Exploring School- and Home-Related Protective Factors for Economically Disadvantaged Middle School Students

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Abstract: *This study explored the experiences of middle school students, particularly focusing on the academic achievement of economically disadvantaged students. For low SES middle school students, the known cumulative effects of poverty coupled with school transition and early adolescence development heighten the potential risks for school failure. By utilizing the nationally representative Early Childhood Longitudinal Study–Kindergarten (ECLS-K) 1998/99 longitudinal data, this study explored parent involvement and school belonging as potential protective factors. The findings for this study showed that when parent involvement and school belonging were considered together, parent involvement emerged not to be significant while school belonging consistently emerged as a significant predictor of achievement. However, while school belonging emerged as a significant predictor, prior achievement was the single strongly significant factor explaining achievement.*

Middle school in the United States (predominantly grades 6 to 8 or ages 11 to 14) is a critical stage in students' academic trajectories, and yet, it is also a very risky stage in their academic and social development. Many middle school students often experience significant life course changes that include developmental or maturational change and contextual (or school) transition (Black, 2009; Cook, MacCoun, Muschkin, & Vigdor, 2008; Wigfield, Lutz, & Wagner, 2005). The literature has identified a number of psychological, social, and academic challenges associated with developmental and contextual transitions among middle school students (Hill & Tyson, 2009). For economically disadvantaged students, the challenges of developmental and contextual changes only aid to complicate the students' already vulnerable lives. The negative effects of developmental changes and school transition compounded with the known effects of poverty create cumulative risk factors that often undermine school success for a number of middle school students (Jozefowicz-Simbeni & Allen-Meares, 2002). Therefore, in acknowledging the collective role that the institutions of family and school play in socializing and educating children, the purpose of this current study was to examine parental involvement and a sense of school belonging as potential protective factors for economically disadvantaged middle school students. This is consistent with the vast work of psychologist Urie Bronfenbrenner (1979) and sociologist Joyce Epstein (2001), who have extensively demonstrated the interconnectedness of the various aspects of family and school contexts. Parental involvement and school belongingness are two family and school factors, respectively, which the literature has linked to positive student academic outcomes (e.g., Goodenow & Grady, 1993; Juvonen, Le, Kaganoff, Augustine, & Constant, 2004; Osterman, 2000). They have the potential to create a support network to facilitate successful middle school experiences for economically disadvantaged students.

The discussion presented in this paper begins with a review of risk factors associated with the multifaceted transitional processes that are compounded with the negative effects of poverty for middle school students. Also, parent involvement and school belonging, as potential protective factors, are examined from the perspectives of nested connections and overlapping spheres of influence. Further, a quantitative analysis, using data from the Early Childhood Longitudinal Study–Kindergarten (ECLS-K), Class of 1998/99, examines parent involvement and school belonging as independent variables and eighth-grade achievement as the dependent variable. This study took advantage of the large-scale and nationally representative nature of ECLS-K dataset and the ability to test for synergetic relationships of variables using multiple regression analysis.

Examining Risk Factors

Challenges Associated With Developmental and Contextual Changes

Across the research, developmental changes are associated with shifting societal demands, conflicting role demands, increasingly complex societal relations, new educational expectations, and at times a mismatch between social, psychological, cognitive, and physical development (Newman & Newman, 2014). The stresses of these new realities usually trigger a search for self-identity; disengagement; and changes in motivation, attitudes, and self-esteem; which may impact academic performance (Black, 2009; Cook et al., 2008; Gutman & Midgley, 2000). These challenges are potential *risk factors* (i.e., individual or environmental characteristics, or behaviors), especially when coupled with the long-lasting effects of poverty that have significant implications on students' educational and life outcomes (Akos & Galassi, 2004; Barber & Olsen, 2004; Black, 2009; Centers for Disease Control and Prevention [CDC], 2009; Wigfield et al., 2005).

Furthermore, while in the midst of developmental changes, early adolescents are forced to transition into a middle school setting that presents unique expectations and responsibilities. Middle schools are characterized by

frequent movement from one teacher to another; learning with several different groups of students; independently handling locker units; an emphasis on self-discipline and academics; a larger, more impersonal institution that is usually farther away from home; and fewer opportunities for teacher-student relationship building (Carnegie Council on Adolescent Development, 1989; Juvonen et al., 2004; Reddy, Rhodes, & Mulhall, 2003). The organizational structure of middle schools presents another level of challenge, especially for students already exposed to adverse conditions of poverty.

Middle School Risk and Economically Disadvantaged Students

In addition to challenges occasioned by contextual and developmental changes, students in poverty are exposed to multiple risks, also known as cumulative risk (Jozefowicz-Simbeni & Allen-Meares, 2002), that can further challenge their academic success along multiple dimensions (Wright, Masten, & Narayan, 2013). Children in poverty are more likely than their middle class peers to be raised by a working single parent, often with the mother as the head of the household (Sawhill, 2006). Such home environments may result in unstructured free time that often creates opportunities for children to engage in risky behaviors (Perry-Jenkins & Wadsworth, 2013). In the case of parents with limited educational experiences, time, and resources, they have limited participation in school-relevant activities (e.g., supporting homework completion, advocating for their child, etc.) that are associated with academic success (Perkins et al., 2013; Sawhill, 2006).

For students in poverty, exposure to risk extends to the communities they live in as well as the schools they attend. Many are likely to reside in impoverished and segregated neighborhoods that offer limited amenities, resources, and social structures that facilitate school success (Johnson, 2010; Lareau, 2003; Leventhal & Brooks-Gunn, 2004). Also, these students are likely to attend high-poverty and low-performing neighborhood schools, many of which are characterized by dilapidated physical facilities, inadequate educational resources such as technology and books, large class sizes, low academic expectations, high turnover of personnel, and higher percentages of novice teachers (Darling-Hammond, 2000, 2010; Jacob, 2007; Jozefowicz-Simbeni & Allen-Meares, 2002). Moreover, classrooms in high-poverty schools are likely to be less desirable learning environments due to being overcrowded, structured around teacher control, dominated by competitive rather than cooperative academic tasks, and orchestrated by teachers who feel disempowered and removed from school policy formulation processes (Darling-Hammond, 2010; Nye, Konstantopoulos, & Hedges, 2004). Consequently, the cumulative risk associated with poverty poses a great risk to school success.

The Role of Protective Factors

Amidst the significant risks associated with poverty, changes in school environment, and individual developmental processes, there are students who reach late adolescence and who are able to achieve academic success (Anderson, Jacobs, Schramm, & Splittgerber, 2000; Wigfield et al., 2005). Masten and Wright (1998) define protective factors as a "correlate of resilience that may reflect preventive or ameliorative influences: a positive moderator of risk or adversity" (p. 10). Protective factors include psychosocial characteristics such as social and academic competence; problem solving; autonomy; and sense of purpose (Seccombe, 2002) as well as environmental factors that originate from the student's family (e.g., parenting, high expectations, etc.); school (e.g., positive teacher-student relationships, caring school environment, etc.); and community (Hauser & Allen, 2006; Southwick, Morgan, Vythilingam, & Charney, 2006). Therefore, given the challenges students face in the middle school years, it is important to conceptualize an approach to schooling that provides for the success of preventive and ameliorative influences.

Theoretical Framework

The ecological theory of nested connections (Bronfenbrenner, 1979) and Epstein's theory of overlapping spheres of influence (Epstein, 1995, 2001) provide conceptual frameworks for understanding the role of protective factors in the context of cumulative risk. The two theories advance the idea that school and family contexts are inevitably interconnected. In essence, school, home, and community settings exist in a symbiotic relationship. Furthermore, Epstein's model of overlapping spheres of influence suggests that school, family, and community interact and directly influence student learning, development, and socialization (1995, 2001). The interaction between the settings, for instance between school and family, create what Epstein (1995) referred to as family-like schools and school-like families—evidence of a symbiotic relationship. Therefore, the interconnectedness posited by these two theories provide the basis for considering school belonging and parental involvement collectively, thus addressing the gap in the research that usually examined these factors separately, especially at the middle school level. Bronfenbrenner (1979) and Epstein (1995, 2001) provide an important perspective regarding student relationships to the nested networks that can support or hinder their achievement. Therefore, given that the intent of the study is to test the synergetic relationship between parent involvement and school belonging and eighth-grade academic outcomes, it is important to better define the variables in this nested supportive network and their possible linkages.

Parental involvement as protective factor. Parental involvement is broadly defined as "the various activities that allow parents to participate in the educational process at school and at home" (Christenson, Rounds, & Gorney, 1992, p. 192). In school-like families and family-like schools in which schools sustain positive partnerships with parents, parent involvement has been shown to be an important protective factor (Christenson et al., 1992; Epstein, 1995, 2001). The extant literature indicates that parental involvement highly correlates with a wide range of positive student outcomes, including motivation, self-efficacy, internal locus of control, prosocial and on-task behavior, and academic

achievement (Epstein, 2001; Hill & Tyson, 2009). However, much of the research examining the effects of parental involvement on student outcomes has been conducted in the elementary grades, with significantly less conducted at the middle school level (Christenson et al., 1992; Juvonen et al., 2004). The studies that exist at the middle school level tend to focus, in part, on the things parents do at home to support the education of their children, such as helping their children with homework (e.g., Van Voorhis, 2003). However, the effect of some aspects of parental involvement on student outcome remains questionable and inconclusive (Driessen, Smit, & Sleegers, 2005; Froiland, Peterson, & Davison, 2012; Gutman & Midgley, 2000; Hill & Tyson, 2009).

Furthermore, there is evidence to show that parental involvement significantly diminishes in middle school grades; particularly, parental involvement is less among low socioeconomic status (SES) families (Hill & Tyson, 2009; Lareau, 2000, 2003). Juvonen and colleagues (2004) blame middle schools for contributing to the decline in parental involvement. Many middle schools, when compared to elementary schools, are less inviting to parents, a situation exemplified by fewer parental school engagement activities (Epstein et al., 2009). Furthermore, parents with limited education and those who are of lower SES may lack the sociocultural capital necessary to navigate a school system that predominantly reflects middle class cultural values, organizational patterns, and forms of communication (Lareau, 2000, 2003). Therefore, differential interactions among family, social class, and school point to limited school-relevant parental participation among low SES parents and consequently potential insignificant influence on their children's school outcomes.

School community as a protective factor. With the understanding that school has the potential to facilitate a family-like school environment, school as a community for learning is critically important. This is particularly true for students who may be considered at risk, such as those situated in poverty conditions, cultural and linguistic minorities, special education, new immigrants, students exhibiting signs of academic and socio-emotional problems, and those experiencing major school environment changes during the middle school transition (Hill & Tyson, 2009; Ma, 2003; Osterman, 2000). The concept of school community, which implies the ability of the school to satisfy the psychosocial needs of its members, is predominantly presented in the literature in terms of student perceptions on school belonging (Goodenow, 1993), membership (Williams & Downing, 1998), relatedness (Conchas, 2001), connectedness (CDC, 2009), and identification (Voelkl, 1997). These different variations of school community are all associated with a number of positive psychosocial and academic outcomes such as motivation, engagement, commitment, positive interpersonal relationships, and self-esteem.

For the purpose of this study, school community was examined through the lens of students' sense of school belonging. Some literature defines school belonging as the extent to which students "feel personally accepted, respected, included, and supported by others—especially teachers" (Goodenow & Grady, 1993, p. 61). Furthermore, school belonging has a lot to do with students' perceptions of the quality of teacher-student relationships (Fredricks, Blumenfeld, & Paris, 2004). Therefore, teacher-student relationships in and out of the classroom largely contribute to students' sense of school belonging. Consequently, teachers are uniquely situated to facilitate family-like schools due to their direct interaction with students on a daily basis. Teachers have opportunities to engage in this direct interaction through their nurturing care of students' psychosocial and academic needs. For instance, positive teacher-student relationships, which are characterized by caring communication, recognition of student effort, and acknowledgment of students' challenges and interests, are increasingly critical to middle school age students who often seek support from adults outside the home (Woolley & Bowen, 2007). Unfortunately, at the middle school, teacher-student relationships decline; this could be attributed to the organization, structure, and the sheer size of most middle schools (Cook et al., 2008; Mizelle, 2005). The decline in teacher-student relationships impacts the building of the much needed support networks for disadvantaged students (Reddy et al., 2003).

Additionally, given that early adolescents are at the pinnacle of peer allegiance, peer relationships provide important support networks when positive adult relationships are missing (Fredricks et al., 2004; Osterman, 2000). Positive peer support is associated with motivational outcomes such as intrinsic value, self-concept, and pursuit of academic and personal goals (Furrer & Skinner, 2003). Personal friendships can also pose a unique dilemma for some students whose friends may subscribe to antiacademic norm, particularly among racial minority student groups. For example, in some minority settings, students who strive for academic success may be chastised by their peers and branded as nerds, teacher's pet, weird, and acting White (Fryer & Torelli, 2010; Murray, Neal-Barnett, Demmings, & Stadulis, 2012).

Therefore, this study proceeded with the understanding that parent involvement and a sense of school belonging hold the promise to mitigate the cumulative negative effects emerging from developmental and contextual changes coupled with poverty. Also, the extensive nature of cumulative effects on students in poverty warrants a collective support system.

Current study. In acknowledging the increasing number of economically disadvantaged students in schools today and their associated risk for school failure (OECD, 2012), the goal of the current study is to explore if parental involvement and school belonging can moderate risk compounded by developmental changes, school transition, and economic disadvantage. To achieve this goal, three research questions guide the study: (a) What are the associations between parental involvement and academic achievement for economically disadvantaged eighth-grade students? (b) What are the associations between school belonging and academic achievement for economically disadvantaged eighth-grade students? (c) Do the relations between parent involvement, school belonging, and eighth-

grade achievement vary as a function of prior achievement and middle school?

Methods

Data from the Early Childhood Longitudinal Study, Kindergarten Class of 1998-99 (ECLS-K) were used for this study. The purpose of the ECLS-K study was to collect information on children's characteristics at initial school matriculation, their transition into school, and their progression through eighth grade. The information collected included students' educational, socioemotional, and physical development as well as teaching practices, school environment, family background, and community resources. The ECLS-K study followed the same students from kindergarten through eighth grade. Data were collected from students, parents, teachers, and school administrators in seven waves between 1998 Fall Kindergarten and 2007 Spring Eighth Grade. The baseline sample included 21,260 students (see Tourangeau et al., 2009, for a detailed description of the sample).

The data included in the present study were from 12,026 students in the fifth-grade wave (2004 Spring) and eighth-grade wave (2007 Spring) who completed cognitive assessments in both collection waves and were assigned valid sampling weights. It is acknowledged that the eighth-grade sample was not freshened (introducing additional participants to sample), as was the case with the first-grade sample; thus, all estimates from ECLS-K eighth-grade data are representative of the 1998/99 kindergarten cohort and not necessarily all eighth-grade student population in the 2006/07 school year. The eighth-grade sample used in the data analysis included 84% high SES students and 16% low SES students. Fifty-one percent of the students were male, and 49% were female. The racial and ethnic composition of the sample for analysis included 63% White, 10% Black, 17% Hispanic, and 11% Other (which includes Asian, Native Hawaiian/Pacific Islander, American Indian, and Multiracial).

Measures

Table 1 provides a list of variables and the selected ECLS-K items that were used to measure those variables.

Achievement. Grade 8 achievement as a dependent variable is a computed average score between reading and math scores (calculated range 0 – 198) as provided in the ECLS-K data. The ECLS-K data reported item response theory (IRT) scale scores for reading (weighted M = 167.24; SD = 28.03; Range = 0 to 212) and for mathematics (weighted M = 139.28; SD = 23.10; Range = 0 – 174).

Parent involvement. This variable measures parent activities at school and home that support student learning (Christenson et al., 1992). Guided by existing research, items were selected from round seven (eighth-grade year) of the ECLS-K data and categorized in three dimensions—school participation, home discussion, and home routine. The parent involvement items were standardized, due to variability in response scales, to z-scores. Confirmatory factor analysis was conducted for a cluster of items in each of the dimensions to determine if the items cohere around the dimensions. A principle component method with an eigenvalue greater than 1 applying Varimax rotation and a test of internal consistency (Cronbach's alpha test) determined the inclusion of the items for each of the three dimensions. School participation was a seven-part question in the parent involvement survey that asked parents to indicate whether or not they participated in various school-related activities. After the confirmatory factor analysis the seven items generated an eigenvalue of 2.79 and explained 40% of the variance with internal item consistency (reliability) of .68 (i.e., Cronbach's alpha value) and an average factor loading of .62. Home discussion—four items were retained after conducting a confirmatory factor analysis, which generated an eigenvalue of 2.14 and explained 53% of the variance with internal consistency (reliability) of .70 (i.e., Cronbach's alpha value) and an average factor loading of .70. Home routine constituted of four items that were retained after conducting a confirmatory factor analysis, which generated an eigenvalue of 1.68 and explained 42% of the variance with internal consistency (reliability) of .51 and an average factor loading of .65.

School belonging. School belonging is a measure of students' perceptions of acceptance, respect, inclusion, and support within the school context (Goodenow & Grady, 1993). Based on prior research (e.g., Goodenow & Grady, 1993; Osterman, 2000), five items were selected from a five-part question in round seven of the ECLS-K student file that asked eighth-grade students to rate their belonging perceptions about school. The five items were subjected to a confirmatory factor analysis to figure out how they cohere together. A principle component method with an eigenvalue greater than 1 applying Varimax rotation and a test of internal consistency (Cronbach's alpha test) determined the inclusion of all five items. The items generated an eigenvalue of 2.3 and explained 54% of the variance. The internal consistency (reliability) of the items was .71 with an average factor loading of .68.

Control Variables

The control variables included were: Family SES; prior academic achievement (i.e., fifth-grade math and reading IRT scores); middle school; and student demographics such as gender, race, and disability status (see Table 1 for more details). There is research to show, for instance, that students often receive differential treatment in school based on "race, gender, class, ability, and appearance, and that [such] differentiation begins early in the school career and increases as students progress through school" (Osterman, 2000, p. 351). Therefore, it is important to account for these factors.

SES indicator. The ECLS-K data provided a poverty status variable (W8POVRTY). This poverty indicator was derived from a number of questions from a parent survey including: Total household income more/less than 25k (P7HILOW), household income category (P7NCCAT), imputed household income category (W8INCCAT), total members in household (P7HTOTAL), and lastly the 2007 census defined poverty thresholds. For this current study, SES is used as a poverty indicator, which is divided into low

Table 1

Selected ECLS-K Items for Variables in Current Study

Variable	ECLS-K Data Items
Achievement	Computed average score of 8th grade reading (coded C7R4RSCL) and math (coded C7R4MSCL) Item Response Theory (IRT) scale scores from the ECLS-K data with reading (weighted M = 167.24; SD = 28.03; Range = 0 to 212) and mathematics (weighted M = 139.28; SD = 23.10; Range = 0 – 174)
Parent Involvement	*School participation* (from round 7 parent file): Since the beginning of this school year have you or the other adults in your household: Attended an open house or back-to-school night? Attended a meeting of a PTA or PTO? Attended parent-teacher conference or meeting with teacher? Attended a school or class event? Volunteered at the school or served on a committee? Participated in fundraising? Contacted teacher or school? (all items coded 0 = no, 1 = yes) *Home Discussion* (from round 7 parent file): How often do you: Discuss report card? Talk about day at school? Talk about grades? Talk about school activities? (coded, 1 = not at all to 4 = every day) *Home Routine* (from round 7 parent file): Are there family rules about: Watching TV? Maintaining a certain GPA? Doing homework? Time on the computer or playing video games? (coded, 0 = no, 1 = yes)
School Belonging	From round 7 student file: How often did you: Feel you fit in at school? Feel close to classmates? Feel close to teachers at your school? Enjoy being at school? Feel safe at school? (coded, 1 = never to 4 = always)
Prior Achievement	Computed average score of 5th grade reading (coded C6R4RSCL) and math (coded C6R4MSCL) Item Response Theory (IRT) scale scores
Race/ Ethnicity	Two indicators provided the child race composite (RACE and W8RACETH). Coded 1 = White, 2 = Black, 3 = Hispanic, 4 = Other. Also dummy coded 0 = White, 1 = Minorities.
Gender	Child composite gender (GENDER). Coded 0 = male, 1 = female
Special Ed Status	Child with disability (P7DISABL), coded 0 = no, 1 = yes
Middle School	Derived from two indicators: Lowest grade at the school (S7LOWGRD) and the highest grade the school (S7HIGGRD). Coded 0 = "not middle school only," 1 = middle school only
SES	SES level (W8POVRTY, coded 0 = High SES, 1 = low SES) derived from total household income more/less than 25k (P7HILOW), household income category (P7INCCAT), imputed household income category (W8INCCAT), total members in household (P7HTOTAL), and 2007 census defined poverty thresholds.

SES and high SES based on 2007 (year data was collected) federal poverty thresholds.

Middle school. For this study, the middle school variable (referring to stand-alone grades 6-8) was generated from two indicators in the ECLS-K data that were reported by the school administrator. These include the lowest grade at the school (S7LOWGRD) and highest grade at the school (S7HIGGRD). Creating the stand-alone middle school variable was necessary because in the ECLS-K data schools were not reported as elementary or middle school or K-8. Also, a stand-alone middle school was pertinent to this study because transition into middle was an important component. The middle school variable was named MSONLY and dummy coded 0 = "non-middle school only," 1 = "middle school only."

Prior achievement. Research suggests that a student's prior academic skills have the potential to predict future academic outcomes hence can serve either as a protective or risk factor (Keith, 2006; Tourangeau, Nord, Lê, Sorongon, & Najarian, 2009). Thus, for this study, a computed average score of fifth-grade reading and math IRT scale scores is used with calculated range of 0-143. ECLS-K data reports IRT scale scores, with values ranging from 0 to 212, weighted mean of 148.67, and a standard deviation of 26.85 for reading (C6R4RSCL); range of 0-174, mean of 122.94; a standard deviation of 25.15 for mathematics (C6R4MSCL); and range of 0-111, mean of 63.72, and standard deviation of 15.73 for science (C6SR2SSCL).

Student gender and ethnicity. The ECLS-K data reported the gender variable (GENDER or C7GENDER) as derived from three different data sources: The parent interview (INQ.016), child report (AIQ.050), and the Field Management System (FMS). For this study, gender (GENDER) is Coded 0 = male, 1 = female. With regard to the race/ethnicity variable, ECLS-K data provided two indicators (RACE and W8RACETH) as collected from parent interview data and the FMS). For this current study, the race composite variable was coded 1 = White, 2 = Black, 3 = Hispanic, and 4 = Other and also dummy coded 0 = White, 1 = Minorities.

Disability status. The ECLS-K data reported the students' disability status from parent interviews (P7DISABL) and the fall eighth-grade FMS file (F7SPCS). For this current study, the disability status variable was dummy coded 0 = no (without disability) and 1 = yes (with disability).

Analysis

All analyses were conducted using Stata 12 statistical software; all analyses account for the clustered nature of the ECLS-K survey design. Multiple regression analyses were conducted: First, control variables model was estimated to the sample as a way to estimate their contributing effects on eighth-grade achievement. Second, main effects regression model was estimated to the eighth-grade student sample. Lastly, multiplicative interaction terms were introduced to the model. Interaction terms were created as a product of the two main independent variables and selected control variables; that is, prior achievement, stand-alone middle school, and SES. The goal of the interaction terms was to examine if parental involvement and school belonging were moderated by prior achievement which was assessed at fifth grade, stand-alone middle school, and SES: (a) parental involvement by school belonging, (b) parental involvement by prior achievement, (c) parental involvement by middle school, (d) parental involvement by SES, (e) school belonging by prior achievement, (f) school belonging by middle school, and (g) school belonging by SES.

Results

Table 2 presents correlation coefficients between all variables in the model. In general, the table shows weak correlations between variables in the study. Group means and standard deviations for low SES and full sample of eighth-grade students are provided in Table 3.

Main Effects

Before estimating the main effects model, achievement was regressed on control variables (see Model 1 in Table 4) to establish their effect. These variables explained .765 of the variance in eighth-grade performance. All control variables, but middle school (stand-alone grades 6-8), were statistically significant. As expected, race, disability status, and SES were negatively related to achievement. Prior achievement (fifth-grade achievement) emerged as the single most strongly related control variable to eighth-grade achievement. Model 2 (see Table 4), eighth-grade achievement was regressed on the three parental involvement dimensions (school participation, home discussion, and home routine) and school belonging accounting for SES, prior achievement, gender, race, middle school, and disability status. This model explained .772 of the variance in eighth-grade achievement, a .007 difference in the variance explained between Models 1 and 2. The slight increase, although statistically significant, in the variance explained was contributed by a sense of school belonging. School belonging was significant ($b = .033$, $t(2183) = 3.22$, $p = .001$); however, none of the three parental involvement dimensions was statistically significant when adjusting for the other variables in the model, implying that students feeling connected to their school are more likely to perform well academically. Other significant variables in Model 2 included SES, prior achievement, gender, race, and disability, but SES status, race, and disability status were inversely related to achievement. In other words, students from low SES, racial minorities, and students with disabilities are likely to perform lower than their peers. Also, female students are likely to perform better than their male counterparts. Furthermore, prior achievement was the single strongest variable [$b = .863$, $t(2183) = 76.80$, $p < .001$] associated with eighth-grade achievement controlling for other variables in the model. In other words, eighth-grade students who entered middle school with better academic skills (such as math and reading) are more likely to maintain academic through middle school. The overall model itself (i.e., Model 2) was statistically significant [$F(10, 2183) = 814$, $p < .001$].

Table 2

Measured Variable Correlations

Variable	1	2	3	4	5	6	7	8	9	10	11
1. 8th grade achieve	1.00										
2. School participate	-.09***	1.00									
3. Home discussion	-.02*	-.10***	1.00								
4. Home routine	.08***	.10***	-.19***	1.00							
5. School belonging	.16***	-.09***	.02	.01	1.00						
6. Prior achieve	.87***	-.09***	-.01	.05***	.13***	1.00					
7. Gender	.02	-.01	.00	.07***	.09***	-.02*	1.00				
8. Race	-.20***	.03***	-.07***	-.05***	-.05***	-.21***	.01	1.00			
9. MS (grades 6-8)	-.06***	.18***	-.03**	.00	-.06***	-.03**	.00	.03**	1.00		
10. Disability	.22***	-.00	-.04***	.00	.13***	.21***	.09***	.05***	-.03**	1.00	
11. SES	-.36***	.14***	-.08***	.03**	-.09***	-.37***	.02	.25***	.05***	-.05***	1.00

Note. Level of significance at *p ≤ .05, **p ≤ .01, ***p ≤ .001.

Table 3

Descriptive Statistics by SES

	Means (SD)	
	Low SES *n* = 1,445 (16%)	High SES *n* = 7,364 (84%)
Individual student characteristics		
Gender (% female)	51.28 (50.00)	48.94 (50.00)
White	28.07[a] (44.95)	69.39[a] (46.09)
African Americans/Black (%)	22.11[a] (41.51)	7.09[a] (25.68)
Hispanic (%)	33.40[a] (47.18)	13.85[a] (34.54)
Other (%)	16.42[a] (37.06)	9.67[a] (29.55)
Special Education (% yes)	20.00[a] (40.00)	15.00[a] (35.00)
Cognitive achievement		
Math achievement: 5th grade	126.94[a] (23.91)	146.06[a] (19.99)
Reading achievement: 5th grade	149.82[a] (29.59)	176.16[a] (24.75)
Math achievement: 8th grade	107.49[a] (25.84)	129.53[a] (22.38)
Reading achievement: 8th grade	131.35[a] (26.63)	156.82[a] (23.89)
Parent Involvement		
School participation[1]	-.58[a] (1.11)	.10[a] (.94)
Home discussion[1]	-.17[a] (1.23)	.03[a] (.94)
Home routine[1]	-.08[a] (1.10)	.01[a] (.97)
School belonging[1]	-.21[a] (1.09)	.04[a] (.97)
Middle school only (%)	81[a] (39)	74[a] (44)

Note. [1]Overall Mean = 0 and Standard Deviation = 1; original items were standardized to *z*-scores due to differentiated scales. Means with the same superscript within each row are significantly different at $\alpha = .05$.

Table 4

Predicting Average Achievement for 8th-Grade Students

Variables	Full sample					
	Model 1		Model 2		Model 3	
	β	*SE*	β	*SE*	β	*SE*
School participation			-.01	.01	-.02	.02
Home discussion			.01	.01	-.06*	.02
Home routine			.00	.01	.03	.02
School belonging			.03***	.01	.07**	.02
Prior achievement	.87***	.01	.86***	.01	.86***	.01
Gender	.10***	.02	.09***	.02	.08***	.09
Race	-.06**	.02	-.06**	.02	-.06*	.02
Middle school	-.01	.02	-.02	.02	-.02	.02
Disability status	-.09**	.03	-.08**	.03	-.08**	.03
SES	-.08**	.03	-.08*	.04	-.09*	.04
SP x Belonging					.00	.01
HD x Belonging					.01	.01
HR x Belonging					.01	.01
SP x Prior achievement					.01	.01
HD x Prior achievement					.00	.01
HR x Prior achievement					.00	.01
SP x Middle school					.01	.02
HD x Middle school					.06**	.02
HR x Middle school					-.02	.02
Belonging x PA					-.01	.01
Belonging x Middle school					-.04	.02
Belonging x SES					-.01	.03
SP x SES					.03	.04
HD x SES					.05	.04
HR x SES					-.05	.04
R^2	.765		.772		.774	

Note. β = standardized coefficients, SE = standard error. High SES was the reference category for the SES variable, male was the reference category for gender, White was the reference category for race, without disability was the reference category for disability, and nonmiddle school was the reference category for the middle school (grades 6-8). Level of significance: *p ≤ .05, **p ≤ .01, ***p ≤ .001.

Interactive Relationships

The eighth-grade achievement model (see Table 4, Model 3) indicated that the only significant interaction was home discussion by middle school [b = -.06, $t(2168)$ = 2.89, $p < .05$] which indicated a negative effect on achievement. All other interactions were nonsignificant. The overall model was significant [$F(25, 2168) = 358$, $p < .001$], explaining 77.4% ($R^2 = .774$) of the variance in achievement. However, the significant interaction contributed a very small (or negligible) increase (.004) in the variance explained. In order to interpret the significant interaction, home discussion by middle school, graphing following Dawson and Richter (2006) procedure was employed (see Figure 1). Figure 1 seems to suggest that the relationship between home discussion and school depends on or varies by whether the school is a stand-alone middle school or not as well as the level of home conversations (less or more) related to school, but with a negative effect on eighth-grade student achievement. Particularly, Figure 1 suggests that less home conversations related to school would be preferable for students in non-stand-alone middle school settings while more school-related conversation at home could eventually benefit students in stand-alone middle schools. However, it is worth noting that this relationship registered minuscule significance which implies minuscule practical significance.

Discussion, Limitations, and Conclusion

Discussion

This study examined how parental involvement and school belonging are synergistically associated with academic achievement of economically disadvantaged eighth-grade students. This study further sought to understand if the relationship between parental involvement, school belonging, and academic achievement vary as a function of prior achievement and middle school. The core finding of this study was that when parent involvement and school belonging were considered together, there was no significant relationship between parent involvement and student achievement while school belonging consistently emerged as a significant predictor of achievement. In other words, generally when eighth-grade students feel a sense of school belonging they are likely to experience higher academic achievement. This finding is consistent with the argument that early adolescents are at an age whereby they often seek autonomy from home and pursue relationships and support outside the home (Woolley & Bowen, 2007). Therefore, school provides the setting for important new relationships. Although a strong relationship between a sense of belonging and achievement was not unique to economically disadvantaged students, all forms of support are particularly critical for these students due to the compounding nature of the risks they often face.

From a policy standpoint, since schools may not directly influence the kinds of family and home conditions that encourage positive student outcomes, school policy can regulate and elicit school-based factors favorable for academic success for all students. Utilizing Goodenow and Grady's (1993) definition of school belonging, school belonging is largely predicated on relationships within the school. It is within the purview of teachers and school leadership to provide a supportive school environment that can facilitate a school community of success. First, teacher-student interactions in particular, both inside and outside the classroom, are a critical component in shaping students' overall school experiences and outcomes. During middle school years, in particular, student-teacher

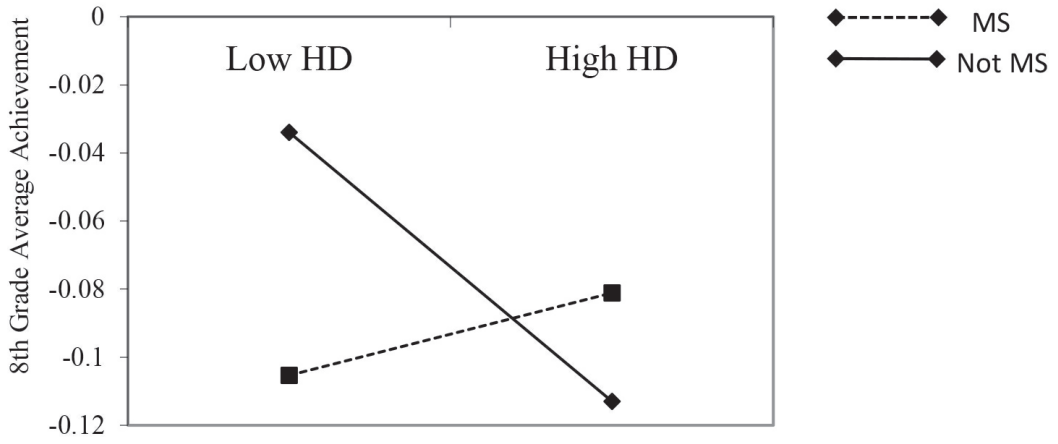

Figure 1. Interaction between home discussion (HD) and middle school (MS) predicting eighth-grade achievement.

relationships are increasingly critical as most early adolescents look for role models and support from nonparental adults. This may be particularly true for students who may lack adequate school-home supports (Perry-Jenkins & Wadsworth, 2013; Seccombe, 2002). However, there is evidence that disadvantaged students are likely not to experience the full benefits of positive teacher-student relationships and support, in part, because these students often do not fit the mold of model students. Therefore, they are likely to experience differential teacher treatment based on students' "race, gender, class, ability, and appearance, and that [such] differentiation begins early in the school career and increases as students progress through school" (Osterman, 2000, p. 351). Unfavorable treatment produces further disengagement, withdrawal, alienation, and aggression (Valenzuela, 1999).

Second, school administrators have an obligation to facilitate a school climate whereby at-risk students can feel welcome, respected, included, and supported, which then can translate into school engagement and academic success. Schools that serve economically disadvantaged students require school administrators who are driven by one goal—to improve student achievement (Leithwood, Louis, Anderson, & Wahlstrom, 2004). Administrators can take a number of actions to include leveraging their hiring power and their leadership in professional development to assemble a cohort of teachers who are willing and equipped to meet the needs of diverse students (Weiner, 2000). Also, the principal's strategic presence or visibility in the school and community goes a long way in building relationships with students as well as parents. For instance, some principals engage in activities such as directing traffic flow during student drop-off and pick-up and in the event initiating informal conversations with parents and their children during this time (Habegger, 2008). Other principals habitually greet students as they go into the school building or as they pass by in the hallways and therefore play a role in establishing relationships with students. Moreover, Rieg (2007) suggested that principals need to take the initiative to visit classrooms more often and participate in learning activities with the students. Further, Rieg noted that outside of the school setting, the principal attending after-school or community events reinforces to students that the principal cares about both their academic success and nonacademic interests. These are activities that have the potential to bring to students a sense of belonging.

Limitations

The findings from this study should be interpreted in light of various limitations. One limitation is the measures used to conceptualize the very complex nature of parent involvement. For example, home-based parental involvement in this study was confined to the family rules guiding parental expectations of their children in relation to school and also home discussion was limited to conversations about school. This is simplistic given the complex nature of family processes as they relate to the academic and life trajectories of children. However, this is not a specific problem of this study, but one that is general to the nature of social science research. It is difficult to capture the complexity of family processes and how they eventually influence children's academic and life outcomes. More so, it remains a challenge to isolate the specific aspects of family processes that are truly significant in changing the academic trajectories of children.

Furthermore, this study provides only a snapshot (i.e., Grade 8), as is the case with most studies, of the relationship between parental involvement, sense of school belonging, and school outcomes. Therefore, it may be meaningful to examine parental involvement and school belonging from a longitudinal perspective such as K-8. Taking a longitudinal approach could identify changes in parent involvement across the grades and its effect on achievement, particularly as a potential protective factor. In addition, a longitudinal study would allow for the analysis of how various components of parental involvement change over time, and to what extent these changes could explain discrepancies in achievement between low SES and high SES.

Conclusion

According to this study, school belonging emerged as a significantly important factor related to positive school outcomes for middle school students. In other words, when early adolescents feel a sense of belonging (i.e., feeling accepted, respected, included, and supported) in their school, they are more likely to perform well academically. Fortunately, it is within the purview of teachers and school leaders to facilitate a climate of belonging that will allow middle school students, particularly those exposed to adverse conditions, to succeed.

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