ABSTRACT

Title of Thesis:IS THERE AN OPTIMAL LEVEL OF PARENTAL
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This study examined how specific types of parental involvement were related to academic achievement, locus of control, and autonomy. The sample consisted of 14,747 eighth graders and their parents who completed the National Education Longitudinal Study of 1988.

Twenty parent involvement variables from the first phase of NELS:88 were factor-analyzed to create ten parent involvement composites, whose relationship to achievement, autonomy, and locus of control was assessed using planned, step-wise multiple regression analyses. The three outcome variables were measured during the second follow-up phase of NELS:88, which took place while the participants were in twelfth grade. A socioeconomic status composite, which included family income and parents' education, was statistically controlled. The study aimed to look for both linear and nonlinear relationships between parental involvement and each of the outcome variables.

Socioeconomic status was a statistically significant predictor of achievement, autonomy, and locus of control. This study found that while there were statistically

significant relationships between some of the parental involvement measures and each of the outcome variables, the effect sizes were too small to be practically or theoretically significant. The findings of this study have implications for school policies that employ parent involvement to increase student achievement.

IS THERE AN OPTIMAL LEVEL OF PARENTAL INVOLVEMENT IN ADOLESCENTS' ACADEMIC LIVES?

by

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Chapter I – Introduction

For more than 40 years, parental involvement in the schools has been a subject of research (e.g., Bing, 1963; Hanson, 1975). Results have consistently shown that parental involvement in academics has a positive impact on students' achievement. As a result of the research, schools have focused on how to get parents more involved in their children's schooling. However, the current body of research has not taken into account the developmental challenges of adolescence, and how parental involvement impacts adolescents' sense of internal control and autonomy.

Definition of Parental Involvement

Throughout the past 40 years, there have been many different conceptualizations of parental involvement (Baumrind, 1978; Epstein, 1986; Keith et al., 1998). The current consensus is that parental involvement is a multidimensional construct, although there is little agreement on how many dimensions exist. Two conceptualizations have dominated the recent research on parental involvement. One consists of five dimensions, and the other defines six dimensions.

Deslandes et al. (1997) developed a five dimensional model, derived from a factor analysis of a data set, which was not grounded in any theory. The five dimensions are: affective support, communication with teachers, parent-child daily interactions regarding school, parent-school communication, and parent-adolescent communication. Affective support consisted primarily of encouragement from the parents regarding competence to complete schoolwork. Communication with teachers included conversations both at school and over the phone. Parent-child daily

interactions included prompts to do homework and questions regarding tests or quizzes. Parent-school communication included memos from the school to home, as well as attendance at PTA or PTO meetings. Finally, parent-adolescent communication consisted of conversations about course selection and future goals (e.g., college).

A second conceptualization of parental involvement is a theory developed by Epstein (1990). She believed that parental involvement fell into six distinct categories: basic obligations of the parent (e.g., health, safety, supplies, positive home conditions); school to home communications (e.g., conferences, open houses, memos); involvement at school (e.g., volunteering, fund-raising); learning activities at home (e.g., monitoring, help with homework); decision making and advocacy (e.g., PTA involvement); and community groups (e.g., parent networking). Epstein believed that these six categories were separable, and that they each have different effects on the student.

Parental Involvement as Policy

In the mid-1960s, the federal government began focusing school interventions on the family. Historically, parental involvement policy has enjoyed bipartisan support at the national level, and has been included in all of the major educational reform legislation (Mattingly et al., 2002). Among the first programs to target the family were Head Start and Title I of the Elementary and Secondary Education Act (ESEA) of 1965 (Desimone, 1997). While research on the positive effects of parental involvement in education grew, the federal government continued to strengthen the parental involvement component of Title I through the 1970s.

The current form of Title I contains the strongest federal provision to involve families in education (Desimone, 1997). The Parental Involvement Section of Title I provides guidelines for involving parents in education; schools must develop programs consistent with these guidelines in order to receive federal funding. Most recently, parental involvement became one of six targeted areas in the No Child Left Behind Act of 2001 (Mattingly et al., 2002). Following in the footsteps of the national government, many state and local governments have developed guidelines for implementing parental involvement programs in the schools.

Parental involvement became a primary policy focus because it has the potential to be controllable, unlike other sources of inequality in schools (e.g., race, socioeconomic status, gender). The policies in place for more than 40 years have affected the quantity and quality of parental involvement in schools, and have affected the way that schools approach parental involvement (Desimone, 1999).

The Developmental Tasks of Adolescents

Adolescence is often viewed as a time of change and turmoil in relationships between children and their parents. It is the period when children begin to acquire the skills and abilities that will help them become successful, well-adjusted adults. One of the primary tasks of adolescence is to develop a sense of autonomy and self-reliance (Isakson & Jarvis, 1999).

The development of autonomy in adolescents has been shown to incorporate three dimensions: a decrease in reliance on the parents, an emotional separation from peers, and the development of an adult-like identity through obtaining adult privileges

(Cohen, 1980). As a result, adolescents spend less time at home and communicate less with their parents (Isakson & Jarvis, 1999).

The development of autonomy in adolescence has been linked to several positive outcomes. First, autonomy has a strong positive correlation with achievement in high school (Deslandes & Potvin, 1999). The nature of high school assignments often require students to be able to take initiative and use independent study skills (Isakson & Jarvis, 1999). Autonomy has also been linked to long-term adjustment; that is, students who were more autonomous in high school become more successful in their later adult years (Deci & Ryan, 1987).

Locus of Control

Another construct strongly linked to academic achievement is locus of control, which is defined as "A generalized expectancy concerning the perception of influence one has over personally relevant events or reinforcements" (Desimone, 1997, p. 33). Locus of control is measured on a continuum from internal to external, where an internal locus of control is indicated by the belief that events occur because of one's own actions, capabilities or characteristics. An external locus of control is indicated by the belief that events occur because of others.

Internal locus of control is associated with higher academic achievement at all ages (Desimone, 1997). Success in academics requires effort and persistence, and a student is unlikely to persist if s/he does not believe that s/he can affect the outcome. Many studies of parental involvement have included locus of control as a mediating factor, finding that parental involvement does contribute to a more internal locus of

control, which in turn leads to higher academic achievement (Trusty & Lamp, 1997; Desimone, 1997).

Statement of Problem

Despite the abundance of research on parental involvement throughout the past few decades, there is still much to be done. While there are two dominant conceptualizations of parental involvement (Hoover-Dempsey & Sandler, 1995; Epstein, 1986), the research that has been conducted in this area has not always utilized these conceptualizations. A majority of the studies on parental involvement used more data-driven definitions of parental involvement, rather than theory-driven definitions, and definitions are often one- or two-dimensional (e.g., Fehrmann et al., 1987; Keith et al., 1998; Paulson, 1994; Trivette & Anderson, 1995).

Additionally, research in the area of parental involvement has focused primarily on academic achievement, even for adolescents. Very little attention has been given to the many developmental tasks faced by adolescents. Since the developmental tasks of adolescence primarily involve breaking away and becoming less dependent on the parents, the involvement of parents in their adolescents' schooling should be closely examined. Grolnick and Ryan (1989) found that moderate levels of parental involvement in schoolwork at home might be optimal for the development of autonomy. While it was not statistically significant, a curvilinear relationship emerged from their data, indicating that under-involvement and overinvolvement may both have negative relationships with the development of autonomy in adolescents.

This study aims to address the holes in the current research base in three ways. First, a broad, multidimensional definition of parental involvement based on Epstein's (1990) conceptualization will be used. The relationship of each dimension of parental involvement to each of the outcome variables will be analyzed separately to determine if there are different trends. Second, this study will examine the relationship of parental involvement to adolescents' development of autonomy and locus of control, two tasks central to that age, as well as academic achievement. Finally, this study will look for curvilinear relationships between parental involvement and autonomy, locus of control, and academic achievement to determine if there is an ideal level of parental involvement during adolescence.

Definitions of Terms

Parental Involvement. Parental Involvement is defined according to Epstein's (1995) theory, which includes six dimensions: basic obligations of parents, schoolhome communication, parent involvement at school, parent involvement in learning activities at home, parent involvement in governance and advocacy, and parent networks.

Autonomy. Autonomy was defined according to Noom et al. (2001) as the ability to set a goal, specify options, and develop a strategy to meet the goal. A factor analysis of the NELS:88 data revealed a scale related to academic autonomy, which will be used in this study. The variables included in this scale focus on whether the adolescent makes decisions regarding his or her academic career. A single item, related to how often the adolescent depends on his or her parents to make decisions, will also be used to measure autonomy.

Locus of Control. Locus of Control is defined as a "generalized expectancy concerning the perception of influence that one has over personally relevant events, or reinforcements" (Desimone, 1997, p. 33). The measure used in this study is a modified version of Rotter's I-E Scale. In the NELS:88 survey, the I-E Scale was shortened to six questions in a Likert format.

Achievement. Achievement is defined as overall grade point average (GPA) at the time of graduation. A NELS:88 variable was used to obtain this information. However, the NELS:88 database did not standardize the format of GPA, and scores ranged from 0.0 to 108.98, with some scores reported on a 4.0 scale and others reported on a 100 point scale. In order to correct for the non-standardization, only those subjects whose GPA fell between 0.0 and 6.0 were used for analyses involving this variable. The 6.0 cutoff was used because that is the maximum GPA attainable on a 4.0 scale when weights are given for honors and advanced placement classes.

Hypotheses

 Each of the dimensions of parental involvement as measured during the base year (8th grade) will have a positive linear correlation with academic achievement as measured by GPA during the second follow up year (12th grade).

2. The various dimensions of parental involvement as measured during the base year (8^{th} grade) will have differential relationships with autonomy as measured by the single autonomy indicator during the second follow up year (12^{th} grade).

a. Dimensions related to home atmosphere for learning (Type 1) will have a positive linear relationship with the autonomy single indicator.b. Dimensions related to involvement at home (Type 4) will have a curvilinear relationship with the autonomy single indicator, with a moderate level of parental involvement being associated with the highest levels of autonomy.

c. Dimensions related to involvement at school (Types 2, 3, and 5) will have a curvilinear relationship with the autonomy single indicator, with a moderate level of parental involvement being associated with the highest levels of autonomy.

3. The various dimensions of parental involvement as measured during the base year (8th grade) will have differential relationships with autonomy as measured during the second follow-up year (12th grade) by the autonomy scale developed for this study.

a. Dimensions related to home atmosphere for learning (Type 1) will have a positive linear relationship with the autonomy scale.b. Dimensions related to involvement at home (Type 4) will have a curvilinear relationship with the autonomy scale, with a moderate level of parental involvement being associated with the highest levels of autonomy.

c. Dimensions related to involvement at school (Types 2, 3, and 5) will have a curvilinear relationship with the autonomy scale, with a

moderate level of parental involvement being associated with the highest levels of autonomy.

4. The various dimensions of parental involvement as measured during the base year (8th grade) will have differential relationships with locus of control as measured during the second follow-up year (12th grade).

a. Dimensions related to home atmosphere for learning (Type 1) will have a positive linear relationship with locus of control.

b. Dimensions related to involvement at home (Type 4) will have a curvilinear relationship with locus of control, with a moderate level of parental involvement being associated with the most internal locus of control.

c. Dimensions related to involvement at school (Types 2, 3, and 5) will have a curvilinear relationship with locus of control, with a moderate level of parental involvement being associated with the most internal locus of control.

Chapter II - Review of the Literature

Introduction to Parental Involvement

Since the earliest days of psychology, theories have emphasized the impact that parents have on their children's development. From Freud to Dr. Spock, parenting advice has always been plentiful (Baumrind, 1978). However, most of this advice was based not on empirical data, but on everyday observations.

Out of the abundance of parenting advice, Diana Baumrind (1966) developed a conceptualization of the various ways that parents treat their children. Since the development of her theory, research in the area of parenting has become prolific. Baumrind's categories themselves have been supported empirically, and many researchers have looked at the effects of different parenting styles on various outcome measures of the children.

Baumrind's (1966) model of parenting styles consists of four distinct types: authoritarian, authoritative, permissive, and neglectful. However, while the first three styles have been supported empirically, there is little support for the neglectful style (Herman et al., 1997). This lack of empirical support for a neglectful parenting style is likely due to research selection bias. There is little chance that a neglectful parent will be willing to participate in a research study on parenting styles. Therefore, the lack of support for this style does not necessarily mean that it is inaccurate.

Authoritarian parents operate with the belief that the child must obey the parent without question. These parents set a standard for their child to adhere to, and do not allow the child to question that standard. Obedience is considered a virtue to

the authoritarian parent, and he or she is typically willing to use punitive or forceful punishments on the child who does not obey.

Contrasted with the authoritarian parent, a permissive parent sets very few rules for the child. The permissive parent allows the child to regulate his or her own activities. When talking to a child, the permissive parent uses reason, but makes few demands of the child.

Authoritative parents are, in a sense, a compromise between authoritarian and permissive parents. An authoritative parent sets policies and rules for the child, but explains the reasoning behind the policy to the child. The authoritative parent also encourages the child to speak up when he or she disagrees with a policy, and takes the child's opinion into consideration. The authoritative parent sets standards for the child's conduct while recognizing and valuing the child's interests and autonomy.

The neglectful parent is uninvolved in the child's life. He or she does not respond to the child's needs or demands.

Brenner and Fox (1999) used a cluster analysis to determine if the parenting behaviors of a large sample of mothers would fit into Baumrind's model. Although they found four clusters of parenting styles, only three corresponded to Baumrind's model. Brenner and Fox (1999) did not find a cluster that described the neglectful parent. The fourth cluster found by Brenner and Fox (1999) did not correspond to any of Baumrind's categories. This cluster was characterized by low to moderate discipline, low nurturing, and low to moderate expectations. This cluster was the most common in Brenner and Fox's (1999) study. Thus, it is possible that many parents do not fit neatly into one of Baumrind's categories.

While the parenting style framework includes all aspects of the parent/child relationship, there are also more specific conceptualizations of parent/child interactions regarding academics. Two such conceptualizations will be described in the following section.

Conceptual Framework of Parental Involvement in Academics

Parents can be involved in their children's academics in many different ways, from volunteering at the school to checking homework. There is no consistency in the conceptualization of parental involvement used in previous research. Most researchers have used a data-driven approach to parental involvement, using whatever dimensions emerged from their data. There are, however, several theories regarding the categorization of parental involvement activities. Joyce Epstein (1990), the primary theorist in parental involvement, has been developing a conceptualization for more than 15 years. Kathleen Hoover-Dempsey and Howard Sandler (1995) published a theory of why parental involvement has beneficial effects for children in school. These conceptualizations will be reviewed below.

Epstein's Conceptual Framework

Epstein (1990) places emphasis on the need for a collaborative relationship between parents and schools. In her theory, there are three spheres of influence over a child in a school: (1) time (developmental changes and background); (2) the philosophies, policies, and practices of the family; and (3) the philosophies, policies, and practices of the school. At any given time, there will beoverlap between these three spheres. The people involved can determine the level of overlap, for example,

both the parents and school system can determine the level of involvement the parent has in the child's schooling.

The type of overlap, or interactions, between the family and school are also significant in predicting the effects of parental involvement. In Epstein's theory, parents and schools should share the responsibilities for the child, that is, there should not be a separation of labor, or an idea that the school has specialized knowledge, and should therefore take more responsibility for the child's education. This emphasis on sharing responsibility promotes generalization of skills to both the school and home environment, leading to a better and more productive life for the child. This pushes the family and school spheres close together, ensuring a large overlap. Teachers are encouraged to focus on the whole child; thus, it is not left entirely up to the family to develop social skills, self-esteem, and other aspects of the child.

Although Epstein's current model suggests six categories of parental involvement, her original model was made up of only four categories. Her model is based primarily on her own research in the area, beginning with a large scale survey conducted in the mid-1980s. Epstein surveyed 3,700 elementary school teachers, 600 principals, and more than 1,200 parents in 16 school districts in Maryland. Using factor analysis on the information obtained in the surveys, she identified four types of parental involvement. Further research in the area led her to add two additional categories to her model. According to Epstein (1987), each of the six types should be a part of school policies for parental involvement, as each of them is important for the child in some way.

Epstein's Spheres of Influence

Type 1: The Basic Obligations of Parents. This category includes a wide range of parental behaviors, including: ensuring the child's health and safety; using appropriate parenting skills to prepare children for school; supervising, disciplining, and guiding the child appropriately; and creating a positive home environment that supports the child's learning school materials as well as behaviors appropriate for each grade level. *Type 2: School-Home Communication.* The school has the responsibility to send home progress reports and to speak with the parents about the child's performance in school. The school should also send home memos or notices regarding school programs and activities. The parent's responsibility, then, is to act on the information from the school. Parents should attend parent-teacher conferences, make appointments to speak with teachers or administrators as needed, and keep the lines of communication open.

Type 3: Parent Involvement at School. The parent should be present at the school on occasion, including through volunteering in the child's classroom, or in other areas of the school. Schools need to inform parents as to the assistance needed, such as lunch monitors, playground monitors, or computer lab assistants. This category also includes attending student performances, sports events, or other school activities. Epstein acknowledges that this category is more difficult for working parents, but says that parents who cannot be involved in activities at school should compensate by increasing their involvement in one or more of the other categories.

Type 4: Parent Involvement in Learning Activities at Home. This category includes both parent-initiated and child-initiated collaboration. Parents should monitor their

child's homework and assist him or her when necessary. Parents should also follow through on teacher requests for parents to reinforce classroom learning. For example, a teacher may ask parents to read a certain book with the child at home, so that the learning is reinforced.

Type 5: Parent Involvement in Governance and Advocacy. Parents should be involved in their child's academics in a way that they feel control over some aspects of the school. Parent-Teacher Organizations (PTOs) are the most common way for parents to be involved at this level. Advisory councils, committees, or independent advocacy groups are also typically available for parents to join.

Type 6: Parent Networks. Parents can also be involved in the school by collaborating with other parents. Research has shown that parents who have built a strong social network through the school often have children who are higher achievers in school.

Most of the dimensions of parental involvement that have been used in the research fall into one of these six categories. This is the most comprehensive theory of parental involvement available currently. Epstein has been developing and revising her theory for more than 15 years. She initially began with four categories of involvement, and added the final two as more research emerged. Thus, this theory is still evolving, and more types of parental involvement may emerge in the future. Although there has been little research conducted to confirm Epstein's dimensions of parental involvement, her theory has been widely used in the literature (e.g., Desimone, 1995 & 1997; Deslandes et al., 1997).

Hoover-Dempsey and Sandler's Parental Involvement Theory

The body of research on parental involvement has shown that children whose parents are involved in their academic careers are higher achievers. Hoover-Dempsey and Sandler (1995) questioned why this is so, and developed a theory of why parental involvement has such an impact on a child. They also investigated why parents choose to be involved in their child's schooling, in the hopes of developing new ways to encourage parents to get involved. While Hoover-Dempsey and Sandler's (1995) model was grounded more in theory than in empirical data, there is empirical evidence that the theory is accurate. A description of the theory and its supporting evidence follows.

There are three primary reasons why parents choose to be involved in their child's education: a personal construction of the parental role, a personal sense of efficacy, and a reaction to school or child demands. A parent's perception of his or her role as a parent is influenced by many factors, including his or her parents, friends, teachers, or the child's school. If a parent sees it as part of his or her role to be involved in the education of the child, he or she may choose to get involved. According to this theory, however, this is a necessary but not sufficient factor for parental involvement. Even if parents see it as part of their role to be involved, other factors may prevent him or her from becoming involved.

In order to become involved, a parent must have a sense that he or she is able to help the child succeed in school. This sense of self-efficacy can arise from four sources: direct experience of success being involved previously, vicarious experience of someone else's success in involvement, verbal persuasion that involvement can be done successfully, or emotional arousal when the parent's success is in danger. A sense of self-efficacy is also necessary for a parent to become involved in the school.

Much of the research that has looked at why parents are involved in their children's education has considered both role construction and efficacy as described by Hoover-Dempsey and Sandler (1995). Both have been strongly linked to parental involvement (Grolnick et al., 1997; Sheldon, 2002), although they may affect parental involvement in different ways. Those parents who consider it their role to be involved in their children's education are frequently involved at both the home and school levels (Sheldon, 2002). A parent's sense of efficacy in helping a child is strongly linked with involvement at the home, but has no significant relationship with involvement at the school level (Sheldon, 2002).

Finally, demands from the child or the school may encourage a parent to become involved. This includes requests from the school for volunteers, requests for homework help from the child, and many others. Hoover-Dempsey and Sandler maintain that this is neither necessary nor sufficient for parental involvement, but that it can help to draw in parents who were hesitant to become involved.

A large amount of research has focused on the role of the teacher in involving parents in education (e.g., Balli et. al., 1997; Epstein, 1986; Eccles & Harold, 1993). Most of this research has utilized parent surveys to rate the effectiveness of teacher's policies on parental involvement. In these surveys, parents often reported that teachers could do more to involve the parents, and they that would be more likely to be involved in the classroom if invited by a teacher (Eccles & Harold, 1993). Epstein (1986) found that routine communications (e.g., memos) from the teacher did not

influence parents' beliefs that they should be involved in their children's education, but specific requests for help did increase parental involvement.

Similarly, Balli, Wedman, and Demo (1997) used an experimental method to study how teacher prompts affected parental involvement. Students in several math classes were grouped into three experimental conditions. On homework assignments, the first group was prompted to ask a family member for help on the assignment, and a parent's signature was required on the homework. In this group, there was also a section on the homework for family members to provide feedback about the experience of helping the child. The second group members were prompted to ask a family member for help, but no signature was required and no feedback section was provided. The third group was given no prompts to involve the family. At the end of the semester, family members were interviewed about their involvement. The families in the prompted groups reported significantly more involvement than the nonprompted group. The prompted groups also reported higher involvement with math homework than with any other subjects. Thus, the prompts to involve the family had a strong impact on the level of involvement. Interestingly, there was no significant difference in the amount of involvement as reported by the families of the two prompted groups. However, the students in the group requiring a signature on the homework reported significantly more involvement than the students in the prompted, no signature group. The researchers hypothesize that the parents who were required to sign the homework were careful not to overstate their involvement, believing that their actual involvement could be traced back to their comments and signatures on the assignments. Thus, it is unclear whether requiring a signature and providing a space

for parents to comment on homework assignments encouraged more involvement than simply prompting the students to ask their parents for assistance.

Hoover-Dempsey and Sandler (1995) point to three mechanisms which influence the effectiveness of parental involvement. First, by being involved in the child's academics, the parent's behaviors model for the child that school is worthy of interest and time. Parents also reinforce the child's behaviors which are necessary for success through interest, attention, praise and rewards. Finally, parents who are involved typically engage in direct instruction with the child through help with homework or studying for tests. Each of these three factors helps to contribute to the higher academic achievement of students whose parents are involved in their education.

Hoover-Dempsey and Sandler (1995) also warn of two variables that may temper the positive effects of parental involvement. First, parental involvement should be developmentally appropriate to the child. The parent's choice of activities and strategies for involvement should be perceived as appropriate by the child. This does not mean that the child must like or agree with the parent, but he or she must feel as though the involvement strategies are appropriate for his or her age and grade level. If a parent chooses activities which are developmentally inappropriate, the child will likely resent the parent, and the parent will not facilitate academic achievement.

It is much easier to determine what activities are developmentally appropriate for younger children than for middle and high school students. When children grow older, their eagerness to have their parents overtly involved wanes, leaving the parent

with the difficult task of finding other ways to be involved. New forms of parental involvement are often needed to fit the changing needs of the child.

Second, parents must also find ways to be involved that are consistent with the needs and expectations of the child's school. If the parent becomes involved in ways that are inconsistent with the school, the chances of influencing positive outcomes is reduced significantly. Additionally, if the parent is involved in ways which fit the school, the child will be more likely to perceive those actions as developmentally appropriate.

In summary, the two current theories indicate that parental involvement is a complicated, multi-dimensional construct. The research in the area has varied widely on the definitions of parental involvement used, resulting in a lack of empirical support for the dimensions proposed by Epstein (1987). There are many different ways that parents can be involved in their child's schooling, and the strategies that parents choose to use may need to be adjusted as the child grows older.

The Effects of Parental Involvement on Achievement

Empirical evidence of the benefits of parental involvement began to appear in the literature more than 30 years ago (Hampton et al., 1998). Early research on parental involvement linked parents' educational values and reinforcement of school learning at home with higher levels of academic achievement (Shuck et al., 1983). Since then, parental involvement has been linked to various types of academic achievement, including grades, standardized tests, and teacher reports of classroom performance (Jeynes, 2003).

Evidence of the effects of parental involvement on achievement is prolific in the literature. In 1981, Henderson (as cited in Hampton et al., 1998) conducted a metaanalysis of the current literature, citing 35 studies which showed positive results of parental involvement, including measurable gains in students' academic performance. In 1987, Henderson updated the meta-analysis, citing 18 new studies with similar results (Hampton et al., 1998).

More recent research on parental involvement has examined its effects across different ethnic backgrounds, parental education levels, and socioeconomic status groups (e.g., Desimone, 1997). The evidence suggests that the relationship between parental involvement and academic achievement holds for all racial groups, although the relationship is stronger for some (Mattingly et al., 2002). Jeynes (2003) found that parental involvement benefited African Americans and Latinos more than Asian Americans, and suggested that Asian culture might include sufficient incentives for educational achievement such that even without parental involvement, students succeed in school. Similarly, the literature shows that the effects of parental involvement hold true for families of all income levels as well as all levels of parental educational attainment (Jeynes, 2003; Desimone et al., 2000).

While previous research has shown that parental involvement can have a strong positive relationship with students' academic achievement at all ages (e.g., Fehrmann et al., 1987; Paulson, 1994), the relationship seems to be less significant for children in high school (e.g., Trivette & Anderson, 1995). Explanations of the decreased influence of parental involvement on high school students' achievement typically focus on the nature of the developmental tasks of adolescence. The primary

task of adolescence is to develop a sense of autonomy (Deslandes & Potvin, 1999). It has been suggested that parental involvement in high school may affect the development of autonomy, and in turn affect the students' academic achievement.

Researchers have also examined the differences between parents' perceptions of their involvement in their child's schooling and the students' perceptions of involvement. There is very little agreement between parents and students regarding the amount and nature of parents' involvement (Paulson, 1994); the students' perceptions of involvement are typically more significantly related to academic achievement (Paulson, 1994; Trivette & Anderson, 1995).

In the research on the effects of parental involvement on academic achievement, there has been little agreement as to how achievement should be measured. Some studies use standardized achievement test scores (e.g., Desimone, 1999), while others have used grades as an indicator of achievement (e.g., Deslandes & Potvin, 1999). Studies that have compared the effects of parental involvement on both standardized test scores and grades have indicated that involvement has a more positive effect on grades, and that the effect on standardized test scores is minimal (Desimone, 1999).

While there has been little consistency in the methodology of the research on parental involvement, most studies have come to the same conclusion. Parental involvement in general has a positive correlation with academic achievement. However, the different dimensions of parental involvement may have varied impacts on achievement scores. Several of the categories have been very strongly related to achievement, while others have shown a less significant relationship.

Basic Obligations of the Parents

Various parenting styles and attitudes have been shown to correlate positively with academic achievement in high school students. Factors such as psychological autonomy granting, values toward achievement, and aspirations for achievement have in fact had the strongest relationship with achievement in high school students (Deslandes et al., 1997; Keith et al., 1998; Paulson, 1994).

Other studies (e.g., Trivette & Anderson, 1995) found that parenting styles and attitudes affect other dimensions of parental involvement. Parents who had high aspirations for achievement for their child were more likely to communicate on a regular basis with their child. Aspirations for achievement also indirectly influenced parent-school communication, involvement in learning activities at home, and involvement in school activities.

Deslandes et al. (1997) found that affective support was the best predictor of academic achievement, explaining "encouragement supports internal motivation by giving responsibility for further actions to the student" (p. 200). However, he also examined behavioral control variables, psychological autonomy granting, and warmth of the home environment. While each of the variables contributed to the prediction of achievement, the combination of all of these variables was a much stronger predictor than any variable on its own. Thus, it appears that a warm and supportive environment may be the most important factor for students' success.

School-Home Communication

Communication between the home and school was not commonly identified as a dimension of parental involvement in the research. Deslandes and Potvin (1999)

found no significant relationship between home-school communication and academic achievement, while in 1997, he found a negative relationship between the two variables.

These findings can be explained by the fact that the school does not typically contact parents unless the child is already performing poorly. This is particularly true in the high school setting. Therefore, because of the selection bias, an experimental design would be needed to determine the actual relationship between home-school communication and academic achievement.

Involvement at the School

There have also been various conclusions regarding the relationship between involvement at the school and academic achievement for adolescents. Paulson (1994) found that the mother's involvement in school functions predicted achievement for both male and female ninth grade students. The measure of involvement included attending activities at the school that the student is involved in and volunteer work at the school. However, only the students' perceptions of parental involvement, which were significantly lower than parent ratings, was related to achievement. The higher parent reports of their own involvement at the school were not significantly related to the student's achievement scores. Another problem with this study is that socioeconomic status was not considered as a potential mediating variable. Nearly all of the previous research has shown that children from wealthier families perform better at school (Fehrmann et al., 1987; Trivette & Anderson, 1995; Keith et al., 1998). It is possible that the parents who were able to be involved at the school were from wealthier families, as they were not employed full-time.

Using NELS:88 data, Trivette and Anderson (1995) found no effect of involvement at the school on achievement. They concluded that this type of parental involvement is probably not perceived as developmentally appropriate by older children. This would, in turn, either dissuade the parents from being involved at the school level, or attenuate the effects on achievement.

Other research (Desimone, 1999) indicates that volunteering at the school is a much better predictor of achievement for White and middle-class students than for minority and low-income students. Therefore, volunteering is probably associated with other, unmeasured variables which directly affect achievement.

No definitive conclusions can be drawn from the current research on parental involvement in the schools. It has been suggested that this type of involvement may not be developmentally appropriate for high school students. This may be why this variable has rarely been studied in the research on high school students.

Learning Activities at Home

Communication. Parent-child communication about school has moderate effects on the student's academic achievement. However, this is one of the few types of parent involvement that does have a significant positive effect for all ethnicities and socioeconomic statuses (Desimone, 1999). Keith, Keith, Quirk, Sperduto, Santillo, and Killings (1998), using a longitudinal design, found that the amount of communication between the parents and the child in regard to school matters can also have a powerful impact on later achievement. Therefore, there may be strong long-term effects of communication between the parent and the child during adolescence.

Desimone (1999) found that communication with the mother was associated positively with achievement, while discussions with the father were negatively associated with achievement. This is probably due to the fact that many fathers do not get involved in the child's academics until he or she is performing poorly. From this evidence, it seems that communication about school on a regular basis can have a positive impact on the student's achievement.

Daily Interactions Regarding Homework. Most studies of parental involvement at the high school level have found a negative correlation between the parents' involvement in homework activities and academic achievement (Paulson, 1994; Deslandes et al., 1997; Desimone, 1999). This could be attributed to two different explanations. First, parents may tend to check their child's homework only when the child is performing poorly in school. If this is the case, then an experimental design would be needed to determine if having a parent involved in homework is beneficial or detrimental to the student. The other possible explanation for these findings is that homework monitoring causes negative outcomes on achievement by decreasing the development of independence and responsibility. That is, having a parent involved in one's homework at the high school level may be perceived as developmentally inappropriate, leading to a reduction in the student's autonomy level. From the current research, it is unclear which of these explanations is more accurate.

Home Structure. The structure of the learning environment at home can also impact a student's achievement scores. Parents may choose to set strict rules regarding homework, set no rules at all, or achieve a balance between the two. Trivette and Anderson (1995) found that a structured home environment had a small negative

effect on students' achievement. Again, this could be due to two very different explanations. First, rules and structure may be imposed only for those students who perform poorly in school.

The second possible explanation is that a structured home environment may hinder adolescents from taking responsibility for their own learning. The requirements in school are not naturally reinforcing to students, and the perception of control at home may prevent the development of intrinsic motivation in the student. *Governance and Advocacy*

Despite the prevalence of Parent-Teacher Organizations in schools, the advocacy role of parents is rarely considered in the research. Desimone (1999) found that involvement in a PTO predicted grades only for Black students, and that involvement in a PTO was actually a better predictor of achievement test scores than grades for all students. The advocacy role may be more important for those parents who have traditionally not been empowered by the school system.

Community Collaboration

The sixth dimension of parental involvement, which was most recently added to the conceptualization by Epstein, has also not been considered frequently in the research. Desimone (1999) found that the parents' social capital was a weak predictor of achievement and grades for white and middle-income students, but was not significant for students from any other ethnicities or socioeconomic statuses. Because this is a recent addition to the parental involvement concept, research may become more readily available on this topic in the future.

What We Still Need to Know About Parental Involvement and Achievement

Despite the fact that parental involvement research has been conducted for more than 40 years, there is still a lot to be learned about the effects of involving parents in the academic lives of their children, particularly for middle and high school students. Very little research has examined the longitudinal effects of parental involvement. Keith et al. (1998) found that parental involvement in eighth grade predicted achievement in tenth grade, but more long-term research on the effects of parental involvement would provide a better answer as to the true benefits of parental involvement.

Research on parental involvement has focused more on the elementary school years, and the middle and high school years are often ignored. The concept of developmentally appropriate parental involvement, as postulated by Hoover-Dempsey and Sandler (1995), should have great importance for older students who are struggling to achieve autonomy and find independence from their parents. However, the developmentally appropriate theory still has very little support. In particular, research on which dimensions of parental involvement are more developmentally appropriate for middle and high school students is needed. Also, based on this theory, there may be optimal levels of involvement on certain dimensions, where too much involvement is perceived as inappropriate, whereas moderate levels of involvement are more likely to improve students' achievement scores.
Autonomy

Current Conceptualizations

Autonomy is a concept that is frequently discussed in the literature on adolescents. However, there is very little agreement among researchers as to what autonomy entails, and even less agreement on how autonomy should be measured (e.g., Noom et al., 2001; Bosma et al., 1996). Some researchers have conceptualized autonomy as one-dimensional (Bosma et al., 1996), while others have suggested that autonomy is in fact a complex, multi-dimensional construct (Noom et al, 2001).

Despite the lack of agreement regarding the nature of autonomy, there are several variables that all researchers seem to agree should be included in a definition of the construct. A theory developed by Noom, Dekovic, and Meeus (2001) was an attempt to unify the many distinct conceptualizations of autonomy that currently exist. Through their review of relevant literature, Noom et al. (2001) developed a comprehensive definition of autonomy which includes three dimensions: attitudinal autonomy, emotional autonomy, and functional autonomy.

Attitudinal autonomy was defined by Noom et al. (2001) as "the ability to specify several options, to make a decision, and to define a goal" (p. 578). This dimension includes one's beliefs about one's own capabilities, attitudinal independence, goal setting, reflection on wishes and desires, decision making, and personal goals.

The second dimension, emotional autonomy, is defined as "a feeling of confidence in one's own choices and goals" (p. 581). The term emotional autonomy has been used in the literature in the past to convey a sense of detachment (e.g.,

Steinberg, 1985). However, the definition proposed by Noom et al. (2001) is meant to be a positive one, indicating a sense of emotional independence and self-other responsibility.

The final dimension proposed by Noom et al. (2001), functional autonomy, is defined as "the ability to develop a strategy to achieve one's goal" (p. 581). This dimension includes the ideas of independence and personal control.

Noom et al. (2001) tested their theory with 400 adolescents ranging from age 12 to 18, using the Adolescent Autonomy Questionnaire, developed by Noom (1999). They conducted a confirmatory analysis of the three-dimensional model and examined the relationship among the three dimensions. The results supported the threedimensional definition of autonomy and indicated a moderate positive relationship among the three dimensions.

Effects of Parental Involvement on Autonomy

Despite the fact that autonomy is the primary developmental task of adolescence, very little research has been conducted on the effects of parental involvement on autonomy. The research that has been conducted has shown mixed results. Some dimensions of parental involvement appear to have strong linear positive relationships with autonomy, while others appear to have negative relationships with autonomy.

The Type I dimension of parental involvement, basic obligations of the parents, has been the best predictor of adolescent autonomy. Parents who create a warm, loving, and positive environment in the home are most likely to foster autonomy in their children (Deslandes & Potvin, 1999). Communication between

parents and adolescents also is correlated with more autonomy development (Deslandes & Potvin, 1999). Attending school performances or sports events, as well as helping with homework when asked were also related to higher levels of autonomy (Deslandes, 2000).

Conversely, daily interactions between parents and children regarding school matters have a fairly strong negative association with autonomy. This is probably due to the fact that parents become more involved in this way with students who do not take initiative on schoolwork. However, it seems that the increased involvement from the parents may boost academic achievement, but does not help the student develop autonomy (Deslandes & Potvin, 1999).

Grolnick and Ryan (1989) examined the effects of structure in the home (e.g., rules about homework, rules about television watching) on autonomy development. They found no significant relationship between the two variables initially. However, when they looked for a curvilinear relationship rather than a linear one, they found a trend toward the curvilinear relationship. Although the trend was not statistically significant, they concluded that the possibility exists that a moderate amount of structure in the home may be ideal for the development of autonomy in adolescent students.

It seems clear from the research that has been done that the various dimensions of parental involvement have different effects on the development of autonomy. However, because of the small number of studies that have been conducted in this area, no definite conclusions regarding the relationship between parental involvement and autonomy can be drawn. It is still to be determined what dimensions of parental

involvement have the most impact on autonomy development. There also lies the possibility that too much parental involvement on some dimensions may lead to less autonomy development in adolescents. The exact nature of the effect of parental involvement on autonomy development needs more exploration.

Locus of Control

Locus of control, another variable that has been strongly related to academic achievement scores, is defined as the "generalized expectancy concerning the perception of influence that one has over personally relevant events or reinforcements" (Desimone, 1997, p. 33). Derived from learning theory, locus of control is measured on a continuum from internal to external. A person with an internal locus of control believes that events are a result of his or her own actions, capabilities, or characteristics; whereas a person with an external locus of control believes that events are do to luck, chance, fate, or the actions of others. An internal locus of control is associated with higher academic achievement scores. Achievement in school requires persistence and effort, behaviors which are unlikely to occur if one does not believe that he or she has control over the outcomes. The direction of causality in the relationship remains unclear, however. It is possible that students who are high achievers in school attribute their success to personal characteristics, leading to a more internal locus of control.

Despite the lack of clarity of the causal relationship, it is beneficial to students to develop an internal locus of control for many reasons. Since the concept of locus of control was derived from learning theory, it is believed that a person can be taught to have an internal locus of control. Therefore, this is a potential point of intervention for

students who are performing poorly in school. Understanding the nature of the relationship between parental involvement and locus of control may provide a way for schools to intervene with low achieving students through their parents.

Effects of Parental Involvement on Locus of Control

Locus of control has not been used frequently as an outcome measure in the research on parental involvement. Parenting style, using Baumrind's parenting style types (e.g., authoritative, authoritarian, permissive) has frequently been linked with locus of control. The authoritative parenting style leads to children with an internal locus of control, while the authoritarian parenting styles leads to an external locus of control. The parents' responsiveness to the child seems to be the determining variable. Those parents who respond readily to their child are more likely to foster an internal sense of control in the child (Trusty & Lamp, 1997).

Trusty and Lamp (1997) investigated the relationship between perceived parental involvement and perceived parental control with locus of control. They found that parental involvement was a better predictor of locus of control than parental control, with higher levels of parental involvement leading to a more internal sense of control. The parental involvement measure included involvement in career options, education, and personal lives. Both communication and activities were included in the measure. Those parents who were perceived high on the controlling scale and low on the involvement scale fostered the most external sense of control.

There is a gap in the research on parental involvement in this area. Little is known about the relationship of involvement in academics and the child's sense of control. The different dimensions of parental involvement may affect locus of control

in various ways; more research is needed in this area. Additionally, it may hold true, as for autonomy, that high levels of parental involvement on some dimensions lead to an external locus of control, as the child may perceive his or her success more as a result of the parents' actions than their own.

Parental Involvement Research Using NELS:88 Data

Because the present study uses the NELS:88 database, it is useful to consider the current literature which has examined parental involvement using this database. Since it was published, a few studies have used the NELS:88 data to examine the effects of parental involvement in academics. The majority of these studies have used some measure of academic achievement as the outcome variable. One study did look at the effects of parental involvement on students' locus of control. This section will describe in detail the methods and results of these studies which used NELS:88 data.

Trivette and Anderson (1995) used the base year, 1988, of the NELS:88 data to examine the effects of parental involvement on eighth graders' achievement. They used four dimensions of parental involvement, and combined both student and parent reports on each dimension. The four dimension used were: academic aspirations and expectations, participation in school activities and programs, home structure that supports learning, and communication about school.

Using the LISREL computer program, Trivette and Anderson (1995) used a latent variable structural equation modeling method. In their model, the researchers controlled for several variables which have been shown to have a relationship with academic achievement: socioeconomic status, ethnicity, intellectual ability, aptitude,

and previous achievement in school. They also used the appropriate weighting variable provided by NELS:88 to correct for an over sampling of minority students.

For a sample of 21,835 eighth graders, Trivette and Anderson (1995) found that parental involvement did have a strong positive effect on students' academic achievement, measured by the students' grades. They also found that the various dimensions of parental involvement were not independent of each other, but rather influenced each other. High aspirations and expectations were found to increase communication between parent and student about school, but the high aspirations did not increase home structure or parental involvement in school activities. High parental aspirations also had the most significant impact on the child's achievement. However, there was a strong relationship between previous achievement and aspirations, suggesting that parents of children who are already achieving have the highest aspirations. This suggests the importance of parental involvement early in a child's academic career. If a child begins achieving early, he or she has a much better chance of succeeding at higher grade levels.

Two dimensions of parental involvement, communication about school and participation in school activities and programs, had no significant effect on academic achievement. The final dimension, home structure, had a negative effect on achievement. This, however, is likely explained by the fact that parents increase the structure in the home when children are not performing well academically.

Trivette and Anderson (1995) came to several conclusions based on their research. The positive effect of aspirations and expectations, coupled with the negative effect of home structure, indicates that nurturing autonomy in students is the key to

improving academic achievement. They also indicated that other dimensions of parental involvement, such as the emotional quality of the home, support for autonomy, discipline style, and methods of motivating the student are important variables to examine in future research. Trivette and Anderson (1995) also indicated that different types of parental involvement may also have different effects on younger and older students. They state that it is important to understand what aspects of parental involvement are effective at different ages.

A second study using NELS:88 data was conducted by Keith et al. in 1998. Keith et al. were interested in the longitudinal effects of parental involvement, as well and gender differences and ethnic differences. They used the base year and first follow-up NELS:88 data to examine these questions.

Keith et al. (1998) used two dimensions of parental involvement in their study: aspirations and communication. Each dimension was a combination of parent and student report. The parental involvement variable was calculated using data from the base year of the study. The dependent variable, high school grades, was collected from the first follow-up year, 1990, when the students were in tenth grade.

Results of the study indicated that parental involvement in eighth grade had a moderate effect on academic achievement in tenth grade. No gender differences in the effects of parental involvement were found.

While the study also showed that parental involvement improved achievement for all ethnic groups, the patterns were not identical for all ethnicities. The relationship between parental involvement and achievement was significantly smaller for Asian students. Asian parents were found to have much higher aspirations for their children,

but communicated with their children about school much less. All other minority parents included in the sample were found to be more involved in their child's academics than the White parents.

Keith et al. (1998) showed, similar to Trivette and Anderson (1995), that early involvement in children's academics produces positive outcomes. They also showed that there are significant differences in the effects of parental involvement for children of different ethnicities. Therefore, ethnicity is not a variable that can be ignored in further research in this area.

Desimone (1999) used NELS:88 data to further examine the differential effects of parental involvement for children of different ethnicities and income levels. Desimone (1999) included twelve measures of parental involvement based on Epstein's model. Eight of the dimensions were parent reported, and the final four were student reported. The parent reported dimensions were: discussions with the child about school (Type IV); talk with the child about post-high school plans (Type IV); volunteering or fundraising (Type III); rules about homework, GPA and chores (Type I); PTO involvement (Type V); PTO meeting attendance (Type V); contact with the school (Type II); and social capital (involvement with other parents outside of school, Type VI). The student reported variables were: rules about TV, chores, and time with friends (Type I); help with homework (Type III); talk with parents about school (Type III); and talk with father regarding high school planning (Type III). Achievement was measured in three ways: GPA, standardized math test scores, and standardized reading test scores. Using LISREL, Desimone (1999) also controlled for those environmental variables which could influence academic achievement. The control variables used were: income, parents' education, family size, mother's work status, family structure, mother's age at childbirth, and gender of the child. Locus of control was also used as a control variable in this study.

Results of this study indicated that parental involvement is a better predictor of grades than of standardized test scores. Desimone (1999) also found that the student-reported measures of parental involvement were better predictors of achievement than the parent reports.

The results of Desimone's study were consistent with that of Keith et al. (1998). The effects of parental involvement differed by ethnicity and income level, but most dimensions of parental involvement had positive effects on all of the students. Those dimensions related to involvement at the school had a positive effect for all ethnicities. The dimensions related to parent-child interactions were the best predictors of achievement for all students. Discussion with the mother had a strong positive relationship with achievement, while discussion with the father had a negative relationship with achievement. This is probably explained by the fact that many fathers do not become involved in the child's academics unless he or she is performing poorly.

Interestingly, discussion with parents about post-high school plans was significantly related to achievement only for White students and middle-class students. This suggests that high aspirations and expectations for students may not be effective

for low-income families. It is possible that environmental factors, such as discrimination, mediate the effects of this dimension.

Consistent with the idea that parental involvement should be developmentally appropriate, help with homework was negatively associated with achievement for all students. This further supports the idea that the dimensions of parental involvement have differential effects, depending on the age of the child.

Fan (2001) also used NELS:88 data to examine the relationship between parental involvement and academic achievement. Using the base year and first and second follow-up data, Fan (2001) addressed four research goals: to empirically derive the dimensions of parental involvement measured by NELS:88 data, to investigate ethnic differences in parental involvement, to assess the effects of parental involvement on high school students' academic growth over four years, and to examine the consistency of parental involvement measures from different data sources (i.e., parent-report vs. student-report). This study used only those participants who had completed student and parent surveys at all three data collection times, leaving a sample size of 10,624. In order to address the over sampling of various ethnic groups in NELS:88, the appropriate weighting was applied to all analyses.

Based on an exploratory factor analysis, Fan (2001) identified four dimensions of parental involvement as reported by the student (educational aspirations, communication, participation, and supervision) and seven dimensions based on the parent data (educational aspirations, volunteering, contact with the school, communication, PTA involvement, TV rules, and supervision).

Academic achievement was measured through the use of achievement test scores in four academic areas. Since the students' scores on these tests were improving over the four years, they were used to model longitudinal academic growth.

In the analyses on academic achievement, Fan (2001) first examined and then controlled for the effects of socioeconomic status. Consistent with nearly all of the prior studies in this area, SES was found to have a profound impact on academic achievement.

Once the effects of SES had been statistically controlled, two of the four student-reported dimensions of parental involvement were shown to have a positive relationship with achievement. Communication and educational aspirations showed positive effects beyond the effects of socioeconomic status. Participation and supervision, however, had a very small negative relationship with achievement.

Using the parent-reported data, only one dimension of parental involvement, educational aspirations, showed a strong positive relationship with achievement after SES had been controlled. A second dimension, volunteering, had a small positive relationship with achievement. The other five parent-reported dimensions had small negative relationships with achievement.

It is unclear from this study why so many of the parental involvement dimensions had little or no relationship with achievement. Previous research has indicated that parental involvement is more strongly related to GPA than to achievement test scores. Since this study used only test scores, this may partially explain the lack of significant findings.

Trusty and Lamp (1997) examined the effects of parental involvement and parental control on students' locus of control using the second follow-up NELS:88 data, from 1992. The researchers used only one dimension of parental involvement in this study, reported solely by the student. Their measure of parental control included two dimensions, disciplinary control and career control, both also reported by the student.

The results of the study indicate that parents who were highly involved in the child's life, and who exerted high amounts of disciplinary and career control, fostered the most internal sense of control in their children. Those parents who were not involved in their child's life, fostered an external sense of control, regardless of the amount of control the parents exerted over the child.

Parental involvement was shown to have a strong relationship with locus of control, while parental control had only a weak relationship with locus of control. However, children of parents who were involved, but who did not exert control, were less likely to have an internal sense of control than the children whose parents were both involved and controlling. Trusty and Lamp (1997) attribute these results to the adolescent's need for a sense of security.

Each of these studies indicates the importance of parental involvement in academics, even during adolescence. However, as the studies suggest, parental involvement must be developmentally appropriate. Thus far, there is no definitive answer as to what types of involvement are appropriate for adolescents. Additionally, several of these studies suggest that fostering a sense of autonomy in adolescents is the key to improving academic achievement. More research needs to be conducted in this

area, as there are many questions about how to foster that sense of autonomy that remain unanswered.

Although several of the studies (e.g., Trivette & Anderson, 1995; Keith et al., 1998; Desimone, 1997) using NELS:88 were conceptually sophisticated, they contain a common, serious methodological flaw. Whereas structural equation modeling methodology (e.g., the LISREL program) is an appropriate method of analysis for testing complex relationships among variables, this methodology can not presently be used appropriately with data sets such as NELS:88 that employ purposefully nonrandom selection of subjects.

Conclusions

Most of the research on parental involvement focused on the effects on academic achievement, as this is the primary goal of schools. However, there are several other variables, such as autonomy and locus of control, which may be important to consider in the research with adolescents. While researchers have historically looked for linear relationships between parental involvement and outcome variables, it appears that there may be some dimensions of parental involvement which have curvilinear relationships with both autonomy, development, and locus of control. That is, there may be an optimal level of parental involvement in adolescence, beyond which the parental involvement becomes dysfunctional.

This study aims to consider the possible curvilinear relationships between parental involvement, academic achievement, autonomy, and locus of control. The dimensions of parental involvement will be considered separately, with the goal of finding the ideal parental involvement pattern for adolescent students.

Chapter III - Methodology

Background of the National Education Longitudinal Study: 1988

The dataset used for this study was the public use data of the National Education Longitudinal Study of 1988 (NELS:88). The target population of the NELS:88 study consisted of eighth grade students in schools throughout the United States, and the parents of those students. The NELS:88 study sample consisted of approximately 25,000 students who were in the eighth grade during the 1987-1988 school year.

Sponsored by the National Center for Education Statistics, NELS:88 is a clustered, stratified national probability sample of 1,052 public and private schools. After a random selection of schools, 25 eighth graders within each school were randomly selected to participate in the study. The sampling of the study was designed to be nationally representative, allowing for targeted study of particular types of schools, geographic locations, and minority groups.

In addition to the student data, parents surveys were designed to provide further information about family background characteristics, parental involvement in the school, parental guidance, and the parents' role in the educational success of their children. The school administrator also completed a questionnaire about the school and two of each students' teachers answered questions about the student, themselves, and the school.

The second follow-up to NELS:88 was conducted in 1992, when most of the sample members were in the second semester of their senior year in high school. As in

the base year, the students filled out a questionnaire, and did their teachers, parents, and school administrators.

Participants

A total of 14, 747 students that were surveyed at the base year in eighth grade also completed surveys while in 12th grade at the second follow-up in 1992. The participants for the present study were drawn from this pool of students, including 7,156 males (48.5%) and 7,476 females (50.7%). A small percentage of participants (115, 0.8%) did not indicate a gender on the survey. The students were representative of a variety of racial groups: American Indian (462, 3.1%), Asian or Pacific Islander (965, 6.5%), Black, non-Hispanic (1,292, 8.8%), Hispanic (1,590, 10.8%), White, non-Hispanic (10,305, 69.9%), and multiracial (26, 0.2%). A small number (107, 0.7%) of respondents did not indicate their race.

Within each analysis, only those participants who had not missing data were included, thus making the actual number of participants used in each analysis variable. The number of participants in the analyses ranged from 6,955 to 11, 361.

Measures

Parental Involvement

To create a practical group of parental involvement variables, exploratory factor analyses were conducted using eight NELS:88 variables reported by the student and 12 reported by the parents. Selection of the variables used was conducted in several steps. First, those variables which appeared related to parental involvement were chosen. The list was then compared to that used by Desimone (1995), and those variables on both lists were used in the final analysis. In addition, several variables

Factor	Cronbach's Alpha
Parent Report	
Discussion with child about school (Type 1)	.7177
Volunteering/Fund-raising (Type 3)	.7197
Involvement in PTA/PTO (Type 5)	.7293
Student Report	
Discussion with parent about school (Type 1)	.7116

Internal Consistencies for Parental Involvement Factors

that were not used by Desimone were included based on face validity alone. Ten measures were constructed from the results, which included four composites and six single indicators (see Appendices A and B for results of factor analyses, and Table 1 for internal consistencies of the factors).

In order to conceptualize the parental involvement measures used in this study, Epstein's (1995) model of parental involvement was used to categorize the measures of parental involvement. Epstein divided parental involvement into six general categories: Type 1, basic obligations of the parent; Type 2, school to home communications; Type 3, involvement at school; Type 4, learning activities at home; Type 5, decision making and advocacy; and Type 6, community groups. Epstein's model was chosen as the framework for this study for two reasons: it is the most widely cited model in the literature and there is evidence from previous studies (e.g., Desimone, 1995; 1997) that NELS:88 data aligns nicely with the model.

The final analysis included a total of 10 parental involvement measures (see tables 2 and 3 for a description of the measures and Appendix C for a list of the individual items used). Six of the measures were reported by the parent: (a) discussion with the child about school (Type 1); (b) family rule about maintaining GPA (Type 1); (c) family rule about doing homework (Type 1); (d) volunteering/fund-raising (Type 3); (e) help with homework (Type 4); and (f) involvement in a PTA/PTO (Type 5). The remaining four measures were reported by the student: (g) discussion with parents about school (Type 1); (h) parent conversations with teachers or counselors (Type 2); (i) parent attendance at school events (Type 3); and (j) help with homework (Type 4). *Autonomy*

Similar to the parental involvement variable selection process, an exploratory factor analysis was conducted using variables related to autonomy reported by the students at the second follow-up. Two measures of autonomy were extracted from the1992 second follow-up, including one composite and one single indicator (see Appendix B for a list of the autonomy variables used).

The single indicator measure asked the student how often they count on their parents to solve problems; responses were rated on a 5-point Likert scale. A scale measure of autonomy was also used, consisting of two variables (a) Who decides if the respondent should go to college; and (b) Who decides which classes the respondent will take. Each of these variables used a 5-point Likert scale, ranging from the student deciding independently to the parents deciding independently. The middle range numbers indicated shared decision making. Cronbach's Alpha for the autonomy scale was .73.

Parental Involvement Composites from Parent Reported Data

Composite	Questionnaire Items			
Discussion with Child	How often talks to child about school experiences (BYP66)			
	How often talks to child about high school plans (BYP67)			
	How often talks to child about post high school plans (BYP68)			
Home Structure	Family rule about maintaining GPA (BYP65A)			
Home Structure	Family rule about doing homework (BYP65B)			
Involvement at School	Contacted school about fundraising (BYP58D)			
	Contacted school about doing volunteer work (BYP44G)			
	Act as a volunteer in the school (BYP59D)			
Help with Homework	How often helps child with homework (BYP69)			
Governance	Belong to PTA/PTO (BYP59A)			
	Attended PTA/PTO meeting (BYP59B)			
	Take part in PTA/PTO activities (BYP59C)			

Parental Involvement Composites from Student Reported Data

Composite	Questionnaire Items
Discussion with Parent	Discuss programs at school with parents (BYS36A)
	Discuss school activities with parents (BYS36B)
	Discuss things studied in class with parents (BYS36C)
	Talk to father about planning high school program
	(BYS50A)
	Talk to mother about planning high school program
	(BYS50B)
Communication with School	Parents spoke to teacher/counselor (BYS37B)
Involvement at School	Parent attended a school event (BYS37D)
Help with Homework	How often parents check homework (BYS38A)

Locus of Control

A composite measure of Locus of Control is included in NELS:88. A revised version of Rotter's Locus of Control Scale was administered to participants. This prederived locus of control score was used in this study (see Appendix C for a description of the variables included in the scale). Cronbach's Alpha for this composite variable, as reported in the Empirical Evaluation of Social, Psychological, and Educational Construct Variables Used in NCES Surveys (Freidlin & Salvucci, 1995) was .68. *Academic Achievement*

Academic achievement was defined as overall grade point average (GPA) at the time of graduation. A NELS:88 variable was used to obtain this information. However, the NELS:88 database did not standardize the format of GPA, and scores ranged from 0.0 to 108.98, with some scores reported on a 4.0 scale and others reported on a 100 point scale. In order to correct for the non-standardization, only those participants whose GPA fell between 0.0 and 6.0 were used for analyses involving this variable. The 6.0 cutoff was used because that is the maximum GPA attainable on a 4.0 scale when weights are given for honors and advanced placement classes.

Family Background Control Variables

Research in the fields of both parental involvement and academic achievement has shown differential effects of various family related factors, including socioeconomic status (e.g., Jimerson et al., 1999; Battin-Pearson et al., 2000), race/ethnicity (e.g., Blair et al., 1999), parents' education (e.g., Bacete & Remirez, 2001), and mother's employment status (e.g., Foon, 1998). Because these factors appear to influence parental involvement, academic achievement, or the relationship between the two, they were controlled using a composite variable from the NELS:88 dataset. The SES2 variable, a composite in the NELS:88 database composed from father's education, mother's education, and family income information, was selected for use in this study. The SES2 variable was generated from information from the parent file, and when data was missing in the parent file, student report was used. An analysis of the socioeconomic status composite variables in NELS:88 conducted by NCES concluded that on the basis of predictive power, simplicity of calculation, and availability, the SES2 variable was the best choice for use in any data analysis.

Descriptive Statistics

Variable	Ν	Possible Range ^a		Mean ^a	SD^{a}
		Min	Max		
Locus of Control	13,641	-3.02	1.43	.085	.629
Autonomy Variable	12,374	1.00	6.00	4.707	1.395
Autonomy Scale	12,706	2.00	10.00	8.160	1.866
GPA					
SES	12,889	-2.95	2.43	.121	.747
PR Type 1	13,667	3	12	10.41	1.53
PR Type 1b	13,572	1	2	1.72	.449
PR Type 1c	13,643	1	2	1.92	.268
PR Type 3	12,972	3	10	3.84	1.444
PR Type 4	13,616	1	4	2.24	.980
PR Type 5	13,387	3	6	4.03	1.142
SR Type 1	14,188	3	13	9.84	2.280
SR Type 2	12,820	1	2	1.65	.476
SR Type 3	14,178	1	2	1.69	.461
SR Type 4	14,666	1	4	3.10	.988

^a Statistics have been weighted using the Panel Weight.

Note. PR Type 1 is parent-reported discussion with the child. PR Type 1b is parent-reported rule about maintaining GPA. PR Type 1c is parent-reported rule about doing homework. PR Type 3 is parent-reported involvement at school. PR Type 4 is parent-reported help with homework. PR Type 5 is parent-reported involvement in governance. SR Type 1 is student-reported discussion with parents. SR Type 2 is student-reported communication with the school. SR Type 3 is student-reported involvement at school. SR Type 4 is student-reported help with homework.

Data Analyses

Each of the research hypotheses proposed in Chapter I were tested using planned, step-wise multiple regression analyses. Because the complex sampling method used in NELS:88 was not a true random sample, AM Software, which was designed to control for the effects of non-random sampling, was used to conduct all analyses (American Institutes for Research, 2003). All analyses used the appropriate Panel Weight, which applies to data from the base year, first follow-up and second follow-up of NELS:88. Descriptive statistics for each of the variables used can be found in Table 4, and correlations among the variables can be found in Appendix D.

In order to test the first hypothesis, which stated that parental involvement would have a positive linear effect with academic achievement, planned, step-wise multiple regression analyses were employed. The socioeconomic status composite was entered on the first step in order to control for the known relationship between SES and academic achievement. On the second step, separate analyses were run for each of the ten parental involvement measures. In order to test for nonlinearity, a quadratic variable was created and entered on the third step. The quadratic variable was generated using a mean-centered squared technique where each individual parental involvement score was subtracted from the mean for that measure and squared.

The same analysis method was used to examine the relationships between parental involvement and each of the other outcome variables (autonomy single indicator, autonomy scale, and locus of control). However, some planned analyses were not able to be conducted due to a high degree of multicolinearity.

Chapter IV – Results

Socioeconomic Status

Because of the frequently documented relationship between achievement and socioeconomic status, a composite variable created using information on family income and parents' education was entered on the first step of all regression analyses. The socioeconomic status variable was found to have a statistically significant (p < .05) positive linear relationship with three of the four outcome variables studied. Socioeconomic status had a negative linear relationship with the autonomy scale developed for this study.

Hypothesis One

The first research hypothesis, which predicted that parental involvement would have a positive linear relationship with academic achievement, was partially supported. Eight of the ten measures of parental involvement added significantly (p < .05) to the prediction of academic achievement above and beyond the effects of socioeconomic status (see Table 5 for results of multiple regression analyses). Two parental involvement measures, parent reported discussion with the child about school (p = .887) and parent reported involvement in a PTA or PTO (p = .710) did not have a significant relationship with academic achievement beyond socioeconomic status. Having family rules about doing homework and maintaining a certain GPA were negatively related to GPA. Help with homework as reported by both the parent and the student was also negatively related to GPA, as was student reported communication between the parents and teachers or counselors at school. Having a parent volunteer at the school was positively related to GPA, as was having a parent attend school events.

Variable	Ν	R	\mathbb{R}^2	Partial Correlation
	Dimensi	ons Related to	Home Atmosph	ere
Discussion with	Child about Se	chool (Type 1)	– Parent Report	
SES	7,993	.305	.093*	
Linear	7,636	.310	.096	
Quadratic	7,636	.310	.096	
Family Rule abo	ut Maintaining	g GPA (Type 1) – Parent Repor	ť
SES	7,993	.305	.093*	
Linear	7,572	.332	.110*	.130
Quadratic	7,572	.362	.131 ^a	
Family Rule abo	ut Doing Hom	nework (Type	l) – Parent Repor	rt
SES	7,993	.305	.093*	
Linear	7,622	.319	.102*	.095
Quadratic	7,622	.494	.294 ^a	
Discussion with	Parents about	School (Type	1) – Student Rep	ort
SES	7,993	.305	.093*	
Linear	7,709	.336	.113*	.141
Quadratic	7,709	.336	.113	
	Dimensio	ns Related to I	nvolvement at H	ome
Help with Home	work (Type 4)) – Parent Repo	ort	
SES	7,993	.305	.093*	
Linear	7,615	.324	.105*	.110
Quadratic	7,615	.324	.105	
Help with Home	work (Type 1)) – Student Rej	port	
SES	7,993	.305	.093*	
Linear	7,947	.310	.096*	.055
Quadratic	7,947	.311	.097	

Summary of Regression Analysis for Variables Predicting GPA

Table 5 (continued)

Summary of Re	Summary of Regression Analysis for Variables Predicting GPA					
Variable	Ν	R	R^2	Partial Correlation		
	Dimension	ns Related to Ir	volvement at So	chool		
Volunteering/Fu	nd Raising (T	ype 3) – Parent	Report			
SES	7,993	.305	.093*			
Linear	7,286	.313	.098*	.071		
Quadratic	7,286	.315	.099*			
Involvement in I	PTA/PTO (Typ	pe 5) – Parent l	Report			
SES	7,993	.305	.093*			
Linear	7,498	.310	.096			
Quadratic	7,498	.311	.097			
Parental Conversion	sations with Te	eachers/Counse	elors (Type 2) –	Student Report		
SES	7,993	.305	.093*			
Linear	6,955	.313	.098*	.071		
Quadratic	6,955	.311	.097			
Parent Attendand	ce at School E	vents (Type 3)	- Student Report	rt		
SES	7,993	.305	.093*			
Linear	7,695	.330	.109*	.126		
Quadratic	7,695	.798	.637 ^a			

 a Significance values could not be calculated due to multicolinearity. * p < .05

Student reported discussions with parents about school was positively related to GPA, and having a parent participate in a PTA or PTO was positively related to GPA. Although these relationship were statistically significant, the effect sizes were all very small, with r^2 changes ranging from .003 to .020, and partial correlations ranging from .055 to .141.

The data analyses conducted also tested for non-linear relationships between parental involvement and academic achievement. Three of the analyses could not be completed due to a high degree of colinearity. The remainder of the analyses were not statistically significant, indicating no non-linear relationships among these variables. *Hypothesis Two*

The second research hypothesis predicted that the various types of parental involvement would have different relationships with the autonomy single indicator, a question regarding how often the children counted on their parents to solve problems. It was assumed that the children who frequently solved problems on their own, without parental support, were the most autonomous. Specifically, it was predicted that parental involvement related to home atmosphere (Type 1) would have a positive linear relationship with the autonomy single indicator, while the dimensions of parental involvement related to involvement at home (Type 4) and involvement at school (Types 2, 3, and 4) would have a curvilinear relationship with the autonomy indicator. It was expected that moderate levels of parental involvement would be associated with the highest levels of autonomy. This hypothesis was partially supported by the data (see Table 6 for results of multiple regression analyses). Home Atmosphere. The hypothesis predicting a positive linear relationship between the autonomy single indicator and the dimensions of parental involvement related to home atmosphere was not supported. Two of the four measures of parental involvement related to home atmosphere added significantly to the prediction of autonomy above the effects of socioeconomic status, but the relationship was a negative one. Parent reported discussion with the child about school (p = .003) and

Variable	N	R	\mathbf{R}^2	Partial Correlation
	Dimensio	ons Related to	Home Atmosph	nere
Discussion with	Child about Sc	hool (Type 1)	– Parent Repor	t
SES	10,337	.032	.001*	
Linear	9,697	.055	.003*	.045
Quadratic	9,697	.055	.003	
Family Rule abo	ut Maintaining	GPA (Type 1) – Parent Repo	rt
SES	10,337	.032	.001*	
Linear	9,632	.063	.004*	.055
Quadratic	9,632	.071	$.005^{a}$	
Family Rule abo	ut Doing Hom	ework (Type	1) – Parent Repo	ort
SES	10,337	.032	.001*	
Linear	9,679	.032	.001	
Quadratic	9,679	.114	.003 ^a	
Discussion with	Parents about S	School (Type	1) – Student Rej	port
SES	10,337	.032	.001*	
Linear	10,003	.032	.001	
Quadratic	10,003	.032	.001	
	Dimensior	ns Related to I	nvolvement at H	Iome
Help with Home	work (Type 4)	– Parent Repo	ort	
SES	10,337	.032	.001*	
Linear	9,657	.063	.004*	.055
Quadratic	9,657	.077	.006*	
Help with Home	work (Type 1)	- Student Rej	port	
SES	10,337	.032	.001*	
Linear	10,286	.045	.002*	.032
Quadratic	10,286	.055	.003	

Summary of Regression Analysis for Variables Predicting the Autonomy Variable

Table 6 (continued)

Variable	Ν	R	R^2	Partial Correlation				
	Dimensions Related to Involvement at School							
Volunteering/Fu	nd Raising (Ty	pe 3) – Paren	t Report					
SES	10,337	.032	.001*					
Linear	9,391	.032	.001					
Quadratic	9,391	.032	.001					
Involvement in PTA/PTO (Type 5) – Parent Report								
SES	10,337	.032	.001*					
Linear	9,509	.045	.002					
Quadratic	9,509	.045	.002					
Parental Convers	sations with Te	achers/Couns	elors (Type 2) –	Student Report				
SES	10,337	.032	.001*					
Linear	9,015	.000	.000					
Quadratic	9,015	.055	.003					
Parent Attendand	ce at School Ev	vents (Type 3)	– Student Repor	rt				
SES	10,337	.032	.001*					
Linear	9,981	.045	.002*	.032				
Quadratic	9,981	.358	.128					

Summary of Regression Analysis for Variables Predicting the Autonomy Variable

^a Significance values could not be calculated due to multicolinearity.

* p < .05

having a family rule about maintaining the child's GPA (p < .001) were significant, while having a family rule about doing homework (p = .100) and student reported discussion with a parent about school (p = .655) were not. As with the results testing the first hypothesis, while the results were statistically significant, the effect sizes were very small, with r^2 changes of .002 and .003 and partial correlations of .045 and .055.

Analyses were also conducted to test for non-linear relationships between these dimensions of parental involvement and autonomy. Two of the analyses could not be conducted due to multicolinearity. The remaining two analyses were non-significant, indicating that a non-linear model did not add to the prediction of autonomy. *Involvement at Home.* The hypothesis predicting a curvilinear relationship between the autonomy single indicator and dimensions of parental involvement related to involvement at home was partially supported. Both parent and student reported help with homework significantly added to the prediction of autonomy when entered on step two, with p values of .002 and .012 respectively. The relationship between help with homework and the autonomy single indicator was a negative one. When entered as quadratic variables on step 3, only parent reported help with homework was significant (p = .005), indicating a non-linear relationship between the variables. Involvement at School. The hypothesis predicting a curvilinear relationship between the autonomy single indicator and involvement at school was not supported. Only one of the four parental involvement dimensions related to involvement at school was significantly related to the autonomy single indicator. Parent attendance at school events, as reported by the student, added to the prediction of autonomy over socioeconomic status (p = .018) in a negative manner. The effect size of this relationship was small, with a partial correlation of .032. The remaining three parental involvement dimensions, volunteering/fund-raising (p = .932), involvement in a PTA or PTO (p = .090), and student reports of conversations between parents and teachers (p = .675) did not contribute to the prediction of autonomy.

When the parental involvement measures were entered as quadratics, none of the analyses were statistically significant, indicating no curvilinear relationships between parental involvement at school and autonomy as measured by the single indicator.

Hypothesis Three

The third hypothesis predicted that the various types of parental involvement would have different relationships with the autonomy scale created for this study. It was predicted that dimensions related to home atmosphere would have a positive linear relationship with the autonomy scale, while dimensions related to involvement at home and school would have a curvilinear relationship with the autonomy scale. This hypothesis was partially supported (see Table 7 for results of multiple regression analyses).

Home Atmosphere. The hypothesis predicting a linear relationship between the autonomy scale and home atmosphere was not supported. In the linear regression, each of the four dimensions of parental involvement related to home atmosphere was found to contribute significantly to the prediction of the autonomy scale beyond the effects of socioeconomic status. However, each of the dimensions of parental involvement had a significant negative relationship with the autonomy scale. Parent reported discussion with the child about school (p < .001), having a family rule about maintaining a certain GPA (p = .041), having a family rule about doing homework (p < .001), and student reported discussion with a parent about school (p < .001) all appear inversely related to autonomy. Partial correlations were again small, ranging from .032 to .089. In the non-linear regression, only student reported discussion with a

Variable	Ν	R	R^2	Partial Correlation				
	Dimensions Related to Home Atmosphere							
Discussion with	Child about Sc	hool (Type 1)) – Parent Report	t				
SES	10,578	.141	.020*					
Linear	9,937	.148	.022*	.045				
Quadratic	9,937	.148	.022					
Family Rule abo	ut Maintaining	GPA (Type	1) – Parent Repo	rt				
SES	10,578	.141	.020*					
Linear	9,874	.145	.021*	.032				
Quadratic	9,874	.164	.027					
Family Rule abo	ut Doing Hom	ework (Type	1) – Parent Repo	rt				
SES	10,578	.141	.020*					
Linear	9,919	.148	.022*	.045				
Quadratic	9,919	.167	.028 ^a					
Discussion with	Parents about S	School (Type	1) – Student Rep	port				
SES	10,578	.141	.020*					
Linear	10,238	.167	.028*	.089				
Quadratic	10,238	.167	.028*					
	Dimensior	ns Related to 1	Involvement at H	Iome				
Help with Home	work (Type 4)	– Parent Rep	ort					
SES	10,578	.141	.020*					
Linear	9,897	.161	.026*	.077				
Quadratic	9,897	.161	.026					
Help with Home	work (Type 1)	- Student Re	port					
SES	10,578	.141	.020*					
Linear	10,528	.173	.030*	.100				
Quadratic	10,528	.173	.030					

Summary of Regression Analysis for Variables Predicting the Autonomy Variable

Table 7 (continued)

Variable	N	R	R^2	Partial Correlation	
	Dimensions R	elated to Involv	vement at School		
Volunteering/Fund	Raising (Type	3) – Parent Rep	oort		
SES	10,578	.141	.020*		
Linear	9,618	.155	.024*	.063	
Quadratic	9,618	.158	.025		
Involvement in PTA	A/PTO (Type 5)) – Parent Repo	ort		
SES	10,578	.141	.020*		
Linear	9,737	.152	.023*	.055	
Quadratic	9,737	.152	.023		
Parental Conversati	ons with Teach	ers/Counselors	(Type 2) – Stude	ent Report	
SES	10,578	.141	.020*		
Linear	9,230	.148	.022		
Quadratic	9,230	.158	.025		
Parent Attendance at School Events (Type 3) – Student Report					
SES	10,578	.141	.020*		
Linear	10,210	.170	.029*	.095	
Quadratic	10,210	.228	.050 ^a		

Summary of Regression Analysis for Variables Predicting the Autonomy Variable

^a Significance values could not be calculated due to multicolinearity.

* p < .05

parent about school (p = .031) indicated a non-linear relationship among the variables. *Involvement at Home.* The hypothesis predicting a curvilinear relationship between the autonomy scale and involvement at home was not supported. Both parent and student reported help with homework were significantly negatively related to the autonomy scale in the linear regression, with p values of < .001 for both. Partial correlations were small, with the parent reported measure having a correlation of .077 with the autonomy scale, and the student reported measure having a correlation of .100 with the autonomy scale. In the non-linear regression, neither parental involvement measure remained significant, with p values of .450 for the parent reported measure and .839 for the student reported measure.

Involvement at School. The prediction that the parental involvement dimensions related to involvement at school would have a curvilinear relationship with the autonomy scale was not supported. Three of the four dimensions were statistically significant in the linear regression. Volunteering/fund-raising (p = .005), involvement in a PTA or PTO (p = .025), and attendance at a school event (p < .001) were negatively related to autonomy, while parent conversations with a teacher or counselor (p = .083) was not significant. One of the non-linear regressions could not be completed due to multicolinearity, and the remaining analyses were not significant. *Hypothesis Four*

The fourth research hypothesis predicted that the dimensions of parental involvement would have different relationships with locus of control. Specifically, it was predicted that parental involvement related to home atmosphere would have a positive linear relationship with locus of control and involvement at school and home would have a curvilinear relationship with locus of control. This hypothesis was partially supported. *Home Atmosphere*. The hypothesis that parental involvement related to home atmosphere would have a positive linear relationship with locus of control was partially supported. Two of the four parental involvement measures contributed

Summary of Re	gression Anal	ysis for Varia	ables Predicting	Locus Of Control
Variable	Ν	R	R^2	Partial Correlation
	Dimensio	ons Related to	Home Atmosph	ere
Discussion with	Child about Sc	hool (Type 1)	- Parent Report	
SES	11,361	.134	.018*	
Linear	10,665	.141	.020*	.045
Quadratic	10,665	.145	.021	
Family Rule abo	ut Maintaining	GPA (Type 1) – Parent Repor	ť
SES	11,361	.134	.018*	
Linear	10,594	.134	.018	
Quadratic	10,594	.134	.018	
Family Rule abo	out Doing Home	ework (Type 1	l) – Parent Repor	rt
SES	11,361	.134	.018*	
Linear	10,645	.134	.018	
Quadratic	10,645	.138	.019 ^a	
Discussion with	Parents about S	School (Type	1) – Student Rep	oort
SES	11,361	.134	.018*	
Linear	10,977	.207	.043*	.158
Quadratic	10,977	.207	.043	
	Dimensior	ns Related to I	nvolvement at H	ome
Help with Home	work (Type 4)	– Parent Repo	ort	
SES	11,361	.134	.018*	
Linear	10,626	.134	.018*	
Quadratic	10,626	.134	.018	
Help with Home	work (Type 1)	– Student Rej	port	
SES	11,361	.134	.018*	
Linear	11,306	.134	.018	
Quadratic	11,306	.134	.018	

Table 8 (continued)

		J	c	
Variable	Ν	R	\mathbb{R}^2	Partial Correlation
	Dimensio	ons Related to Ir	volvement at So	chool
Volunteering/Fund	Raising (T	ype 3) – Parent	Report	
SES	11,361	.134	.018*	
Linear	10,315	.130	.017	
Quadratic	10,315	.134	.018	
Involvement in PT	A/PTO (Ty	rpe 5) – Parent H	Report	
SES	11,361	.134	.018*	
Linear	10,446	.141	.020*	.045
Quadratic	10,446	.141	.020	
Parental Conversat	ions with T	eachers/Counse	elors (Type 2) –	Student Report
SES	11,361	.134	.018*	
Linear	9,888	.138	.019*	.032
Quadratic	9,888	.138	.019	
Parent Attendance	at School E	Events (Type 3)	- Student Repo	rt
SES	11,361	.134	.018*	
Linear	10,950	.152	.023*	.071
Quadratic	10,950	.148	.022 ^a	

Summary of Regression Analysis for Variables Predicting Locus Of Control

 a Significance values could not be calculated due to multicolinearity. * p < .05

significantly to the prediction of locus of control above the effects of socioeconomic status. Both parent and student reported discussion about school were significant, with a p value of < .001 for both, while having family rules about maintaining a GPA (p = .141) and about doing homework (p = .147) were not significant in the linear regression. Partial correlations ranged from .045 for parent reported discussion about
school to .158 for student reported discussion. In the non-linear regression, one of the analyses could not be completed due to multicolinearity and the remainder were non-significant.

Involvement at Home. The prediction that the parental involvement dimensions related to involvement at home would have a curvilinear relationship with locus of control was not supported. Parent reported help with homework was significant in the linear regression (p = .044), but not in the non-linear regression (p = .737). Student reported help with homework was non-significant in the linear regression (p = .270) and in the non-linear regression (p = .130).

Involvement at School. The hypothesis that involvement at school would have a curvilinear relationship with locus of control was not supported. In the linear regression, three of the four parental involvement measures were statistically significant. Volunteering/fund-raising (p = .053) was not significant, while involvement in a PTA or PTO (p = .004), parent conversations with a teacher or counselor (p = .035) and parent attendance at a school event (p < .001) were significant. However, parent conversations with a teacher or counselor was negatively related to locus of control. Two of the non-linear analyses could not be conducted due to multicolinearity, and the remaining two analyses were non-significant.

Chapter V - Conclusions

Overall, this study found only partial support for the hypotheses proposed. While there were statistically significant relationships between some of the parental involvement measures and each of the outcome variables, closer examination revealed that the effect sizes were too small to be theoretically significant. The following sections will discuss the results in practical terms and examine the convergence and divergence with the previous literature in the field. Each outcome variable's relationship with parental involvement will be discussed separately.

Parental Involvement and Achievement

Of the ten measures of parental involvement used in this study, eight were found to have a statistically significant relationship with GPA when socioeconomic status was controlled. Thus, it appears that certain dimensions of parental involvement are related to GPA. However, the effect sizes were small, indicating that the changes that occur in GPA when parental involvement increases are minor.

In the previous literature, the parental involvement dimension that has been shown to have the strongest link to GPA is parental aspirations for the child's achievement (e.g., Deslandes et al., 1997; Keith et al., 1998; Paulson, 1994). Unfortunately, there was no measure of this included in the current study, so the connection with GPA could not be confirmed or challenged.

This study found that students who reported that their parents had spoken to a teacher or counselor had slightly lower GPAs than those students whose parents had not communicated with the school when socioeconomic status was controlled. This is consistent with previous research, which has shown that communication with the

school typically had either no relationship or a negative relationship with GPA (Deslandes, 1999), possibly because communication is often not initiated until the student is doing poorly in school. It is important to note that only one measure of this parental involvement dimension that was student reported was available for use in this study, so it is unknown what relationship parent reported communication with the school might have had with GPA.

Several measures of parental involvement at school were used in this study. A positive linear relationship was found between GPA and student reports of parents attending at least one school event. A significant nonlinear relationship was found between GPA and parent reports of volunteering or fund raising at the school, indicating that a moderate level of involvement at school might have the strongest positive relationship with GPA. Previous research (e.g., Deslandes & Potvin, 1999; Trivette & Anderson,1995) has shown no significant linear relationship between involvement at school and GPA for adolescents, possibly because this type of involvement is not seen as developmentally appropriate for older students. The studies that have been done previously looked exclusively for a linear relationship, however. It is possible that the lack of significant results was due to the fact that a nonlinear relationship existed.

Discussion about school is one of the few types of parental involvement that has been shown to have a positive relationship with GPA for all ethnicities and socioeconomic status groups (Desimone, 1999), meaning that those students who discussed school with their parents had a higher GPA than those students who did not discuss school with their parents. This study found that student reported discussion

with parents about school had a positive linear relationship with GPA, while parent reported discussion with their children had no relationship with GPA. This is consistent with previous research which indicates that students' perceptions of their parents' involvement are better predictors of achievement than the parents' reports of involvement.

A majority of previously conducted research indicates that with adolescents, help with homework has a negative relationship with GPA (Paulson, 1994; Deslandes et al., 1997; Desimone, 1999), meaning that students whose parents helped them with homework had a lower GPA than those students who received no help with homework. Most researchers attribute this to the probability that parents only help their teens with homework if they are doing poorly in school. This study also found that both parent and student reported help with homework had a negative linear relationship with GPA. When looking at the relationships between help with homework and GPA, it would be interesting to consider prior achievement as a control variable. In doing this, a better estimate of the true relationship between the two variables could be obtained.

This study found that when parents reported they imposed rules about doing homework and maintaining a certain GPA, their children had lower GPAs. This is consistent with prior research, which indicates that having a home structure including rules such as these has a negative relationship with adolescents' achievement. Most researchers propose that this is due to the fact that many parents may not impose such rules until the child is doing poorly in school (Trivette & Anderson, 1995). As with

the help with homework dimension, controlling for previous achievement would probably help to explain this relationship.

The final dimension of parental involvement included in this study, involvement in a PTA or PTO, did not have a significant relationship with GPA. In previous research, involvement in governance roles such as a PTA or advisory committee, only contributed to the prediction of GPA for African-American families (Desimone, 1999). It has been suggested that this is due to an empowerment of a group that is not typically empowered by the school system. Perhaps a non-significant relationship was found in the current study because results were not disaggregated by race or ethnicity, and the current study controlled for socioeconomic status.

Results of the current study with regards to the relationship between parental involvement and GPA are relatively consistent with previous research. However, it is important to reiterate that despite the large number of statistically significant results, the effect sizes were all quite small. One must not over-interpret the results to mean that there is a strong relationship between parental involvement and GPA. It is also important to note that the current study did not use an experimental design, and thus causality cannot be inferred from the results presented. It is possible that other variables not included in the study influence one or both variables.

Parental Involvement and Autonomy

Of the ten measures of parental involvement used in this study, five were found to have a statistically significant relationship with the autonomy single variable (how often do children count on their parents to solve problems) and nine were found to have a statistically significant relationship with the autonomy scale. Nearly all of the statistically significant results indicated a negative relationship between parental involvement and autonomy, indicating that higher levels of parental involvement were associated with lower levels of autonomy. As with GPA, however, all of the effect sizes were small, indicating that the changes that occur in autonomy when parental involvement increases are minor. Also, because the current study was correlational in nature, it was impossible to determine the direction of causality in the relationship between parental involvement and autonomy. It is possible that parents adjust their level of involvement with students based on the student's autonomy, so that parents will become more involved with students who display less autonomy.

As with GPA, previous research has shown that the best predictor of autonomy is a positive, warm, and loving environment (Deslandes, 1999), which this study was not able to research. Therefore, this finding from the prior research could not be confirmed or challenged.

This study found that parental communication with a teacher or counselor at the school, as reported by the student, had no relationship with either of the autonomy measures. There was no prior research which considered this relationship.

Previous research has indicated that parental involvement at the school is related to higher levels of autonomy (Deslandes, 2000). This study found that students who reported that their parents attended at least one school event also reported lower levels of autonomy both on the single indicator and on the scale. There are several possible explanations for this finding. First, it is probable that the previous studies that found a positive relationship used different measures of autonomy, which may have affected the results. Second, the previous studies may have looked at parent reported

attendance at school events rather than student reported attendance. Previous research indicates that there is very little consistency between parent and student reported involvement. When this is the case, it is typically the student's report that has a stronger relationship with the outcome variable, indicating that the student's perception of involvement is significant. It may be in this case that the students perceived the parents' involvement as inappropriate, leading to the negative relationship found in this study.

Another measure of involvement at school was also used in this study. Parent reported volunteer work at the school had a negative relationship with the autonomy scale, indicating that parents who worked at the school frequently had children with lower levels of autonomy. The autonomy scale used included information about who makes decisions regarding the adolescent's academic career. Thus, parents who were more likely to volunteer at school also contributed more to the decisions made about the child's academics. The volunteer work dimension had no relationship with the autonomy single indicator, implying that having a parent volunteer at the school did not relate to how often children rely on their parents to solve problems. Thus, the parent reported measure of involvement at school was less consistently related to autonomy. However, for all of the significant relationships, the effect sizes were small, indicating that changes in parental involvement are related to minor changes in the degree of autonomy.

Discussion about school has been shown in prior research to correlate positively with autonomy (Deslandes, 1999). This study found that parent reported discussion about school was negatively related to both measures of autonomy, while

student reported discussion about school was negatively related to the autonomy scale. Student reported discussion had no relationship with the autonomy single indicator. The inconsistency with the previous research here is likely due to a difference in the way autonomy was measured. With regards to the autonomy scale, it seems to make sense that parents who spoke more frequently with their child about school would also contribute to decisions made about the child's academic career, leading to a lower autonomy score for the child.

A majority of the previously conducted research indicates that help with homework is related to higher levels of autonomy (e.g., Deslandes, 2000). This study found that both parent and student reported help with homework were negatively related to the autonomy scale, meaning that parents who helped with homework more frequently had less autonomous children. Student reported help with homework was negatively related to the autonomy single indicator, suggesting that children whose parents helped with homework also counted more frequently on their parents to solve problems. Parent reported help with homework had a significant nonlinear relationship with the autonomy single indicator, suggesting that perhaps a moderate level of homework support is associated with children making decisions more on their own. Because all of the effect sizes were small, these results should not be over-interpreted. However, this study provides some evidence that help with homework may be negatively associated with autonomy.

Previous research on the relationship between home structure (e.g., rules) and autonomy found a trend toward a nonlinear relationship, suggesting that a moderate amount of structure was associated with the highest levels of autonomy (Grolnick &

Ryan, 1989). In this study, analyses looking for nonlinear relationships between home structure (i.e., having family rules about doing homework and maintaining a certain GPA) and autonomy could not be completed due to high degrees of multicolinearity. However, having a family rule about maintaining a certain GPA had a negative linear relationship with both autonomy measures, and having a family rule about doing homework had a negative linear relationship between having a family rule about doing homework and the autonomy scale. There was no relationship between having a family rule about doing homework and the autonomy single indicator. It appears that having such family rules may not be associated with the positive outcome of autonomy development. It is important to note that the questions used to derive the autonomy scale discuss who makes decisions regarding the student's academics. It seems somewhat logical that in families where the parents impose rules about academics, that the parents would also be involved in making academic decisions either for the child or with the child. It is also possible that parents impose such rules for students who do not display autonomy.

The final measure of parental involvement used in this study is involvement in a PTA or PTO. There has been no prior research examination the relationship between this type of involvement and autonomy. The current study found that involvement in a PTA was negatively related to the autonomy scale and had no relationship with the autonomy single indicator. As with the prior dimension discussed, it seems somewhat logical that parents who participate in the PTA would be more involved with academic decisions for their child.

Overall, many of the dimensions of parental involvement were found to be negatively associated with autonomy. This is possibly due to the autonomy measures

used in this study. Because the measures looked primarily at academic autonomy, it seems likely that more involved parents would have less autonomous students. Had a more global measure of autonomy been available for use in this study, the results might be significantly different.

Parental Involvement and Locus of Control

Of the ten measures of parental involvement used in this study, five were found to have a statistically significant relationship with locus of control. It appears that certain dimensions of parental involvement are related to locus of control. However, the effect sizes were quite small, indicating that the changes that occur in locus of control when parental involvement increases are minor.

There is no previous research that has looked at the direct relationship between parental involvement and locus of control. In all of the studies where locus of control was considered, it was used as a mediating variable between parental involvement and achievement (e.g., Desimone, 1997). Therefore, the results of this study will be discussed without consideration of their convergence with the literature.

When students reported that their parents had spoken with a teacher or counselor at school, this was negatively associated with locus of control, meaning that these students reported a more external locus of control. There are many possible explanations for this finding. It may be that parents are more likely to speak with the school when the student has not exhibited an internal sense of control with regards to their academics. Parents may be concerned that their child is not studying or taking responsibility for their work, and might contact the school to discuss their concerns. Likewise, teachers may be more likely to contact parents of students who are not

taking responsibility for their schoolwork. The student with an external locus of control might also blame their performance on the teacher or an unfair test, causing the parents to contact the school. It is also possible that students whose parents contact the school regularly may come to attribute their academic progress more to their parents than to themselves. Without an experimental design, it is impossible to determine causality.

Of the two measures of involvement at school, only parent attendance at school events was significantly related to locus of control. While attendance at school events had a positive linear relationship with locus of control, having a parent volunteer at the school was not related to locus of control. There are again many possible explanations for these findings. Perhaps parents who attended school events are more likely to reinforce an internal sense of control in their children, or perhaps children with an internal locus of control participate in more activities at school for parents to attend.

Both parent and student reported discussion about school were positively related to locus of control, indicating that students who spoke more frequently with their parents about school had a more internal locus of control. It is possible that holding conversations with the student about school instills in them a belief that they are in control of their academics.

Student reported help with homework was not related to locus of control, and although parent reported help with homework was statistically significantly related to locus of control, the effect size was very close to 0, indicating that there is no real practical significance. Similarly, having family rules about doing homework and maintaining a certain GPA were not related to locus of control.

The final dimension of parental involvement included in this study,

involvement in a PTA or PTO, was positively related to an internal locus of control. It is likely that the parents who get involved in these types of organizations themselves have an internal locus of control, leading them to believe they can affect some change. The students of these parents may be more likely to have an internal locus of control because their observe their parents' sense of control.

Overall, only a few dimensions of parental involvement appear related to locus of control, and for each of those the effect sizes were relatively small. It is possible that locus of control is more appropriately used as a mediating variable between parental involvement and other outcome measures, as has been done in the previous research.

Implications

Theoretical Implications

Based on the results of the current study, there are two main theoretical implications for future work on parental involvement. First, because the results of the factor analysis on the parental involvement variables aligned nicely with Epstein's framework, this study provides some support for her theory. It seems as though the dimensions of parental involvement that she defines are accurate for this dataset, and are likely descriptive of parental involvement in the real world.

The second major theoretical implication of this study is related to the small effect sizes found for nearly all of the analyses when socioeconomic status was controlled. Based on the results of this study, it appears that parental involvement has only a very minor relationship with each of the outcome variables once socioeconomic status is factored out. This leads to the question of how socioeconomic status fits in Epstein's model of parental involvement. Since socioeconomic status was significantly related to all outcome variables, and only some of the dimensions contributed to the prediction of the outcome variables beyond socioeconomic status, should this be mentioned in Epstein's theory? Epstein does recognize that for parents of low socioeconomic status, certain types of involvement are more difficult, and that these parents should compensate by increasing other types of involvement. Perhaps more detail as to which types of involvement would be best to increase could be included in her theory.

Research Implications

The results of this study indicate that socioeconomic status (including family income and parents' education) plays an important role in predicting not only achievement, but also autonomy and locus of control. Many of the studies on parental involvement previously did not attempt to control for these factors, making their results less meaningful. For future research in this area, researchers should include a control variable to account for the strong relationships between socioeconomic status, parental involvement, achievement, autonomy, and locus of control.

Implications for Practice

With the present emphasis on parental involvement in the educational reform legislation as a way to increase student achievement, research on the relationship between parental involvement and achievement has an important role to play. Most recently, parental involvement became one of six targeted areas in the No Child Left Behind Act, making it a high priority for all schools. In the past, research has indicated

that parental involvement has a strong positive relationship with academic achievement, particularly for younger children. Several previous studies have indicated that the relationship between parental involvement and achievement wanes as the child reaches high school, and the current study provides additional evidence that this may be true. Thus, policymakers and educators may wish to consider that targeting parental involvement at the high school level may not be the most effective way to increase student achievement. Perhaps a more effective method for assisting students in high school to increase their achievement is to empower the students themselves. Teaching the students study techniques and organizational strategies, as well as providing them with ways to seek assistance when needed could work to increase autonomy and improve academic achievement for adolescents.

Limitations

Design and Internal Validity

The primary limitation of this study is that it is correlational in nature, rather than an experimental design. As a result, there is no way to determine cause and effect relationships between the independent and dependent variables.

A second design issue involves the possibility that autonomy and locus of control are better considered as mediating variables between parental involvement and achievement. Several studies have used locus of control in this manner and found that it does in fact mediate between the two variables. The goal of this study was to examine the direct relationship between parental involvement and locus of control and autonomy, but the results indicate that they might be better used as mediating variables.

Analyses and Statistical Power

The number of analyses conducted in this study was quite large, which increase the likelihood that Type I errors were made. However, because the large number of subjects allowed for the detection of small differences in the outcome variables, statistical significance was further examined using partial correlations. Emphasis was placed on the small effect sizes and practical significance rather than statistical significance.

Measurement

There were several measurement limitations with this study, beginning with the fact that a previously conducted national survey was used. The researcher was not able to control what information was obtained and how questions were worded. As a result, some of the measures used in this study were less than ideal.

While the questions related to parental involvement in the NELS:88 dataset covered most of the dimensions included in Epstein's framework, there were no measures of her sixth dimension, social capital. Several of the dimensions included only one or two relevant questions, and for several dimensions only parent or student reported data was available. Ideally, there would have been more questions for each dimension and the same questions would have been asked of both the students and the parents.

There was also a problem with the GPA variable in the NELS:88 dataset, as discussed in chapter 3. The GPA variable was not standardized; some students reported GPA on a 4.0 scale and others on a 100-point scale. In order to correct for this, only those students whose GPA fell between 0.0 and 6.0 were included in the

GPA analyses. This correction was less than ideal, as it is possible that some of the scores included were actually very low on the 100-point scale.

The autonomy measures that were available in NELS:88 were limited, and concerned primarily decisions regarding academics. Additionally, the autonomy variables were coded such that independent decision making by the adolescent was considered the highest level of autonomy. It has been proposed in some theories that mutual decision making (i.e., parent and child together) may actually be ideal.

Finally, this study used primarily self-report information, and thus comes will all of the limitations related to self-reports. Information may be biased, as responders my try to make themselves socially desirable or say what they think the examiner wants to hear. Missing data is also an issue with this dataset, although the percentage of missing data was quite small.

Future Directions

Based on the results of this study, the following suggestions can be made for future research:

- Use a more comprehensive set of questions to measure parental involvement, which includes Epstein's sixth dimension and expands the number of questions related to each dimension. Include questions that address the quality of parental involvement, including the parents' and students' impressions of the involvement.
- Consider the long-term relationship between parental involvement and autonomy by measuring autonomy during adulthood.
- Use autonomy and locus of control as mediating variables.

- Look at parental involvement in elementary and middle school and examine trends. Is the best outcome associated with parents who are very involved in elementary school, and then become less involved as the child gets older?
- Use other measures of academic achievement, including retention, drop out rates, school behavior, and college attendance.
- Use a broader definition of autonomy that addresses non-school related issues.

Appendix A

Parental Involvement	Components								
Variables	1	2	3	4					
Contacted school about									
fund raising	.780	.070	.130	.046					
Contacted school about									
doing volunteer work	.858	.048	.138	.001					
Belong to Parent-Teacher									
Organization	.124	.105	.807	.004					
Attend Parent-Teacher									
Organization Meetings	.144	.076	.797	.061					
Take part in Parent-Teacher									
Organization Activities	.392	.085	.694	.000					
Act as a volunteer at the school	.709	.060	.240	.021					
Family rule about maintaining									
grade average	.012	.077	.010	.789					
Family rule about doing									
Homework	.004	.087	.024	.811					
How often talks to child about									
school experiences	.020	.689	.140	.033					
How often talks to child about									
high school plans	.116	.844	.030	.073					
How often talks to child about									
post high school plans	.056	.819	.009	.043					
How often help child with									
Homework	.011	.322	.140	.244					

Results of Factor Analysis on Parent Reported Involvement Variables

Note. Results presented are the rotated component matrix.

Parental Involvement		Components		
Variable	1	2	3	
Discuss programs at school				
with parents	.695	.020	.136	
Discuss school activities with				
Parents	.565	.015	.444	
Discuss things studied in class				
with parents	.602	.150	.028	
Talk to father about planning				
high school program	.701	.089	.033	
Talk to mother about planning				
high school program	.766	.053	.013	
Parents spoke to teacher/				
Counselor	.055	.683	116	
Parents attended a school				
Event	.161	.209	.761	
How often parents check				
Homework	.358	.345	431	

Appendix B Results of Factor Analysis on Student Reported Involvement Variables

Note. Results presented are the rotated component matrix.

Appendix C

NELS:88 Survey Questions

Parent Involvement

Parent Questionnaire

BYP58	Since your eighth grader's school opened last fall, how many times HAVE YOU OR YOUR SPOUSE/PARTNER CONTACTED the school about each of the following? D. Participating in school fund raising activities F. Doing volunteer work, such as supervising lunch or chaperoning a field trip
	Options: None, Once or Twice, Three or Four Times, More than Four Times
BYP59	 Do you and your spouse/partner do any of the following at your eighth grader's school? (MARK ONE EACH) A. Belong to a parent-teacher organization B. Attend meetings of a parent-teacher organization C. Take part in the activities of a parent-teacher organization D. Act as a volunteer at the school
	Options: Yes, No
BYP65	Are there family rules that are enforced for your eighth grader about any of the following activities? A. Maintaining a certain grade average B. Doing homework
	Options: Yes, No
BYP66	Parents differ in how much they talk to their children about what they do in school. How often do you or your spouse/partner talk with your eighth grader about his or her experiences in school?
	Options: Not at all, Rarely, Occasionally, Regularly
BYP67	Parents differ in how much they talk to their children about their plans for high school. How often do you or your spouse/partner

	talk with your eighth grader about his or her plans for high school?
	Options: Not at all, Rarely, Occasionally, Regularly
BYP68	How often do you or your spouse/partner talk with your eighth grader about his or her educational plans for after high school?
	Options: Not at all, Rarely, Occasionally, Regularly
BYP69	How often do you or your spouse/partner help your eighth grader with his or her homework?
	Options: Seldom or Never, Once/Twice a Month, Once/Twice a Week, Almost Every Day

Student Questionnaire

BYS36	 Since the beginning of the school year, how often have you discussed the following with either or both of your parents/or guardians? A. Selecting courses or programs at school B. School activities or events of particular interest to you C. Things you've studied in class Options: Not at all, Once or Twice, Three or More Times
BYS37	Since the beginning of this school year, has either of your parents or guardians done any of the following?B. Phoned or spoken to your teacher or counselorD. Attended a school event such as a play, concert, gym exhibit, sports competition, honor ceremony or science fair where YOU participated
	Options: Yes, No
BYS38	How often do your parents or guardians do the following? A. Check on whether you have done your homework
	Options: Often, Sometimes, Rarely, Never
BYS50	How often have you talked to the following people about planning your high school program?

- A. Your father (or male guardian)
- B. Your mother (or female guardian)

Options: Not at all, Once or Twice, Three or More Times

Locus of Control Variables

BYS44	How do you feel about each of the following statements? B. I don't have enough control over the direction my life is taking.
	C. In my life, good luck is more important than hard work for success.
	F. Every time I get ahead, something or someone stops
	G. My plans hardly ever work out, so planning only makes me unhappy.
	K. When I make plans, I am almost certain I can make them work.
	M. Chance and luck are very important for what happens in my life.
	Options: Strongly Agree, Agree, Disagree, Strongly Disagree

Autonomy Variables

F2S98	In your family, who makes the most decisions on each of the following topics? H. Whether you should go to college or vocational/technical school I. The courses you take
	Options: Parents decide, Parents decide with me, We decide together, I decide with parents, I decide myself
F2S100	How true are the following statement for you and your parent(s)/guardian(s)?C. I often count on my parent(s)/guardian(s) to solve many of my problems for me.
	Options: False, Mostly false, More false than true, More
	true than false, Mostly true, True

Appendix D

Intercorrelations Between Parental Involvement Variables, Autonomy Variables, Locus of Control, GPA, and SES

	SES	GPA	Auto. Scale	Auto. Var.	LOC	PR1	PR1b	PR1c	PR3	PR4	PR5	SR1	SR2	SR3	SR4
SES GPA Auto. Scale Auto. Var. LOC PR1 PR1b PR1c PR3 PR4 PR5 SR1 SR2 SR3 SR4		.304	143 054 —	.030 .111 .146 	.134 .233 .011 .132	.184 .066 073 044 .068	096 115 006 047 026 .146 	039 085 039 021 026 .143 .326 	.162 .102 .066 .006 .640 .158 .016 .030	.108 065 082 067 023 .215 .064 .154 .085 	.258 .091 079 027 .071 .196 .046 .051 .449 .119 	.240 .213 111 .008 .181 .252 .015 005 .119 .093 .126	.126 043 042 014 008 .079 014 .050 .120 .083 .116 .116 .116	.180 .154 094 029 .088 .095 013 008 .173 .021 .149 .217 .057 	.023 077 098 039 .015 .111 .076 .130 .025 .184 .047 .212 .109 .055

Note. PR1 is parent-reported discussion with the child. PR1b is parent-reported rule about maintaining GPA. PR1c is parent-reported rule about doing homework. PR3 is parent-reported involvement at school. PR4 is parent-reported help with homework. PR5 is parent-reported involvement in governance. SR1 is student-reported discussion with parents. SR2 is student-reported communication with the school. SR3 is student-reported involvement at school. SR4 is student-reported help with homework.

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