Universal Journal of Educational Research 2(8): 564-576, 2014
DOI: 10.13189/ujer.2014.020805 http://www.hrpub.org

Parent Involvement, Academic Achievement and the Role of Student Attitudes and Behaviors as Mediators

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Abstract Previous research shows inconsistent relationships between parent involvement and academic achievement and often asks why such inconsistencies occur. The research proposes a theoretical model that separates parent involvement into those practices linking parents to children and those practices linking parents to other adults in the school environment. The researcher hypothesizes that parent-child (i.e. discussion and monitoring) and parent-school (i.e. educational support strategies and Parent Teacher Organization involvement) practices will differentially affect student attitudes (educational expectations), behaviors (absenteeism, homework, truancy), and achievement (math and science). Using a national survey conducted in the United States of schools and students, the National Education Longitudinal Study (NELS:88), The research estimates a series of hierarchical models to test the direct and indirect effects of parent involvement on student attitudinal, behavioral and academic outcomes. Findings confirm that parent-child and parent-school involvement practices differentially influence student attitudes and behaviors, thereby indirectly affecting student achievement – to varying degrees.

Keywords Parent Involvement, Academic Achievement

1. Introduction

Parent involvement continues to be the focus of much academic research, policy formation, and public debate. Parent involvement is a major cornerstone of President Obama's "Race to the Top" educational initiative. Parent involvement was the cornerstone of former President Bush's No Child Left Behind initiative, was the cornerstone of former President Clinton's 1996 Elementary and Secondary Act, was the cornerstone of former President Reagan's Goals 2000: Educate America Act, is being touted as a key element of school reform, and is actively promoted in national programs and initiatives (e.g. Head Start). Much of this attention can be attributed to there being something inherently appealing in the notion that increased parent involvement will help remedy the continued problem of poor academic performance, especially compared to other industrialized nations. In many ways, it is an attempt to help 'fix' a faltering education system without fundamentally restructuring schools, redistributing students, raising standards for teachers, or investing more resources (e.g. physical).

Construed most broadly, parent involvement is any action taken by a parent that can theoretically be expected to improve student performance or behavior. In other words, parent involvement consists of those actions that help a child meet or exceed the norms or expectations of the student role and encompasses parent-child, parent-teacher, and to some degree parent-parent relations. Given the breadth of the topic, it is not surprising that research findings have been largely inconsistent.

While much research supports the claim that parent involvement leads to improved academic achievement (e.g. Boger et al. 1986; Burcu and Sungur 2009; Coleman 1991; Epstein 1991; Henderson 1991; Ho Sui-Chi &Willms 1996; Lareau 1989; Lee and Bowen 2006; Patel 2006; Reynolds 1992), other research indicates that parent involvement is associated with lower levels of achievement (e.g. Brookover et al. 1979; Desimone 1999; Domina 2005) or has no effect on achievement (e.g. Brookover et al. 1979; Domina 2005; El Nokali, Bachman and Votruba-Drzal 2010; Epstein 1988, 1991; Fan 2001). Additionally, parent involvement's effect on academic achievement has been found to vary by the minority and/or social status of the student (e.g. Hill et al. 2004; Lareau 1989; Lee and Bowen 2006), by gender (Keith et al. 1998; Muller 1998), and by immigrant status (Kao 2004). Finally, many studies find positive, negative, and/or no associations between parent involvement and academic achievement within the same study (e.g. Crosnoe 2001; Domina 2005; Ho Sui-Chu & Willms 1996; McNeal 1999; Muller 1995; Reynolds 1992). Surprisingly, the contradictory findings are remarkably consistent and cut across grade level, measure of academic achievement, and time (spanning the middle 1970s to the late 2000s).

Aside from individual studies, there have been three comprehensive reviews or meta-analyses conducted in

recent years. Mattingly et al. (2002) conduct a comprehensive review of 41 studies and conclude there is little evidence indicating parent involvement affects academic achievement. In a meta-analysis, Jeynes (2003) concludes that parent involvement was statistically related to increased academic achievement for African-American students, but not other minority groups. In a second meta-analysis, Jeynes (2007) focuses on urban secondary students and found that parent involvement was associated with increased achievement.

Given the current literature, the most logical conclusion is that some elements of parent involvement affect some types of achievement for some students some of the time. It is also possible that some forms of parent involvement beneficially affect other student outcomes that might be associated with academic achievement such as educational expectations, absenteeism, and truancy. This degree of inconsistency, and lack of clarity on which elements of parent involvement affect which outcomes, is especially troublesome for policy makers and educational practitioners. On the one hand, teachers, principals, superintendents, school board members, and parents are frantically developing parenting partnerships to have parents play a more active role. On the other hand, nobody is clear on which component(s) of parent involvement these partnerships should focus, nor on which student outcomes these partnerships are likely to have the greatest effect.

Given the lack of clarity in the existent literature, and the importance of gaining a better understanding of how parent involvement affects student outcomes, this research focuses on two questions. First, how do different parent involvement practices (i.e. parent-child and parent-school) affect student attitudes, behaviors, and achievement? Second, for those practices that primarily affect student attitudes and behaviors, how do these effects indirectly improve academic achievement and performance? If parent involvement practices differentially affect student attitudes, behaviors and achievement and student attitudes and behaviors are related to improved achievement, then previous research may have substantially under-estimated parent involvement's influence on adolescents' lives. Furthermore, if we can better understand how parent-child and parent-school involvement affects adolescents, we will be better situated to design parent involvement interventions that maximize the benefits for youth and adolescents.

To answer these two questions, the researcher investigates the effects of parent involvement on a wider range of outcomes than previously studied, including attitudes (i.e. educational expectations), behaviors (i.e. absenteeism, truancy, and hours homework), and achievement (i.e. reading, mathematics, and science). The research focuses on reading, mathematics, and science achievement separately for several reasons. First, recent studies tend to focus on separate measures of achievement rather than composite measures (i.e. Burcu & Sungur 2009; Fan 2001; Ho Sui-chi and Willms 1996; Muller 1998). Second, since math and science use different cognitive skills than does reading it is possible that parent involvement does not uniformly affect these domains. Finally, most international comparisons continue to show America's declining performance in math and science relative to other industrialized nations, and parent involvement may yet prove to be an important policy consideration that helps reverse this trend.

Prior to answering these questions, there are three issues that need to be addressed. First, what is the structure and nature of parent involvement? Second, how might parent involvement affect student attitudes, behaviors, and achievement? Third, why might these effects be differentially distributed across form of parent involvement and type of outcome being studied?

2. Nature of Parent Involvement

Parent involvement can be described as social relations that are imbued with norms of trust, obligation, or reciprocity (Coleman 1988; McNeal 1999). If described in this manner, parent involvement is conceived of as a form of social capital. Parents invest their time, attention, and resources in their children with the expectation of a return – namely that their children will perform better in school. Using this framework, McNeal (1999) contends that parent involvement encompasses three broad domains, parent-child relations, parent-school relations, and parent-parent relations. In all three cases, it is generally assumed that parents invest time with their children, school personnel, or other parents with the expectation that their involvement will yield a tangible return. The exact form of the expected return is not always clear, but can include improved educational expectations, improved role performance (i.e. better attendance, increased homework done, reduced delinquency, etc.), increased achievement, or strengthened relationships with school personnel or other parents.

Recognizing that parent involvement can be with the child, school personnel, or other parents is important because not all strategies of involvement are likely to yield the same result. In fact, one of the confusing aspects of the literature is that so many different conceptualizations of parent involvement are relied upon, and these conceptualizations cut across the domains (child, school, parents) with little discussion of the implications. Why is this important? Because some forms of parent involvement are likely to more greatly affect student attitudes and behaviors, while other forms more greatly affect achievement. In the current literature, the two most widely used "domains" of parent involvement include parent-child and parent-school involvement, which are the focus of this research.

Parent-child involvement is one of the most common ways to conceptualize and measure parent involvement, especially by educators. Two of the more predominant conceptualizations for parent-child involvement are parent-child discussion and parental monitoring (e.g. Astone and McLanahan 1991; Ho Sui-Chi and Willms 1996; Keith

et al. 1986; Pong 1997; Reynolds 1992; Sheldon and Epstein 2005). The theoretical dynamics affiliated with parent-child discussion are well established and can be summarized as follows: parents discussing school-related topics with their children convey the importance of schooling, thereby improving the student's attitudes and expectations. In other words, talking with your child about school conveys the message to your child that 'school is important to me and I want it to be important to you too'. This notion corresponds to Hoover-Dempsey and Sandler's (1995) contention that modeling is a key mechanism through which parent involvement affects behavior. Parent-child discussion is expected to affect student attitudes (and possibly behavior), which in turn should translate into improved academic achievement.

A second way to conceptualize parent-child involvement is the degree to which a parent is actively engaged in their child's life, knows their child's whereabouts, and makes sure their child's homework is completed. These measures are usually referred to as monitoring. Monitoring is usually associated with student behavior and performance by parents reinforcing or sanctioning desirable and non-desirable behavior (e.g. Hoover-Dempsey and Sandler 1995). The assumption is that active parental monitoring will ultimately affect the child's academic performance by first altering the adolescent's behavior (i.e. truancy, absenteeism, and homework).The reinforcement process thus indirectly affects achievement by parents keeping their children away from bad influences, assisting teachers by assuring homework is properly completed, and making sure that their child is staying out of trouble.

The preceding paragraphs clarify at least two dynamics related to parent-child involvement. For discussion, the primary effects of modeling should be to alter student attitudes and behaviors; for monitoring, the primary effects of reinforcement should be to alter adolescent behavior .Any effect these two parent involvement strategies have on academic achievement should primarily be secondary and indirect. Nonetheless, many studies continue to examine direct relationships between discussion, monitoring, and achievement – often reporting inconsistent findings.

Parent-school involvement strategies, unlike parent-child involvement strategies, are theorized to more directly affect academic achievement. A prominent manner in which to conceptualize parent-school involvement is the degree that parents visit classrooms, speak with teachers or counselors, or volunteer in the school (e.g. Dearing et al. 2006; Lareau 1989; Machen, Wilson and Notar 2004).I refer to these practices as school-situated educational-support strategies. Similar practices were found by Lareau (1989) and Useem (1992) to have positive and beneficial effects on a student's classroom placement and subsequent performance. In both studies, the authors found that higher social class parents possessed greater levels of cultural capital and that this greater knowledge and familiarity with the school system allowed these parents to alter their child's classroom placement. Educational support strategies, given they reflect a parent's direct intervention in the schooling process, are thus more likely to directly affect achievement. Such tactics may only modestly influence adolescent attitudes and behaviors, especially in middle school and high school, since many older adolescents often resist parental intervention.

A similar conceptualization widely used in the literature is involvement with the Parent-Teacher Organization (e.g. Esptein 1992; Lareau 1989; McNeal 1999; Reynolds 1992).This strategy is generally perceived of as having two different theoretical effects. On one hand, PTO involvement improves a parent's level of cultural capital by increasing their familiarity with school dynamics and specific teacher's strengths and weaknesses. PTO involvement also facilitates the parent's ability to stay abreast of tactics and strategies that can benefit their child's educational performance (e.g. Lareau 1989).In this case, PTO involvement may signal the importance of schooling to the child and affect educational expectations or specific aspects of a student's role performance.

PTO involvement is also used by social capital theorists, albeit it with a slightly different explanation for why it affects adolescent behavior .For social capital theorists, the extended social network formed in the PTO between parent(s) and teacher(s) helps curb anti-social behavior and improve student role performance (Coleman 1988, 1991).The primary theoretical mechanism for how PTO involvement affects adolescent behavior resides in the existence of a dense social network, which constrains adolescent behavior. Cultural capital theorists thus hypothesize a direct relationship between PTO involvement, educational expectations, and achievement, whereas social capital theorists hypothesize strong relationships between PTO involvement and adolescent behavior. Linking the two theoretical frameworks together means PTO involvement should influence various student attitudes, behaviors, and achievement.

The above discussion clearly indicates that parent involvement strategies that directly engage the child are fundamentally different than those strategies that seek to link the parent to the educational environment. It is also clear that even within type of involvement (i.e. parent-child involvement versus parent-school involvement), strategies may yield differing results as a function of the outcome being studied and the particular involvement strategy utilized. This research thus examines the following four hypotheses:

Hypothesis 1: Parent-child discussion should directly influence student attitudes (i.e. educational expectations), and to a lesser degree behaviors (i.e. absenteeism, homework, truancy), thereby indirectly affecting academic achievement.

Hypothesis 2: Parent-child monitoring should directly influence student behaviors (i.e. absenteeism, homework, truancy), and to a lesser degree attitudes (i.e. educational expectations), thereby indirectly affecting academic achievement.

Hypothesis 3: Educational support strategies should directly affect achievement, but should affect student attitudes and behaviors only modestly.

Hypothesis 4: Parent Teacher Organization involvement should directly affect student attitudes and behavior, thereby indirectly affecting academic achievement. PTO involvement should also directly affect academic achievement.

In summary, the four hypotheses can be succinctly summarized along the proposed theoretical dimensions of parent-child and parent-school involvement. Parent-child involvement strategies should primarily affect student attitudes and behaviors and whatever effect these strategies have on achievement will be indirect. Parent-school involvement strategies should more directly affect academic achievement and only modestly influence student attitudes and behaviors. If these hypotheses are empirically supported, and the broader framework distinguishing between parent-child and parent-school involvement is confirmed, many of the previous inconsistencies reported in the literature might begin to make sense.

Despite the wealth of literature on the relationship between parent involvement and academic achievement, little research explicitly examines how parent involvement affects student attitudes and behaviors, thereby translating into improved academic performance. This question has been posed by several researchers in the past two decades (i.e. Bierman 1996; Coleman 1991; Epstein 1992; Hill et al. 2004; Muller 1995), although it has received very little empirical attention. One of the very few studies that might be able to shed light on this issue is that by Hill and her colleagues (2004).Their ability to answer this question, however, is limited. While the researchers include measures of parent involvement as reported by the teacher, parent and child, they do not distinguish between the various types of involvement – which previous research has clearly established is essential given different types of involvement have different effects on adolescent behavior and achievement. Hus , the best summary is that previous research has in essence realized that there are key mediating mechanisms that translate some forms of parent involvement into gains in some forms of achievement for some kids, but little research exists that documents these variable and indirect influences.

Involvement-Achievement Dynamics

The theoretical model is summarized in Figure 1.The first panel includes socio-demographic (i.e. socioeconomic status, gender, and race/ethnicity) and parent involvement measures. Parent involvement spans the parent-child and parent-school domains and includes two measures each. Discussion and monitoring represent parent-child involvement; Parent Teacher Organization (PTO) involvement and educational support strategies represent parent-school involvement. All exogenous measures are captured during the 8th grade. The second panel includes 8th grade attitudinal and behavioral measures. Attitude is captured with educational expectations; behavior is captured with absenteeism, hours of homework completed each week, and truancy. The third panel includes 8th and 10th grade achievement, with 8th grade achievement being a significant predictor of 10th grade achievement.

These particular attitudes and behaviors have been chosen because they should be readily altered by parent involvement and are closely associated with academic achievement. Previous literature relies on parent involvement affecting various attitudinal (i.e. educational expectations) and behavioral (i.e. truancy, absenteeism, homework) measures as part of their theoretical discussion on how parent involvement translates into improved academic performance (e.g. Hill et al. 2004; Hoover-Dempsey and Sandler 1995; Lareau 1989).If parent-child involvement has any tangible benefits, it likely leads to higher educational expectations, reduced truancy, reduced absenteeism, and an increased focus on homework – which theoretically increases academic achievement. I n short, parent-child involvement primarily affects academic achievement indirectly by raising expectations and the amount of homework completed and by lowering the student's rate of truancy and absenteeism. On the other hand, stronger direct relationships between parent-school involvement and academic achievement are expected.

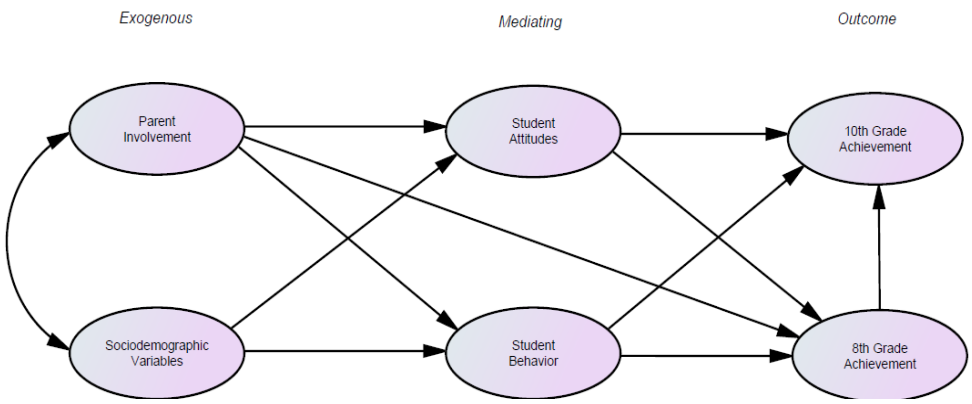

Figure 1. Conceptual Model for Effects of Parent Involvement on Attitudes, Behavior, and Academic Achievement

3. Sample & Method

This research uses data from the National Educational Longitudinal Study (NELS:88). NELS is a nationally representative database, with data collection beginning in 1988 (8th graders) and follow-ups occurring every two years thereafter. NELS was specifically chosen due to the large # of previous studies on parent involvement using this dataset; the author(s) believe that to empirically test an extended theoretical framework it is better to use a dataset that was extensively used for numerous individual-level studies.

NELS includes data collected from students (every wave), as well as from parents, teachers, and principals (selected waves). This research uses student and parent data from the first wave (8th grade) and student data from the second wave (10th grade).Students who attended public school, completed the baseline and first follow-up achievement tests, and had valid responses on parent questionnaires were selected (N=12,245).After listwise deletion of cases missing data on dichotomous variables (mean substitution was used for continuous variables), 12,101 cases were retained for analysis.

Variable Construction

Parent involvement measures were constructed by factor analyzing fifteen variables that measure some element of parental involvement with the child, teachers, or other school personnel. The entire 8th grade public school sample was utilized and weighted factor scores extracted; promax rotation is used rather than varimax rotation because of the theoretical interconnectedness of the concepts. Using the Kaiser method of extraction (eigenvalues > 1.0) yields four factors for parent involvement (eigenvalues and percent variance explained are in parentheses), parent-child discussion (3.0; .20), PTO involvement (2.0; .14), monitoring (1.3; .09), and educational support strategies (1.1; .08).Two of these factors link parents to their children (discussion & monitoring); two of these factors link parents to the school (PTO involvement & educational support strategies).These four factors cumulatively explain fifty-one percent of the variance in the original fifteen variables.

Discussion (loadings in parentheses) is the degree to which children report discussing school programs (.74), school activities (.63), things studied in class (.61), and planning the high school program (.70 father; .77 mother) with their parents. *Parent-Teacher Organization* Involvement is the degree to which parent(s) report belonging to the PTO (.74), attending PTO meetings (.75), taking part in PTO activities (.79), and volunteering at the school (.54).Monitoring is the degree to which students report parents actively monitor their behavior and includes checking on homework (.63), requiring chores to be done (.70), and limiting time spent watching television (.72).*Educational Support Strategies* is the degree to which students report their parents are actively engaged in processes directly related to the student's status as a member of the school, including attending school meetings (.67), visiting classes (.69), and talking to teacher(s) / counselor(s) (.69).1All four weighted factor scores are transformed to follow a standardized, normal distribution (mean = 0, standard deviation = 1).

The second series of concepts that deserve explicit mention are the four attitudinal and behavioral measures. *Educational Expectations* is how much education the student intends to complete, ranging from (1) less than high school to (6) graduate school. *Absenteeism* is the number of days the student was absent for any reason during the past four weeks. Hours Homework is the total hours per week the student spends doing homework. Truancy is a dichotomous variable representing whether the student cut or skipped classes during the current school year. All four of the attitudinal and behavioral measures are from the 8th grade.

Reading, mathematics and science achievement are key dependent variables. *Eighth grade and tenth grade achievement* are the baseline and first follow-up measures of reading, mathematics, and science achievement respectively. These variables are coded as the estimated number right using Item Response Theory.

Finally, exogenous variables are included in the analysis for race/ethnicity, gender, and socioeconomic status. These covariates are consistently associated with student behavior, parent involvement, and academic achievement (e.g. Coleman 1991; Desimone 1999; Domina 2005). Socioeconomic status is a composite measure provided by NELS:88 that includes father's occupation and education, mother's occupation and education, and family income; minority status and gender are dichotomous variables.

Correlations and Descriptive Statistics

Table 1 presents the correlations, means, and standard deviations for all variables. Approximately 29 percent of the sample is minorities (10% black, 13% Hispanic, 6% Asian); gender is evenly divided (49 percent male).As for mediating variables, students have missed an average of 1.5 school days during the past four weeks and spend approximately 6 hours per week on homework. Roughly 1 in 9 students (11.5%) report skipping classes during the current school year. The average educational expectation of the 8th graders in this sample is 4.6, or slightly higher than two or more years of college.

All four measures of parent involvement are significantly related to reading, mathematics, and science achievement; the only non-significant correlation is between educational support strategies and 10th grade reading performance ($r=.013$, $p>.05$).The statistically significant relationships between educational support strategies, monitoring, and achievement are particularly weak, ranging in magnitude from .020 to .074.This is the first indication that there may be only a weak direct relationship between some strategies of involvement and academic performance.

There is also a pattern of significance between the mediating variables (expectations, absenteeism, homework, and truancy) and parent involvement. In nearly every circumstance, parent involvement is associated with more

positive outcomes; the only exceptions are non-significant bivariate correlations between educational support strategies, absenteeism, and truancy. Three additional patterns related to the parent-involvement / mediating variable nexus also emerge. First, discussion is more strongly correlated with educational expectations (r=.341, p<.05), absenteeism (r=-.080, p<.05), homework (r=.193 p<.05) and truancy (r=-.146, p<.05) than any other parent involvement measure. Second, educational support strategies is weakly correlated with absenteeism (r=.001), homework (r=.085) and truancy (r=.007) (i.e. behavioral measures).Third, PTO involvement and monitoring have differing correlations with mediators dependent on whether the mediator measures student attitudes or behaviors. PTO involvement is more strongly correlated with educational expectations (r=.175, p<.05) than is monitoring (r=.095, p<.05); monitoring is more strongly correlated with absenteeism (r=-.054, p<.05), homework (r=.106, p<.05) and truancy (r=-.092, p<.05) than is PTO involvement (r=-.048, .062, and -.031 for absenteeism, homework and truancy respectively).

From Table 1, we can draw several preliminary conclusions. First, parent-child measures are more clearly associated with student attitudes (discussion) and behaviors (discussion, monitoring) than are parent-school measures; the only exception to this general pattern is PTO involvement's correlation with educational expectations. Second, PTO involvement is more strongly associated with student attitudes than with behaviors, while the reverse is true of monitoring. Third, educational support strategies are at best weakly associated with attitudes and tends to have no association with behavioral outcomes. Table 1 thus provides preliminarily support for the need to theoretically distinguish between parent-child and parent-school involvement, as well as the need to use multiple indicators of each domain. As for supporting the four hypotheses, the results are generally positive although far from definitive.

Table 1. Correlations, Means, and Standard Deviations. (N=12,101)

	Minority	SES	Male	Expect	Absent	Hrs HW	Truant	Mean	Std. Dev.
Minority[1]	1.000							.288	---
SES	-.260*	1.000						-.140	---
Male[1]	-.012	.029*	1.000					.492	---
Expect	.003	.387*	-.074*	1.000				4.6	1.3
Days Absent	-.006	-.091*	-.056*	-.104*	1.000			1.5	2.3
Hrs HW	-.025*	.105*	-.034*	.136*	-.022*	1.000		5.8	4.8
Truant[1]	.078*	-.099*	.076*	-.127*	.124*	-.058*	1.000	.115	---
Discussion	-.093*	.273*	-.091*	.341*	-.080*	.193*	-.146*	0.0	1.0
PTO	.029*	.269*	.007	.175*	-.048*	.062*	-.031*	0.0	1.0
Ed Support	.013	.159*	.062*	.103*	.001	.085*	.007	0.0	1.0
Monitoring	.066*	.079*	.013	.095*	-.054*	.106*	-.092*	0.0	1.0
8th Reading	-.203*	.397*	-.099*	.372*	-.093*	.137*	-.136*	26.6	8.5
10th Reading	-.191*	.400*	-.090*	.382*	-.086*	.132*	-.145*	29.9	10.0
8th Mathematics	-.204*	.435*	.024*	.382*	-.121*	.173*	-.133*	35.8	11.8
10th Mathematics	-.202*	.445*	.022*	.416*	-.141*	.163*	-.156*	42.9	13.9
8th Science	-.229*	.387*	.087*	.337*	-.105*	.137*	-.134*	18.7	4.8
10th Science	-.250*	.422*	.131*	.342*	-.114*	.173*	-.134*	21.3	6.0

	Discussion	PTO	Ed Support	Monitor	8th Grade Reading	10th Grade Reading	8th Grade Math	10th Grade Math	8th Grade Science	10th Grade Science
Discuss	1.000									
PTO	.167*	1.000								
Ed Support	.216*	.228*	1.000							
Monitoring	.236*	.051*	.141*	1.000						
8th Reading	.266*	.123*	.022*	.068*	1.000					
10th Reading	.256*	.121*	.013	.074*	.806*	1.000				
8th Mathematics	.250*	.127*	.030*	.036*	.701*	.686*	1.000			
10th Mathematics	.249*	.131*	.020*	.039*	.689*	.752*	.879*	1.000		
8th Science	.218*	.118*	.024*	.060*	.705*	.676*	.726*	.701*	1.000	
10th Science	.250*	.112*	.027*	.048*	.665*	.736*	.720*	.783*	.733*	1.000

* indicates significant at p<.05

1: mean value is proportion in sample since these variables are dichotomous

Plan of Analysis

The researcher now turns to examining the hypotheses using a series of fixed-effects hierarchical models (Bryk and Raudenbush 1992). Hierarchical models are necessary because the NELS:88 data are derived from a clustered, probability sample. Since students are nested within schools, standard errors from non-hierarchical approaches tend to be artificially reduced. The researcher's primary concern is in correcting these standard errors, not in studying school effects, so the researcher limits the analysis to fixed-effects hierarchical linear models. For the attitudinal and behavioral measures, the following specification was utilized:

$$Yij = \beta 0j + \beta 1j\ (SES) + \beta 2j\ (Minority) + \beta 3j\ (Male) + \beta 4j\ (Discussion) + \beta 5j\ (PTO) + \beta 6j\ (Ed\ Support) + \beta 7j\ (Monitoring) + rij$$

where $\beta 0j = \gamma 00 + \mu 0j$ and Yij = the respective dependent variable of interest.

For educational expectations, absenteeism (# days absent within last four weeks), and hours of homework done on a weekly basis, the researcher estimates hierarchical linear models. For truancy, the researcher estimates a hierarchical log it model given the dichotomous dependent variable.

A similar approach is used when estimating models for reading, mathematics, and science achievement. For 8th grade measures, the estimated model(s) are as follows:

$$Yij = \beta 0j + \beta 1j\ (SES) + \beta 2j\ (Minority) + \beta 3j\ (Male) + \beta 4j\ (Discussion) + \beta 5j\ (PTO) + \beta 6j\ (Ed\ Support) + \beta 7j\ (Monitoring) + \beta 8j\ (Expectations) + \beta 9j\ (Absenteeism) + \beta 10j\ (Hrs\ Homework) + \beta 11j\ (Truancy) + rij$$

where $\beta 0j = \gamma 00 + \mu 0j$ and Yij = the respective dependent variable of interest.

For 10th grade achievement, 8th grade achievement for the respective measure is included as a covariate. For all hierarchical analyses, continuous variables are standardized and centered on their grand means prior to analysis.

The equations taken in their entirety can be thought of as that set of equations necessary to complete a path diagram (see Figure 2). Estimating these individual equations is nearly identical to a traditional path analysis, except that the standard errors are robust standard errors corrected for variation that exists within and between schools. After discussing the direct effects of parent involvement on student attitudes, behaviors, and achievement, the researcher will return to discuss the indirect effects that can be constructed using Figure 2 as a guide.

4. Results

Table 2 presents results that examine parent involvement's effect on student attitudes, behaviors, and achievement. Within this table, we can also extract information about the relationship between student attitudes and behaviors and academic achievement.

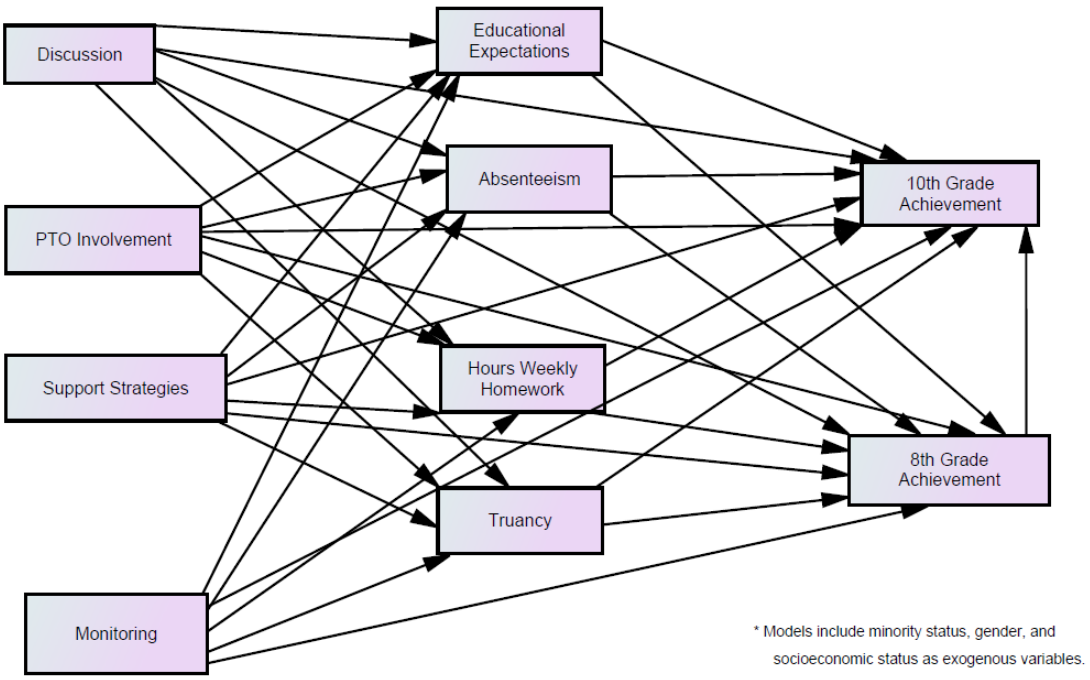

Figure 2. The Effects of Parent Involvement on Student's Attitudes, Behavior and Achievement*

Table 2. Standardized Direct Effects of Parent Involvement on Educational Expectations, Absenteeism, Truancy, Homework, and Achievement (Effects

	Educational Expectations	Absenteeism	Homework	Truancy	8th Gr. Reading	8th Math	8th Gr. Science	10th Gr. Reading	10th Math	10th Gr. Science
Parent-Child Involvement										
Discussion	.2626*	-.0722*	.1620*	-.3218*	.0785*	.0779*	.0743*	.0203*	.0011	.0296*
Monitoring	.0028	-.0485*	.0755*	-.2101*	.0128	-.0308*	.0006	.0092	-.0028	-.0083
Parent-School Involvement										
PTO Involvement	.0506*	-.0293*	.0091	-.0124	.0070	.0061	.0218t	.0074	.0070	-.0105
Support Strategies	-.0070	.0507*	.0187	.1338*	-.0473*	-.0484*	-.0543*	-.0304*	-.0219*	-.0220*
Student Attitudes & Behaviors										
Expectations	.....	.....	.....	.....	.2203*	.2232*	.1981*	.0702*	.0790*	.0810*
Absenteeism	.....	.....	.....	.....	-.0324*	-.0536*	-.0433*	.0064	-.0195*	-.0089
Hrs. Homework	.....	.....	.....	.....	.0519*	.0753*	.0586*	.0094	.0049	.0143t
Truancy	.....	.....	.....	.....	-.1651*	-.1402*	-.2082*	-.0643*	-.0919*	-.0326
Control Variables										
8th Grade Achievement	.....	.....	.....	.....	.....	.....	.....	.7346*	.8111*	.6176*
Minority (0, 1)	.2256*	-.1069*	-.0208	.2836*	-.3143*	-.3173*	-.3669*	-.0641*	-.0399*	-.1693*
SES	.3236*	-.0908*	.0258*	-.1778*	.2114*	.2323*	.1947*	.0663*	.0484*	.1101*
Male	-.1172*	-.0926*	-.0803*	.4400*	-.1627*	.0920*	.2113*	-.0223	.0166	.168

Columns 1 through 4 examine the degree to which the type of parent involvement differentially affects student attitudes and behaviors. Discussion has the greatest effect of all four strategies of involvement on educational expectations, absenteeism, homework, and truancy. Since the effects are standardized, we can compare effects both within and across models. For example, it is fair to say that discussion's effect on educational expectations (.2626, $p<.05$) is 5 times greater than PTO involvement's effect on educational expectations (.0506, $p<.05$).Discussion's effect is approximately 1.5 times larger than the next largest effect for absenteeism (versus educational support strategies), 2.0 times larger than the next largest effect for homework (versus monitoring), and 1.5 times larger than the next largest effect for truancy (versus monitoring).Discussion is by far the most meaningful parent involvement strategy of those examined for directly altering student attitudes and behaviors.

A clearer perspective of the magnitude of discussion's effect on educational expectations, absenteeism, truancy and homework can be attained by comparing it to those effects associated with socioeconomic status. In other words, how much of the "disadvantage" associated with lower socioeconomic status could theoretically be altered by raising levels of parent-child discussion? Discussion's effect is approximately 80% the size of the "socioeconomic disadvantage" in educational expectations and absenteeism. Discussion's effect at lowering truancy is approximately 2 times greater, and discussion's effect at increasing the amount of homework done is approximately 8 times greater, than effect(s) associated with being one standard deviation lower on socioeconomic status. Discussion's effect at altering student attitudes and behaviors is large enough that it could nearly eliminate the disadvantage in educational expectations and absenteeism, and completely offset the disadvantage in hours of homework and truancy, associated with being a standard deviation below the mean on socioeconomic status. Similar findings pertain to discussion's ability to offset the white-minority gap in educational expectations, absenteeism, hours homework completed, and truancy.

Table 2 also provides support for some aspects of the hypotheses that pertain to student attitudes and behaviors, particularly those associated with parent-child involvement. Discussion generally has a larger effect on student attitudes (i.e. educational expectations) than on student behavior (i.e. absenteeism, homework).[2] Monitoring has a stronger influence on student behavior than on student attitudes; monitoring significantly reduces absenteeism and truancy and increases homework, while it has no significant effect on educational expectations. The first two hypotheses receive substantial support regarding the relationship between parent-child involvement and student attitudes and behaviors.

The portions of hypotheses three and four dealing with the relationship between parent-school involvement and student attitudes and behaviors are generally not supported by the findings in Table 2.Hypotheses 3 states that educational support strategies should have a minimal to modest effect on student attitudes and behaviors. While educational support strategies generally have a modest influence on student attitudes and behaviors, the findings are in a negative direction! This might be considered further evidence that there is a "reactive" hypothesis whereby parents become involved once their children begin to struggle, although a recent study finds that there is little empirical support for such a hypothesis (McNeal, 2011).

Hypothesis four contends that PTO involvement should affect student attitudes and behaviors. While PTO involvement has a positive effect on educational expectations, it has weak to non-significant relationships with absenteeism, homework, and truancy. This indicates that a hypothesis derived from Coleman's (1991) perspective that PTO involvement serves to form an extended social network that will help curb negative behavior and reinforce positive behavior receives limited support. On the other hand, the results more closely adhere to a hypothesis compatible

with Hoover-Dempsey and Sandler's (1995) contention that PTO involvement may serve as a form of modeling – reflected in its modest influence on educational expectations.

If Table 2 is interpreted in light of the broader theoretical framework that distinguishes between parent-child and parent-school involvement, the findings and implications are much clearer. Parent-child involvement consistently has a greater effect on student attitudes and behaviors than does parent-school involvement. Parent-child involvement measures (discussion, monitoring) are consistently significant and of consistently greater magnitude than are parent-school involvement measures. The discussion thus far has been limited to portions of the hypotheses addressing parent-child and parent-school involvement effects on student attitudes and behaviors. The researcher now turns to how parent involvement is related to academic achievement.

Hierarchical models predicting reading, mathematics, and science achievement also address the hypotheses presented earlier in this manuscript. It was hypothesized that discussion and monitoring, or parent-child measures more generally, should have weak direct relationships with achievement, whereas educational support strategies and PTO involvement, or parent-school measures more generally, should more strongly affect achievement. Table 2 indicates that the aspects of the hypotheses dealing with direct effects between parent involvement and achievement receive mixed support, especially if student attitudes and behaviors are included as covariates in the analysis.

Discussion directly affects 8th grade achievement after controlling for educational expectations, absenteeism, homework, and truancy; discussion's effect on 10th grade achievement is limited to a minimal increases in 10th grade reading and science achievement. Monitoring has minimal to non-existent effect(s) on achievement. PTO involvement has no significant relationship with 8th or 10th grade achievement, with the sole exception being a marginal relationship with 8th grade science ($p<.10$).Educational support strategies has a negative association with all forms of 8th and 10th grade achievement.

The portions of Hypotheses 1 and 2 linking parent-child involvement to achievement receive mixed support. Hypothesis 1, asserting weak to non-existent direct relationships between discussion and achievement, is not supported; parent-child discussion continues to directly affect 8th and 10th grade achievement, although the 10th grade direct effects are small in magnitude. Hypothesis 2, asserting weak to non-existent direct relationships between monitoring and achievement, is supported; monitoring generally exhibits no direct effect on achievement.

Hypotheses addressing parent-school involvement contend that there will be a direct relationship between parent-school involvement (i.e. PTO involvement, educational support strategies) and achievement. The only evidence linking parent-school involvement practices directly to improved academic achievement is a marginally significant relationship between PTO involvement and 8th grade science achievement (.0218, $p<.10$).In summary, parent-child involvement (specifically discussion) consistently has a greater direct effect on student achievement than does parent-school involvement.

Table 2 does not necessarily indicate that parent-school involvement only affects student attitudes and behaviors. Similarly, Table 2 does not necessarily indicate that monitoring's effect is limited to behavioral outcomes. Since parent-school involvement (PTO and educational support strategies) and monitoring consistently affect student behaviors, and student behaviors consistently affect academic achievement, there are likely many indirect effects linking parent-school involvement and monitoring to academic achievement. To determine the full magnitude of parent involvement's effect on achievement, the researcher investigates how involvement indirectly affects achievement via attitudinal and behavioral measures.

Table 3 provides a summary of the direct, indirect, and total effects that correspond to Table 2 and Figure 2.These figures were derived by multiplying the paths from parent involvement to the mediating variable with those between the mediating variable and achievement. Only statistically significant direct and indirect effects are presented in Table 3, although all estimated paths are depicted in Figure 2 and Table 2.Significance for indirect effects was determined using asymptotic standard errors calculated using the multivariate delta method (Sobel, 1982).

Table 3 shows limited significant direct effects between parent-child involvement and achievement; discussion consistently improves 8th grade achievement and raises 10th grade reading and science achievement. Parent-school involvement direct effects are even less prominent; PTO involvement is associated with higher 8th grade science achievement and educational support strategies is consistently associated with lower achievement levels for all 8th and 10th grade outcomes. While direct effects between parent-child discussion and 8th grade achievement can be considered modest at best, the other direct effects might be considered "statistically meaningful, but substantively meaningless". Indirect effects, on the other hand, are another story.

Table 3 indicates that there are numerous indirect effects between parent involvement and achievement. Educational expectations, absenteeism, hours of homework, and truancy all mediate substantial portions of parent involvement's effect on 8th and 10th grade reading, mathematics, and science achievement. To varying degrees, each indicator of parent involvement indirectly affects 8th and 10th grade achievement measures, even in circumstances where significant direct effects are not present. The cumulative impact of these indirect effects is sometimes quite substantial, especially for parent-child discussion. For example, the cumulative indirect effect of discussion on 8th grade reading (.1217 standard deviations) is greater than discussion's direct effect (.0785 standard deviations).A similar phenomenon occurs for all other achievement measures with discussion's indirect effect dwarfing its direct effect. In addition, while parent-child discussion in the 8th grade shows no significant

direct relationship with 10th grade mathematics achievement, parents talking with their child about school, and its importance, has an indirect advantage of .2121 standard deviations.

A pattern also emerges that cuts across substantive fields. With very few exceptions, parent involvement effect(s) on reading, mathematics, and science achievement show remarkably similar patterns of significance and are of similar magnitude. Discussion's total effect(s) on 8th grade achievement range from .1977 to .2059 standard deviations; discussion's total effect(s) on 10th grade achievement range from .1804 to .2121.Monitoring's total effect(s) on 8th grade achievement range from .0007 to .0402 standard deviations; monitoring's total effect(s) on 10th grade achievement range from .0259 to .0431 standard deviations. *Particular strategies of parent involvement seem to have fairly consistent and uniform influence on achievement regardless of the substantive topic being investigated.* Furthermore, parent involvement effects on 8th grade achievement are of similar magnitude to their effects on 10th grade achievement, net of 8th grade performance.

Table 3. Direct and Indirect Effects of Parent Involvement on Reading, Mathematics, and Science Achievement (Computed From HLM Model(s) Presented in Table & Figure 2)

	Direct	Indirect Effect Via					Total	Total
	Effect	Expect	Absent	Truancy	Homework	8th Ach	Indirect	Effect
8th Grade Reading								
Discussion	.0785	.0579	.0023	.0531	.0084	N/A	.1217	.2002
Monitoring	.....	.....	.0016	.0347	.0039	N/A	.0402	.0402
PTO Involvement	.....	.0111	.0009	.....	.....	N/A	.0120	.0120
Ed. Support Strategies	-.0473	.....	-.0016	-.0221	.....	N/A	-.0237	-.0710
8th Grade Math								
Discussion	.0779	.0586	.0039	.0451	.0122	N/A	.1198	.1977
Monitoring	-.0308	.....	.0026	.0295	.0057	N/A	.0378	.0007
PTO Involvement	.....	.0113	.0016	.....	.....	N/A	.0129	.0129
Ed. Support Strategies	-.0484	.....	-.0027	-.0188	.....	N/A	-.0215	-.0699
8th Grade Science								
Discussion	.0743	.0520	.0031	.0670	.0095	N/A	.1316	.2059
Monitoring	.....	.....	.0021	.0044	.0437	N/A	.0462	.0462
PTO Involvement	.0218	.0100	.0013	.....	.....	N/A	.0113	.0331
Ed. Support Strategies	-.0543	.....	-.0022	-.0279	.....	N/A	-.0301	-.0844
10th Grade Reading [2]								
Discussion	.0203	.0577	.0017	.0597	.0062	.0577	.1830	.2033
Monitoring	.....	.....	.0012	.0390	.0029	.....	.0431	.0431
PTO Involvement	.....	.0117	.0007	.....	.....	.....	.0124	.0124
Ed. Support Strategies	-.0304	.....	-.0012	-.0248	.....	-.0347	-.0607	-.0911
10th Grade Math [2]								
Discussion	.....	.0683	.0045	.0662	.0099	.0632	.2121	.2121
Monitoring	.....	.....	.0031	.0432	.0046	-.0250	.0259	.0259
PTO Involvement	.....	.0132	.0018	.....	.....	.....	.0150	.0150
Ed. Support Strategies	-.0219	.....	-.0032	-.0275	.....	-.0393	-.0700	-.0919
10th Grade Science [2]								
Discussion	.0296	.0534	.0019	.0414	.0082	.0459	.1508	.1804
Monitoring	.....	.....	.0013	.0270	.0038	.....	.0321	.0321
PTO Involvement	.....	.0103	.0008	.....	.....	.0135	.0246	.0246
Ed. Support Strategies	-.0220	.....	-.0013	-.0172	.....	-.0335	-.0520	-.0740

[1] Analysis includes minority status, socioeconomic status, and gender as exogenous variables.

[2] Indirect effects for 10th grade measures include 1st order (parent involvement >>> attitude / behavior >>> 10th grade achievement) and 2nd order (parent involvement >>> attitude/behavior >>> 8th grade achievement >>> 10th grade achievement) effects. For example, the indirect effect of PTO involvement on 10th grade mathematics via absenteeism is the sum of 1st order (PTO >>> absenteeism >>> 10th grade mathematics, -.035 * -.025)) and 2nd order (PTO >>> absenteeism >>> 8th grade mathematics >>> 10th grade mathematics, -.035 * -.057 * .814)) effects. See Figures 2 and Table 2 to determine specific paths for each listed indirect effect.

Parent-child discussion clearly has a strong influence on student attitudes, behaviors, and achievement. Other parent involvement strategies seem to have a much more modest influence on these outcomes. It would be a mistake, however, to simply dismiss these parent involvement strategies because doing so risks losing site of a potentially important finding. In several cases, while the indirect effects are at best modest, they are the only statistically significant linkages tying some strategies of parent involvement to achievement. In other words, by examining only direct effects, and by focusing mostly on academic achievement, the literature has severely under-estimated the potential influence of parent involvement on adolescents' lives during high school. In almost every circumstance, including the indirect effects of parent involvement on achievement via educational expectations, absenteeism, homework, and truancy reveals linkages that are far greater in magnitude than if we focus solely on direct relationships between involvement and academic achievement.

The findings of indirect and total effects can be succinctly summarized to shed light on the hypotheses presented at the outset of this research by the following statements:

- *Parent-child involvement consistently has a greater effect on student attitudes, behaviors, and achievement than does parent-school involvement.*
- *Without exception, parent-child discussion consistently has the strongest effect on student attitudes, behaviors, and achievement.*
- *Indirect effects of parent-child and parent-school involvement consistently are greater than their corresponding direct effects.*

5. Discussion

The assumption that all forms of parent involvement raise educational expectations, reduce truancy and absenteeism, and generally improve achievement continues to be problematic – at least for high school students. The findings in this research are clear. First, some forms of parent involvement, particularly parent-child discussion, have a far greater effect on student attitudes, behaviors, and achievement than do others. Second, in almost every case the magnitude of the parent involvement effects on attitudinal and behavioral measures far outpace parent involvement's influence on achievement. Third, parent involvement has the potential to have a long-term and indirect influence on adolescents; discussion, PTO involvement, and monitoring's cumulative indirect effect(s) on 8th and 10th grade achievement are larger in magnitude than their corresponding direct effect(s) on these same measures. Previous research has underestimated the true influence of parent involvement on academic achievement by not specifically accounting for the numerous indirect mechanisms that theory indicates should exist.

The one finding that continues to plague research on parent involvement was also found in this research: apparent negative relationships between educational support strategies and student attitudes, behaviors, and achievement. The literature is replete with references to such negative associations and often refers to these findings as corresponding to the 'reactive' hypothesis (Epstein 1988; McNeal 1999).The basic premise is that some forms of parent involvement are not usually engaged in pro-actively by many parents, but are used reactively. Adolescents begin to exhibit difficulties in school, at which time parents become aware of the behavior. It is only once the student has already begun to inadequately fulfill the expectations of the student role that parents then intervene with the school. Often times, in fact, parents use these tactics at the request of school personnel (i.e. the dreaded "why don't you come in for a visit so we can talk about your child" request).In these cases, negative relationships appear in the empirical estimates because poor performance led to parental intervention. Nonetheless, the general belief is that parental use of educational support strategies proves beneficial in preventing further poor performance. At least with regard to this particular parent involvement strategy, we must gain a better understanding of the timing of parent involvement to definitively understand the positive and/or negative effects.

Policy Implications

How did the general theoretical framework fare and what does this mean for educational policy? Overall, the results indicate that parent-child involvement strategies (parent-child discussion and monitoring) have consistently greater influence on student attitudes, behaviors, and achievement than do parent-school involvement strategies (PTO involvement, educational support strategies).This finding speaks directly to educational policy and initiatives that are geared toward parent involvement and/or student performance. As we continue to struggle with failing schools, especially in rural and urban settings, and continue to fall further behind our international counterparts in mathematics and science achievement, educational leaders are grappling with various initiatives to improve student performance. What role should parents play? How do we better form partnerships between schools and parents? How do we foster closer ties between parents and teachers? Questions such as these are being tackled in school systems all across the nation. The question(s) being asked may actually need to be re-framed since the majority of the questions are focused on finding ways to better involve parents in the schooling environment rather than seeking ways to improve parent-child relationships.

Evidence presented here indicates that parent-school involvement, at least when conceptualized as educational support strategies and PTO involvement, hold little promise for improving secondary student's academic performance. These two forms of involvement showed little to no direct effect on reading, mathematics, or science achievement in either the 8th or 10th grades. What indirect influence these parent involvement strategies have on achievement tend to be either extremely small in magnitude, inconsistent, or both.

For example, the largest total positive effect exhibited by either of these two strategies on achievement is approximately .03 standard deviations!

Parent-child involvement, on the other hand, seems to hold much promise for increasing achievement – not to mention improving educational expectations and homework and reducing truancy and absenteeism. Within the broader rubric of parent-child involvement, parent-child discussion dominates the findings. Parents simply need to continue to speak with their children about the importance of schooling. While many parents no doubt believe that their children stopped listening to them when they entered puberty, something must be getting through as is evidenced by the findings of this research. On average, middle school children whose parents actively help the child plan their curriculum and talk to their child about the importance of schooling and school-related activities score 1/5th a standard deviation higher on 8th grade tests. Even more surprising is that this differential is net of the student's socioeconomic status, gender, and ethnicity. By almost any measurable standard, this is a substantial increase.

Even more surprising is that discussion between parents and children in the 8th grade continues to have a lasting effect on 10th grade achievement, a two-year lag. Parent-child discussion appears to have a substantial influence on attitudes, behaviors and achievement and this should be recognized and incorporated into educational policy and initiatives. We have long known that school-to-family communication was an important aspect of effective schooling, but have paid far less attention to what schools can or should do to foster parent-to-child communication.

This research also has implications for parent involvement initiatives more broadly. Parent involvement initiatives must explicitly address what type of involvement they are trying to foster and what outcomes they are trying to affect. The findings indicate that there are few parent involvement strategies that we can expect to directly affect achievement; those that are theorized to matter, such as parent-school involvement strategies, show little relationship to academic achievement during the early high school years. Initiatives might be considered only to the degree that they raise student expectations and reduce absenteeism and truancy. By altering these mechanisms, we can expect indirect and cumulative effects on achievement

What does seem to matter, much more so than parent involvement at the school or in various Parent-Teacher Organizations, is the degree to which parents talk to their child about school, show an active interest in the child's life, and actively monitor their child's behavior and performance. The question is: what can the school do to help create, foster, and sustain these practices? Schools should implement programs to encourage parent-child discourse in the early grades, and make concerted efforts to maintain these communication lines between parents and children throughout the child's schooling career. If necessary, in times of fiscal difficulty, one could even argue that resources already devoted to establishing or maintaining parent-school linkages should be diverted into programs to foster and nourish parent-child communication. This is a direction in which future research, program developers, and educators should invest time and energy if parent involvement is truly to help improve the attitudes, behavior, and academic performance of our children.

Endnotes

1 .When constructing parent involvement measures, student-reported information was used whenever possible. Many of the primary theoretical explanations for how parent involvement affects children rely on changes in social-psychological measures such as attitudes, values, and commitment to school. Social-psychological processes rely on students internalizing certain beliefs and expectations, meaning the student must be cognizant of the parent's efforts and take these into consideration when choosing various courses of action. Unfortunately, NELS does not include student-based reports of parent involvement in the PTO during the baseline survey; PTO involvement is thus measured using parent data

2. You cannot compare the effect of a particular type of parent involvement on expectations, absenteeism, and homework with its effect on truancy since the units of analysis are not comparable. A one standard deviation shift in parent involvement (X) reflects a β change in standard deviations of absenteeism, expectations, and homework. A one standard deviation shift in parent involvement (X) reflects a β change in the log-odds of being truant.

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