall of 2000 or 2001 into a larger longitudinal study ($N = 784$) when they were in Grade 1 (mean age = 6.57, $SD = 0.38$). Students in the larger longitudinal sample were originally enrolled in first grade in one of three school districts (one urban and two small city districts) in Texas. They were initially selected into the study on the basis of scoring below the median on a district-administered test of literacy administered in the spring of kindergarten or the fall of Grade 1. Additional inclusionary criteria for the larger study included speaking English or Spanish, not receiving special education services other than speech and language services, and not having been previously retained in Grade 1. Details on recruitment of the 784 participants are reported in Hughes & Kwok, 2007.

At completion of the first 5 years of study participation, parental written consent for continued participation was received for 569 of the 784 participants. Almost all nonconsent was due to parental nonresponse. Of the 569 students, 42 students did not meet the inclusionary criteria for this study of having parent, teacher, and peer measures at one or more of the annual assessments during ages 12, 13, and 14 (corresponding to Grades 6, 7, and 8 for the majority of participants). Relative to the 527 participants included in the current analyses, the 257 attrited subjects did not differ on any of the key baseline measures shown in prior literature to be related to educational outcomes (i.e., gender, parent education level, reading and math achievement, district literacy score, IQ, ethnicity, and bilingual status). At year 6, these 527 participants averaged 12.57 years of age ($SD = 0.37$), and 359 (68%) were enrolled in Grade 6 and 167 (32%) were enrolled in Grade 5, due to prior grade retention. Based on income eligibility for free or reduced lunch, 61.4% were economically disadvantaged, and for 40% of the students the highest level of educational attainment reported by either parent or caretaker was a high school diploma or less. The ethnic composition of the sample was 34% Euro-American, 25% African American, 38% Latino, and 3% other ethnicities. At age 12, these 527 students were enrolled in 50 school districts, 88 schools, and 194 classrooms. At age 15, these students were enrolled in 71 school districts, 92 schools, and 182 classrooms. The increase in the number of school districts reflects the increased geographical dispersal of the sample over time.

Assessment Overview

Students' perception of parents' school knowledge and friends' school involvement were assessed annually at school by trained research staff, with a minimum of eight months separating each annual assessment at ages 12, 13, and 14. Students who were more proficient in Spanish than English, based on performance on the Woodcock-Muñoz Language Test (Woodcock & Muñoz-Sandoval, 1993) ($n = 22$ at age 12), were administered all measures in Spanish. Student ethnicity was obtained from the school, based on parent report in Grade 1. Reading and math achievement were assessed at age 11 (baseline for this

study) and at age 15. Students reported on their school engagement and school belonging and teachers reported on students' behavioral engagement at baseline (age 11 for all measures except for student-reported engagement, for which age 10 was the baseline) and age 15. Achievement was tested with the Woodcock-Johnson III Tests of Achievement (WJ-III; Woodcock, McGrew, & Mather, 2001) Broad Reading and Broad Math scales. Students assessed as more proficient in Spanish than English were administered the Bateria III, the equivalent Spanish version of the WJ-III (Woodcock, Muñoz-Sandoval, McGrew, Mather, & Schrank, 2004). Parents reported the highest educational level of any adult in the household on a 1 (elementary school) to 10 (PhD, MD, or equivalent) scale.

Social Support for Achievement Measures

Perceived friends' school involvement—Students were individually interviewed and asked to name up to eight peers with whom they spend time outside of the classroom (e.g., at lunch, before or after school, in the neighborhood). Students could name peers who did not attend their grade or school. For each peer named, students answered questions describing the peer's friendship status (i.e., close friend or “someone you just spend time with”) and the peer's positive school involvement and problem behaviors. Based on research finding stronger peer effects for peers identified as close friends compared to peers with whom one spends time but does not share a close relationship (for a review, see Berndt, Hawkins, & Jiao, 1999), only data concerning characteristics of close friends were used in the current analysis.

At age 12, 13, and 14, the mean number of close friends nominated was 3.12 ($SD = 1.99$), 3.26 ($SD = 1.92$), and 3.40 ($SD = 1.79$), respectively. The student answered *yes* or *no* to 3 questions describing positive school involvement for each close friend (i.e., “Does friend plan to go to college?”; “Does friend get along with teachers and other adults?”; “Is the friend doing well in school?”) and 4 questions describing conduct problems, or negative school involvement, of each close friend (i.e., “Does friend regularly smoke or chew tobacco?”; “Is friend often out on the town at night?”; “Has friend ever been caught by the police?”; and “Has the friend ever skipped school?”). For each school involvement item, the score was the mean percentage of one's close friends who engaged in that behavior; scores could range from 0 to 1.0.

Prior research has found that measures of friends' prosocial and problem behaviors are strongly negatively correlated with each other, and that both predict changes in adolescents' academic achievement (Véronneau & Dishion, 2011). Furthermore, problem behaviors may be viewed as indicators of disaffection from school or amotivation, which many researchers view as the opposite of positive school involvement (Green-Demers, Legault, Pelletier, & Pelletier, 2008; Legault, Green-Demers, & Pelletier, 2006). Thus, to obtain a single, broad index of friend school involvement, a composite friend school involvement score was formed as the mean across the 7 items (after reverse scoring the negative involvement items). The mean internal consistency of the seven items across the three measurement waves was 0.65 (range 0.59–0.69).

Perceived parent school knowledge—Students indicated their agreement on a 5-point Likert-type scale for three items assessing parents' knowledge of their school activities (i.e., what homework I have, when I have a quiz, and when I have a presentation). Adolescents have been shown to be reliable reporters of parent knowledge of school activities, and measures with similar items have been shown to predict student school engagement and achievement (Cheung et al., 2013; Hill et al., 2004). The average internal consistency for these three items across the three assessment waves was 0.75 (range 0.67–0.83).

Measures of Academic Functioning

Student-reported school engagement—Students rated their school engagement on an 18-item scale drawn from Skinner, Zimmer-Gembeck, and Connell (1998). Results of exploratory and confirmatory factor analyses with the current sample supported three factors labeled Behavioral Engagement (7 items), Behavioral Disaffection (6 items), and Emotional Engagement (4 items) (Chen, Hughes, Liew, & Kwok, 2010). Only the behavioral engagement scale was used in this study. This scale has demonstrated good criterion-related validity (Chen et al., 2010). Sample items include: “When I am in class, I work as hard as I can,” and “When I am in class, I concentrate on doing my work.” Students were asked to indicate their agreement on each item on a 1 (*not at all true*) to 4 (*very true*) scale. A composite score was created as the mean item score for these 7 items (Cronbach's $\alpha = .83$ for ages 10 and 15).

Teacher-rated behavioral engagement—Teachers rated students' classroom engagement with an 11-item questionnaire. Items were drawn from the teacher and student ratings of student engagement scales (Skinner et al., 1998). Items assess effort, persistence, concentration, and interest. Sample items include the following: “Tries hard to do well in school,” “concentrates on doing work,” “tries to look busy” (reverse scored), and “participates in class discussion.” Teachers were asked to indicate the extent to which each statement was true of the student on a 1 (*not true at all*) to 4 (*very true*) scale. Scores on this scale predict changes in students' reading and math achievement (Wu, Hughes, & Kwok, 2010). Internal consistency (Cronbach's α) for the current sample was 0.93 for ages 11 and 15.

School belonging—The Psychological Sense of School Membership Scale (Goodenow, 1993) was administered in individual interviews. Students were asked to indicate their agreement on a 5-point Likert-type scale with 18 items that assess students' perceived acceptance, feelings of inclusion, respect, and encouragement for participation. Higher school membership scores are associated with greater school attendance, higher grades, more positive self-concept, greater time spent on homework, and better social–emotional adjustment (Goodenow, 1993; Hughes & Chen, 2011). The internal consistency reliability (Cronbach's α) of school belonging scores for age 11 and age 15 was .84 and .90, respectively.

Academic achievement—The WJ-III Test of Achievement (Woodcock et al., 2001) is an individually administered measure of academic achievement for individuals 2 years of age to adulthood. The WJ-III Broad Reading W Scores (based on letter–word identification,

reading fluency, passage comprehension subtests) and the WJ-III Broad Math W Scores (based on calculations, math fluency, and math calculation skills subtests) were used. Because W scores are based on the Rasch measurement model, yielding an equal interval scale, they are well-suited for the analysis of longitudinal change. Evidence of the reliability and construct validity of scores on the WJ-III and its equivalent Spanish version is strong (Woodcock et al., 2001, 2004).

Demographic Covariates

Gender was coded as 1 for male and 0 for female. Socioeconomic status (SES) was the mean of the standardized scores for economic disadvantage (a dichotomous variable based on school records indicating eligibility for free or reduced lunch) and parent education level (based on parent-reported highest level of education obtained by any adult living in the home, scored on a 1–10 scale). Higher scores represented relatively higher SES.

Research Design and Data Analysis

All analyses were conducted using Mplus (version 7, Muthén & Muthén, 1998–2012). The models in the study were tested using full information maximum likelihood, which provides proper adjustment for data that are missing at random (Enders, 2010). First we investigated trajectories of friends' school involvement and parent school knowledge across ages 12–14 using an unconditional latent growth model (LGM). The LGMs with two trajectory factors allowed us to estimate the average level of friends' school involvement and parent school knowledge at age 12 (i.e., intercept) and the rate of linear growth or decline in each support context across ages 12–14 (i.e., slope). All students had three repeated assessment waves across ages 12–14 (typically Grades 6, 7, and 8). Second, using the conditional LGM, we investigated the effect of gender on the intercept and slope for each relationship, controlling for the effect of SES and student grade at age 12.

Third, combining LGMs and structural equation models (SEMs), we examined the direct effects of trajectories of friend school involvement and parent school knowledge across ages 12–14 on the age 15 outcomes (i.e., student- and teacher-rated school engagement, student-rated school belonging, and achievement test scores). Figure 1 depicts the model for these analyses. Student gender, SES, student school grade at age 12, baseline score of the outcome, and age 11 WJ achievement were covariates for the intercept and slope for friend school involvement and for parent school knowledge. The effects of baseline measures of the outcome and age 11 achievement were also controlled for the outcomes at age 15. We also tested the potential moderating effect of parent school knowledge on the effect of friends' school involvement on age 15 outcomes. Finally, using multiple-group SEM analyses, we investigated ethnic differences among the Euro-American, African American, and Latino groups in the relation between the trajectories of each relationship and age 15 outcomes.

RESULTS

Descriptive Statistics

Descriptive statistics for the measured variables in the analyses are depicted in Table 1. None of the variables had extreme values or exhibited levels of skewness or kurtosis

associated with problematic tests of fit or standard errors in structural equation modeling (West, Finch, & Curran, 1995); thus, full information maximum likelihood estimation was used. The mean 1-year stability for ratings of friend and parent involvement was .33 and .54, respectively. The lower stability for friends' involvement likely reflects the fact that close friendships often change from year to year during early adolescence (Brown & Larson, 2009). Within each time period, the two sources of involvement were positively and significantly correlated.

Consistent with previous research, female gender and SES were positively associated with a majority of the outcomes. Students who were in Grade 6 at age 12 (i.e., not previously retained), compared to students who were in Grade 5 at age 12 (i.e., previously retained once), scored higher on age 15 reading and math and reported lower levels of parent school knowledge. Age 15 teacher-reported behavioral engagement was significantly correlated with each of the other outcome variables. Both reading and math scores were also significantly correlated with student-reported school belonging; student-reported school belonging was also significantly correlated with student-reported behavioral engagement.

Latent Growth Modeling for Friend and Parent Involvement

We initially conducted unconditional LGMs which had adequate fit according to suggested criteria (Hu & Bentler, 1999); for friend school involvement, $\chi^2(1) = 0.001$, $p = .993$, root mean square error of approximation (RMSEA) = 0.000, standardized root mean square residual (SRMR) = 0.000; for parent school knowledge, $\chi^2(1) = 4.775$, $p = 0.0289$, RMSEA = 0.084, SRMR = 0.019. The average friend school involvement score at age 12 (friend involvement intercept) was 0.93 ($SE = 0.004$, $p < 0.001$) on a scale that could range from 0 to 1.0, indicating that, on average, participants' close friends had a high level of positive school involvement. The unstandardized linear slope for friend involvement was significantly negative, indicating a decline in the school involvement of one's friends with increasing age 12–14 ($\gamma = -0.012$, $SE = 0.003$, $p < 0.001$). The average item score of parent school knowledge (parent knowledge intercept) was 3.84 on a 5-point scale ($SE = 0.041$, $p < 0.001$), and the unstandardized linear slope for parent knowledge was significantly negative, indicating declining parent school knowledge across age 12–14 ($\gamma = -0.258$, $SE = 0.026$, $p < 0.001$).

We estimated the correlations between the latent intercepts and latent slopes of friends' school involvement and parent school knowledge in the unconditional LGMs. Using Cohen's (1988) norms for interpretation of correlation coefficients, the two intercept terms were highly correlated ($r = .51$). The correlation between the slope for friends' involvement and slope for parent school knowledge was moderate to high ($r = .40$).

Next, we investigated the effect of the three covariates (i.e., gender, SES, and grade at age 12), considered simultaneously, in the two conditional LGMs. Both models had good fit according to Hu and Bentler's (1999) criteria: for friends' school involvement, $\chi^2(4) = 0.788$, $p = .940$, RMSEA = 0.000, SRMR = 0.008; for parent school knowledge, $\chi^2(4) = 6.010$, $p = 0.198$, RMSEA = 0.031, SRMR = 0.014. At age 12, relative to boys, girls reported a higher mean score (intercept) on both friend's and parents' school involvement, indicating girls perceived that their friends were more involved in school (standardized $\beta =$

−0.198, $SE = 0.073$, $p = .004$) and their parents were more knowledgeable about their school activities (standardized $\beta = -.118$, $SE = .055$, $p = .032$). However, no gender differences were found between boys and girls in the rate of linear growth or decline in perceived friend school involvement or in perceived parent school knowledge across age 12–14. SES was positively associated with the friend school involvement slope (standardized $\beta = .011$, $SE = 0.003$, $p = .001$), with the friends of higher SES students having a lower rate of decrease in school involvement. No other effects of covariates were found.

Simultaneous SEM

Latent growth model and *SEM* were combined to examine the separate effects of parent and friend trajectories of school involvement on each of the four age 15 outcomes. Because the intercepts and slopes for friends' school involvement and parent school knowledge were correlated, it was important to assess whether each relationship context made separate (i.e., additive) contributions to age 15 outcomes. In each analysis, we controlled for the effect of the baseline variables (i.e., age 10 or 11 measure of the outcome and age 11 WJ achievement) on the age 15 outcomes. These baseline variables were correlated in the models. We also controlled for the three covariates (gender, SES, grade at age 12) and baseline variables on the growth parameters. Figure 1 depicts the model for the SEM analyses. Results are reported in Table 2. We present the standardized coefficients (β) and corresponding standard errors (SE) for the growth parameters for each trajectory in the hypothesized SEMs. The p -values are based on the unstandardized coefficients and standard errors which provides a more accurate test of the relationship.

For the age 15 student-reported engagement outcome, the hypothesized model showed adequate fit; $\chi^2(28) = 107.777$ ($p < .001$); RMSEA = 0.076; SRMR = 0.070. Only the parent knowledge intercept ($\beta = 0.320$, $SE = 0.059$, $p < .001$) and the parent knowledge slope ($\beta = .208$, $SE = 0.066$, $p = .002$) predicted student-reported engagement at age 15. This positive effect of parent knowledge intercept indicates that students reporting higher levels of parent knowledge of their school activities at age 12 reported a higher level of school engagement at age 15. The positive effect of parent knowledge slope indicates that the students with a lower rate of decrease in perceived parent school knowledge across age 12 to 14 reported a higher school engagement at age 15. In contrast, the friend involvement intercept ($\beta = .216$, $SE = 0.107$, $p = .056$) and slope ($\beta = .216$, $SE = 0.107$, $p = .056$) did not make a unique contribution to student-reported school engagement at age 15.

For age 15 teacher-rated engagement, the model showed adequate fit $\chi^2(28) = 96.909$ ($p < .001$); RMSEA = 0.077; SRMR = 0.075. A unique effect was found only for the friend involvement slope ($\beta = .441$, $SE = 0.114$, $p = .005$), indicating students having a lower rate of decrease in friend school involvement across age 12 to 14 were rated by their teachers as more engaged in school at age 15.

For age 15 student-rated school belonging, the model fit was also adequate; $\chi^2(28) = 92.054$ ($p < .001$); RMSEA = .067; SRMR = 0.064. Separate unique effects predicting school belonging in age 15 were found for the friend school involvement intercept ($\beta = .178$, $SE = 0.074$, $p = .018$) and parent school knowledge intercept ($\beta = .319$, $SE = 0.061$, $p < .001$). These results indicate that students who perceived their friends as more involved in

school (a higher intercept) and their parents as more informed of school activities at age 12 reported a higher sense of school belonging. In addition, the parent knowledge slope ($\beta = .268$, $SE = 0.064$, $p < .001$) predicted the student-reported school belonging at age 15, indicating the students having a lower rate of decrease in parent school knowledge across age 12 to 14 reported a higher level of school belonging at age 15.

For age 15 tested achievement, the hypothesized models showed an adequate fit; $\chi^2(26) = 102.244$ ($p < .001$); RMSEA = 0.076; SRMR = 0.078. Only friend engagement slope separately predicted achievement at age 15 ($\beta = 0.216$, $SE = 0.058$, $p = .001$). This result indicates that students having a lower rate of decrease in parent school knowledge across age 12 to 14 had a higher achievement scores at age 15.

Parent School Involvement Moderation of Effect of Friends' School Involvement

We tested the potential moderating effect of parent school knowledge on the effect of friends' school involvement on age 15 outcome. In this moderation model, we analyzed the latent growth interaction effect using the unconstrained product indicator (UPI) approach proposed by Marsh, Wen, and Hau (2004, 2006). The UPI approach requires the creation of the latent interaction factors by creating the corresponding product (interaction) term(s) from the observed variables. Adapting Marsh et al.'s (2004, 2006) approach, we created the three matched pair product terms by pairing up the indicators that were assessed in the same year.

We included the interaction between intercepts (Friend involvement intercept $\times$ Parent knowledge intercept) and interaction between slopes (Friend involvement slope $\times$ Parent knowledge slope) in addition to the four first-order effects (i.e., friend involvement intercept, friend involvement slope, parent knowledge intercept, and parent knowledge slope) in the model for each age 15 outcome. The moderation model fit the data adequately ($\chi^2(52 \text{ to } 57) = 83.486 \text{ to } 97.259$ ($p = .001 \text{ to } p = .013$); SRMR = .043 to .046; RMSEA = .033 to .039). However, we found no evidence of interactive effects, indicating that the intercept and slope of parent school knowledge do not appear to buffer students from the negative effects of having friends with low school involvement on any of the age 15 outcomes.

Ethnic Moderation

Ethnic differences in the relation between trajectories of each relationship involvement trajectory and each age 15 outcome were tested using multiple-group SEM. We first allowed the relation to vary between the two growth factors and each outcome separately across the three sizeable student ethnic groups (i.e., Euro-American, Latinos, and African American). That is, all other parameters were allowed to vary across groups except the relations of interest between the trajectories of social support (friend engagement intercept, friend engagement slope, parent knowledge intercept, and parent knowledge slope) and the outcome in the multiple-group SEMs. Next, we imposed equality constraints on these relations. Using chi-square difference tests, we found no evidence that ethnic group moderated the effects of either friends' school involvement or parent school knowledge on any of the four outcomes.

DISCUSSION

Trajectories of Social Support for Achievement

Consistent with expectations, our predominantly low-SES, low-achieving students on average reported a decline in the school involvement of their friends and a decline in parent knowledge of school activities during early adolescence. The average decline in parent knowledge may be explained by two complementary developmental trends. First, as students enter middle school, parents reduce direct academic involvement (talking to teachers, helping with homework) and are thus more dependent on their child's disclosure for information about school assignments and events. Second, early adolescence marks a period of decreased youth disclosure to their parents about their activities (Cheung et al., 2013), a trend best understood in the context of the child's normative striving for autonomy and self-governance during this developmental period (McElhaney, Allen, Stephenson, & Hare, 2009).

The higher level of friends' school involvement and parent school knowledge reported by girls relative to boys at age 12 persisted across the next 3 years. These gender differences in both friend and the parent contexts may partially explain girls' advantages in school engagement and school completion (Chapman et al., 2011). Whereas higher SES youth did not differ initially from lower SES youth in friends' school involvement, the school engagement of the friends of higher SES youth declined more slowly than that of friends of lower SES youth. The more rapid decline in one's friends' school involvement among lower SES youth may explain, in part, the overrepresentation of low-SES children in statistics on high school dropout.

Grade level at age 12 was negatively associated with the intercept, but not the slope from age 12–14, for perceived parent school knowledge; it was not predictive of the intercept or slope for perceived friends' school involvement. In the participating school districts, most students make the transition to middle school in Grade 6. Among students of the same age, those who were still in Grade 5 at age 12 (due to grade retention) perceived higher levels of parent knowledge of their school activities. These findings suggest that the transition to middle school is accompanied by a lessening in parent knowledge of their children's school activities; the decline in parent knowledge is not explained by a change in student age alone.

Effect of Support Trajectories on Academic Outcomes

With the exception of sense of school belonging, friends' involvement and parent knowledge predicted different academic outcomes. Friends' initial school involvement and the initial level and change in parent school knowledge across ages 12–14 made separate contributions to students' age 15 school belonging. These results suggest that targeting either or both of these contexts at the beginning of middle school may result in higher levels of school belonging at age 15. Both initial level at age 12 and change over time in parent school knowledge also predicted student-reported behavioral engagement, but parent involvement trajectory parameters did not predict teacher-rated behavioral engagement or scores on tests of reading and math achievement at age 15.

Prior studies have found that indirect forms of parent academic involvement, including monitoring of youth's school activities and parent–child discussions about school, predict academic achievement (Wang & Sheikh-Khalil, 2014). Differences in our findings and prior research may be due to sample characteristics. Our sample is predominantly low-SES, with 61% eligible for free or reduced lunch. The relatively few studies examining SES as a moderator of effects of parent academic involvement on academic achievement suggest that lower SES youth, relative to higher SES youth, may benefit less from parent involvement (Hill et al., 2004; McNeal, 2012). For example, in a study of middle school students (Hill et al., 2004), among the higher parental education group, student-reported parent academic involvement (defined in terms of awareness of school progress, communication about things related to school activities) was related to fewer behavior problems, which were in turn related to achievement and children's educational aspirations. For youth in the lower parental education group, parent academic involvement was related to children's aspirations but not to their behavior or achievement. The authors suggested the smaller effects of parent academic involvement on achievement among low-SES families may be due to lower social capital, including parent knowledge of effective strategies for improving achievement, relative to higher SES families.

Although we did not find a direct effect of parent knowledge on teacher-rated behavioral engagement or achievement, it is possible that the direct effect of parent knowledge on students' reported engagement and school belonging might have an indirect effect on their long-term educational attainment. Such indirect effects are common in the literature (Wang & Sheikh-Khalil, 2014). For example, Hong and Ho (2005) found that greater parental involvement at Grade 8, in terms of parent–child communication about school and educational aspiration for children, had an indirect effect on growth in achievement through Grade 12, via its direct effect on students' educational aspiration and locus of control. Furthermore, it is important to note that even if parent knowledge does not have an effect on academic achievement; it may protect academically at-risk youth from dropping out of school via its effects on students' valuing of school or sense of school belonging (Fall & Roberts, 2012).

Changes in friends' school involvement across these 3 years of early adolescence predicted age 15 teacher-rated behavioral engagement and tested achievement but not students' academic self-views. The greater effect of the parent context, versus the friend context, on academic self-views may reflect the fact that most friend interactions occur at school, whereas parent–child interactions occur at home. Adolescents may engage in behaviors at school that are approved by their friends, even if they diverge from their academic self-views, which may be more influenced by interactions with their parents. Prior research suggests that parents play a critical role in students' educational goals and attitudes, whereas peers are a more important source of influence on student school behaviors (Guay, Marsh, Senecal, & Dowson, 2008).

Contrary to expectations, there was no evidence for an interaction of parent school knowledge and friend school involvement in predicting age 15 outcomes. The beneficial effects of parent school engagement did not differ as a function of the school engagement of the youth's friends. One plausible explanation for this finding is that having parents who are

informed about their youth's school activities may promote students' academic engagement via processes that are independent of adolescents' peer relationships, such as assistance with school tasks and communicating high educational expectations. In contrast, parent monitoring of their child's out-of-school activities presumably limits their child's time spent in unsupervised activities with friends. Such unsupervised activities are strongly related to increases in students' problem behaviors (Véronneau & Dishion, 2010).

Study Strengths, Limitations, and Directions for Future Research

Among study strengths is a prospective research design that statistically controlled for the effect of demographic variables known to affect adolescents' academic performance (gender and SES) as well as baseline measures of reading and math performance. Nevertheless, longitudinal studies such as this one cannot rule out the possibility that unmeasured time-varying covariates might be confounders that could potentially account for study findings.

Our assessment of perceived parent knowledge of school activities does not address whether adolescents or their parents initiated conversations about school. Results for parent engagement might have been stronger, or parent engagement might have interacted with friend school engagement, had we measured youth disclosure of school activities versus youth report of parental knowledge of school activities. Prior research suggests that child voluntary disclosure is the primary means by which parents gain knowledge of their children's activities, and that only spontaneous disclosure of school activities to parents is associated with positive student academic outcomes (Stattin & Kerr, 2000). Future research on parents' knowledge of their adolescent's school activities should assess the means by which parents obtain information about their child's school activities.

Our measure of friends' school involvement permitted students to name individuals who were classmates as well as individuals who were not in their class at school (e.g., neighbors, church friends, or members of community athletic teams), thereby providing a more comprehensive assessment of friends' influence. Despite these advantages to our assessment of friends' school involvement, it is not without limitations. First, because youth tend to overestimate the degree to which they are similar to their friends (Prinstein & Wang, 2005), the association between adolescents' engagement and that of their friends may be inflated. Second, we do not know if the friendships were reciprocated or just "one way." Prior research that has identified reciprocated friends and collected objective information on friends' characteristics has typically been conducted in studies completed within a given school year (Kindermann & Skinner, 2012; Véronneau & Dishion, 2011). Logistical problems and human subjects restrictions associated with collecting data on reciprocated friends' characteristics across multiple years required a different approach.

Because students in the current sample were recruited into a larger longitudinal study in first grade on the basis of scoring below the median for their school district on a test of early literacy, the current findings may not generalize to students entering school with above average academic readiness. However, because the sample is ethnically diverse, and 61% of the students were eligible for free or reduced lunch, findings are of considerable relevance to educators and policy makers concerned with reducing ethnic and SES disparities in educational achievement. Low-income, low-achieving students are at the highest risk of

school dropout prior to graduation from high school. Finally, because the relationships examined in this study are embedded within broader social and structural contexts, it is important to understand how features of these contexts, such as school climate or school ethnic composition, may moderate the effect of parent and friends' school involvement on academic achievement.

Implications of Findings for Policy and Practice

Low achievement and school engagement at age 15 are strong predictors of dropping out of school, above and beyond the effects of previous school performance and students' attitudes (Neild et al., 2008). Thus, the findings of the present study underscore the importance of finding ways to promote parent school engagement and student affiliation with academically engaged students. Improvements in the friend or parent contexts, or both, are likely to enhance school engagement and achievement.

The finding that parents of students who were enrolled in elementary school rather than middle school at age 12 of the study had higher levels of parent school engagement suggests that the transition to middle school triggers a reduction in parent school engagement that is not explained by age alone. Parents may believe that a reduction in school involvement is appropriate as their children enter middle school (Whitaker & Hoover-Dempsey, 2013). Yet, our results suggest that parents' engagement at the beginning of middle school and their continued engagement throughout middle school influence youths' perceived engagement in school and sense of belonging to school, both of which predict students' long-term educational attainment. Schools may be able to attenuate this normative decline in parent school engagement when children enter middle school by encouraging parents to engage in developmentally appropriate strategies, such as talking to their adolescent about school activities and educational goals. Teachers can encourage parent involvement during middle school by asking students to engage parents in specific learning activities at home that complement students' learning at school.

Efforts to improve school climate may increase the school engagement of the entire student body, making it more likely that all students will have higher peer support for positive school involvement. The Centers for Disease Control and Prevention (2009) recommends reforming school climate as a strategy to promote healthy relationships, school connectedness, and educational attainment. For example, schools implementing school-wide positive behavioral supports (SWPBS) experience decreases in behavioral problems and increased academic performance (Ward & Gersten, 2013).

As adolescents become older, they and their parents are more likely to consider rules restricting the youths' friendships and activities as outside legitimate parental authority (Kuhn & Laird, 2011). Thus, direct parental attempts to orchestrate friendships are less likely to succeed. However, indirect parental strategies, such as structuring an adolescent's opportunities to form friendships with prosocial youth by encouraging involvement in activities and contexts that maximize interaction with prosocial youth, may be effective. Considerable research documents that participation in extracurricular activities promotes students' positive school identity and academic success (Farb & Matjasko, 2012), an effect explained in part by access to positive social norms (Ramey & Rose-Krasnor, 2012).

Furthermore, extracurricular participation is particularly beneficial to the academic success of lower income and ethnic minority students (Mahoney & Stattin, 2000). Such “social engineering” on the part of parents may affect students' long-term educational attainment via its more proximal effects on students' peer contexts.

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FIGURE 1.

Hypothesized SEMs to test the effect of middle school trajectories in each of social support on age 15 outcomes. The same model applies to the four age 15 outcomes (school engagement and achievement). For covariates, SES is socioeconomic status; higher scores indicate higher SES. Grade at age 12 is grade in which the student is enrolled at age 12 (Grade 5 or Grade 6). Achievement is a composite score based on WJ-III Broad Reading and Math W scores. Intercept refers to the estimated mean level of friends' school involvement and parent school knowledge at age 12. Slope refers to rate of linear growth or decline in friends' school involvement and parent school involvement across age 12–14. For the SEM models, we did not include the correlated residuals between the Intercept and Slope latent growth factors because the model did not converge. However, modification indices indicated that this correlation was minimal.

TABLE 1
Zero-Order Correlations and Descriptive Statistics Among Observed Analysis Variables ($N = 527$)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
<i>Source of support</i>																			
1 F_Involve12	–																		
2 F_Involve13	.30	–																	
3 F_Involve14	.30	.39	–																
4 P_Knowledge12	.24	.19	.19	–															
5 P_Knowledge13	.16	.28	.22	.48	–														
6 P_Knowledge14	.15	.23	.28	.37	.61	–													
<i>Outcomes</i>																			
7 S_Engage15	.09	.26	.28	.26	.33	.38	–												
8 T_Engage15	.08	.17	.20	.04	.07	.08	.26	–											
9 S_Belonging15	.20	.26	.25	.28	.34	.40	.52	.18	–										
10 Reading 15	.08	.15	.06	.06	–.07	–.08	–.02	.22	.07	–									
11 Math 15	.14	.14	.12	.09	–.06	–.04	.01	.23	.12	.70	–								
<i>Baseline variables</i>																			
12 S_Engage10	.10	.03	.15	.12	.18	.17	.25	.09	.21	–.02	.02	–							
13 T_Engage11	.07	.14	.16	.04	–.01	.00	.02	.33	.11	.33	.36	.07	–						
14 S_Belonging11	.16	.12	.11	.24	.27	.15	.23	.02	.27	.04	.02	.20	.10	–					
15 Reading11	.04	.13	.00	.05	.00	–.08	–.04	.16	.04	.82	.58	–.02	.30	.07	–				
16 Math11	.08	.09	.05	.04	–.06	–.10	–.03	.21	.07	.66	.81	.05	.35	.04	.64	–			
<i>Covariates</i>																			
17 Gender	–.12	–.14	–.17	–.07	–.08	–.02	–.13	–.22	–.09	–.12	.04	–.13	–.18	–.05	–.09	.01	–		
18 SES	.04	.07	.18	–.01	–.02	.00	–.04	.26	.02	.37	.37	–.10	.13	–.04	.26	.33	.00	–	
19 Grade 12	.03	.01	–.02	–.09	–.09	–.07	–.08	.07	–.03	.31	.24	–.06	.11	.00	.36	.38	–.11	.17	–
<i>Descriptive statistics</i>																			
Missing (%)	4%	5%	6%	3%	4%	5%	8%	26%	9%	9%	10%	3%	19%	4%	4%	4%	0%	5%	0%
Mean	.93	.92	.91	3.86	3.51	3.34	3.06	2.71	3.84	97.46	94.66	3.47	2.80	3.93	95.61	100.43	.55	.61	5.68
SD	.10	.12	.12	.96	1.07	1.14	.54	.66	.67	15.58	13.00	.44	.68	.63	13.63	11.66	.50	.49	.47

Note. For the source of support, F_Involve is close friends' school involvement, P_Knowledge is parent knowledge of their child's school activities. For source of measures, S_ is student-reported; T_ is teacher-reported. Engage is student's behavioral engagement. Belonging is student's school belonging. Reading is WJ-III Broad Reading W scores. Math is WJ-III Broad Math W scores. For covariates,

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Gender was coded as 1 for male and 0 for female. SES is social economic status; higher scores indicate higher SES. Grade 12 is grade in which the student is enrolled at age 12 (6 = Grade 6; 5 = Grade 5). Number at the end of each variable indicates the student's age when the variable was measured. The correlations are bivariate correlations based on listwise deletion. Italic correlations are significant at $p < .05$.

Effect of Trajectories of Friends' School Involvement and Parent School Knowledge Across Age 12–14 on Outcomes at Age 15

TABLE 2

Outcomes Effects	S Engagement			T Engagement			S School Belong			Achievement		
	β	SE	p	β	SE	p	β	SE	p	β	SE	p
Friend involvement intercept	.060	0.085	.478	-.019	0.093	.835	*,178	0.074	.018	.060	0.040	.130
Friend involvement slope	.181	0.105	.084	*,441	0.114	.005	.031	0.083	.707	*,216	0.058	.001
Parent knowledge intercept	*,320	0.059	<.001	-.016	0.074	.823	*,319	0.061	<.001	-.010	0.032	.760
Parent knowledge slope	*,208	0.066	.002	.065	0.081	.422	*,268	0.064	<.001	-.032	0.036	.365

Note: Source of measure, S = student report; T = teacher report. Engagement is student's school behavioral engagement. School Belong is school belonging. Achievement is composite score based on WJ-III Broad Reading and Math W scores. Friend involvement intercept refers to the estimated mean level of friends' school involvement at age 12. Friend involvement slope refers to rate of linear growth or decline in friends' school involvement across age 12–14. Parent knowledge intercept refers to the estimated mean level of parent knowledge in their child's activities in school at age 12. Parent knowledge slope refers to rate of linear growth or decline in parent school knowledge across age 12–14. β is the estimate of the standardized parameters. SE is standard error of the standardized coefficient, p is p -value corresponding to the unstandardized coefficient. Analyses controlled for the effect of covariates (i.e., gender, SES, and grade in which the student is enrolled at age 12) and for the effect of the prior performance of the outcome (i.e., age 10 or 11 measure of the outcome). We also controlled for the age 11 achievement score on both trajectories (intercept and slope) for friends' school involvement and parent school knowledge and the age 15 outcomes.

* $p < .05$.