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Parent involvement in a child's education is consistently found to be positively associated with a child's academic performance. However, there has been little investigation of the mechanisms that explain this association. The present study examines two such potential mechanisms, the child's perception of cognitive competence and the quality of the student-teacher relationship, as potential mediators of the relation between parent involvement and a child's academic performance. This study used a sample of 158 seven-year old participants, their mothers, and their teachers. Results indicated a statistically significant association between parent involvement and a child's academic performance. This finding was significant over and above the impact of the child's intelligence. The child's ethnicity was not a moderator of this relation. A multiple mediation model indicated that the child's perception of cognitive competence fully mediated the relation between parent involvement and the child's performance on a standardized achievement test. The quality of the student-teacher relationship fully mediated the relation between parent involvement and teacher ratings of the child's classroom academic performance. Limitations, future research directions, and implications for public policy initiatives were discussed.

THE IMPACT OF PARENT INVOLVEMENT ON A CHILD'S ACADEMIC
PERFORMANCE

By
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To my parents, Gloria and Isaac, my sister, Debra, my grandparents, Helen, Alex, Dora,
and Anchel, my dog, Bailey, and to the Anaya, Coffey, Dove, Mestepey, Zivan, and
Zygman families.

To the 1.5 million children of the Shoah who did not have the chance to go to school, and
who were lost but will never be forgotten.

APPROVAL PAGE

This Dissertation has been approved by the following committee of the
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CHAPTER I
INTRODUCTION

Parent Involvement

Parent involvement in a child's education is consistently found to be associated with a child's academic performance (Bogenschneider, 1997; Hara & Burke, 1998; Hill & Craft, 2003; Marcon, 1999; McWayne, Hampton, Fantuzzo, Cohen, & Sekino, 2004; Miedel & Reynolds, 1999; Stevenson & Baker, 1987). Specifically, children whose parents are more involved in their education have higher levels of academic performance than children whose parents are involved to a lesser degree. Parent involvement is therefore an important construct to examine, given the importance of a child's early academic success.

The influence of parent involvement on academic success has not only been noted among researchers, but also among policy makers who have integrated efforts aimed at increasing parent involvement into broader educational policy initiatives. For instance, the United States Congress set national educational goals that mandate some level of family-school connection. In 1994, the United States Congress passed *The Goals 2000: Educate America Act* (United States Department of Education, 1994). The goal of this Act was to provide a "national framework for educational reform" (United States Department of Education, 1994). The Act included provisions such as: (a). "By the year 2000, every school will promote partnerships that will increase parental involvement and

participation in promoting the social, emotional, and academic growth of children” (b). “Every state will develop policies to assist local schools and local educational agencies to establish programs for increasing partnerships that respond to the varying needs of parents and the home, including parents of children who are disadvantaged or bilingual, or parents of children with disabilities” (c). “Every school will actively engage parents and families in a partnership which supports the academic work of children at home and shared educational decision making at school” (d). “Parents and families will help to ensure that schools are adequately supported and will hold schools and teachers to high standards of accountability” (United States Department of Education, 1994).

According to Jimerson, Egeland, and Tao (1999), increasing a child’s academic performance in early elementary school is particularly important, because academic achievement in elementary school is a critical precursor for later academic success and ultimately for life success. Other researchers have reported that early academic success is related to a variety of positive life outcomes including higher self-esteem, greater employment opportunities, and better overall physical health (Ceci & Williams, 1997; Renter & Kober, 2001; United States Department of Education, 2001). Cicchetti and Toth (1998) indicated that early academic success is also related to lower incidences of negative outcomes such as school dropout, the development of depression and anxiety, and alcohol and illicit substance abuse.

Coupled with these findings of the importance of early academic success, a child’s academic success has been found to be relatively stable after early elementary school (Entwisle & Hayduk, 1988; Pedersen, Faucher, & Eaton, 1978; Pianta &

Steinberg, 1992). Therefore, examining factors that contribute to early academic success is important. Several factors that have been found to consistently predict academic performance include family income (Marcon, 1999; McWayne, Hampton, Fantuzzo, Cohen, & Sekino, 2004), child Intelligence Quotient (IQ) (Brody, 1997; Christian, Morrison, & Bryant, 1988), and maternal education level (Alwin & Thornton, 1984). As these factors are relatively stable and therefore not appropriate targets for intervention, additional factors that are amenable to change need to be explored in order to inform interventions that will increase children's academic performance.

Researchers such as Berk (2001) and Christian, Morrison, and Bryant (1998) have reported that the child-parent interactions are perhaps the most influential on the child's social, emotional, and academic development. Further, a child's early acquisition of academic skills is promoted by stimulating and responsive parenting practices (Committee on Early Childhood Pedagogy, 2000). Thus, it has been suggested that specific parenting variables that are amenable to change and have an important impact on the child's academic performance be examined to increase a child's academic performance. This has led to a renewed focus on the relation between parenting practices at home and the relation of these practices to outcomes in the school environment.

Parent involvement is an important aspect of the interaction between the home and school environments that leads to increased academic performance. Parent involvement has been conceptualized in several ways in the literature. These frameworks have included educational activities parents engage in at home and at school (Epstein, 1990, 1996; Grolnick & Slowiaczek, 1994), the frequency with which parents engage in

these academic activities, and the attitudes parents have towards their child's school and education (Kohl, Lengua, & McMahon, 2000; Rimm-Kaufman, Pianta, Cox, & Bradley, 2003).

While parent involvement in general has been found to be related to increased academic performance, the specific mechanisms through which parent involvement exerts its influence on a child's academic performance are not yet fully understood (Hill & Craft, 2003). Understanding these mechanisms is important, as it would inform further research and policy initiatives and may lead to the development of more effective intervention programs designed to increase children's academic performance.

The purpose of this study is to examine two mechanisms, a child's perceived cognitive competence and the quality of the student-teacher relationship, by which parent involvement may impact a child's academic performance in early elementary school.

Models of Parent Involvement

Previous studies have used varying models and definitions of behaviors and relationships that represent parent involvement (Christenson, Rounds, & Gorney, 1992; Jeynes, 2003; Lawson, 2003). Definitions of parent involvement are typically based on one of several theoretical models of what constitutes parent involvement (Kohl, Lengua, & McMahon, 2000). Several older theories concentrate on behaviors that parents engage in, including attending school functions and interacting with the teacher. Recently, newer frameworks of parent involvement differentiate between the activities parents engage in and the attitudes parents have toward education and their child's school. Reasons for this differentiation are discussed when describing these frameworks. Despite this apparent

shift in thinking about parent involvement, several common theoretical threads are pervasive in the varied models that have been used.

Epstein's model. Epstein (1990, 1996) proposed six types of parent involvement, mainly focusing on the collaboration between the home and school environments. These six types are the most widely recognized and cited in the literature (Hoover-Dempsey & Sandler, 1995). Epstein's (1990, 1996) framework allows for a broad view of parent involvement and serves as the basis for several other conceptualizations of involvement (Hoover-Dempsey & Sandler, 1995).

The first type of involvement focuses on school programs that help parents fulfill their basic obligations of providing for their child's safety and health. These programs may help the family learn skills to build positive home conditions conducive to learning, assist with child-rearing, or provide supervision and guidance for children (Epstein, 1990, 1996).

The second type of involvement refers to communication from school to home about school programs and student progress. This is achieved through school newsletters, notices about the student's progress, parent-teacher conferences, and report cards (Epstein, 1990, 1996).

The third type of involvement includes programs that allow parents to volunteer in the child's classroom and encourages the attendance of parents at student performances, sports, or other school events. Students are encouraged to participate in extracurricular activities and parents are encouraged to become involved in the school environment through their participation (Epstein, 1990, 1996).

Epstein's (1990, 1996) fourth type of involvement refers to learning activities that parents engage in at home to help monitor and assist their children in developing their academic abilities. This level of involvement requires parent knowledge of what skills their child needs to master in each grade, how to monitor their child's work, and parent action such as discussing schoolwork with their child.

A fifth type of involvement encompasses leadership opportunities for parents at school, particularly in decision-making roles such as serving on district school boards, advocacy groups, or school committees. While this type of involvement is more indirect compared to direct involvement with classroom activities, it encourages parents to model civic-minded and leadership behavior for children and illustrates the important role of the school in the community (Epstein 1990, 1996).

Finally, the sixth type of involvement includes collaboration between the school and the surrounding community, including local businesses, colleges, and agencies, to strengthen student learning.

Grolnick and Slowiaczek's model. Although many research studies continue to use Epstein's framework to understand parent involvement, competing perspectives have emerged to account for other dimensions of involvement (Fishel & Ramirez, 2005). Grolnick and Slowiaczek (1994) used both parent and teacher report to define parent involvement as the dedication of parent resources at home and at school in three domains: (a) behavioral, (b) cognitive-intellectual, and (c) personal involvement (Grolnick, Ryan, & Deci, 1991). These domains are only moderately correlated, supporting the idea that involvement has multiple facets (Grolnick & Slowiaczek, 1994).

In the behavioral domain, parent involvement is evident in parent participation in school-related activities both at home and at school. This participation could include helping with homework, asking about the child's school activities and attending school functions and open houses (Grolnick & Slowiaczek, 1994).

Cognitive-intellectual involvement comprises parents providing intellectually stimulating activities for the child outside of school, such as taking a trip to the library or discussing current events. Personal involvement encompasses the teacher's perception that the parent cares about school and has a positive attitude towards school and towards the child's education (Grolnick & Slowiaczek, 1994).

Kohl, Lengua, and McMahon's model. Kohl, Lengua, and McMahon (2000) integrated parent and teacher reports of parent involvement to create six theoretical factors that constituted parent involvement. A confirmatory factor analysis supported the proposed 6-factor theoretical model. The factors incorporated the quantity and quality of parent involvement behaviors. Three of the factors examined the quantity or frequency of behaviors that were common among existing theoretical frameworks in the literature, including frequency of attending school events and helping the child with homework.

The first factor theorized by Kohl et al. (2000) is the frequency of parent teacher contact, through communication on the phone, in person, or through written correspondence. This communication has the dual goals of facilitating the parent's understanding of the child's school progress and providing the parent with skills to help his or her child complete homework.

The second factor discussed by Kohl et al. (2000) was the frequency of attendance at school-related activities. Attendance at these events was counted when parents volunteered for school-related events or attended parent group meetings such as the Parent-Teacher Association.

The third factor reported in Kohl et al.'s (2000) model was the frequency of parent activities at home that were related to school readiness. These activities included parents reading with the child, assisting the child with homework, and taking the child to the library. The frequency factors were measured by responses on a 5-point scale, where scores corresponded with a set range of the frequency of the activity (e.g., one time per month, etc.). Higher scores were indicative of increased frequency (Kohl et al. 2000).

As proposed by Kohl et al. (2000), the next three factors are aimed at capturing the quality of the parents involvement using both parent and teacher report. Quality of involvement was a facet not specifically identified and isolated in previous definitions. Quality of involvement was also measured on a 5-point Likert-type scale, with higher scores indicating more agreement (e.g. Not at all; Very much, etc.) with the items.

The first quality factor was the quality of the parent-teacher relationship. The instrument designed to measure this factor assessed the parent's feelings about the teacher using questions such as "Do you enjoy talking with you child's teacher?" and "Do you feel that the teacher cares about your child?" and the teacher's feelings about the parent, using questions such as "Is the parent interested in knowing you?" (Kohl et al., 2000).

The instrument designed to assess the second quality factor measured the teacher's perception of the parent's value of education and investment in their child's education and included questions such as "Does the parent encourage positive attitudes toward education?" Finally, the instrument designed to assess the third quality factor examined the family's satisfaction with and endorsement of the child's school, including the extent to which the parents feel that the school is preparing the child for the future (Kohl, et al., 2000). The researchers tested their instrument on their sample to determine the internal validity of their measures. They found that internal consistency as measured by Cronbach's alpha ranged from .67 to .93 on the subscales for these six factors.

Other definitions of parent involvement. The framework of parent involvement proposed by Kohl et al. (2000) was the first to differentiate between the frequency of the parent's involvement and the quality of the involvement. More recent studies of parent involvement have also differentiated between the quantity and quality of parent involvement.

For instance, Rimm-Kaufman, Pianta, Cox, and Bradley (2003) defined parent involvement as consisting of both the teacher's perception of the activities parents engage in and the teacher's perception of the attitudes parents have towards education and towards their child's school. Rimm-Kaufman et al. (2003) measured parent attitudes through teacher ratings on a 5-point scale, with higher scores indicating greater involvement. Questions included "How well do you feel you can talk to and be heard by this parent?" and "How much do you feel this parent has the same goals for his/her child that the school does?"

This distinction between attitude and activity further contributed to the current understanding of parent involvement, as positive family attitudes towards education as reported by the child's teacher were found to be significant predictors of higher teacher ratings of the child's language and mathematics performance in kindergarten. Parent involvement activities did not predict the child's language or mathematics performance (Rimm-Kaufman et al., 2003). Therefore, the distinction between the parent's activities and attitudes may be a useful one for predicting outcomes of parent involvement, specifically the child's academic performance. While these findings may discount the importance of parent activities, it may be possible that other factors have yet to be considered when examining the frequency of activities. For instance, these studies did not measure the intent of the parent's involvement or perhaps were unable to delineate specific involvement activities that were related to a child's academic performance.

Definitions of parent involvement proposed by Espstein (1996), Grolnick and Slowiaczek (1994), and Kohl, Lengua, and McMahon (2000) all include home-based and school-based activities such as volunteering in the child's school, helping with homework, and interacting with the child's teacher. Recently, the difference between the parent's attitudes or feelings about the child's education and schooling and the parent's activities, or actual participation in school activities has been considered. This distinction appears to have an impact when considering the impact of parent involvement on a child's academic performance (Rimm-Kaufman et al., 2003). Specifically, it may be that the attitudes parents have towards education have a greater impact on academic performance than do the activities parents engage in.

Parent Involvement and Academic Performance

Researchers have found parent involvement in a child's education to be associated with child academic performance, as measured by the child's scores on standardized achievement tests, by classroom grades, and by teacher ratings of the child's academic performance in the classroom (Bogenschneider, 1997; Hamre & Pianta, 2001; Hara & Burke, 1998; Hill & Craft, 2003; Jeynes, 2003; Marcon, 1999; McWayne, Hampton, Fantuzzo, Cohen, & Sekino, 2004; Stevenson & Baker, 1987).

Marcon (1999) demonstrated that, among pre-school children, increased parent involvement was positively associated with the child's mastery of basic early academic skills. Parent involvement was defined in this study by the number of "yes" or "no" responses for four parent and teacher activities (parent attendance at parent-teacher conferences, home visits by the teacher, extended class visits by the parent, and parental help with a class activity). McWayne et al. (2004) found that increased parent involvement was positively related to teacher ratings of kindergarten children's reading and mathematics achievement. Parent involvement was operationalized in this study based on Epstein's (1990, 1996) framework of parent involvement. Parent involvement at home (learning activities that parents engage in at home to help and assist their children in developing academic abilities), as rated by the child's parent, had the strongest association with teacher-rated reading and mathematics achievement.

Grolnick and Slowiaczek (1994) extended this work by including the frequency with which parents engage in school and home-based activities, as well as the teacher's perception of the value or importance the parents placed on education. These three types

of parent involvement (home, school, and teacher perception) together accounted for eight percent of the variance when predicting standardized mathematics scores and nineteen percent of the variance when predicting standardized reading scores.

Recently, the distinction between the activities parents engage in and the attitudes parents have about education and the school has resulted in differing results with regard to the impact of parent involvement on academic outcomes. In particular, Izzo et al. (1999) reported that an increase in the parent's school activities was associated with worsening achievement and classroom behavior. This result was attributed to the fact that the frequency of behaviors, such as number of parent-teacher contacts, was related to behavior problems in the classroom. Specifically, it was believed that the number of parent-teacher contacts was associated with a child's existing behavior problems, rather than the number of parent-teacher contacts leading children to behave poorly.

Conversely, a parent's positive attitude toward education and school was found to be positively associated with positive child academic outcomes (Kohl, et al. 2000; Rimm-Kaufman, et al. 2003). Consistent with this finding, Izzo et al. (1999) found that among kindergarten through third grade children, the parent's positive attitude, rather than quantity or frequency of parent involvement behaviors, predicted improvement in the child's academic performance.

Similarly, Hill and Craft (2003) found that parent involvement was a significant predictor of standardized mathematics achievement test scores among kindergarten children. Parent involvement was defined in this study as the activities parents engage in at home and at school, and the teacher's perception of the parent's attitude toward

education. The teacher's perception of the parent's attitude toward education was more significantly related to the child's reading and mathematics performance, as rated by the child's teacher, than was activities parents engage in.

Thus, while both activities and attitudes are components of parent involvement, some previous research has found that the attitude the parent has towards education and school is positively associated with the child's academic performance, whereas increased frequency of activities was not associated with the child's academic performance. These findings may be due to the lack of discrimination in previous studies of the reason for the parents participating in school related activities. For instance, parents may attend parent-teacher conferences to better understand the child's academic skills and to build a strong home-school connection, or they may attend a parent-teacher conference to tell the teacher of concerns over their child's abilities or because the teacher requested a conference due to behavioral or academic difficulties in the classroom. Current frameworks of parent involvement do not appear to adequately account for the different reasons parents may partake in involvement activities.

In addition, while previous research has demonstrated that there is a relation between parent involvement and a child's academic performance, comparing outcomes across these studies is difficult due to the varying definitions of parent involvement and academic performance. A more thorough consideration of how parent involvement influences the several methods by which student academic performance is evaluated is necessary.

Assessment of Academic Performance in Early Elementary School

Three methods of assessment have primarily been used to measure a child's academic performance in early elementary school: standardized achievement tests, teacher ratings of academic performance, and report card grades (Adams, Ryan, Ketssetzis, & Keating, 2000; Fan, 2001). Each of these three methods have strengths and limitations.

Standardized achievement tests. Standardized achievement tests are objective instruments that assess the skills and abilities children learn through direct intervention or instruction (Sattler, 2001). These tests typically assess abilities and skills in a variety of subject areas including reading, mathematics, and writing. Standardized achievement tests, such as the Woodcock-Johnson Test of Achievement (WJ-III ACH; Woodcock, McGrew, & Mather, 2001) and the Wechsler Individual Achievement Test (WIAT-II; The Psychological Corporation, 2002), are valid and reliable measures of learning and have been used to compare children's performance within age groups (Sattler, 2001). Furthermore, both tests were standardized on large, national samples, and both are widely used tests of achievement (Sattler, 2001).

Although achievement tests are used frequently as measures of academic performance, several factors may limit their usefulness (DuPaul & Rapport, 1991). These tests may be unable to adequately assess all subject areas taught in the academic curriculum. In addition, achievement tests use a limited number of items to sample various academic skills, which does not allow for a complete understanding of the child's academic performance (DuPaul & Rapport, 1991). However, the items used on

standardized achievement tests are widely used and validated and perhaps fewer items are needed to understand a child's academic performance.

Despite these potential limitations, standardized achievement tests have superior psychometric and normative data to other means of measuring a child's academic performance and are widely used to study a child's academic performance. They are the most widely recognized measure of a child's academic performance, although some studies supplement achievement test scores with other indicators of a child's academic performance, such as teacher ratings of academic performance and report card grades, to provide a more complete understanding of a child's performance.

Teacher rating scales. Teacher rating scales are a means for teachers to provide their judgment of a child's academic performance (DuPaul & Rapport, 1991). Teachers are able to rate the accuracy of the child's academic work compared to other children in the class. There are several benefits to using teacher rating scales to study a child's academic performance. These scales allow for the observation of student academic performance on a wider range of academic tasks than those examined on standardized achievement tests (DuPaul & Rapport, 1991). Another strength of some rating scales is the inclusion of a standard set of valid and reliable questions for teachers to complete, which allows for a comparison of teacher ratings for children from different classrooms and different schools (DuPaul & Rapport, 1991).

As with standardized achievement tests, there are limitations inherent to using teacher ratings of academic performance. The usefulness of teacher ratings is limited by potential inherent biases the teacher may hold about the child and the child's parents. For

example, it has been speculated that teacher ratings of a child's classroom academic performance may be related to the teacher's perception of the importance the child's parents place on education, with higher ratings given to children whose parents the teacher perceives as being cooperative and involved (Jeynes, 2003). Teacher ratings may even reflect an acknowledgement by the teacher of the parent's efforts. Teacher ratings of a child's academic performance may also be influenced by several other variables, including the child's academic performance in other disciplines ("halo effect"), the average performance of the class in the discipline (class context effect), and individual characteristics of the child, including whether the child has repeated a grade (Dompnier, Pansu, & Bressoux, 2006). In addition to these potential biases, it may be the case that rating scales may only provide a global description of the child's academic performance. That is, rating scales may be unable to distinguish between more subtle differences in academic performance in the manner achievement tests are capable of. Finally, teacher rating scales that have normative data from various regions of the country, data from urban, rural, and suburban settings, and data from different ethnic and socioeconomic groups have yet to be developed (DuPaul & Rapport, 1991).

Report card grades. Report card grades provide yet another means for teachers to report the child's academic performance in the classroom. Only a few studies have examined report card grades as a measure of academic performance for children in early elementary school. There are several reasons for this lack of widespread use. A main reason is a lack of standardized grading system or subjects that children are evaluated on. While report card grades do provide information on a wide variety of subjects, the

subjects assessed differ from school to school. In addition, the grading system used often differs from school to school for children in early elementary school. While some schools may use a traditional letter grading system to evaluate a child's work, other schools may use more global and subjective descriptors such as "satisfactory" or "On/Above Level"/ "Below Level" to describe a child's academic performance (Hamre & Pianta, 2001). These descriptors give a vague sense of what type of performance constitutes a "satisfactory" grade. These types of grading systems may also only contain a very restricted range of descriptors, which may not allow for a wide enough distribution of grades needed to distinguish meaningful differences in academic performance among students.

Further, the descriptors may not be used in a reliable or valid way across classrooms. Teachers, even within the same school, may use these descriptors in different ways as teachers may have different ideas of what "Satisfactory" is. Teachers may also have different ideas of what an average grade for the class should be, which again may lead to inconsistent use of grades from teacher to teacher (Entwisle & Alexander, 1988).

Teachers may also grade each child differently, depending on the teacher's expectations of what current and future performance should be for the individual child. For instance, teachers may have high expectations for certain students and hold them to stricter standards than other students (Entwisle & Alexander, 1988).

Finally, similar to a limitation of teacher rating scales of academic performance, some educators view grades as more of an arbitrary assessment by the teacher and

susceptible to influence based on a parent's level of involvement (Dornbusch, Ritter, Leiderman, Roberts, & Fraleigh, 1987). For instance, one study found that teacher perception of the child and of the parent's level of involvement influenced the child's grades, with increased parent involvement leading to a more favorable teacher perception of the child, resulting in higher grades (Hamre & Pianta, 2001). Taken together, it appears that there are numerous limitations to the validity and reliability of using report card grades to understand a child's academic performance in early elementary school.

Previous research has typically measured a child's academic performance in early elementary school children by standardized achievement tests and teacher rating scales. There are benefits and limitations to each method of assessment, leading some researchers to use both methods to more fully examine a child's academic performance (DuPaul, Volpe, Jitendra, Lutz, Lorah, & Gruber, 2004). Using multiple methods to account for most psychological and performance characteristics, including a child's academic performance, allows for a more valid assessment of the construct (Meehl, 1986).

Impact of Parent Involvement on Different Measures of Academic Performance

Previous research has been mixed as to which measure of academic performance, standardized achievement test scores or teacher ratings, is most related to parent involvement. Few studies have examined the impact of involvement on both of these measures of academic performance simultaneously. As teacher ratings are more of a subjective assessment by the teacher, some researchers have speculated that teacher ratings may be more susceptible to influence based on the teacher's perception of the

level of parent involvement (Dornbusch, Ritter, Leiderman, Roberts, & Fraleigh, 1987). That is, a higher level of parent involvement may bias the teacher to more favorably view the child's academic performance.

Jeynes (2003) found in a meta-analysis that parent involvement improves teacher ratings of academic performance more than it does standardized achievement test scores. He attributed this finding to teacher ratings being impacted by the perceived cooperation of the child's family, and that teachers may view that child in a more positive manner as a result of a high level of parent involvement and may feel inclined to reward the child. Jeynes (2003) also theorized that parents may focus their involvement on school outcomes rather than results of standardized tests.

Other researchers have suggested that parent involvement may impact a child's performance on standardized achievement tests more than on teacher rating scales. These researchers theorized that involved parents may place more importance on achievement test scores than on classroom academic performance as these parents may view achievement test scores as more indicative of a child's actual academic capabilities (Marsh, Trautwein, Ludtke, Koller, & Baumert, 2005). As a result, children may view achievement scores as having "higher stakes" than classroom academic performance and apply more effort during testing than when completing school assignments. However, these speculations have yet to be demonstrated in a research study.

Demographic Factors That Influence the Relation Between Parent Involvement and a Child's Academic Performance

Previous research has identified several demographic characteristics that influence both parent involvement and a child's academic performance, as measured by standardized achievement test scores or teacher ratings of academic performance. These characteristics include the child's ethnicity, family income, parent level of education, and child IQ. While these variables are not easily amenable to change and are thus not feasible targets for intervention, they are important to understanding the relation between parent involvement and academic performance. In addition, differences based on ethnicity, family income, and parent education, are often intertwined and difficult to interpret.

Ethnicity. Previous research has produced mixed findings with regard to differences in the level of parent involvement across ethnic groups. Ethnic groups are typically characterized by similar cultural norms, religion, values, and family patterns. Specifically, several studies found that parent involvement was found to be lower among African American parents and Hispanic parents when compared to European American parents (Kohl et al., 2000; Zellman & Waterman, 1998). This finding was explained in both studies as representing differences in what the parents' perceived role is in their child's education and their view of the school and the teacher. For instance, Kohl et al. (2000) speculated that African American parents had fewer positive school experiences of their own and may view their child's teacher with discomfort or even resentment. However, Stevenson, Chen, and Uttal (1990) found that European American parents

tended to be less likely to assume a more central role in their child's education than African American or Hispanic parents, leaving the child's education more in the domain of the school and the teacher.

Ethnicity may also play a role in the importance of particular measures of academic performance. According to Julian, McKenry, and McKelvey (1994), European American parenting practices usually value individualism, individual achievement, and competition. These views may lead European American parents to encourage increased performance on individually administered achievement tests, while African American parenting practices often value interdependence and security and a group effort for common interests (Hill, 2001).

Stevenson et al. (1990) reported that European American mothers tend to be more realistic in evaluating their child's academic capabilities in reading and mathematics than African American and Hispanic mothers, who overestimated their child's capabilities. This finding may lead to differences in the expectations European American, African American, and Hispanic mothers have for their child's level of achievement and the role of the parent and the teacher in increasing their child's academic performance.

In addition to being related to parent involvement, ethnicity has frequently been found to be related to a child's academic performance. For example, recent findings indicate that 71% of European American students perform at or above grade level, contrasted with 31% of African American students (United States Department of Education, 1999).

Furthermore, Fan (2001) found that mean scores on reading, math, science, and social studies achievement tests varied depending upon ethnicity. Specifically, Asian American students had the highest mean achievement test scores, followed by European American, African American, and Hispanic students. This finding is consistent with results from Kenny and Faunce (2004), who found that Asian American students scored higher than European American students on tests of academic achievement. However, Bogenschneider (1997) found that children achieved higher classroom grades when parents were involved, regardless of the child's ethnicity. Overall, the observed differences in academic performance across ethnic groups may not be solely linked to ethnicity, but may stem from differences in parenting practices, goals, and values the child's parents have towards the child's academic performance (Hill, 2001). Taken together, it appears that ethnicity is one important influence on parent's involvement in education and on a children's academic performance. Further, there may be ethnic differences in parents' beliefs about the role of parents in the child's education, attitudes toward the child's school, and expectations of the child's academic performance. Ethnicity may, therefore, change the strength of the relation between parent involvement and a child's academic performance.

Family income. Previous research has found mixed results when examining the relation between family income, parent involvement, and a child's academic performance. Marcon (1999) and McWayne et al. (2004) found that parents with low family incomes were as involved as parents with high family incomes. Marcon (1999) defined parent involvement by teacher "yes"/"no" responses to four categories of parent-

teacher contact, including a parent-teacher conference, home visit by the teacher, extended class visit by the parent, and parent help with class activity. Marcon (1999) also found that some lower income families with children in Head Start programs participated in more school activities than more affluent families with children in preschool. This finding was attributed to the emphasis of Head Start on building a stronger home-school relationship. In addition, several studies have found that students from lower income families perform at a lower level on academic tasks than do children from middle or higher income levels (Alwin & Thornton, 1984; Jimerson, Egeland, & Teo, 1999; McWayne, Hampton, Fantuzzo, Cohen, & Sekino, 2004; Pettit, Bates, & Dodge, 1997). However, these findings have been mixed as well. Other researchers have not found a relation between a family's socioeconomic status, which accounts for the family's income and the parent's level of education, on academic outcomes, as measured by a child's achievement test scores and teacher ratings of a child's academic performance (Graziano, Reavis, Keane, & Calkins, 2007; Stevenson, Chen, & Uttal, 1990).

Academic performance difficulties based on ethnicity and family income are often difficult to interpret because ethnicity and family income are highly related (Hill, 2001). Few studies have disentangled the effects of these two variables on academic performance. Stevenson et al. (1990) reported that after controlling for family income, African American students in the first and third grades still scored significantly lower on math and reading tests than European American students. Thus, it may be the case that

the child's ethnicity impacts the parent's involvement and perhaps expectations of the child's academic performance, over and above the impact of the family's income.

Parent education level. Previous research has also found that the parent's level of education is related to the child's academic performance (Alwin & Thornton, 1984; Stevenson & Baker, 1987). In particular, the mother's educational background is a significant predictor of a child's school performance. Alwin and Thornton (1984) reported a positive correlation between mother's education level and the child's Grade Point Average (GPA): as the number years of schooling the mother completed increased, so did the child's GPA. Stevenson and Baker (1987) found that among children in elementary school through high school, the mother's level of education was significantly related to the child's school performance, as measured by teacher ratings. Mother's level of education was measured on a 7-point scale, with the lowest value indicating an education level of eighth grade or less and the highest value indicating the mother had attained an advanced degree. Thus, it appears that the mother's level of education is related to the child's classroom academic performance.

Child intelligence. Previous research has consistently demonstrated that child intelligence is strongly and positively related to academic performance, and is predictive of later academic performance (Brody, 1997; Christian, Morrison, & Bryant, 1998; Howse, Calkins, Anastopoulos, Keane, & Shelton, 2003; Kenney & Faunce, 2004; Sattler, 2001; Watkins, Lei, & Canivez, 2006; Zellman & Waterman, 1998). For instance, Howse et al. (2003) examined predictors of mathematics achievement test scores of kindergarten children and found that the child's IQ alone accounted for 28

percent of the variance. Graziano et al. (2007) found that a child's IQ accounted for 32 percent of the variance when predicting standardized math achievement test scores in kindergarten. Other researchers have reported evidence that kindergarten IQ scores are strongly related to kindergarten, first grade, and sixth grade reading achievement scores (Butler, Marsh, Sheppard, & Sheppard, 1985; Naglieri, De Lauder, Goldstein, & Schwebech, 2006). Despite these findings indicating a strong relation between child IQ and academic achievement, none of the previous studies investigating the impact of parent involvement on academic performance accounted for child IQ. This exclusion may lead to faulty conclusions, as it may be the case that children with higher IQ scores have higher performance on measures of academic performance, regardless of the level of parent involvement.

Proposed Explanations of the Relation Between Parent Involvement and Academic Performance

Although the effect of socio-demographic variables on parent involvement and academic performance has been examined, no studies to date have examined the mechanisms by which parent involvement influences a child's academic performance. Previous researchers have examined two variables that may explain this relationship, the child's perceived cognitive competence and the student-teacher relationship.

Perceived Cognitive Competence

Perceived cognitive competence is defined as the extent to which children believe that they possess the necessary cognitive skills to be successful when completing academic tasks, such as reading, writing, and arithmetic (Harter & Pike, 1984). Previous

research found evidence that higher parent involvement contributes to an increase in a child's perceived level of competence (Gonzalez-DeHass, Willems, & Holbein, 2005; Grolnick, Ryan, & Deci, 1991). In addition, a child's increased perception of cognitive competence is consistently related to higher academic performance (Chapman, Skinner, & Baltes, 1990; Ladd & Price, 1986; Schunk, 1981; Skinner, Chapman, & Baltes, 1988a). Based on these findings, Gonzalez-DeHass et al., (2005) suggest that perceived cognitive competence be examined to explain the relation between parent involvement and a child's academic performance.

According to Findley and Cooper (1983), children who believe that they have the ability to achieve positive academic outcomes score higher on classroom exams and on standardized achievement tests. These results have been consistently reported in multiple samples of elementary and middle school children (Chapman et al., 1990; Schunk & Pajares, 2005; Skinner, Wellborn, & Connell, 1990). As research on the impact of cognitive competence on academic performance relies on child self-report, it is important to consider the validity of such data.

Validity of Measurement of a Child's Perceived Cognitive Competence

Previous research has found that children are relatively accurate reporters of their own level of cognitive competence to complete academic tasks (Anderson & Adams, 1985; Assor & Connell, 1992). Anderson and Adams (2001) found that for pre-school children, perceived cognitive competence was significantly related to three clusters of standardized achievement test scores (Woodcock-Johnson Psycho-Educational Battery Preschool Scale Cluster, Skills Cluster, Knowledge Cluster). Following a review of

multiple studies assessing the validity of self-report of competency in students from elementary school through high school, Assor and Connell (1992) concluded that self-reported appraisals of cognitive competence are highly related to others' evaluations of the child's competence. The child's self-report was also predictive of academic performance outcomes. In addition, current assessment instruments provide a valid means of measuring a child's self-perception of competence (Harter & Pike, 1984).

Bandura (1977) suggested that perceptions of cognitive competence result in children's increased confidence in their ability to successfully execute the behavior required of them. Consistent with this explanation, Schunk (1991) found that children with higher perceptions of their cognitive capabilities expended greater effort, persisted longer, and achieved more than children who doubted their cognitive capabilities. In addition, kindergarten children were more accurate in their perception of cognitive competence than were children in preschool, indicating that the validity of the construct may increase over time (Anderson & Adams, 1985). Ladd and Price (1986) found that for students in third through fifth grades, higher self-ratings of perceived competence in the cognitive domain were related to higher scores on all subscales of a standardized achievement test (Iowa Test of Basic Skills). Schunk's (1981) study of nine to eleven-year old participants examined perceptions of cognitive competence and found that children with higher perceived cognitive competence on arithmetic tasks persisted longer and achieved greater success than did children with lower perceived competence.

Theoretical Methods by Which Parents May Influence a Child's Perception of Cognitive Competence

Researchers have theorized that parents are able to influence their child's actual cognitive competence, and as a result their child's perception of cognitive competence, in several ways (Clark & Ladd, 2000; Cohn, 1990). Bandura (1977) presented a theoretical basis for pathways through which children's perceptions and expectations of their cognitive competence are influenced: (a) performance accomplishments/performance mastery, (b) vicarious reinforcement, (c) verbal persuasion, and (d) emotion regulation (Bandura, 1977). These pathways are particularly salient for younger children completing tasks in the academic domain, as younger children have limited experiences with academic tasks and are uncertain about their abilities to complete these tasks (Schunk & Pajares, 2005). This lack of experience may allow parents to have a greater influence on children's perceptions of their abilities.

Personal mastery or accomplishment experiences. According to Bandura (1977), parents increase a child's perception of cognitive competence by setting up personal mastery or accomplishment experiences for the child through participant modeling, performance desensitization, and performance exposure (Bandura, 1977). Participant modeling entails parents displaying a behavior for the child and then guiding the child's subsequent performance. Following this concept, Schunk (1981) selected children with low achievement in arithmetic, as identified by their teachers. Children were assigned to one of two mathematics training sessions. In one session, the trainer modeled solving arithmetic problems including verbalizing the correct strategies to use and providing

corrective feedback while the child was solving the problem. In the other session the trainer referred the child to the appropriate lesson in the textbook when the child had difficulty. Results indicated that children in the group that received problem-solving principles, modeling of how to apply these principles, and corrective feedback developed both more advanced math skills and an enhanced sense of efficacy in solving arithmetic problems than did children who were referred to the lesson in the textbook. Involved parents may be able to enact similar strategies to influence their child's perception of cognitive competence. According to Bandura (1977), performance desensitization occurs when parents are able to present difficult academic problems to the child in an encouraging and positive atmosphere. For example, this might occur when parents develop a simpler set of arithmetic problems for the child to complete, before introducing more difficult ones. As the child continues to experience success in solving math problems, mastery expectations may increase and generalize to other academic activities (Bandura, 1977). Desensitization also provides exposure to solving academic problems in an encouraging, positive, and relaxed atmosphere. For instance, one study found that the more difficult the parent perceived the task to be, the harder the child felt the problem was, and the less likely the child was to work on the task (Ladd & Price, 1986).

Conversely, parents who positively interpreted academic tasks had children who felt more confident in their ability to work on and successfully solve academic problems.

Vicarious reinforcement. Bandura (1977) theorized that another pathway of influencing a child's perceptions and expectations of cognitive competence is through vicarious reinforcement. Parents provide reinforcement for their child when the child is

able to observe the parent model successful problem-solving. A child who observes a parent successfully solve academic problems may be more likely to believe that they also can successfully solve problems. This leads to an increase in the child's perceived competency in his or her ability to complete similar tasks (Schunk & Pajares, 2005). Bandura (1977) theorized that when individuals see others successfully complete activities in the absence of negative consequences, those individuals believe in their ability to achieve success as well.

Verbal persuasion. A third pathway of influence on cognitive competence was defined by Bandura (1977) as verbal persuasion. It was theorized that parents' verbal and social persuasion, including encouragement and praise, can lead to an increase in the child's perception of cognitive competence (Gonzalez-DeHass, Willems, & Holbein, 2005; Gottfried, Fleming, & Gottfried, 1994; Schunk, 1981). Verbal persuasion is widely used due to its ease and availability (Bandura, 1977). It is important that parents promote children's beliefs in their capabilities, while ensuring that the envisioned success is attainable. Both negative persuasion and not attaining success on an academic task after being told it is within a child's capabilities will weaken a child's perception of cognitive competence (Entwisle & Alexander, 1998; Schunk & Pajares, 2005). Gottfried et al. (1994) concluded that when parents provide verbal encouragement of the child's academic abilities or convey that the child is capable of completing academic tasks, the child's perceived competence of ability to complete academic tasks increases.

Emotion regulation. The final pathway of influence on perceived cognitive competence theorized by Bandura (1977) and others is emotion regulation. Schunk and

Pajares (2005) theorized that involved parents can also help children understand and regulate their emotions and emotional arousal to increase perceived cognitive competence. High emotional arousal is associated with negative thoughts and fears about one's capabilities, leading to lowered perceptions of cognitive competence. Involved parents have a greater understanding of their child's physiological response to specific academic tasks, through direct observations and from information provided by the child's teacher. These parents are able to help their child regulate emotional arousal and deal with anxiety and frustration by teaching and modeling effective breathing and relaxation methods or other calming strategies (Schunk & Pajares, 2005).

Taken together, parents may be able to influence their child's perception of cognitive competence by being actively involved in the child's learning in a number of ways. Specifically, it has been theorized that that parents are able to influence their child's perceptions of competence through four pathways: (a) performance accomplishments/performance mastery, (b) vicarious reinforcement, (c) verbal persuasion, and (d) emotional arousal (Bandura, 1977). Previous studies have shown that a child's increased perception of cognitive competence is predictive of higher performance on academic tasks (Anderson & Adams, 2001; Schunk, 1991). While it appears that perceived cognitive competence may play an important role in understanding the relation between parent involvement and a child's academic performance, this has not been examined in previous research. Therefore, one of the goals of the current study is to examine the child's perceived cognitive competence as a mediator of the relation between parent involvement and a child's academic performance.

The Student-Teacher Relationship

A positive student-teacher relationship is defined in this study as the teacher's perception that his or her relationship with the child is characterized by closeness and a lack of dependency and conflict (Birch & Ladd, 1997). Birch and Ladd (1997) characterized closeness in the relationship as the degree of warmth and open communication between the student and the teacher. Dependency is characterized by children who are "clingy" to the teacher, and over reliant on the teacher as a source of support. Conflict in the student-teacher relationship is represented by the teacher or student becoming angry in the relationship and the degree of friction in student-teacher interactions. Previous research has shown that more positive and closer student-teacher relationships are positively related to a wide range of child social and academic outcomes in school (Hughes, Gleason, & Zhang, 2005). Specifically, a close student-teacher relationship is an important predictor of a child's academic performance (Birch & Ladd, 1997; Hamre & Pianta, 2001).

Hughes, Gleason, and Zhang (2005) examined the teacher report of strength and closeness in the student-teacher relationship. Teachers were asked to rate on a 5-point Likert-type scale their agreement with items like "I enjoy being with this child" and "I find I am able to nurture this child." The findings indicated that increased strength of the student-teacher relationship was significantly related to the child's performance on standardized tests of academic achievement and on teacher ratings of the child's classroom academic performance.

Hamre and Pianta (2001) found that increased conflict and dependency in the student-teacher relationship, as rated by the teacher, was negatively related to classroom grades and achievement test scores for students in grades one through six. The authors concluded that intervention programs in the early grades designed to build supportive student-teacher relationships may enhance school academic outcomes. These findings were replicated in a sample of first grade participants, where a positive and supportive student-teacher relationship, as reported by the teacher, predicted increased achievement test scores among first grade students (Hughes & Kwok, 2007).

Other researchers have also found a relation between the student-teacher relationship and the child's academic performance. Birch and Ladd (1997) found that positive student-teacher relationships, as reported by the teacher, predicted higher language achievement scores in kindergarten. Pianta, Steinberg, and Rollins (1995) examined kindergarten retention and promotion rates of students at high risk for special education and found that the quality of the student-teacher relationship influenced whether the child was retained. Specifically, high-risk students who were not retained had more positive and closer relationships with their teachers compared to high-risk students who were retained in kindergarten.

While current research has focused on the positive effects of student-teacher relationships on students, less is understood about the antecedents of a quality student-teacher relationship (Hill & Craft, 2003). Specifically, few studies have directly investigated the influence of parent involvement on the student-teacher relationship. One unpublished study found that parent involvement led to a strong parent-teacher

relationship, which in turn was the strongest predictor of quality of student-teacher relationships in preschool (Chung, 2001). Other studies have suggested that the effect of parent involvement on the student-teacher relationship be explored in future research.

Hughes, Gleason, and Zhang (2005) examined the relation of parent involvement with the student-teacher relationship and with the child's academic performance in first grade. The study's definition of parent involvement was based on the theory of Kohl, Lengua, and McMahon (2000) and accounted for the frequency and quality of the parent's behaviors, as rated by the child's teacher. Teachers rated the level of support and conflict in their relationship with the child. Academic performance was assessed by examining the child's standardized achievement test scores and by the teacher's ratings of academic performance. The findings indicated a significant relation between parent involvement, the student-teacher relationship, and both measures of academic performance. The authors recommended that future studies explore building of home-school relationships as a means of increasing the quality of the student-teacher relationship.

Other studies have also found that parent involvement in a child's education positively influences the nature of the student-teacher relationship (Hill, 2003; Stevenson & Baker, 1987). Previous research has demonstrated that the positive view teachers have of a child whose parents are involved may lead to higher scores on teacher-rated measures of academic performance, because the positive student-teacher relationship may make teachers "feel inclined to reward good motives by the child and the family" (Jeynes, 2003, p. 214). Hill (2003) found that the teacher's perception of the importance

parents place on education was positively related to a child's academic skills, as measured by improved scores on a reading performance task. Similarly, Hoover-Dempsey et al. (2002) found that teachers who view a child's parents as being involved consider that child to be capable of higher levels of academic performance than a child whose parents they do not believe to be involved. In addition, teachers who perceive a child's family as cooperative and involved in the child's education tend to treat the child in a more positive manner than they treat other children (Jeynes, 2003). In addition, teachers were more apt to believe that children of highly involved parents were putting forth more effort, compared with children of less-involved parents (Stevenson & Baker, 1987). These studies, while not directly assessing the student-teacher relationship, add evidence that parent involvement influences the teacher, which in turn may influence the relation the teacher has with the child and the child's academic performance.

Present Study

Children's academic performance tends to be relatively stable after early elementary school (Pedersen, Faucher, & Eaton, 1978; Pianta & Steinberg, 1992). It is therefore necessary to investigate variables that improve children's academic performance at a young age, to reduce the likelihood of a child experiencing later academic failure. Parent involvement is one factor that has been consistently related to a child's increased academic performance (Bogenschneider, 1997; Hara & Burke, 1998; Hill & Craft, 2003; Marcon, 1999; McWayne, Hampton, Fantuzzo, Cohen, & Sekino, 2004; Stevenson & Baker, 1987). While this relation between parent involvement and a child's academic performance is well established, studies have yet to examine *how* parent

involvement increases a child's academic performance. Identifying these mechanisms would permit the development of parent involvement programs that specifically target these mechanisms. This in turn would maximize the impact of parent involvement on a child's academic performance in early elementary school, helping more children succeed academically.

The goal of the present study was to test two variables that may mediate, or explain how, parent involvement is related to a child's academic performance, as defined by the child's score on a standardized achievement test and on teacher ratings of the child's classroom academic performance. As noted previously, parent involvement has been defined in numerous ways, mainly based on the objectives and limitations of the individual studies that examine the construct.

Definitions of parent involvement have been based on theories proposed by Epstein (1990, 1996), Grolnick and Slowiaczek (1994), and Kohl, Lengua, and McMahon (2000). The distinction between the activities parents partake in and the attitude parents have towards education was highlighted by several recent studies. Several studies have found that increased frequency of parent involvement is associated with higher levels of child misbehavior in the classroom (Izzo et al., 1999), whereas positive attitudes towards education and towards the child's school have been found to be associated with the child's increased academic performance (Rimm-Kaufman et al., 2003).

Based on these findings, the amount or quantity of parent involvement was not examined in this study, as this type of involvement may not be reflective of a parent's interest in enhancing the child's academic performance. Therefore, parent involvement

was defined in the present study as the teacher's perception of "the positive attitude parents have towards their child's education, teacher, and school" (Webster-Stratton, 1998).

Previous research measuring academic performance in children has primarily used two methods: standardized achievement tests and teacher report of academic performance by rating scales. Both of these methods were used in the current study to provide a more comprehensive assessment of a child's academic performance in early elementary school. Based on conflicting findings in previous research, it is unclear on which measure of academic performance parent involvement has the greater impact.

Based on previous research (Gonzalez-DeHass et al., 2005; Hughes et al., 2005), the present study independently examined whether two possible mechanisms, a child's perception of cognitive competence, as measured by the child's report, and the student-teacher relationship, as measured by the teacher's report, mediate the relation between parent involvement (as measured by the teacher's report) and academic performance (as measured by the child's performance on standardized achievement tests and by the teacher's report of accuracy of classroom academic work). It was predicted that increased parent involvement would increase both a child's perception of cognitive competence and the student-teacher relationship. In turn, perception of cognitive competence and the student-teacher relationship would predict the child's increased academic performance.

Several sociodemographic variables have been identified by previous research as influencing academic performance, including the child's IQ, ethnicity, family income,

and mother's level of education. Specifically, previous research has found that the child's ethnicity may alter the strength of the relation between parent involvement and a child's academic performance (Hill, 2001; Stevenson, et al., 1990). This may be due to different ways members of ethnic groups view the role of parents in their child's education and differing expectations parents have for standardized achievement test scores and classroom academic performance. Therefore, the child's ethnicity was examined for its ability to alter the strength, or moderate, the relation between parent involvement and the child's academic performance.

Previous research has demonstrated that a child's IQ accounts for a significant amount of variance of a child's academic performance (Butler, et al., 1985; Naglieri, et al., 2006). Therefore, the present study examined the relation between the child's IQ and the child's academic performance, and controlled for IQ, when this relation was significant. This was done to examine the relation of parent involvement, perceived cognitive competence, and the student teacher relationship on the child's academic performance, independent of the child's IQ.

Finally, previous research has also found that the family's income and mother's level of education are related to a child's academic performance. Therefore, the child's socioeconomic status score, which takes these factors into consideration, was examined for its relation to the child's academic performance. Socioeconomic status was controlled for in the analyses, if this relation was significant. Controlling for socioeconomic status allowed for the examination of the relation of parent involvement,

perceived cognitive competence, and the student-teacher relationship on the child's academic performance, independent of the child's socioeconomic status.

The purpose of the present study was to address the following questions.

Research Question One: Is parent involvement positively related to a child's academic performance?

Based on previous research, it was predicted that higher parent involvement would be related to higher standardized achievement test scores and higher teacher ratings of a child's academic performance (Hill & Craft, 2003; Marcon, 1999; Stevenson & Baker, 1987).

Hypothesis One: Scores on the INVOLVE-T "Parent Involvement in Education" subscale will be positively related to child WIAT-II scores.

Hypothesis Two: Scores on the INVOLVE-T will be positively related to child ratings on the Academic Performance Rating Scale (APRS).

Research Question Two: Is parent involvement positively related to increased perceived cognitive competence?

Based on previous research, it was predicted that higher parent involvement would be positively related to increased perception of cognitive competence (Gonzalez-DeHass et al., 2005; Grolnick, et al., 1991).

Hypothesis Three: Scores on the INVOLVE-T "Parent Involvement in Education" subscale will be positively related to the cognitive competence subscale of the

Pictorial Scale of Perceived Cognitive Competence and Social Acceptance for Young Children.

Research Question Three: Is parent involvement positively related to a positive student-teacher relationship?

Based on previous research, it was predicted that higher parent involvement would be positively related to a stronger student-teacher relationship (Chung, 2001; Hughes, Gleason, & Zhang, 2005).

Hypothesis Four: Scores on the INVOLVE-T “Parent Involvement in Education” subscale will be positively related to the overall positive student-teacher relationship scale on the Student-Teacher Relationship Scale.

Research Question Four: Is a child’s perception of cognitive competence positively related to a child’s academic performance?

Based on previous research, it was predicted that a child’s perceived cognitive competence would be positively related to a child’s academic performance, as measured by higher standardized achievement test scores and higher teacher ratings of a child’s academic performance (Ladd & Price, 1986; Schunk, 1981; Skinner, Wellborn, & Connell, 1990).

Hypothesis Five: Scores on the cognitive competence subscale of the Pictorial Scale of Perceived Cognitive Competence and Social Acceptance for Young Children will be positively related to a child’s WIAT-II scores.

Hypothesis Six: Scores on the cognitive competence subscale of the Pictorial Scale of Perceived Cognitive Competence and Social Acceptance for Young Children will be positively related to teacher ratings on the Academic Performance Rating Scale (APRS).

Research Question Five: Is a positive student-teacher relationship positively related to a child's academic performance?

Based on previous research, it was predicted that the student-teacher relationship would be positively related to a child's academic performance, as measured by higher standardized achievement test scores and higher teacher ratings of a child's academic performance (Birch & Ladd, 1997; Hughes & Kwok, 2007).

Hypothesis Seven: Scores on the overall positive student-teacher relationship scale on the Student-Teacher Relationship Scale will be positively related to child WIAT-II scores.

Hypothesis Eight: Scores on the overall positive student-teacher relationship scale on the Student-Teacher Relationship Scale will significantly predict child ratings on the Academic Performance Rating Scale (APRS).

Research Question Six: Do perception of cognitive competence and the student-teacher relationship mediate the relation between parent involvement and the two measures of academic performance?

It was predicted that when using the Baron and Kenny (1986) test for mediation, both proposed mediators would mediate the relation between parent involvement and standardized achievement scores and teacher report of academic performance. A multiple mediation model was used to examine the unique contribution of each mediator while controlling for the other (MacKinnon, 2000). Multiple mediation analyses, where both mediators are entered simultaneously in the same step of the regression equation, ensure that the two mediators function independently from one another (Preacher & Hayes, 2006). The Sobel test was used to further confirm the effect of the mediator (Sobel, 1982).

Hypothesis Nine: When scores on the cognitive competence subscale of the Pictorial Scale of Perceived Cognitive Competence and Social Acceptance for Young Children and the overall positive student-teacher relationship scale on the Student-Teacher Relationship Scale are both accounted for, the score on the INVOLVE-T “Parent Involvement in Education” subscale will no longer be related to the child’s WIAT-II score.

Hypothesis Ten: When scores on the cognitive competence subscale of the Pictorial Scale of Perceived Cognitive Competence and Social Acceptance for Young Children and the overall positive student-teacher relationship scale on the Student-Teacher Relationship Scale are both accounted for, the score on the INVOLVE-T “Parent Involvement in Education” subscale will no longer be related to child’s classroom academic performance.

CHAPTER II

METHOD

Participants

Sample

The participants in this study were one hundred and fifty-eight (158) children who, at age seven, participated in the laboratory and school visits. Participants were obtained from three different cohorts participating in a larger ongoing longitudinal study. Four hundred and forty seven (447) participants were initially recruited at two years of age through child care centers, the County Health Department, and the local Women, Infants, and Children program. Further details about the recruitment may be found in Smith, Calkins, Keane, Anastopoulos, and Shelton (2004). Of the original 447 participants, 365 participated at the assessment when the children were five years of age. There were no significant differences in gender, ethnicity, or socioeconomic status between families who did and did not participate at the 5-years of age assessment. The families participating in the present study did not differ from families participating in the larger population at age two or age five on any demographic variable.

Ethnicity. Consistent with the original longitudinal sample, 66.5% of the children ($N = 105$) were European American, 26.6% of the children were African American ($N = 42$), seven children (4.4%) were bi-racial, and four children (2.5%) were of another ethnic background.

Socioeconomic status. Socioeconomic status of the participants ranged from lower to upper class as measured by the family's Hollingshead Four Factor Index of Social Status score (Hollingshead, 1975). The index is based on scores assigned to the employed householder's education, occupation, marital status, and sex. Index scores ranged from 8 to 66, with higher scores reflecting higher socioeconomic status. Consistent with the original longitudinal sample, there were 71 (45%) male child participants and 87 (55%) female child participants. Of the 158 participants, 24 (15.2%) of the mothers had attended some high school or completed high school, 48 (30.4%) had attended some college, 67 (42.4%) had completed college, and 19 (12.0%) earned an advanced degree. Participants in this sample did not differ from participants in the population on these sociodemographic measures.

Measures

Demographic Information Form

Mothers completed a questionnaire during the first laboratory visit updating demographic information, including family income and the level of education attained by the mother (See Appendix A).

Parent Involvement

The Parent-Teacher Involvement Questionnaire (INVOLVE) was used to assess parent involvement (Webster-Stratton, Reid, & Hammond, 2001). Teachers completed the teacher version of the Parent-Teacher Questionnaire (INVOLVE-T) (Webster-Stratton, Reid, & Hammond, 2001) as part of a series of questionnaires collected during the school visit. The INVOLVE-T has good internal consistency and validity for teacher

report of parent involvement (Webster-Stratton et al., 2001). The INVOLVE-T is a twenty-item scale with a 5-point scale answer format. Teachers were asked to rate the frequency of twelve parent behaviors indicating the frequency with which parents engage in school activities indicating how often parents engaged in school activities such as how often the parent had called the teacher and attended parent-teacher conferences. Response choices ranged from 1 = “Never” to 5 = “More than once per week”. Teachers were also asked to rate their level of agreement with the items assessing the parent’s attitude towards school such as “How much is this parent interested in getting to know you?” and “If you had a problem with this child how comfortable would you feel talking to his/her parent?” Response choices ranged from 1 = “Not at all” to 5 = “Very much.” Higher scores on these items indicated higher parent involvement.

Two subscales of the INVOLVE-T were identified: Parent Involvement in Education and Parent Involvement with Teacher. The “Parent Involvement in Education” subscale included six items and assessed the teacher’s perception of the positive attitude parents had towards their child’s education, teacher, and school. Reliability for the six items on this subscale is adequate, with alphas ranging from .85 to .93 (Webster-Stratton & Hammond, 1998; Webster-Stratton, 1998). This subscale was used in the present study as the items assessed match this study’s definition of involvement. Items on this subscale are displayed in Appendix B.

Student-Teacher Relationship

The Student-Teacher Relationship Scale (STRS) consists of 28 items and was used to measure aspects of the relationship between the student and teacher (Pianta,

2001). Item responses are in a 5-point Likert-style format, ranging from 1 = “Definitely does not apply” to 5 = “Definitely applies” to various aspects of the relationship between the student and the teacher. Specifically, questions in this instrument assess a teacher’s feelings about a child, teacher’s beliefs about the child’s feelings towards the teacher, and the teacher’s observation of the child’s behavior in relation to the teacher (Pianta & Nimetz, 1991).

The measure yields three subscales: “Conflict,” “Closeness,” and “Dependency”. An overall “Positive Student-Teacher Relationship Scale” is calculated by summing the items on the “Closeness” scale and the reverse-score of the items on the “Conflict” and “Dependency” scales. This scale was used in a previous study of kindergarten children, had adequate reliability ($\alpha = .86$) and was related to standardized mathematics achievement test scores (Graziano et al., 2007).

Perceived competence. The Pictorial Scale of Perceived Competence and Social Acceptance for Young Children (Harter & Pike, 1984) consists of 24 items that measure four domains of self-concept: (a) perceived cognitive competence, (b) perceived physical competence, (c) peer social acceptance, and (d) maternal social acceptance. This measure has adequate reliability and validity (Harter & Pike, 1984; El Hassan, 1999; Strein & Simonson, 1999).

Children are presented with 6 items for each of the 4 domains measured, each depicting a specific skill, action, ability, or activity. Each item consists of a picture of a gender-specific child who is successful and one who is unsuccessful in the specific skill, action, or activity consistent with that domain. Items may include, for example, a child

naming alphabet letters or running in a race. For each item, children are asked to choose the picture that they are most similar to. Children are then asked to indicate whether the pictured child's ability was "really true" or "sort of true" for them. Each item is assigned a score from 1 through 4, with higher scores denoting higher levels of perceived competence.

The cognitive competence scale on the Pictorial Scale of Perceived Competence and Social Acceptance for Young Children (Harter & Pike, 1984) was used in the present study. This scale is related to measures of academic performance and has been used in previous studies examining perceived cognitive competence (Harter & Pike, 1984). Multiple studies have demonstrated that this scale has acceptable validity and reliability ($\alpha = .79$) for young children (Anderson & Adams, 2001; Alva & Reyes, 1999; Harter & Pike, 1984). For example, Anderson and Adams (2001) found that preschool and kindergarten students were realistic in their self-perceptions of cognitive competence, as higher scores on the cognitive competence subscale were related to three measures of academic readiness obtained from a standardized achievement test. Alva and Reyes (1999) reported that the cognitive competence subscale was the only measured variable that reliably predicted classroom grades as compared to: other subscales of perceived competence, demographic variables, and stressful life events.

For the present study, the mean of the six items on the cognitive competence subscale was used as the measure of the child's self-report of perceived cognitive competence.

Academic Performance

In the current study, composite reading and mathematics scores from a standardized achievement test and teacher ratings of classroom academic performance were used as the two measures of academic performance. The Wechsler Individual Achievement Test-Second Edition (WIAT-II; The Psychological Corporation, 2002) is an individually administered, nationally standardized measure of academic achievement (Sattler, 2001). The measure is reliable and valid and has a mean standard score of 100 and a standard deviation of 15 (Sattler, 2001). The test has normative data for children and young adults between the ages of 5 and 19. Further, experts in reading, math, and other areas have reviewed the items to establish face and content validity (Sattler, 2001).

Previous studies have found the correlation between the WIAT-II and the Full Scale Wechsler IQ scores ranging from .30 to .84, with a median correlation of .58 (Sattler, 2001). Children in the present study were individually administered the three subtests that comprise the Reading Composite (Word Reading, Reading Comprehension, Pseudoword Decoding) and the two subtests that make up the Mathematics Composite (Numerical Operations, and Mathematics Reasoning) by a trained and supervised graduate student examiner. The Word Reading subtest assesses the child's ability on a variety of reading tasks, ranging from matching words beginning or ending with the same sound to pronouncing individual words. The Reading Comprehension subtest contains tasks that asked students to read sentences and passages and answer questions about what they have read. The Pseudoword Decoding subtest asked students to apply their phonetic coding skills to read nonsensical words. The Numerical Operations subtest contains

items assessing skills ranging from writing numbers to solving various mathematical problems. The Mathematics Reasoning subtest assessed the child's mathematical reasoning, such as solving word problems and simple arithmetic problems. Higher scores on these subtests indicate greater achievement. As the current study was interested in examining a more global standardized measure of academic achievement, the Reading and Mathematics composites were combined to form an overall composite of academic achievement. In addition, the Reading and Mathematics composites were related ($r = .60, p < .001$). Therefore, the mean of the composites was used as the child's standardized achievement score in this study.

The Academic Performance Rating Scale (APRS) (DuPaul & Rapport, 1991) is a 19-item teacher-rated scale that assesses academic performance in the classroom. Teachers rated the child's academic abilities and behaviors on a 5-point scale, with higher scores indicating greater academic performance in the classroom. Some scale items were based on percentages (e.g., "Estimate the accuracy of completed written language arts work (percent correct of work done)") 1 = 0-64%, 2 = 65-69%, 3 = 70-79%, 4 = 80-89%, and 5 = 90-100%, while others were based on the frequency of a child's behavior (e.g., "How frequently does the student accurately follow teacher instructions and/or class discussion during large-group (whole class) instruction?") 1 = "Never" to 5 = "Very Often." The measure has acceptable internal consistency, including test-retest reliability and criterion-related validity (DuPaul & Rapport, 1991).

The APRS yields three subscales: (a) impulsivity, (b) academic success, and (c) academic productivity. The impulsivity subscale contains three items that assess the

child's impulsive behaviors in the classroom (e.g., "begins written work prior to understanding the directions"). The academic success subscale includes seven items that assess the accuracy of the child's completed work in mathematics, reading, and general academic areas. The academic productivity subscale includes nine items that assess academic behavior, including following directions and completing work in a timely manner.

As the current study focused on academic performance, only items related to the child's actual performance were examined. The principal author and an independent rater identified two items that corresponded to the child's actual classroom academic performance. Inter-rater reliability was 100%. These two items were the teacher's rating of the "accuracy of the child's completed written math work" and the "accuracy of the child's written language arts work". Teachers were asked to estimate the percentage of work in these two subject areas that was correctly completed by the child. These two items were highly correlated ($r = .84, p < .001$). A mean of the items was used as the measure of classroom academic performance.

Intelligence

The Wechsler Intelligence Scale for Children-Third Edition (WISC-III) is a nationally standardized and individually administered measure of general intelligence for children aged 6-16 years (Wechsler, 1991). The test was standardized on a large ethnically and geographically diverse sample of 2,200 participants and exhibited high test-retest reliability and validity (Sattler, 2001). The WISC-III provides three IQ scores (Verbal, Performance, and Full Scale), with a mean of 100 and standard deviation of 15

for each. The WISC-III was used, instead of the WISC-IV, because the newer version of the intelligence test was not available at the start of the data collection when the children were seven-years-old. A trained graduate student clinician individually administered the WISC-III to the child during the first laboratory visit. The Full Scale IQ score was used as a control variable in all analyses in the current study.

Procedure

Mothers of children from the three longitudinal cohorts were contacted by mail and telephone when the children were seven years of age and were asked to participate in a follow-up study. The children's teachers were contacted by telephone following receipt of consent from the child's family, and asked to complete a packet of measures, including a rating form of the parent's involvement and of the child's academic performance.

Participants in the current study ($N = 158$) represented the subset of these families that completed all of the family measures used in this study and had all of the completed measures from the child's school. Participants with missing responses were excluded from the present study. Data for the present study were collected at several time points and in multiple settings (in the laboratory and at school).

Data were gathered from the child and the child's mother during two visits to the laboratory and from the child's teacher during one visit to the child's school. Families were compensated \$50.00 for each laboratory visit. Mothers were contacted by telephone to schedule the laboratory visits. During the first laboratory visit, mothers provided updated demographic information and were asked for permission to collect data from the child's teacher, including teacher ratings of parent involvement and the child's classroom

academic performance. The child's IQ and academic achievement were assessed in a one-on-one session with a trained graduate student clinician during the first laboratory visits. The graduate student clinician who completed IQ and achievement testing was not aware of the child's classroom academic performance, the student-teacher relationship, the child's perception of cognitive competence, or the parent's involvement.

During the second laboratory visit, the child's perceived cognitive competence was assessed in a one-on-one session with a trained graduate student researcher. This graduate student researcher was not aware of the child's performance on the IQ test, achievement test, or performance in the classroom. This researcher was also unaware of the parent's involvement in school activities and the teacher's perception of the student-teacher relationship.

Upon receiving the consent from the child's mother, the child's teacher was contacted and asked to complete a packet of questionnaires. The order of the measures in the teacher packets was randomized to minimize rater fatigue and other potential biases. As previously mentioned, two of these measures assessed the mother's involvement in the child's education (INVOLVE-T) and the child's classroom academic performance (APRS). The child's teacher completed these questionnaires during one school visit that occurred either during the fall or spring semester of the school year. This fall school visit occurred several months into the school year to allow the teacher adequate time to become familiar with the child and the child's mother. Teachers who agreed to participate were compensated \$25.00.

Data and Statistics

Prior to data analyses, the child's ethnicity was coded into categorical variables. As a disproportionately small number of children in this study were bi-racial or from another ethnic background (11 out of 158 children) and could not be considered separately in a comparison of means, two ethnic categories were created: European American and non-European American. A dummy variable was created with European American as the comparison variable (0) due to the higher number of European American students in the study. Non-European American children were coded as a one in the data file.

Moderation Analysis

A moderator is a variable that alters the direction or strength of the relation between a predictor and an outcome (Baron & Kenny, 1986). Specifically, examining moderation allows researchers to address "for whom" a variable most strongly predicts an outcome variable (Frazier, Tix, & Barron, 2004). The choice of a moderating variable should be based on theory and previous research (Frazier et al., 2004). Previous research has found that parent involvement may impact academic performance, as defined by a child's standardized achievement test score and teacher ratings of the child's classroom academic performance, differently depending on the ethnicity of the child (Hill, 2001; Stevenson, et al., 1990). Therefore, to better understand the relation between parent involvement and the child's academic performance, ethnicity was examined as a moderator of this relation in the preliminary analysis. Dummy codes, as previously described, were used in this analysis to represent the two ethnic groups. The continuous

variable of parent involvement was standardized, using a z score, to reduce multicollinearity among the variables and to provide a meaningful mean to interpret potential significant interaction terms (Frazier, et al., 2004). A product term was created to represent the interaction between the standardized predictor (parent involvement) and the moderator (ethnicity).

The effect of a categorical moderator is tested using hierarchical linear regression techniques (Frazier et al., 2004). Variables are entered in the regression equation through a series of specified steps. The first step includes the standardized independent variable and the second step includes the coded moderator variable. The third step includes the product term of the standardized independent variable and the moderator variable.

The F test representing stepwise change for the step in which the product term is entered is examined for its significance. If this step is significant, a significant moderator effect exists and warrants creation of representative groups of the predictor variables when predicting the outcome variable. If there is a non-significant finding of the interaction term, the researcher must re-examine the proposed model and determine if there are theoretical reasons to keep the non-significant interaction term in the model (Frazier, Tix, & Barron, 2004).

Mediation Analysis

A mediator is defined as a variable that explains the relation between a predictor variable and an outcome variable (Baron & Kenny, 1986). That is, mediators establish “how” or “why” one variable predicts an outcome and allows researchers to understand the mechanism through which a predictor influences an outcome (Baron & Kenny, 1986).

As with moderators, theory and previous research is used to identify potential mediating variables. The child's perception of cognitive competence and the student-teacher relationship were examined as mediators in the present study. A multiple mediation model was used to examine these variables. Multiple mediation enables the researcher to consider if both potential mediators jointly reduce the direct effect of parent involvement on a child's academic performance (Preacher & Hayes, 2006). Multiple mediation also allows for an understanding of the unique contribution of each individual mediator when the other mediator is controlled for (Preacher & Hayes, 2006).

Baron and Kenny's (1986) test for mediation was used in this study. According to this test, four regression analyses are performed to test each potential mediator. Baron and Kenny (1986) state that the first regression must show that the independent variable (parent involvement) affects the mediator (child's perception of cognitive competence/student-teacher relationship). The second regression must show that the independent variable (parent involvement) affects the dependent variable (standardized achievement score/classroom academic performance score). The third regression must show that the mediator (child's perception of cognitive competence/quality of the student-teacher relationship) affects the dependent variable (standardized achievement score/classroom academic performance score). For full multiple mediation, the fourth regression must show that after controlling for both mediators (child's perception of cognitive competence and student-teacher relationship), the independent variable (parent involvement) is no longer a significant predictor of the dependent variable (standardized achievement test score/classroom academic performance). Baron and Kenny (1986) state

that full mediation exists if the independent variable (parent involvement) has no effect when the mediators (child's perception of cognitive competence and student-teacher relationship) are entered into the model. Partial mediation exists if the effect of the independent variable on the dependent variable is reduced, but still significant, when the mediators are controlled (Baron & Kenny, 1986). In addition, variables that are considered co-variables must be controlled for in all of the regression equations.

The mediation was also tested by examining the reduction of the effect of the independent variable (parent involvement) on the dependent variable (standardized achievement test score/classroom academic performance), after accounting for the mediating variable (child's perception of cognitive competence/student-teacher relationship). The Sobel (1982) test is a single test that is recommended to conservatively test this reduction by the mediator (MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002). The Sobel (1982) test divides the effect of the mediator by its standard error. This term is compared to a standard normal distribution to test for significance (MacKinnon et al., 2002).

CHAPTER III

RESULTS

Preliminary Analyses

Descriptive Statistics

Preliminary analyses were conducted to examine the statistical properties of the variables of interest (parent involvement, perceived cognitive competence, student-teacher relationship, and academic performance) and of the demographic variables of ethnicity and socioeconomic status. Means and standard deviations of the measures used in this study are presented in Table 1. It was determined that skewness or kurtosis absolute values greater than 1.5 represented problematic deviations from normal distribution (Lomax, 2001). The absolute value of the skewness of all predictor and outcome variables ranged from .06 to 1.40 and absolute values of kurtosis ranged from .09 to 1.37. Given the robustness against non-normality of the statistical tests used, these values do not represent significant deviations from normal distribution.

Reliability Analyses

Cronbach's alpha scores were calculated for the subscales used in this study to examine internal reliability of the scale items for the present sample. The Cronbach's alpha for the six items on the "Parent Involvement in Education" subscale on the INVOLVE-T in the current study is $\alpha = .91$, indicating good internal consistency. Likewise, the reliability of the 28 items on the "Positive Student-Teacher Relationship

Scale” on the Student-Teacher Relationship Scale and the six items of the cognitive competence subscale on the Pictorial Scale of Perceived Competence and Social Acceptance for Young Children was adequate (Cronbach’s alpha $\alpha = .86$ and $.80$, respectively).

Bivariate Correlations

The relation between parent involvement, the proposed mediators of perceived cognitive competence and the student-teacher relationship, and the measures of academic performance (standardized achievement test scores and classroom academic performance) were examined. Bivariate correlations between the variables of interest and demographic variables are presented in Table 2.

Demographic Variables

The relation between the child’s IQ, ethnicity, and the family’s socioeconomic status with the predictor and outcome measures was examined to determine which variables were significantly related to each other.

Full-Scale IQ score. The child’s Full-Scale IQ score, as measured by the WISC-III, was significantly related to the child’s standardized achievement test score ($r = .68, p < .001$), to the child’s classroom academic performance ($r = .47, p < .001$), and to parent involvement ($r = .39, p < .001$). These results indicated that as the child’s Full-Scale IQ increased, so did parent involvement and academic performance as measured by both the child’s standardized achievement test score and the child’s classroom academic performance. Given these significant findings, the child’s Full-Scale IQ score was examined as a control variable in the analyses addressing the research questions.

The child's Full-Scale IQ score was also significantly related to the proposed mediators of perceived cognitive competence ($r = .34, p < .001$) and the student-teacher relationship ($r = .20, p < .05$). These results indicated that as the child's Full-Scale IQ score increased, so did the child's perception of cognitive competence and the teacher's perception of a positive student-teacher relationship.

Finally, there was also a significant positive correlation between the child's Full-Scale IQ score and the family's socioeconomic status ($r = .42, p < .001$). This result indicated that as the child's Full-Scale IQ score increased, so did the family's socioeconomic status.

Family socioeconomic status. As reported above, there was a significant positive correlation between family socioeconomic status and the child's Full-Scale IQ score. In addition, there was a significant positive correlation between family socioeconomic status and: the child's standardized achievement test score ($r = .31, p < .001$); parent involvement ($r = .26, p < .01$); the child's academic performance in the classroom ($r = .24, p < .01$); and the perception of cognitive competence ($r = .17, p < .05$). These results indicated that as family socioeconomic status increased, so did academic performance as measured by the child's standardized achievement test score, parent involvement, the child's academic performance in the classroom, and the child's perception of cognitive competence. Socioeconomic status was not significantly related to the student-teacher relationship ($r = .04, p < .61$). Given these significant findings, socioeconomic status was examined as a control variable in the analyses addressing the research questions.

Ethnicity. A disproportionately small number of children in this study were bi-racial or from another ethnic background (11 out of 158 children) and could not be considered separately in a comparison of means. Therefore, children were split into two groups based on ethnicity: European American (105 children) and non-European American (53 children).

As shown in Table 3, an independent *t*-test was conducted to evaluate if parent involvement differed based upon ethnicity. The test was significant $t(156) = 2.98, p < .01$, indicating that teachers reported that European American ($M = 4.18$) parents had higher scores on the INVOLVE-T than non-European American parents ($M = 3.76$). The Levene's test for equality of variances was not significant ($F(156) = .11, p = .74$), indicating that the two groups exhibited similar amounts of variance.

As shown in Table 3, an independent *t*-test was conducted to evaluate if standardized achievement test scores differed based upon ethnicity. The test was not significant $t(156) = 1.73, p = .09$. This indicates that there was no significant difference between the standardized achievement test scores between European American ($M = 109.53$) children and non-European American parents ($M = 105.25$). Levene's test for equality of variances was not significant ($F(156) = 2.32, p = .13$).

As shown in Table 3, an independent *t*-test was conducted to evaluate if the child's classroom academic performance differed based upon ethnicity. The test was significant $t(79.22) = 2.41, p < .05$, indicating that teachers reported that European American ($M = 4.49$) children had better classroom academic performance than non-European American children ($M = 4.03$). The Levene's test for equality of variances was

significant ($F(79.22) = 13.56, p < .001$). This finding indicates that the variance within the two groups was unequal, making it more difficult to find significant results if the two groups did differ significantly.

Given these significant findings and previous research findings (Hill, 2001; Stevenson, et al., 1990) that indicate that ethnicity may affect the relation between parent involvement and academic performance, ethnicity was examined as a moderator of the relation between parent involvement and both measures of a child's academic performance.

Independent and Dependent Variables

Parent Involvement

As shown in Table 2, there were significant positive correlations between parent involvement and the student-teacher relationship ($r = .48, p < .001$); and parent involvement and the child's perception of cognitive competence ($r = .31, p < .001$). These results indicated that higher parent involvement was associated with higher teacher perception of a positive student-teacher relationship and higher child perception of cognitive competence.

As shown in Table 2, there were significant positive correlations between parent involvement and the child's standardized achievement test score ($r = .43, p < .001$); and parent involvement and the child's classroom academic performance ($r = .35, p < .001$). These results indicate that as parent involvement increased, the child's academic performance, as measured by standardized achievement test score and teacher ratings of the child's classroom academic performance, increased.

Perceived Cognitive Competence

As shown in Table 2, there were significant positive correlations between perceived cognitive competence and the child's standardized achievement test score ($r = .54, p < .001$); perceived cognitive competence and the child's classroom academic performance ($r = .24, p < .01$); perceived cognitive competence and the student-teacher relationship ($r = .20, p < .05$). These results indicated that as a child's perceived cognitive competence increased, so did the child's academic performance as measured by the child's standardized achievement test score and the teacher's ratings of the child's classroom academic performance. In addition, as a child's perceived cognitive competence increased, so did the teacher's perception of a positive student-teacher relationship.

Student-Teacher Relationship

As shown in Table 2, there were significant positive correlations between the student-teacher relationship and: parent involvement ($r = .48, p < .001$); the child's classroom academic performance ($r = .38, p < .001$); the child's standardized achievement test score ($r = .26, p < .01$); and the child's perceived cognitive competence ($r = .20, p < .05$). These results indicated that as the teacher's perception of a positive student-teacher relationship increased, so did parent involvement, the child's academic performance as measured by standardized achievement test score and classroom academic performance, and the child's perception of cognitive competence.

Research Question One

Research question one asked whether parent involvement would positively predict a child's academic performance. Two hypotheses were developed to answer this research question.

Hypothesis One

Hypothesis one proposed that parent involvement as measured by scores on the INVOLVE-T "Parent Involvement in Education" subscale would predict a child's WIAT-II achievement test score. Given past research findings and theoretical reasoning, ethnicity was considered as a moderator of the relation between parent involvement and the child's WIAT-II score.

The effect of the moderator was tested using hierarchical linear regression techniques (Frazier, Tix, & Barron, 2004). As shown in Table 4, neither ethnicity nor the interaction of ethnicity and parent involvement were significant predictors of the child's WIAT-II score.

Given the significant correlation of the child's Full-Scale IQ and the family's socioeconomic status with the WIAT-II scores, these two variables were controlled for in the hierarchical linear regression analyses. As shown in Table 5, the child's Full-Scale IQ score was a significant predictor of the child's WIAT-II score ($\beta = .60, p < .001$). Therefore, the child's Full Scale IQ score was controlled for in future analyses predicting the child's WIAT-II score. The family's socioeconomic status was not a significant predictor of the child's WIAT-II score ($\beta = .01, p = .88$), after controlling for the child's IQ. Given this non-significant finding, the family's socioeconomic status was not

controlled for in further analyses predicting the child's WIAT-II score. As shown in Table 5, parent involvement was a significant predictor of the child's WIAT-II score $F(3, 154) \text{ change} = 9.88, p < .01, \beta = .20$. In addition, the residuals of the regression were examined to detect violations in normality, and non-normality was not detected. These results showed that parent involvement was a significant predictor of the child's WIAT-II score, over and above the variance accounted for by the child's IQ and the family's socioeconomic status. Hypothesis one was supported.

Hypothesis Two

Hypothesis two proposed that parent involvement as measured by scores on the INVOLVE-T "Parent Involvement in Education" subscale would predict teacher ratings of a child's classroom academic performance (APRS). Given past research findings and theoretical reasoning, ethnicity was considered as a moderator of the relation between parent involvement and the child's classroom performance.

The effect of the moderator was tested using hierarchical linear regression techniques (Frazier et al, 2004). As shown in Table 6, neither ethnicity nor the interaction of ethnicity and parent involvement were significant predictors of the child's WIAT-II score.

Given the significant correlation of the child's Full-Scale IQ and the family's socioeconomic status with the WIAT-II scores, these two variables were controlled for in the hierarchical linear regression analyses. As shown in Table 7, the child's Full-Scale IQ score was a significant predictor of the child's classroom academic performance ($\beta = .38, p < .001$), but socioeconomic status was not a significant predictor ($\beta = .03, p = .68$).

Therefore, given these results, the child's Full-Scale IQ score was controlled for in further analyses, while the family's socioeconomic status was not controlled for in further analyses. As shown in Table 7, parent involvement was a significant predictor of the child's classroom academic performance, $F(3, 154)$ change = 6.68, $p < .05$, $\beta = .20$. In addition, the residuals of the regression were examined to detect violations in normality, and non-normality was not detected. These results showed that parent involvement was a significant predictor of the teacher's rating of the child's academic performance in the classroom, over and above the variance accounted for by the child's IQ and the family's socioeconomic status. Hypothesis two was supported.

Research Question Two

Research question two asked whether parent involvement would positively predict a child's perception of cognitive competence. One hypothesis was developed to answer this research question.

Hypothesis Three

Hypothesis three proposed that parent involvement as measured by scores on the INVOLVE-T "Parent Involvement in Education" subscale would predict the child's perception of cognitive competence as measured by the cognitive competence subscale of the Pictorial Scale of Perceived Cognitive Competence and Social Acceptance for Young Children. A hierarchical linear regression analysis was conducted, with the child's Full-Scale IQ entered in the first step. As shown in Table 8, parent involvement was a significant predictor of the child's perception of cognitive competence ($\beta = .21$, $p < .01$). These results showed that parent involvement was a significant predictor of a child's

perception of cognitive competence, over and above the variance accounted for by the child's IQ. Hypothesis three was supported.

Research Question Three

Research question three asked whether parent involvement would positively predict a positive student-teacher relationship. One hypothesis was developed to answer this research question.

Hypothesis Four

Hypothesis four proposed that parent involvement as measured by scores on the INVOLVE-T "Parent Involvement in Education" subscale would predict a positive student-teacher relationship, as measured by teacher ratings on the Student Teacher Relationship Scale. A hierarchical linear regression analysis was conducted, with the child's Full-Scale IQ entered in the first step. As shown in Table 8, parent involvement was a significant predictor of the student-teacher relationship ($\beta = .47, p < .001$). These results showed that parent involvement was a significant predictor of the student-teacher relationship, over and above the variance accounted for by the child's IQ. Hypothesis four was supported.

Research Question Four

Research question four asked whether a child's perception of cognitive competence would positively predict a child's academic performance. Two hypotheses were developed to answer this research question.

Hypothesis Five

Hypothesis five proposed that a child's perception of cognitive competence, as measured by the mean of the items on the cognitive competence subscale of the Pictorial Scale of Perceived Cognitive Competence and Social Acceptance for Young Children, would predict the child's WIAT-II score. A hierarchical linear regression analysis was conducted, with the child's Full-Scale IQ entered in the first step. As shown in Table 9, a child's perceived cognitive competence was a significant predictor of the child's WIAT-II score ($\beta = .35, p < .001$). These results showed that a child's perceived cognitive competence was a significant predictor of the child's WIAT-II score, over and above the variance accounted for by the child's IQ. Hypothesis five was supported.

Hypothesis Six

Hypothesis six proposed that a child's perception of cognitive competence, as measured by the mean of the items on the cognitive competence subscale of the Pictorial Scale of Perceived Cognitive Competence and Social Acceptance for Young Children, would predict teacher ratings of the child's classroom academic performance. A hierarchical linear regression analysis was conducted, with the child's Full-Scale IQ entered in the first step. As shown in Table 9, a child's perceived cognitive competence was not a significant predictor of the child's classroom academic performance ($\beta = .09, p = .23$). These results showed that a child's perceived cognitive competence was not a significant predictor of the child's classroom academic performance, and could not be considered a mediator of the relation between parent involvement and a child's classroom academic performance. Hypothesis six was not supported.

Research Question Five

Research question five asked whether a positive student-teacher relationship would positively predict a child's academic performance. Two hypotheses were developed to answer this research question.

Hypothesis Seven

Hypothesis seven proposed that a positive student-teacher relationship would predict a child's WIAT-II score. A hierarchical linear regression analysis was conducted, with the child's Full-Scale IQ entered in the first step. As shown in Table 10, the student-teacher relationship was a significant predictor of the child's WIAT-II score ($\beta = .13, p < .05$). These results showed that the student-teacher relationship was a significant predictor of the child's standardized achievement test score, over and above the variance accounted for by the child's IQ. Hypothesis seven was supported.

Hypothesis Eight

Hypothesis eight proposed that a positive student-teacher relationship would predict the teacher's ratings of a child's classroom academic performance. A hierarchical linear regression analysis was conducted, with the child's Full-Scale IQ entered in the first step. As shown in Table 10, the student-teacher relationship was a significant predictor of the child's classroom academic performance ($\beta = .30, p < .001$). These results showed that the student-teacher relationship was a significant predictor of the child's classroom academic performance, over and above the variance accounted for by the child's IQ. Hypothesis eight was supported.

Research Question Six

Research question six asked whether the child's perceived cognitive competence and a positive student-teacher relationship would mediate the relation between parent involvement and a child's academic performance. Two hypotheses were developed to answer this research question.

Hypothesis Nine

When scores on the cognitive competence subscale of the Pictorial Scale of Perceived Cognitive Competence and Social Acceptance for Young Children and the overall positive student-teacher relationship scale on the Student-Teacher Relationship Scale jointly predict a child's WIAT-II score, the score on the INVOLVE-T "Parent Involvement in Education" subscale will no longer significantly predict a child's WIAT-II score.

A hierarchical linear regression analysis was conducted according to the Baron and Kenny (1986) test for mediation. The child's Full-Scale IQ score was entered in the first step, the child's perceived cognitive competence and the student-teacher relationship were entered in the second step, and the teacher report of parent involvement was entered in the third step. As shown in Table 11, parent involvement was no longer a significant predictor of a child's WIAT-II score when the child's cognitive competence and the student-teacher relationship were accounted for in the analyses ($\beta = .11, p = .08$). Further analysis of the multiple mediation model indicated that only perceived cognitive competence uniquely predicted a child's WIAT-II scores ($\beta = .32, p < .001$). The Sobel test further confirmed the effect of perceived cognitive competence as an independent

mediator (Test statistic = 2.50, $p < .05$) (Sobel, 1982). Hypothesis nine was partially supported in that the child's perceived cognitive competence mediated the relation between parent involvement and a child's WIAT-II score, but the student-teacher relationship was not a significant mediator of this relation.

Hypothesis Ten

When scores on the cognitive competence subscale of the Pictorial Scale of Perceived Cognitive Competence and Social Acceptance for Young Children and the overall positive student-teacher relationship scale on the Student-Teacher Relationship Scale jointly predict teacher ratings of a child's classroom academic performance, the score on the INVOLVE-T "Parent Involvement in Education" subscale will no longer significantly predict teacher ratings of a child's classroom academic performance.

A hierarchical linear regression analysis was conducted according to the Baron and Kenny (1986) test for mediation. The child's perceived cognitive competence was not examined as a mediator, as it was not a significant predictor of a child's classroom academic performance. The child's Full-Scale IQ score was entered in the first step, the student-teacher relationship was entered in the second step, and the teacher report of parent involvement was entered in the third step.

As shown in Table 11, parent involvement was no longer a significant predictor of a child's classroom academic performance when the student-teacher relationship was accounted for in the analyses ($\beta = .07, p = .36$). The Sobel test further confirmed the effect of the mediator (Test statistic = 1.90, $p = .05$) (Sobel, 1982). Hypothesis ten was partially supported in that the student-teacher relationship mediated the relation between

parent involvement and a child's classroom academic performance, but the child's perceived cognitive competence was not a mediator of this relation.

CHAPTER IV

DISCUSSION

The purpose of the present study was to examine a child's perceived cognitive competence and the quality of the student-teacher relationship to explain the relation between parent involvement and a child's academic performance. Previous research has found that parent involvement is associated with a child's higher academic performance in early elementary school (Bogenschneider, 1997; Hara & Burke, 1998; Hill & Craft, 2003; Marcon, 1999; McWayne et al., 2004; Miedel & Reynolds, 1999; Stevenson & Baker, 1987). Specifically, higher levels of parent involvement are related to higher academic performance. However, research has yet to examine how parent involvement is related to increases in a child's academic performance. Previous researchers have identified several mechanisms that are related to both parent involvement and a child's academic performance, and may explain how parent involvement is related to a child's academic performance: a child's perception of cognitive competence (Chapman, Skinner, & Baltes, 1990; Gonzalez-DeHass, Willems, & Holbein, 2005; Grolnick et al., 1991; Ladd & Price, 1986; Schunk, 1981; Skinner, Chapman, & Baltes, 1988a) and the student-teacher relationship (Birch & Ladd, 1997; Hamre & Pianta, 2001; Hughes, Gleason, & Zhang, 2005). The aim of this study was to investigate these two potential mechanisms (perceived cognitive competence and the student-teacher relationship), which may explain the relation between parent involvement and a child's academic performance.

Relation Between Parent Involvement and Academic Performance

The findings from the present study demonstrated that parent involvement, defined as the teacher's perception of the positive attitude parents have toward their child's education, teacher, and school, was significantly related to increased academic performance, based both on an objective standardized measure of performance and on teacher ratings of the child's classroom academic performance. That is, higher parent involvement was associated with the child's increased academic performance on both a standardized achievement test and teacher ratings of academic performance. This finding further adds to existing research that found an association between parent involvement and a child's academic performance.

Further, parent involvement was significantly related to academic performance, above and beyond the impact of the child's intelligence. Child intelligence was not accounted for in previous studies examining parent involvement and academic performance. Not accounting for child intelligence when predicting academic performance is a limitation of previous studies, as children with higher IQ perform higher on measures of academic performance, regardless of the level of parent involvement. In addition, it may be that parents with higher IQ have children with higher IQs and this may explain this relation. A strength of the current study is that IQ was accounted for and the findings indicated that while child IQ is significantly related to academic performance, it does not solely account for the relation between parent involvement and the child's academic performance.

The current study also examined ethnicity as a moderator of the relation between parent involvement and the measures of the child's academic performance. Results showed that parent involvement was associated with increased academic performance for both European American children and non-European American children. While this is inconsistent with some previous research (Kohl, et al., 2000; Stevenson, Chen, & Uttal, 1990), the present study defined parent involvement as the teacher's perception of the parent's attitude. Most previous studies examining the impact of ethnicity looked at parent behaviors, rather than attitude. This study extends work examining the influence of ethnicity when considering parent involvement to be an attitude. It may be the case that ethnicity is related to parent behaviors, but unrelated to the parent's attitudes toward the child's education, teacher, and school.

Relation Between Parent Involvement and Perceived Cognitive Competence

Findings from the present study demonstrated that parent involvement is significantly related to a child's perception of cognitive competence. That is, increased parent involvement was related to increased perception of cognitive competence. This finding is consistent with those of previous studies (Gonzalez-DeHass, Willems, & Holbein, 2005; Grolnick, Ryan, & Deci, 1991). There are several theoretical pathways by which parents may influence their child's perception of cognitive competence. While validating these pathways was outside the scope of the present study, it is conceivable that parent involvement may influence the child's perception of cognitive competence by means described by Bandura (1977). Parents who positively view the child's education may be more willing to set up personal mastery experiences for their child. They may be

more likely to provide a positive, relaxing environment in which their child can learn to solve academic problems. Involved parents may also provide more verbal persuasion and encouragement to their child, thus boosting perceived cognitive competence. Finally, parents who are more involved may also be able to help their child lower emotional arousal and the child's fears about being able to complete the problem. Future studies may investigate these individual pathways, with the goal of understanding how parent involvement increases a child's cognitive competence.

Relation Between Parent Involvement and the Student-Teacher Relationship

Findings from the present study demonstrated that parent involvement was significantly related to the quality of the student-teacher relationship. The more positively the parent is perceived as viewing the child's education, the more the student-teacher relationship is characterized by closeness and lacking in conflict and dependency.

This is consistent with the findings of previous research (Hill, 2003; Stevenson & Baker, 1987). This finding speaks to the importance of the parent's attitude toward education and the relation this has on the student-teacher relationship. Teachers may feel more inclined to and invested in building a positive relationship with the child if they perceive the parent as valuing the teacher and the child's education.

Relation Between Perceived Cognitive Competence and Academic Performance

Findings from the present study demonstrated that perceived cognitive competence was related to a child's academic performance on a standardized achievement test. That is, increased perceived cognitive competence was related to higher achievement test scores. This finding is consistent with previous research and

theory (Chapman, Skinner, & Baltes, 1990; Ladd & Price, 1986; Schunk, 1981; Skinner, Chapman, & Baltes, 1988a). Children with increased perception of cognitive competence expend greater effort on academic tasks, persist longer when completing these tasks, and achieve more than children who doubt their abilities (Schunk, 1991).

However, increased perception of cognitive competence was not significantly related to teacher ratings of academic performance. There may be several reasons for this finding. First, the tasks children feel competent in completing may not be related to actual tasks that children are asked to complete in the classroom. Instead, the tasks the children feel competent in completing appear to be more consistent with those assessed by a standardized achievement test.

In addition, previous research did not examine the relation between perceived cognitive competence and teacher ratings of classroom academic performance. Previous studies largely focused on academic performance as defined by classroom test scores and standardized achievement test scores. Therefore, it may be the case that teacher ratings of academic performance are not related to the child's perception of cognitive competence. Finally, it may also be the case that teacher ratings of academic performance are in part based on other variables that are external to the child's actual functioning. For instance, findings in the present study indicate that parent involvement is related to both the teacher's ratings of the child's academic performance and the nature of the student-teacher relationship. Therefore, teacher ratings may include influences other than the child's perceived, or perhaps actual, abilities, while standardized achievement tests may provide a more valid measure of the child's abilities.

Relation Between Student-Teacher Relationship and Academic Performance

Findings from the present study demonstrated that the quality of the student-teacher relationship was significantly related to the child's academic performance. Increased closeness and lower levels of conflict and dependence in the student-teacher relationship were related to the child's increased performance on a standardized achievement test and the child's classroom academic performance. These findings highlight the importance of the relationship the teacher has with the child, as related to the teacher ratings of a child's academic performance. Teachers who have more positive relationships with a child may take extra care to ensure that the child understands the academic material. The teacher may also be able to identify children who have mastered the academic tasks in the classroom and provide them with additional academic exercises to further increase their knowledge. It may also be the case the teacher holds inherent biases about the child. For instance, teacher ratings may reflect an acknowledgement by the teacher of the parent's efforts. Teacher ratings of a child's academic performance may also be influenced by several other variables, including the child's academic performance in other disciplines ("halo effect"), the average performance of the class in the discipline (class context effect), and individual characteristics of the child, including whether the child has repeated a grade (Dompnier, Pansu, & Bressoux, 2006).

*Perceived Cognitive Competence and the Student-Teacher Relationship as Mediators of
the Relation Between Parent Involvement and Academic Performance*

The sixth research question examined the ability of perceived cognitive competence and the student-teacher relationship to jointly mediate the relation between parent involvement and academic performance. When examined as simultaneous mediators, there was evidence from the current study that perceived cognitive competence fully mediated the relation between parent involvement and the child's standardized achievement test score, over and above the influence of the student-teacher relationship. It may be the case that the variance of the relation between parent involvement and achievement test score is already explained by the child's perception of cognitive competence. This finding suggests that parent involvement is related to the child performance on standardized achievement tests and this relation is explained in part by the child's perception of cognitive competence. This is one of the first studies to examine a mechanism by which parent involvement is related to a child's performance on a standardized achievement test. Two statistical techniques to test for mediation were also used, further confirming the findings.

In addition, there was evidence from the current study that the student-teacher relationship was a mediator of the relation between parent involvement and teacher ratings of the child's classroom academic performance. Results showed that perceived cognitive competence was not significantly related to the child's classroom academic performance. The student-teacher relationship was a full mediator of the relation between parent involvement and classroom academic performance, as parent involvement

was no longer a significant predictor of classroom academic performance when the student-teacher relationship was accounted for. This is one of the first studies to examine a mechanism by which parent involvement is related to teacher ratings of a child's classroom academic performance.

Summary of Findings

This study yielded several important findings. All results controlled for child IQ, which is a significant contribution to the literature, as most studies do not consider the contribution of child intelligence when examining the child's academic performance. Results indicated that parent involvement was significantly positively associated with academic performance, as measured by both standardized achievement test scores and by teacher ratings of classroom academic performance. Further, parent involvement was positively associated with a child's increased perception of competence in completing cognitive tasks and a positive student-teacher relationship. Perceived cognitive competence was positively associated with a child's standardized achievement test score, but not with teacher ratings of a child's classroom academic performance. There was a significant relation between the student-teacher relationship and the child's performance on a standardized achievement test and between the student-teacher relationship and teacher ratings of the child's classroom academic performance.

Finally, results showed that when examined as multiple mediators, both perceived cognitive competence and the student-teacher relationship fully mediated the relation between parent involvement and a child's classroom academic performance. Further examination showed that only perceived cognitive competence was a significant mediator

after accounting for the student-teacher relationship. The student-teacher relationship fully mediated the relation between parent involvement and teacher ratings of the child's classroom academic performance.

Limitations

Although this study had many strengths, the results of the present study are tempered by a consideration of several methodological limitations. One limitation was the measurement of the variables of interest. Little psychometric data were available for the measures of parent involvement and the teacher's ratings of the student teacher relationship and of the child's classroom academic performance. Despite this, the alphas of the current sample were adequate.

In addition, all the children were all from a southeastern United States city and were potentially influenced by the culture of the location. Data collection from locations around the United States or around the world may have provided more information about the importance schools and families place on involvement and how that varies across cultures. Furthermore, as the majority of the data were from European American and African American families, this may have influenced the results and reduced the generalizability of the findings. In addition, the children in this study were seven years old, and the results may not generalize to older children.

A third limitation was that there were several time points and several settings at which data were collected. This increased the opportunities for families and teachers to not participate in a visit and not complete all of the necessary measures. These factors increased the likelihood of not having complete data sets for all children and children

with incomplete data sets were excluded from this study. While children in the present study were similar to the sample population in many demographic characteristics, it may be that the families with complete data were more invested in the research study, which may be indicative of more investment in the child's development.

A fourth limitation was that the mean scores of several of the variables were positively skewed relative to a normal population. For instance, the mean of the WISC-III for the participants of this study was 108, whereas the population mean was 100.

Finally, the child's teacher was the reporter for several of the measures. These included the measures of parent involvement, quality of the student-teacher relationship, and the child's classroom academic performance. As several of the research questions examined the relation between these measures, it may be that some teachers have a bias toward the student or toward the parent which may have influenced the teacher's responses on all of the measures completed for that child. This may have led to artificially high relations between these teacher-report measures.

Future Research Directions

Despite these limitations, the findings of this study generate several directions for future research. There appears to be a need for additional valid and reliable instruments to assess parent involvement, teacher ratings of academic performance, and the student-teacher relationship. Few measures are currently available to measure these constructs. This may be partly due to multiple ways these constructs are operationalized. As previously noted, multiple conceptualizations exist for parent involvement and few measures currently exist that are consistent with these conceptualizations. For instance, a

recent distinction has emerged between the frequency of parent involvement behaviors and the attitudes parents have toward education (Rimm-Kaufman et al., 2003).

Assessment tools are needed to better understand how these dimensions are related to the child's academic performance and to other outcomes, such as the student-teacher relationship and the child's classroom behavior. For instance, it may be the case that the frequency of certain parent involvement behaviors are in reaction to a child's disruptive behavior in the classroom while others are positively related to the child's increased academic performance.

Given the relation between parent involvement and the child's perception of cognitive competence, the relation between parent involvement and other areas of competence should be explored. While not related to a child's academic performance, the child's performance in other domains may be related to the child's perceived competence in each domain. The Pictorial Scale of Perceived Competence and Social Acceptance for Young Children (Harter & Pike, 1984) also assesses for perceived physical competence, peer social acceptance, and maternal social acceptance. Future studies should explore the relation parent involvement has with each of these competencies and methods to increase competence in each of these domains can be examined. Once factors are identified, empirically based school programs can be developed and validated that may bolster a child's perception of competency in these domains, which may in turn lead to increased performance in each domain.

In addition, future studies should investigate the relation of parent involvement and a variety of social outcomes. These outcomes might include increasing a child's

social standing in the classroom and number and quality of a child's close friendships in the classroom. Future studies could also examine the impact increased parent involvement has on a variety of other peer behaviors, including sharing and fighting in the classroom. Mechanisms explaining how parent involvement is related to these outcomes could also be examined. Perhaps parents who have a positive attitude toward the child's school also have positive feelings about the child establishing friendships among peers.

Promoting increased parent involvement can also be examined for its ability to prevent or buffer against the development of externalizing or internalizing psychological symptoms. That is, if parents are more involved in their child's education, they will be able to better understand their child's psychological functioning and perhaps be better able to intervene if a difficulty arises. Preliminary analyses in the current study did not support additional examination of these issues, but future studies should continue to consider them.

The possibility of bidirectional relations among parent involvement, perceived competence, and academic performance also needs to be explored. Longitudinal studies tracking children over extended periods of time would allow for a better understanding of how these variables interact with each other over time. For instance, among older children, perhaps increased perception of competence and higher academic performance may lead to increased parent involvement, as opposed to parent involvement leading to increased academic performance for younger children.

The relation between child IQ and the outcomes of interest should continue to be accounted for in future studies. Given the importance of IQ when predicting a child's academic success, it is important to account for IQ when predicting academic performance to ensure that the independent variable of interest impacts academic performance above and beyond the effect of the child's intelligence. Studies that do not account for the child's IQ may produce misleading results. These findings from other studies may then inform future public policy initiatives, leading to the development of ineffective and potentially harmful school interventions.

Furthermore, future research should examine parent involvement behaviors across cultures to determine how the conceptualization of parent involvement changes according to cultural needs and expectations and how this may impact the relation of parent involvement to academic performance. For instance, previous research noted that there may be differences in the way European American families and African American families view the role of parents and the role of the teacher and the school in educating their child (Hill, 2001; Stevenson, Chen, & Uttal, 1990). These potential differences should continue to be explored and extended to other ethnic groups including Hispanic Americans and Asian Americans. While preliminary analyses in the current study did not support differences based on gender, gender should continue to be examined in future studies examining parent involvement and academic performance.

Public Policy Implications

There are several public policy recommendations and initiatives that follow from the results of the present study. School administrators and policymakers should continue

to investigate ways to increase a parent's positive attitude about their child's education and schooling and demonstrate to parents that their attitude is related to their child's academic performance. School administrators should also work to consider ways to improve the relationship between the teacher and the student, given the important relation between the student-teacher relationship and the child's academic performance.

Therefore school administrators may set aside time in the curriculum for team building exercises between the student and the teacher, or perhaps activities that include the parent, the student, and the teacher.

Finally, school administrators and policy makers should consider the impact of ethnicity and socioeconomic status differences when developing parent involvement programs. While parent involvement was found in the current study to be related to a child's academic performance, over and above the impact of the child's ethnicity or socioeconomic background, ethnicity and socioeconomic status may still play a role in determining the access parents have to school programs, the role parents are expected to play in a child's education, and the relationship parents may have with the child's teacher.

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Appendix A
General family information

RIGHT TRACK – Participant Information

I. General Information

Today's Date: _____

Subject Number: _____

Child's Name: _____

Child's Date of Birth: _____

II. Mother's Information

Mother's Name: _____

Mother's Date of Birth: _____

Mother's relation to child:

- Biological Mother
- Adoptive Mother
- Stepmother

If you are in a parenting situation that is not listed above, please describe here:

Mother's Education Level:

- Some High School
- High School Graduate/GED
- Some College (# of years _____)
- College Graduate
- MA/MS
- PhD
- Other (please explain _____
_____)

Mother's Marital Status:

(Married, Single, Separated, Divorced, Remarried)

Mother's Occupation:

Employer: _____

Job Title: _____

Work Phone Number: _____

Mother's Average Annual Salary:

- < \$20,000
- \$20,000 - \$35,000
- \$35,000 - \$50,000
- \$50,000 - \$65,000
- \$65,000 - \$80,000
- \$80,000 - \$95,000
- \$95,000 - \$110,000
- > \$110,000

If your address or phone number has changed, please fill in the following few lines. If not, please continue to section III "Father/Partner's Information" on the following page.

Mother's Address:

Mother's Phone Numbers:

Home: _____

Cell: _____

Mother's Email Address:

III. Father/Partner's Information

Is your child's father or your partner living in the household with you and your child? YES NO

If NO, does your child have a father or a father figure that is involved in their life? YES NO

If NO, please continue to section IV "Sibling Information". If YES, please answer the following questions about that person:

Father's Name: _____

Father's Date of Birth: _____

Father's Relation to Child:

- Biological Father
- Adoptive Father
- Stepfather
- Other

Father's Education Level:

- Some High School
- High School Graduate/GED
- Some College (# of years _____)
- College Graduate
- MA/MS
- PhD
- Other (please explain _____)

Father's Email Address:

Father's Marital Status:

(Married, Single, Separated, Divorced, Remarried)

Father's Occupation:

Employer: _____

Job Title: _____

Work Phone Number: _____

Father's Average Annual Salary:

(Only if salary is contributed to the household's income)

- < \$20,000
- \$20,000 - \$35,000
- \$35,000 - \$50,000
- \$50,000 - \$65,000
- \$65,000 - \$80,000
- \$80,000 - \$95,000
- \$95,000 - \$110,000
- > \$110,000
- Don't Know

IV. Sibling Information

Child's Siblings, Birthdays and Relation:

Sibling's Name:

Relation to Child:
(Biological, Step or Half)

Sibling's Birthday:

_____	_____	_____
_____	_____	_____
_____	_____	_____

V. Contact Information

Please provide us with the name of a contact person, someone (a friend or relative) who will know where you are if you move, change telephone numbers, etc.

Contact's Name: _____	Relation to you: _____
Address: _____	Phone Number: _____
_____	Cell Phone: _____

Appendix B

Items of teacher report of parent involvement

How much is this parent interested in getting to know you?

How much do you feel this parent has the same goals for his/her child that the school does?

To the best of your knowledge, how much does this parent do things to encourage this child's positive attitude toward education (e.g., take child to the library, play games to teach child new things, read to child)?

How involved is this parent in his/her child's education and the classroom?

How important is education in this family?

Do you think that the parent is more interested in her child's education than the parent's participation indicates (i.e., full-time work, student, several young children at home)?

Table 1.

Descriptive Statistics for Measures

	<i>M</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>	<i>N</i>
Parent Involvement (T) (INVOLVE)	4.04	.86	1.50	5.00	158
Perceived Cognitive Competence (Harter) (L)	3.45	.57	1.17	4.00	158
Student-teacher relationship (STRS) (T)	112.81	11.97	69.00	131.00	158
Standardized Achievement Test Score (WIAT-II)(L)	108.10	14.74	70.00	143.50	158
Full Scale IQ (WISC-III) (L)	108.56	14.39	65.00	139.00	158
Classroom Academic Performance (APRS) (T)	4.33	1.03	1.00	5.00	158
Socioeconomic status (Hollingshead) (P)	44.20	10.55	14.00	66.00	158

(P) = parent report
 (T) = teacher report
 (L) = laboratory measure

Table 2.

Correlations Between Variables of Interest

Variable	1	2	3	4	5	6	7
1. Socioeconomic status (Hollingshead)	-						
2. Full Scale IQ Score (WISC-III)	.42***	-					
3. Parent involvement (INVOLVE-T)	.26**	.39***	-				
4. Perceived cognitive Competence (Harter)	.17*	.34***	.31***	-			
5. Positive student-teacher relationship (STRS)	.04	.20*	.48***	.20*	-		
6. Standardized achievement test score (WIAT-II)	.31***	.68***	.43***	.54***	.26**	-	
7. Classroom academic performance (APRS)	.24**	.47***	.35***	.24**	.38***	.46***	-

*p <.05, **p<.01, ***p<.001

Table 3.

<i>Descriptive Statistics By Ethnicity</i>	<i>European American</i>		<i>Non European American</i>			
	<i>(N =105)</i>		<i>(N=53)</i>			
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>df</i>	<i>t</i>
Parent Involvement (T) (INVOLVE)	4.18	.83	3.76	.85	156	2.98**
Standardized Achievement Test Score (WIAT-II) (L)	109.53	14.94	105.25	14.04	156	1.73
Classroom Academic Performance (APRS) (T)	4.49	.88	4.03	1.23	79.2	2.41*

*p <.05, **p<.01, ***p<.001

(P) = parent report
(T) = teacher report
(L) = laboratory measure

Table 4.

Regression Analyses Testing Ethnicity as a Moderator of Parent Involvement as a Predictor of Child's WIAT-II Score

	B	SE B	β	R ²	R ² Change	F Change
Step 1.				.19	.19	32.57***
Ethnicity	-1.28	2.35	-.04			
Parent Involvement (<i>z score</i>)	7.48	1.59	.44***			
Step 2. Ethnicity X Parent Involvement (<i>z score</i>)	-.43	2.31	-.02	.19	.00	.04

* $p < .05$, ** $p < .01$, *** $p < .001$

Table 5.

Regression Analyses Testing Parent Involvement as a Predictor of Child's WIAT-II Score

	B	SE B	β	R ²	R ² Change	F Change
Step 1.				.47	.47	67.26***
Full-Scale IQ score	.62	.07	.60***			
Socioeconomic status	.01	.09	.01			
Step 2. Parent Involvement	3.38	1.08	.20	.50	.03	9.88**

* $p < .05$, ** $p < .01$, *** $p < .001$

Table 6.

Regression Analyses Testing Ethnicity as a Moderator of Parent Involvement as a Predictor of Child's Classroom Academic Performance

	B	SE B	β	R ²	R ² Change	F Change
Step 1.				.14	.14	17.67***
Ethnicity	-.29	.17	-.14			
Parent Involvement	.38	.11	.32***			
Step 2. Ethnicity X Parent involvement	.02	.17	.01	.14	.00	.01

* $p < .05$, ** $p < .01$, *** $p < .001$

Table 7.

Regression Analyses Testing Parent Involvement as a Predictor of Child's Classroom Academic Performance

	B	SE B	β	R ²	R ² Change	F Change
Step 1.				.22	.22	22.26***
Full-Scale IQ score	.03	.01	.38***			
Socioeconomic status	.00	.01	.03			
Step 2. Parent Involvement	.24	.09	.20	.26	.04	6.68*

* $p < .05$, ** $p < .01$, *** $p < .001$

Table 8.

Regression Analyses Testing Parent Involvement as a Predictor of Perceived Cognitive Competence and the Student-Teacher Relationship

	B	SE B	β	R ²	R ² Change	F Change
Regression Examining Parent Involvement as a Predictor of Perceived Cognitive Competence						
Step 1. Full Scale IQ	.01	.00	.25	.11	.11	19.87 ***
Step 2. Parent Involvement	.14	.05	.21	.15	.04	6.99 **
Regression Examining Parent Involvement as a Predictor of the Student-Teacher Relationship						
Step 1. Full Scale IQ	.01	.06	.02	.04	.04	6.39 *
Step 2. Parent involvement	6.57	1.07	.47	.23	.19	37.42 ***

* $p < .05$, ** $p < .01$, *** $p < .001$

Table 9.

Regression Analyses Testing Perceived Cognitive Competence as a Predictor of Child's Academic Performance

		B	SE B	β	R ²	R ² Change	F Change
Regression Examining Perceived Cognitive Competence as a Predictor of Child's WIAT-II score							
Step 1.	Full Scale IQ	.58	.06	.57	.46	.46	134.93***
Step 2.	Perceived Cognitive Competence	8.85	1.44	.35	.57	.11	38.02***
Regression Examining Perceived Cognitive Competence as a Predictor of Child's Classroom Academic Performance							
Step 1.	Full Scale IQ	.03	.01	.44	.22	.22	44.19***
Step 2.	Perceived Cognitive Competence	.16	.13	.09	.03	.01	1.47

* $p < .05$, ** $p < .01$, *** $p < .001$

Table 10.

Regression Analyses Testing Positive Student-Teacher Relationship as a Predictor of Child's Academic Performance

		B	SE B	β	R^2	R^2 Change	F Change
Regression Examining Student-Teacher Relationship as a Predictor of Child's WIAT-II score							
Step 1.	Full Scale IQ	.67	.06	.66	.46	.46	134.93***
Step 2.	Student-Teacher Relationship	.16	.07	.13	.48	.02	4.57*
Regression Examining Student-Teacher Relationship as a Predictor of Child's Classroom Academic Performance							
Step 1.	Full Scale IQ	.03	.01	.41	.22	.22	44.19***
Step 2.	Student-Teacher Relationship	.03	.01	.30	.31	.09	19.20***

* $p < .05$, ** $p < .01$, *** $p < .001$

Table 11.

Regression Analyses Testing Perceived Cognitive Competence and the Student-Teacher Relationship as Multiple Mediators of the Relation Between Parent Involvement and Child's Academic Performance

		B	SE B	β	R ²	R ² Change	F Change
Regression Examining Mediation of the Relation Between Parent Involvement and Child's WIAT-II score							
Step 1.	Full Scale IQ	.54	.06	.52	.46	.46	134.93***
Step 2.	Perceived Cognitive Competence	8.12	1.45	.32***	.58	.11	20.29***
	Student-Teacher Relationship	.05	.07	.04			
Step 3.	Parent Involvement	1.95	1.10	.11	.58	.00	3.12
Regression Examining Mediation of the Relation Between Parent Involvement and Child's Classroom Academic Performance							
Step 1.	Full Scale IQ	.03	.01	.39	.22	.22	44.19***
Step 2.	Student-Teacher Relationship	.02	.01	.27	.31	.09	19.20***
Step 3.	Parent Involvement	.09	.10	.07	.31	.00	.84

* $p < .05$, ** $p < .01$, *** $p < .001$

Figure 1
Full mediation

