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THE EFFECTS OF PARENTAL INVOLVEMENT ON CHILDREN'S SCHOOL READINESS SKILLS

Danielle C. Swick

A dissertation submitted to the faculty of the University of North Carolina at Chapel Hill in partial fulfillment of the requirements for the degree of Doctorate of Philosophy in the School of Social Work

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Approved by:

Advisor: Oscar A. Barbarin, Ph.D.

Reader: Natasha K. Bowen, Ph.D.

Reader: Shenyang Guo, Ph.D.

Reader: Jill V. Hamm, Ph.D.

Reader: Irene N. Zipper, Ph.D.

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ABSTRACT

DANIELLE C. SWICK: The Effects of Parental Involvement on Children's School Readiness Skills
(Under the direction of Oscar A. Barbarin)

The purpose of this dissertation is to test a number of models that examine the effects of parental involvement on kindergartners' school readiness skills and whether the models differ for race/ethnic groups. The National Center for Early Development and Learning's (NCEDL) Multi-State Study of Pre-Kindergarten dataset was used for the current study. Data were collected on parental intentional teaching and socialization practices, the quantity of parental involvement in school-based activities, the quality of the parent-teacher relationship, and children's school readiness as indexed by early academic skills (i.e., receptive vocabulary, expressive vocabulary, letter identification skills, and math skills) and social competence. Hierarchical multiple regression was used to investigate the effects of intentional teaching and socialization practices on children's school readiness skills (N = 179). Structural equation modeling was used to investigate the effects of the quantity of parental involvement at school and the quality of the home-school relationship on children's school readiness skills (N = 742).

The results revealed that greater use of discourse practices by parents was associated with children's significantly higher receptive and expressive vocabulary scores. However, intentional teaching practices were associated with children's significantly higher letter identification scores. Neither intentional teaching nor

socialization practices predicted math or social competence skills. Race/ethnicity moderated the relationship between parental criticism and children's expressive vocabulary skills. The quantity of parental involvement in school-based activities was not associated with children's outcomes. However, the quality of the home-school relationship was positively associated with children's letter identification skills and social competence. Race/ethnicity moderated the relationship between the quantity of parental involvement and the quality of the home-school relationship. Additionally, race/ethnicity moderated the relationship between quantity of parental involvement and children's expressive vocabulary scores, and between quality of the home-school relationship and expressive vocabulary scores.

The present findings extend previous research by demonstrating the differential effects of socialization and intentional teaching practices on children's early academic outcomes. In addition, this study provides preliminary evidence that close and trusting relationships between parents and teachers can foster children's school readiness skills. The results can be used to develop more effective school readiness interventions for families of young children.

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CHAPTER 1

PARENTAL INVOLVEMENT AND SCHOOL READINESS

During the past two decades, the question of school readiness has received increased attention from teachers, school administrators, and state and federal legislators. Broadly speaking, school readiness can be de fined as "the state of child competencies at the time of school entry that are important for later success" (Snow, 2006, p. 6).[1] The issue of school readiness rose to the forefront when the landmark legislation Goals 2000: The Education of America Act of 1994 boldly established as a national goal, "By the year 2000, all children in America will start school ready to learn" (National Education Goals Panel, 1997).

In order to oversee and evaluate the progress made toward this goal, the National Education Goals Panel was established. In addressing this goal, the panel set forth five elements of school readiness in children: (a) physical well-being and motor development, (b) social and emotional development, (c) approaches to learning, (d) language development, and (e) cognition and general knowledge (Emig, 2000). Although all of these dimensions are critical to children's school success, the focus of this study will be children's language development and social and emotional development. As defined by

[1] There is ongoing debate in the literature about whether school readiness should be defined by a child-focused model or a developmental systems model (Mashburn & Pianta, 2006). A child-focused model of school readiness concerns whether children have the requisite competencies to start school ready to learn. In contrast, a developmental systems model sets forth that the relationships between children and their families, children and their teachers, and families and teachers are key processes through which children develop the academic and social competencies that are necessary for school success.

the National Education Goals Panel (1997), language development includes verbal language (e.g., listening, speaking, and vocabulary) and emergent literacy (e.g., print awareness, story comprehension, and beginning forms of writing). Social and emotional development refers to children's ability to interact with and understand the feelings of others as well as the ability to interpret and express their own feelings.

Children acquire language and reading skills in a relatively predictable way, through direct exposure to literacy materials in early childhood and through activities that stimulate motivation to speak, listen, and read (National Research Council, 1998). However, predictability does not guarantee success. As noted in the Carnegie Foundation's report on school readiness, the precursor skills needed for competent reading are not always acquired (Boyer, 1991). For example, 34% of children entering kindergarten cannot identify letters of the alphabet by name, and 18% are not familiar with the conventions of print (e.g., knowing that English print is read from left to right) (U.S. Department of Education, 2000). Moreover, 35% lack even basic vocabulary and sentence structure skills required for academic success (Boyer, 1991). In addition to being less prepared for school, longitudinal studies have indicated that many children who experience early reading difficulties continue to have lower reading performance in both the elementary and high school years (Cunningham & Stanovich, 1997; Juel, 1988).

Unfortunately, many children are also arriving at school without the social and emotional competencies required for successful navigation of their social worlds. Approximately 31% of kindergartners were found to lag behind in social and emotional competence in a study of 22,000 children enrolled in over 1,200 kindergarten programs. (Wertheimer, Croan, Moore, & Hair, 2003). Similarly, in a national survey of over 3,500

kindergarten teachers, 46% of teachers indicated that at least half of the children in their classrooms had difficulty following directions due to either poor academic skills or an inability to work in groups (Rimm-Kaufman, Pianta, & Cox, 2000).

Children who lag behind in social competence skills can suffer severe immediate and long-term negative consequences. A number of studies have shown that deficits in social and emotional competence can lead to academic failure, school dropout, grade retention, and antisocial behavior (Snyder, 2001; Tremblay, Mass, Pagain, & Vitaro, 1996). Conversely, socially competent kindergarteners develop more positive attitudes about school and do better academically than their less competent peers (Birch, Ladd, & Blecher-Sass, 1997; Ladd, Birch, & Buhs, 1999).

Several risk factors are associated with suboptimal development of U.S. children's early academic and social competence skills. Some of these include having a mother whose home language is not English, having a mother with less than a high school education, living with only one parent, living in a family with an income below the poverty level, and having a racial and ethnic identity other than Euro-American, non-Hispanic (U.S. Department of Education, 2000). Children with one or more of these risk factors are less likely than other children to frequently engage with their families in activities that foster academic success. Research has uncovered several possible explanations for why these children are at risk for later academic difficulties. Most of these causes are attributed to contextual factors that surround the child rather than to individual differences within the child.

Reducing the number of children who enter school with insufficient literacy-related knowledge or with social and emotional problems is essential for preventing

future academic difficulties (National Research Council, 1998). Parents can play a vital role in promoting children's early academic success, because they are the first teachers in their children's lives. Parental involvement can take numerous forms, from engaging in learning activities with children at home to communicating with children's teachers.

Increasing parental involvement in children's education has become a national priority because of its evidenced positive impact on children's academic success. The eighth goal in the Goals 2000: The Education of America Act of 1994 states that, "Every school will promote partnerships that will increase parental involvement and participation in promoting the social, emotional, and academic growth of children" (National Education Goals Panel, 1997). In accordance with this goal, both the federal government and all 50 states have taken steps to promote parental involvement in schools (Miedel & Reynolds, 1999). Due to the increased national attention on how parents can foster their children's school readiness skills, the issue of parental involvement has become a critical area of research inquiry. Accordingly, the purpose of this dissertation is to test a number of models that examine the effects of parental involvement on children's early academic skills and social competence.

CHAPTER 2

THEORETICAL FRAMEWORKS

Several researchers have proposed theoretical frameworks that delineate dimensions of parental involvement and offer conceptualizations of how parental involvement influences children's academic performance (Eccles & Harold, 1996; Epstein, 1995; Grolnick & Slowiaczek, 1994; Kohl, Lengua, McMahon, & Conduct Problems Prevention Research Group, 2000). The majority of frameworks focus principally on the *frequency and range* of parental involvement strategies. Often missing from these models is a focus on the quality of the home-school relationship. A notable exception is the multidimensional framework of parental involvement developed by Kohl et al. (2000) which incorporates both the quantity of parental involvement and the quality of the relationship between the parent and teacher. Because of its comprehensiveness, this model was used as the beginning framework for this study of school readiness.

This chapter begins with a description of Kohl et al.'s (2000) framework of parental involvement and is followed by a discussion of two theoretical frameworks focused on how children develop early reading skills. It is important to explore the process by which children develop emergent literacy skills, because this is the main outcome under study. The development of children's emergent literacy skills in relation to parental involvement will be specifically discussed.

Multidimensional Framework of Parental Involvement

Kohl et al. (2000) propose six major dimensions of parental involvement: (a) parent-teacher contact (e.g., how often the parent calls the child's teacher and/or attends parent-teacher conferences); (b) parental involvement at school (e.g., how often the parent volunteers at school and/or attends special events and parent teacher organization meetings); (c) parental involvement at home (e.g., how often the parent reads to the child and/or takes the child to the library); (d) quality of parent-teacher relationship (e.g., does the parent enjoy talking with the child's teacher and/or does the parent feel that the teacher cares about the child); (e) teacher's perception of parent's value of education (e.g., does the parent encourage positive attitudes toward education, and how important is education in the family); and (f) parental endorsement of school (e.g., does the parent think the child's school is a good place for the child to be).

The first three dimensions aim to measure the quantity of parental involvement. Kohl et al. (2000) argue that the amount of parent-teacher contact and parental involvement at school are important because they allow parents to monitor their children's school progress, to maintain knowledge about the school's policies and programs, and to model for their children the importance of school. Additionally, the amount of parental involvement in educational activities at home can reinforce what children learn in the classroom. The final three dimensions measure the quality of the home-school relationship. These are included in the framework because creating a close and trusting relationship in which parents and teachers are working toward common goals should foster children's academic skills and social competence.

The multidimensional framework of parental involvement was tested in a normative sample of approximately 350 kindergarten and first-grade children. Teacher reports of parental involvement were collected in the spring of the children's first-grade year. Parental reports of parental involvement were collected in the summer following the children's first-grade year. A confirmatory factor analysis indicated that the data fit the theoretical model relatively well. Cronbach's alpha for the dimensions of parental involvement ranged from .67 to .93. For all six dimensions, teacher-report items loaded more strongly than did parent-report items.

In the present study, data were available to represent four out of the six dimensions of involvement: (a) parent-teacher contact, (b) parental involvement at school, (c) parental involvement at home, and (d) quality of parent-teacher relationship. Although research has indicated that parents' valuing of education and endorsement of school can positively contribute to children's academic success, the constraints of using secondary data made it impossible to include these constructs. Parent-teacher contact and parental involvement at school are combined into one construct in the present study due to the limited number of indicators for each dimension.

The framework's inclusion of the quality of the parent-teacher relationship was unique among conceptual models linking parent involvement to readiness. This feature made it especially useful as a starting point for conceptualizing the present study. Several other studies have used Epstein's (1995) model of parental involvement, which includes the dimensions of parenting, communicating, volunteering, learning at home, decision making, and collaborating with the community. However, because Epstein's model

focuses only on school-initiated activities and not parent-initiated behaviors, it was not the most suitable framework for the present study.

Theoretical Perspectives on How Children Develop Early Reading Skills

Emergent Literacy Framework

To understand children's development of reading and language skills, it is important to examine the underlying theoretical perspectives that help explain early literacy development. The most well-known theoretical framework in early literacy research is called emergent literacy. This perspective was largely influenced by Clay's (1967) observational study of 5-year-old children's emerging reading behavior. Clay found that young children came to school with more knowledge about reading and writing than was once thought to exist (Crawford, 1995). Children were able to engage in reading behaviors such as visual sensitivity to letter and word forms, self-correction, and synchronized matching of spoken word units with written word units. From these results, Clay (1967) concluded, "There is nothing in this research that suggests that contact with printed language forms should be withheld from any five-year-old child on the ground that he is immature" (p. 24). Her work revealed that children's emergent literacy skills develop during the preschool years and are fostered by both the home literacy environment and parent-child interactions.

The term *emergent literacy* came into currency in the mid-1980s with the publication of Teale and Sulzby's (1986) *Emergent Literacy: Writing and Reading* (Hiebert & Raphael, 1998). Sulzby (1989) defines emergent literacy as "the reading and writing behaviors and concepts of young children that precede and develop into conventional literacy" (p. 88). Emergent literacy involves the skills, knowledge, and

attitudes that are presumed to be developmental precursors to conventional forms of reading and writing and the environments that support these developments (Whitehurst & Lonigan, 1998). As Cooper (1983) explains:

> Emergent literacy is the idea that children grow into reading and writing with no real beginning and ending point, that reading and writing develop concurrently, interrelatedly, and according to no right sequence or order. Instead, learners are always emerging. Moreover, this process begins long before children enter school—through the activities and experiences in their everyday lives and through their interactions with peers and adults. Literacy learning involves all elements of the communication process—reading, writing, speaking, listening, and thinking. (cited in Scott & Marcus, 2001, p. 9)

The emergent literacy framework differs in several aspects from the reading readiness paradigm that preceded the emergent literacy perspective (Whitehurst & Lonigan, 1998). The notion of emergent literacy assumes that literacy acquisition develops along a continuum that begins early in a child's life and that there is no clear boundary between prereading skills and the actual reading that children are taught in schools. However, the reading readiness perspective, which is still dominant in many educational settings, asserts that reading can only begin efficiently once children have mastered a set of basic, prerequisite skills that can be arranged into a skill hierarchy (Crawford, 1995; Teale & Sulzby, 1986).

Therefore, the theory of reading readiness assumes that there is a clear boundary that demarcates children's prereading skills from the actual reading skills that children acquire in educational settings. Those who subscribe to the reading readiness paradigm often believe that children cannot begin to learn how to read until they enter formal schooling. In contrast, proponents of the emergent literacy perspective believe children begin to learn prereading skills even before they enter school.

In summary, the emergent literacy paradigm encompasses several assumptions that differ from the reading readiness paradigm. Some of these assumptions are: (a) literacy development begins long before children start formal instruction; (b) reading, writing, and oral language are all important parts of literacy learning; (c) literacy is learned best through children's active engagement with the world; (d) children's literacy learning progresses through a series of developmental stages; and (e) literacy education should be developmentally appropriate for children (Crawford, 1995).

There are several components of emergent literacy. These components include: (a) language development (e.g., vocabulary); (b) an understanding of print conventions (e.g., knowing that writing goes from left to right across the page); (c) beginning forms of printing (e.g., scribbling and writing one's name); (d) an understanding of the purpose of print (e.g., knowing that words convey a message separate from pictures or oral language) and the function of print (e.g., knowing print can be used in varied ways); (e) knowledge of graphemes (e.g., naming of the alphabet); and (f) knowing the correspondence between letter and sound (e.g., knowing that the word *bat* begins with the sound /b/) (Whitehurst et al., 1999). An additional element of emergent literacy is attitude. This dimension has been defined as "the preliterate child's interest in and motivation to interact with picture books and other printed materials (e.g., the frequency with which the child asks to be read to)" (p. 261).

Outside-In/Inside-Out model

Whitehurst and Lonigan (1998) have developed a model that further categorizes the components of emergent literacy. They propose that emergent and conventional literacy comprises two interdependent domains of skills and processes: *outside-in* and

inside-out. The outside-in units represent knowledge from outside the printed text that help children understand the meaning of print. These processes include expressive and receptive language, understanding and producing narrative, knowledge of conventions of print, and emergent reading. The inside-out units represent knowledge from within the printed text that helps children translate print into sounds and sounds into print. These processes include knowledge of graphemes (i.e., letter-name knowledge), phonological awareness (i.e., detection of rhyme), syntactic awareness (i.e., ability to detect grammatical errors), phoneme-grapheme correspondence (i.e., letter-sound knowledge), and emergent writing. If children have mastered the necessary inside-out skills, they may be able to read a sentence without having any outside-in skills. For example, a child could read a sentence without understanding the meaning of the words or the context of the sentence. However, outside-in skills are essential for comprehension. Consequently successful reading requires competence in both sets of skills.

An empirical study of the inside-out/outside-in model revealed several important findings (Storch & Whitehurst, 2001). First, the home literacy environment, parental expectations, and parental characteristics have a significant influence on children's outside-in skills among children enrolled in Head Start. These home and family characteristics accounted for approximately 20% of the variance in preschool outside-in skills.

Second, outside-in skills in preschool predicted 46% of the variance in inside-out skills, but this relationship lessened over time. In kindergarten, outside-in skills predicted only 5% of inside-out skills variance.

Third, there is strong continuity in both outside-in and inside-out skill domains from preschool to kindergarten. In kindergarten, approximately 81% of a child's outside-in skill ability was accounted for by preschool ability. In the case of inside-out skills, approximately 45% of kindergarten ability was accounted for by preschool ability.

Fourth, kindergarten inside-out skill ability is predictive of both first- and second-grade reading abilities, but this relationship also lessened over time. Forty-two percent of first-grade reading ability was accounted for by kindergarten inside-out skill ability, and 25% of second-grade reading ability was accounted for by kindergarten inside-out skills.

These results suggest that inside-out skills may be developmentally important for skilled reading in the first grade but that they are less related to skilled reading by the second grade. Although this finding is theoretically important because it indicates a developmental change between first grade and second grade with regard to the contribution of inside-out skills to reading abilities, additional studies are needed to confirm this developmental change.

In summary, this structural model of language and literacy development provides a framework both for predicting and for understanding the influence of multiple home and family characteristics on a child's later reading achievement. The model indicates that home characteristics and kindergarten inside-out and outside-in abilities are predictive of children's reading ability in the first and second grades.

Whitehurst and Lonigan (1998) have suggested that various home literacy activities may differentially affect children's inside-out and outside-in skills. They state that outside-in skills are best fostered through opportunities to engage in conversations with adults, shared storybook reading, and literacy-rich environments (e.g., children's

books in the home, library visits, and availability of written materials). However, children's inside-out skills are enhanced through direct teaching of letters and print, alphabet books, invented spelling activities, and learning how to print their names.

One limitation of empirical studies testing the outside-in/inside-out model is that they do not specifically account for the effects of parental socialization practices on children's emergent literacy outcomes. For example, research has indicated that children whose parents use more explanation techniques, expand on their children's current knowledge, and provide a supportive learning atmosphere have better emergent literacy skills than children whose parents do not use such socialization practices (DeTemple, 2001; National Institute of Child Health [NICHD] 2000; Reese, 1995; Roberts, Jurgens, & Burchinal, 2005). These high-quality interactions may take place during joint book reading and/or everyday conversations between parents and children. However, the Storch and Whitehurst (2001) study only included the frequency and duration of shared storybook reading. Therefore, the current study adds to the empirical tests of the outside-in/inside-out model by testing the effects of the quality of parental practices (or socialization practices) on children's emergent literacy skills.

CHAPTER 3

REVIEW OF THE EMPIRICAL EVIDENCE

Parental involvement is multifaceted and spans multiple settings, from the home environment to a child's school. Parental involvement can take the form of engaging in enriching activities with children at home, providing a supportive learning climate (e.g., acknowledging and reinforcing children's efforts and successes), or of partaking in school-related activities such as parent-teacher conferences. In the following sections, I will review the empirical evidence regarding parental involvement.

Parental Home Involvement

Research has indicated that parents can engage in a variety of activities with their children in the home setting to promote early academic skills. Although there are a number practices that have been shown to positively affect children's skills, the focus of this section will be on parental intentional teaching practices related to shared storybook reading and direct instruction of letters and words. Additionally, the nature of interactions (i.e., parental socialization practices) surrounding these activities will also be discussed.

Intentional Teaching Practices

Shared storybook reading. Shared storybook reading has received the most attention in the emergent literacy literature (Bus, van IJzendoorn, & Pellegrini, 1995; Scarborough & Dobrich, 1994). There are several benefits of shared storybook reading, including the acquisition of word knowledge and novel vocabulary, increased familiarity

with the syntax of written language, and heightened awareness of written letters and words (Mason & Allen, 1986). The benefits of shared storybook reading could be a result of several factors. First, parents may provide more sophisticated language models during story time than during caretaking activities or free play. Second, parents may teach their children new vocabulary words while reading aloud. Third, parents may provide an environment of warmth and sensitivity while reading. Fourth, the frequency of reading aloud to young children has been shown to be positively correlated with oral language skill and reading readiness and with later language and reading abilities in the elementary school years (DeBaryshe, 1993).

Several studies have examined the effects of joint storybook reading on children's emerging literacy skills. A review by Scarborough and Dobrich (1994) of studies from 1960 to 1993 revealed modest associations between the frequency of storybook reading at home and literacy achievement during the early school years. The results suggest that no more than 8% of the variance of preschoolers' concurrent or subsequent literacy-related abilities is predicted by differences in being read to by their parents. From this, the researchers conclude that "it might matter a great deal whether a preschooler experiences little or no shared reading with a responsive partner, but beyond a certain threshold level, differences in the quantity or quality of this activity may have little bearing on skill development" (p. 285). Additionally, they suggest that although joint book reading may be associated with the development of emerging literacy skills, it is important to consider the other home and parental practices that may also contribute to literacy development.

Scarborough and Dobrich's (1994) findings were challenged by Bus et al. (1995), who used a quantitative analysis to review a more extensive body of studies. They found

evidence that joint book reading does have a direct impact on learning to read. The results revealed an overall effect size of $d = .59$. According to Cohen's (1977) criteria, this is between a medium ($d = .50$) and a strong ($d = .80$) effect size. From this, Bus et al. (1995) conclude that book reading is effective and that it is a strong predictor of reading achievement.

There are a few methodological differences between Bus et al.'s (1995) and Scarborough and Dobrich's (1994) studies that are worth noting. First, while Scarborough and Dobrich analyzed correlational studies separately, Bus et al. (1995) included both correlational and experimental designs in a single analysis. Furthermore, Scarborough and Dobrich (1994) examined 11 correlational studies from 1960 to 1993, whereas Bus et al. (1995) analyzed five additional, unpublished studies.

The results of both Bus et al.'s (1995) and Scarborough and Dobrich's (1994) studies should be interpreted with caution because the reviewed studies used limited measures. For example, dichotomous or limited ordinal scaling of reading frequency may not have accurately depicted the full variability in several samples. Additionally, many studies utilized questionable composite indices of home literacy.

Several other studies have indicated that shared book reading is an effective means of stimulating language development. DeBaryshe (1993) explored the relation between joint picture-book-reading experiences provided in the home and children's early oral language skills. Subjects included 41 two-year-old children and their mothers. The results revealed that home story-reading practices were significantly related to receptive vocabulary skills. Additionally, the age of joint reading onset showed the most robust predictive power. Children whose mothers began to read to them at an earlier age

had stronger receptive vocabulary skills. Senechal, LeVevre, Thomas, and Daley (1998) also studied the effects of home literacy experiences on the development of oral and written language in a sample of 110 kindergarteners. They found that storybook exposure explained statistically significant variance in children's oral-language skills. Although significant results were found in both of these studies, their generalizability is limited due to the homogeneous nature of the sample (Euro-American, middle- and upper-class families).

Although the majority of studies on the benefits of shared storybook reading have included only middle- and upper-class families in their samples, Whitehurst et al. (1994) sought to overcome this limitation by examining the effects of an interactive shared-reading intervention on 4-year-olds from low-income families. The shared-reading program, called dialogic reading, involves the child learning to become the storyteller. The adult plays an active role in the reading process by listening, questioning the child, and building on the child's current knowledge.

Head Start classrooms were randomly assigned to intervention and control conditions. Because of a higher dropout rate in the control classrooms, the final sample size included 94 children in the intervention group and 73 children in the control group. Both teachers and parents were trained in the dialogic method of reading. The intervention included small-group reading in the classroom, with children being read to about three to five times per week, and one-on-one reading at home using the same books that were used in the classroom (Whitehurst et al., 1994).

The program had significant positive effects on children's writing and printing abilities. The effects on children's language skills were largest for those children whose

parents were more involved in the at-home component of the program. In a follow-up study of this study's cohort and a replication cohort, the effects of the intervention did not generalize to children's literacy skills in the first and second grades (Whitehurst et al., 1999). The authors suggest that this may be a result of reading ability in the first and second grades being related to only a subset of the skills that were a focus of the dialogic reading intervention.

Direct instruction of letters and words. There is some research indicating that the use of direct instruction for teaching children letter- and word-related knowledge may also promote emergent literacy skills (Haney & Hill, 2004; Nord, Lennon, Liu, & Chandler, 2000; Senechal & LeFevre, 2002). Data from the 1993 to 1999 National Household Education Surveys indicate that 43% of children who are taught letters, words, or numbers three or times a week show three or more skills associated with emerging literacy, compared to 31% of the children who are taught the same skills less often (Nord et al., 2000). Similarly, Haney and Hill (2004) found that children whose parents used direct teaching methods for alphabet knowledge and writing words scored significantly higher on emergent literacy tasks than did children whose parents who did not employ direct teaching methods.

Differential effects of intentional teaching practices. Children's literacy outcomes may be differentially affected by parental involvement in intentional teaching practices. That is, the use of intentional teaching practices may not have the same effect on children's vocabulary skills as on other emergent literacy outcomes such as print knowledge. Although this issue has not been studied extensively, because the majority of studies do not examine multiple parental practices and multiple child outcomes at the

same time, some support has been found for this assertion. In a study of 85 preschool children and their parents, Weigel, Martin, and Bennett (2006) examined the relationship between parental intentional teaching practices (e.g., reading, visits to the library, reciting rhymes, and telling stories) and several indicators of children's literacy and language development (i.e., print knowledge, emergent writing, reading interest, expressive language, and receptive language). The results revealed that intentional teaching practices were significantly related to children's print knowledge and reading interest but not to expressive language, receptive language, or emergent writing. Additionally, DeBaryshe (1993) found that the degree of exposure to joint book reading predicted children's reading interest but not their receptive or expressive vocabulary.

Socialization Practices

Discourse practices (explain, expand, and support). Research on language development indicates that, in addition to quantity, the quality of parent-child interactions related to shared storybook reading is an important predictor of a child's acquisition of early literacy skills. During shared storybook reading, adults may use a number of different discourse practices that may promote children's emergent literacy skills, including the use of explanations, expanding on the child's current knowledge, and providing a supportive atmosphere.

For example, DeTemple (2001) suggests that joint reading influences children's language acquisition not so much by its frequency as by the quality of the interaction parents have regarding the reading material. The relationship between the type of talk mothers used while reading to their children and the children's later language and literacy

skills was observed in a sample of 54 kindergarten children. The type of talk mothers used was classified into two categories: immediate talk and non-immediate talk.

Immediate talk refers to comments or questions that are closely tied to the illustrations or words in the text that have just been read. For example, the mother may draw the child's attention to an illustration, point out or ask the child to label an object mentioned in the text, ask for a demonstration of skills, or request the child's participation through a fill-in-the-blank routine. In contrast, nonimmediate talk uses the text or the illustrations as a springboard for recollections of personal experiences, questions about general knowledge, or for drawing inferences and making predictions. This type of talk often involves longer utterances and more complex language than the simple yes/no questioning that constitutes much of immediate talk.

DeTemple's (2001) results revealed that there were no associations between the number of immediate utterances during the book readings and any of the early literacy measures. However, the mothers' use of nonimmediate talk was the characteristic of book reading most strongly and positively associated with the children's performances on early literacy measures.

Reese (1995) sought to investigate the effect of maternal utterances during both shared storybook reading and recollection of past events. When their children were 40, 46, and 48 months old, 24 Euro-American, middle-class mothers were asked to complete two tasks: (a) to read an unfamiliar book with their children, and (b) to discuss with their children three shared, one-time past events. In both tasks, maternal utterances were coded for degree of decontextualization. During the book reading task, children were coded as participating in the task when they made unsolicited, story-relevant comments. During

the narrative task, children were coded as participating when they made "unique provisions," or requests for memory information. At age 70 months, children were assessed on a battery of literacy measures, including concepts of print, decoding, story production, story comprehension, and story retelling.

Regression analyses indicated that mothers' use of decontextualized utterances in both the storybook reading task and the narrative task significantly positively predicted children's 70-month print skills. Growth-curve analyses revealed that mothers' increasing use of contextualizing utterances over the 18-month study period was an even stronger predictor of children's print skills. Additionally, children's participation in both tasks was a stronger predictor of their narrative skills than of their print abilities at 70 months old (Reese, 1995).

Limited research has indicated that discourse practices may be differentially related to children's outcomes (Barbarin et al., 2007). Barbarin et al. found that discourse practices predicted preschoolers' language skills but not math or socioemotional competence, and control strategies did not predict early language, math, or behavioral skills. These results suggest that discourse practices may be the most desirable practices for improving preschoolers' language skills, whereas control strategies may have no effect on preschoolers' competencies.

Maternal sensitivity, or supportive presence, is another socialization practice that has been shown to be positively correlated with children's early academic skills. Several studies have demonstrated that a warm and supportive style on the part of mothers during shared storybook reading and other language-promoting activities fosters children's language and cognitive development (DeJong & Lessman, 2001; NICHD, 2002; Roberts

et al., 2005). In a longitudinal study of more than 1,000 children and their parents, children who were cared for by more sensitive and supportive mothers had better letter-word identification, math, language, and social skills, and fewer behavior problems. The effects associated with high-quality parenting and children's outcomes were among the largest effects found in the study (NICHD, 2002).

In a study of 72 low-income African American children, Roberts et al. (2005) found similar results. Mother-child dyads were videotaped during shared storybook reading, and these tapes were coded for maternal book-reading strategies (e.g., describe, explain, and expand) and maternal sensitivity. Maternal sensitivity was significantly related to children's receptive vocabulary but not to their expressive vocabulary or emergent literacy knowledge as it related to knowledge of the alphabet, conventions of print, and constructing meaning from print. A global measure of overall responsiveness and support of the home environment using the Home Observation for Measurement of the Environment (HOME) was the single best predictor of children's early language and literacy skills.

Control practices. The effects of parental discipline or control style on children's outcomes are well documented. Baumrind's (1966, 1967, 1971) hallmark research delineated three types of parental discipline style: authoritarian (high degree of power assertion and control); authoritative (demanding yet responsive and nurturing); and permissive (least likely to discipline). Numerous studies have indicated that parental use of authoritative discipline is positively related to children's social skills and academic achievement from preschool to high school, whereas authoritarian discipline is negatively related to these outcomes (Baumrind, 1971; Lamborn, Mounts, Steinberg, & Dornbusch,

1991; Steinberg, 1996). Other research has suggested that the effect of discipline style on children's outcomes may vary by ethnicity. Specifically, authoritarian parenting appears to have far fewer negative consequences for African American children than for Euro-American children, in terms of social and academic development during adolescence (Baldwin, Baldwin, & Cole, 1990; Dornbusch, Ritter, Liederman, Roberts, & Fraleigh, 1987; Portes, Dunham, & Williams, 1986).

Parental discipline in the context of children's emergent literacy skills is important to consider, because parenting styles may differ in the quantity and quality of language used. For example, authoritarian parents, who are often restrictive and controlling, may use less dialogue with their children than authoritative parents, who are more responsive and nurturing. Because studies have indicated that the quantity and quality of parent verbalizations can affect children's literacy skills, it is critical to investigate whether parental discipline may moderate this relationship or have a direct effect on children's learning.

Gest, Freeman, Domitrovich, and Welsh (2004) explored this issue in a sample of 76 Euro-American kindergarten children and their primary caregivers. They found a significant negative relationship between physical punishment and children's comprehension skills, even after controlling for parental education and quantity of shared reading. Additionally, parental use of nondirective reasoning in disciplinary situations moderated the relationship between frequency of shared storybook reading and children's language comprehension skills. High nondirective reasoning was defined as frequent use of reason and infrequent use of directive control; low nondirective reasoning was defined as the opposite pattern. After controlling for parental education and children's nonverbal

reasoning skills, there was a significant positive relationship between shared storybook reading and children's language skills in the case of those parents who used high levels of nondirective reasoning, but there was no relationship between shared storybook reading and children's language comprehension skills in the case of parents who used low levels of nondirective reasoning.

Whereas many studies have included only one ethnicity or socioeconomic status (SES) in their sample, Hill (2001) compared samples of African American and Euro-American children and their families to determine whether relationships between parenting behaviors and children's school performance were generalizable among ethnicities and different family income levels. Fifty-four African American and 49 Euro-American mothers of kindergarten children completed the Children's Report of Parenting Behavior Inventory, which measures parental acceptance, enforcement, withdrawal and relations, hostile control, and inconsistent discipline. A series of regression analyses indicated that maternal acceptance was positively related to children's prereading scores and that hostile socialization was negatively associated with prereading scores.

Although ethnicity did not moderate this relationship, the interactions between family income and acceptance, hostile control, and inconsistent discipline were significant. Low levels of acceptance and high levels of hostile socialization strategies were more negatively related to children's prereading scores among lower-income families than among higher-income families. The relationship between inconsistent discipline and prereading scores also was stronger for lower-income families. However, contrary to expectation, inconsistent parenting practices in lower-income families were associated with higher prereading scores (Hill, 2001).

Poverty- and Ethnicity-Related Differences in Intentional Teaching and Socialization Practices

Research has suggested that having an ethnic identity other than Euro-American, non-Hispanic and living in poverty are risk factors for developing later reading difficulties. This is of great concern because over the past 30 years poverty rates among children have increased by 50% (Children's Defense Fund, 1994). In 2002, 16% of children in the United States lived in families whose income was at or below the federal poverty level (National Center for Children in Poverty, 2004). Children from low-income families are likely to lag behind their middle-class counterparts in the development of oral language skills (e.g., Lonigan & Whitehurst, 1998; Whitehurst, 1996), letter knowledge, and phonological processing skills prior to school entry (e.g., Bowey, 1995; Lonigan, Burgess, Anthony, & Barker, 1998). Poor families often have less-stable lives, experience greater distress, have fewer resources, and have unequal access to materials, books, and social resources (Hart & Risley, 1992; Smith, Brooks-Gunn, & Klebanov, 1997). The stress associated with living in poverty may limit parents' opportunities to engage with their children in enriching activities that promote academic success.

Several studies have indicated substantial social-class differences in the amount of intentional teaching practices and the quality of socialization practices employed by parents. For example, the Federal Interagency Forum on Child and Family Statistics (2003) reported that 48% of families living below the poverty level read to their preschoolers on a daily basis, compared to 61% of families whose incomes were at or above the poverty level. Additionally, Hart and Risley (1992) found that the quality of parents' verbalizations with their children was strongly related to the family's existing

socioeconomic status. One-hour segments of the everyday conversations of 40 families were tape-recorded once monthly over a 2 1/2-year period. In lower-SES families, up to 20% of parental utterances to children functioned to prohibit the children's activities, whereas similar discouraging words were rarely or never heard in higher-SES families. In contrast, parents in higher-SES families used more questions (up to 45% of parent utterances). These differences were strongly correlated with subsequent child IQ measures. These results highlight the importance of high-quality conversations with children as well as the differences that may exist across socioeconomic backgrounds. The multiple stressors associated with having a low SES may unfortunately limit the amount of time parents get to spend talking with their children.

Children from minority cultures also are at greater risk for later learning difficulties (National Research Council, 1998). African American children from low-income families and whose mothers have limited education are reportedly at greatest risk of academic failure (Jencks & Phillips, 1998; National Research Council, 1998). Considering that African American children are more than twice as likely as Euro-American children to be raised in poverty, this raises great concern (Children's Defense Fund, 1994). The U.S. Department of Education (2005a) reported that 43% of African American children under 18 years of age are being raised in families living below the poverty line, compared to 16% of Euro-American children. This number jumps to 63% for African American children living in homes headed by single mothers.

Research has indicated that African American families differ from Euro-American families in the quantity of their joint storybook reading as well as in the socialization practices that parents use with their children. The Federal Interagency

Forum on Child and Family Statistics (2003) reports that 64% of Euro-American families read daily to their preschoolers, compared to 48% of African American families. A few studies have shown that African American parents use different joint book-reading strategies than Euro-American parents. Anderson-Yockel and Haynes (1994) found that African American mothers used significantly fewer questioning behaviors than Euro-American mothers. Additionally, Euro-American children produced more question-related communications, and African American children produced more spontaneous verbalizations. Hammer (2001) also found that both low- and middle-income African American mothers used a small percentage of questions when reading books to their children. Low-income mothers used questions 9% of the time, and middle-income mothers used questions 15% of the time. Additionally, Baker, Sonnenschein, Serpell, Fernandez-Fein, and Scher (1994) report that parents from middle- and upper-SES groups were more likely to utilize play and entertainment strategies such as games and finger plays to promote literacy skills, whereas low-income parents were more likely to use drills, worksheets, and direct teaching methods.

The use of different teaching strategies by African American parents can have significant implications for children's school entry. Unlike many African American families, parents from the culture as a whole often use story grammars and question-asking routines that resemble those used in the schools (Vernon-Faegans, Hammer, Miccio, & Manlove, 2001). Those children who have not been exposed to these teaching methods are at risk of school failure for several reasons (Vogt, Jordan, & Tharp, 1987). First, if book reading is not a common practice at home, children may not have developed the emerging literacy skills (e.g., vocabulary development, knowledge of print

conventions, or letter recognition) that have been shown to result from exposure to books (Vernon-Faegans et al., 2001). Second, children from different cultures may not have been exposed to the events encountered by the characters in the stories used in school (Bloome, Harris, & Ludlum, 1991). Third, children from different cultures may have different ideas of how meaning is derived and of what constitutes a story (Vernon-Faegans et al., 2001). For example, Heath (1983) found that in working-class African American families, the meaning of text was jointly constructed and what constituted a "story" differed from the conception employed in school.

Another factor that has been hypothesized to be a source of reading difficulties for African American children is the interference of African American English dialect in the reading process (Washington & Craig, 2001). African American English differs from standard American English phonologically (in how sounds are used to form words), morphosyntactically (in how words and sentences are formed to have meaning), and pragmatically (in how language is used in social contexts) (LeMoine, 2001). The effect of African American English on reading development and academic achievement has long been debated (Washington, 2001). Some earlier studies found that reading was significantly affected by dialect use (Ames, Rosen, & Olsen, 1971; Bartel & Axelrod, 1973), whereas others have found no significant effects (Gemake, 1981; Harber, 1977; Hart, Guthrie, & Winfield, 1980).

Parental School Involvement

Parental involvement in school-based activities has been positively linked to children's academic achievement, school behavior, and social competency (Fan & Chen, 2001; Henderson & Mapp, 2002; Izzo, Weissberg, Kasprow, & Fendrich, 1999). Hill and

Taylor (2004) suggest two processes by which parental involvement has positive effects on children's school readiness skills. The first process is that parental school involvement increases parent's social capital (e.g., knowledge and skills), which they can then use to foster their children's development. For example, communication with teachers and schools can educate parents about school policies and teachers' expectations for their child. The second process is social control, which occurs when parents and teachers work together to provide congruence for the child between the home and school contexts with regard to both learning activities and performance expectations. Hill and Taylor (2004) state, "Through both social capital and social control, children receive messages about the importance of schooling, and these messages increase children's competence, motivation to learn, and engagement in school" (p. 162).

Although the majority of studies on the benefits of parental involvement in education have focused on the elementary and high school years, very few have looked at its effects in early childhood, and the results of the studies that have been conducted have been mixed. In the following sections, I will review the literature on the effects of the quantity of parental at-school involvement and the quality of the home-school relationship on children's early academic and social competencies.

Quantity of Parental Involvement and Quality of the Home-School Relationship

Marcon (1999) studied the effects of parental at-school involvement on children's school readiness outcomes in a sample of approximately 700 randomly selected African American preschoolers who attended public prekindergarten or Head Start programs in Washington, D.C. Teachers indicated whether they had contact with the child's parent(s) during the school year in any of the following four categories: (a) parent-teacher

conference, (b) home visit by teacher, (c) extended class visit by parent, and (d) parental help with class activity.

Higher parental involvement was significantly associated with children's greater mastery of early basic skills in mathematics and science, verbal skills, social and work habits, and physical skills, and more positive adaptive development in the areas of communication, daily living skills, socialization, and motor development. Active parental involvement (i.e., class visits and helping with class activity), compared with more passive parental involvement (i.e., parent-teacher conference and home visit by teacher), was associated with significantly more positive adaptive development in all domains except motor development. Additionally, active parental involvement was significantly related to children's greater mastery of basic skills in all subject areas (Marcon, 1999).

Although Marcon's (1999) study lends support to the notion that parental involvement positively impacts children's development, a few limitations of the research should be noted. First, parental involvement in each of the four categories was dichotomously coded as yes or no. This does not capture whether the number of contacts within each category is related to children's outcomes. Additionally, the author's classification of active versus passive parental involvement is questionable. Attending parent-teacher conferences, which was classified as passive involvement, could very well be seen as an active type of involvement because it requires the parent to actually go to the child's school.

In accordance with Marcon's (1999) findings, a longitudinal study of 1,205 urban, kindergarten through third-grade children found that parental involvement was significantly related to children's academic and social functioning (Izzo et al., 1999).

Teachers reported on the frequency of parent-teacher contacts each year, parental participation in activities at school, and parental participation in activities at home. Teachers also were asked two questions concerning the quality of their interactions with each child's parents.

Results showed a small but significant decline from kindergarten through the third grade in the number of parent-teacher contacts, parents' participation in school activities, and the quality of parent-teacher interactions (Izzo et al., 1999). Parent participation in home activities remained steady over time and was the strongest predictor of math and reading achievement. Parent participation in school activities was positively associated with children's school engagement, and the quality of the parent-teacher relationship was positively associated with children's social and emotional adjustment. However, the number of parent-teacher contacts was negatively associated with both school engagement and adjustment. One explanation for this finding is that teachers may be more likely to contact parents when children are having behavioral problems. A major limitation of this study is that the authors did not include in the statistical models control variables that may be associated with parental involvement (e.g., socioeconomic status).

The relationship between parental participation in an early intervention program for low-income, inner-city children (the Chicago Child-Parent Centers [CPC]) and the children's eighth-grade school achievement was explored in a sample of 704 parents (97% African American) (Miedel & Reynolds, 1999). Parents of the eight-grade children provided retrospective accounts of their participation in the CPC program when their children were in preschool and kindergarten. Parents reported the frequency of involvement in school activities on a Likert type scale from 1 (*less than once a month or*

never) to 3 (*weekly or more*) and the specific activities in which they participated (i.e., attending parent resource room, school meetings, school assemblies, or parent teacher conferences; going on class trips; volunteering in the classroom; receiving home visits; and transporting the child to and from school).

To verify the accuracy of the parent reports, teachers also were asked to rate the parents' participation on a 5-point Likert scale. After controlling for child and family characteristics such as eligibility for subsidized lunch and parental education, frequency of school participation in preschool and kindergarten and the number of activities in which parents participated was found to be significantly positively associated with higher reading achievement, lower retention rates, and fewer years spent in special education up to age 14. These results should be interpreted with caution, however, because of the retrospective design of the study. The fact that parents were asked about their participation in school activities approximately 10 years after their children were enrolled in the CPC program could have led to inaccurate reports (Miedel & Reynolds, 1999).

Although these studies demonstrate benefits of parental involvement in school activities, other research contradicts these findings (Bennett, Weigel, & Martin, 2002; McWayne, Hampton, & Fantuzzo, 2004). For example, Bennett et al. (2002) examined three theoretical models developed by Snow, Barnes, Chandler, Goodman, and Hemphill (1991) in order to explain family contributions to early language and literacy skills in a sample of 143 predominantly middle-class, Euro-American children. The three theoretical models were (a) family as educator, (b) resilient family, and (c) parent-child care partnership.

The family as educator model focused on family factors that can positively affect children's emergent literacy skills, such as providing a home environment rich in literacy resources and providing direct instruction. The resilient family model hypothesized that families can protect children from external stressors. The parent-child care partnership model included components such as formal parent-school involvement (e.g., joining parent-teacher associations) and the frequency of contact with teachers. Bennett et al. (2002) found that only the family as educator model was significantly related to children's book-related knowledge, receptive language skills, and expressive language skills. Therefore, unlike the previously discussed studies, which reported significant associations between parental school-based involvement and children's academic and social skills, the results of this study indicated no such effects.

McWayne et al. (2004) also did not find a significant relationship between parental involvement in school-based activities and academic competence in a sample of 307 low-income, ethnic-minority children. Similar to Bennett et al.'s (2002) findings, in this study a supportive home learning environment demonstrated the strongest association with academic competencies. However, the results did indicate a significant relationship between parental school involvement and children's social skills. These results suggest that the effects of parental school involvement and the quality of the parent-teacher relationship may vary by the outcome that is being studied. For example, Hill and Craft (2003) found that the quantity of parent-school involvement was positively associated with kindergartners' math performance but not with their reading performance. Additionally, Hill (2001) demonstrated that the quality of the parent-teacher relationship was a significant predictor of sound-letter correspondence but not of math skills.

Poverty- and Ethnicity-Related Differences in Parental School Involvement

As with parental involvement at home, research suggests there are poverty- and ethnicity-related differences in parental involvement at school (Grolnick, Benjet, Kurowski, & Apostoleris, 1997; Hill, 2001; Kohl et al., 2000; Kohl, Weissberg, Reynolds, & Kasprow, 1994). For example, Grolnick et al. (1997) reported a significant negative correlation between SES and both parental involvement in school activities and educational learning activities in the home (e.g., going to the library or discussing current events). Kohl et al. (1994) and Kohl et al. (2000) found that minority status was associated with a decrease in the amount and quality of parental school-based involvement.

In addition to differences in the amount and quality of parental involvement, ethnicity has also been found to moderate the relationship between parental school involvement and children's school readiness skills (Hill, 2001). For example, Hill reported a positive relationship between parental involvement in school activities and kindergartners' math skills among African Americans, but a negative relationship in the case of Euro-Americans. Involvement in educational activities at home was more strongly related to premath performance for Euro-Americans than for African Americans.

There are several explanations for why parental involvement has been shown to differ by socioeconomic status and ethnicity. Families living in poverty may face numerous barriers to involvement, including lack of financial resources, stress related to financial circumstances, limited social support, and inflexible work schedules (Hill & Taylor, 2004). According to Lareau (1996), lower-SES parents often have less education themselves and do not feel as though they have the knowledge or ability to question or

confront a teacher. Therefore, they may be more likely than middle- and upper-class parents to rely on the teacher's expertise. African American parents may have values and beliefs that are incongruent with the dominant culture in schools and may therefore demonstrate lower levels of parental involvement (Lareau, 2001). They also may have less access to social capital (i.e., valuable resources gained through social networks), resulting in unequal access to institutional resources (Lareau, 2001).

Contributions of the Present Study to the Literature

The present study will make several contributions to the parental involvement literature. First, several studies thus far have used survey interview methods to learn about parental involvement practices. Embedded in the survey interview method is the methodological problem of reliance on self-report. Many researchers have argued that self-report measures are unreliable because of social desirability; parents may overreport the use of teaching practices for fear of being evaluated negatively or judged as inadequate. Therefore, studies that use both self-report measures and observational techniques should provide a sounder methodological basis for claims of validity and hence for drawing accurate inferences about relationships between parental practices and child outcomes. This study is designed to address this methodological limitation by using both parent self-report measures of parental home practices and observations of parent-child interactions to predict children's academic skills and social competence.

Furthermore, few studies have examined whether specific parental practices are associated with specific academic and social-emotional competencies in children. The majority of studies have tended to focus on only one type of practice at a time (e.g., shared storybook reading, conversations, or direct teaching) and whether this practice

predicts children's emergent literacy skills. However, as discussed earlier, some theoretical models of emergent literacy suggest that certain types of practices might be associated with specific literacy skills. Therefore, one aim of the current study is to determine whether specific groups of practices (e.g., direct teaching practices or socialization practices) predict specific children's academic skills (e.g., expressive vocabulary, receptive vocabulary, or letter identification) and social competence.

Finally, there is a dearth of research examining the contribution of parental school-based involvement and the quality of the home-school relationship to children's early outcomes. Children's school readiness might be enhanced when there is a high degree of respect, trust, and cooperation between parents and early childhood teachers. Although several studies among elementary and high school students have indicated that family-school partnerships lead to positive student outcomes, there is limited research on the nature of home-school relationship during the kindergarten years and its effect on children's academic and socioemotional outcomes. The proposed research will examine the effects of both the quantity of parental involvement and the quality of the home-school relationship during the kindergarten year on children's academic skills and social competence.

CHAPTER 4

RESEARCH METHODS

Conceptual Framework

The aim of this study is to examine the relationships between parental involvement and children's early academic skills and social competence. The conceptual framework outlining the relationships between parental involvement at home and children's outcomes is depicted in Figure 1. Previous research on parental involvement at home has indicated that both parental intentional teaching and socialization practices are imperative for the development of children's early academic skills and social competence (e.g., Bus et al., 1995; DeTemple, 2001; Whitehurst et al., 1994). Furthermore, a few studies have revealed that various parental practices may differentially affect children's academic outcomes (Barbarin et al., 2007; DeBaryshe, 1993; Weigel et al, 2006). For example, intentional teaching practices have been shown to be related to children's print related knowledge but not their vocabulary skills (Weigel et al., 2006). In addition, Barbarin et al. (2007) found that socialization practices predicted preschoolers' language skills but not math or socioemotional competence. Although Barbarin et al. (2007) did not find a significant relationship between socialization practices and social competence, other studies have demonstrated a positive association between supportive presence and children's social skills and a negative association between parental control and children's social skills (Lamborn et al., 1991; NICHD, 2002, Steinberg, 1996).

In the present study, no single practice is expected to affect all desired outcomes across the board. The socialization practices of explain, expand, and support (discourse strategies) are expected to be positively related to children's language skills and social competence, and direct and criticism are expected to be negatively related to these outcomes. Intentional teaching practices related to literacy are hypothesized to be positively associated with children's letter identification skills and intentional teaching practices related to math are hypothesized to be positively associated with children's math skills.

The conceptual framework outlining the relationships between parental involvement at school and children's outcomes is depicted in Figure 2. Previous findings on the effects of parental involvement at school and children's outcomes have been mixed. For example, some research has indicated that parental involvement in school activities and the quality of the parent-teacher relationship is significantly related to children's academic and social functioning (e.g., Izzo et al., 1999; Marcon, 1999). However, other studies have found no significant relationship between parental involvement at school and children's early outcomes (e.g., Bennett et al., 2002; McWayne et al., 2004).

In the present study, the quantity of parental involvement at school is hypothesized to be positively related to children's academic skills and social competence. Furthermore, it is expected that close, trusting, and collaborative relationships between teacher and parent will be positively associated with children's outcomes.

Figure 1. Conceptual framework for the effects of parental involvement at home on children's outcomes

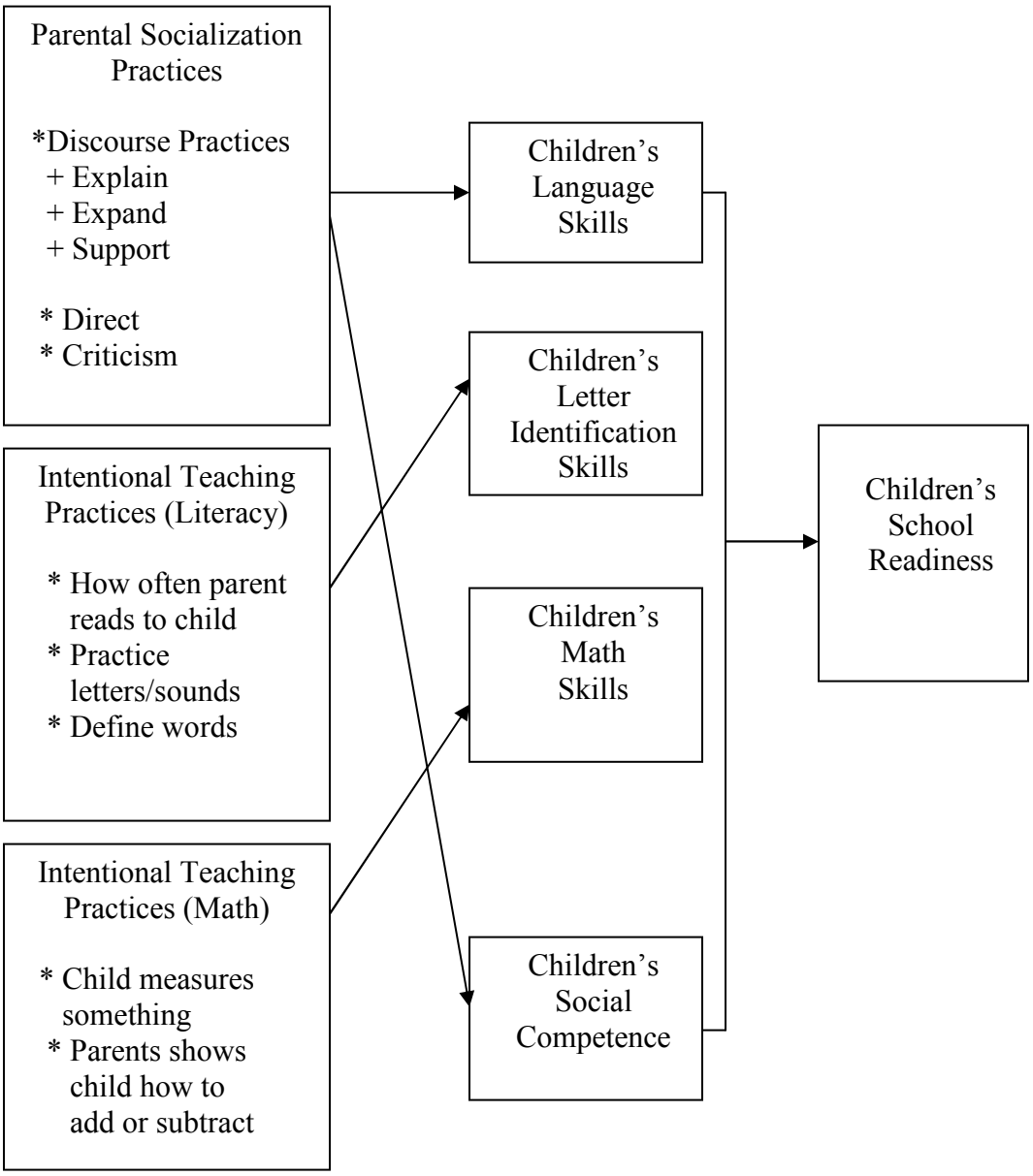
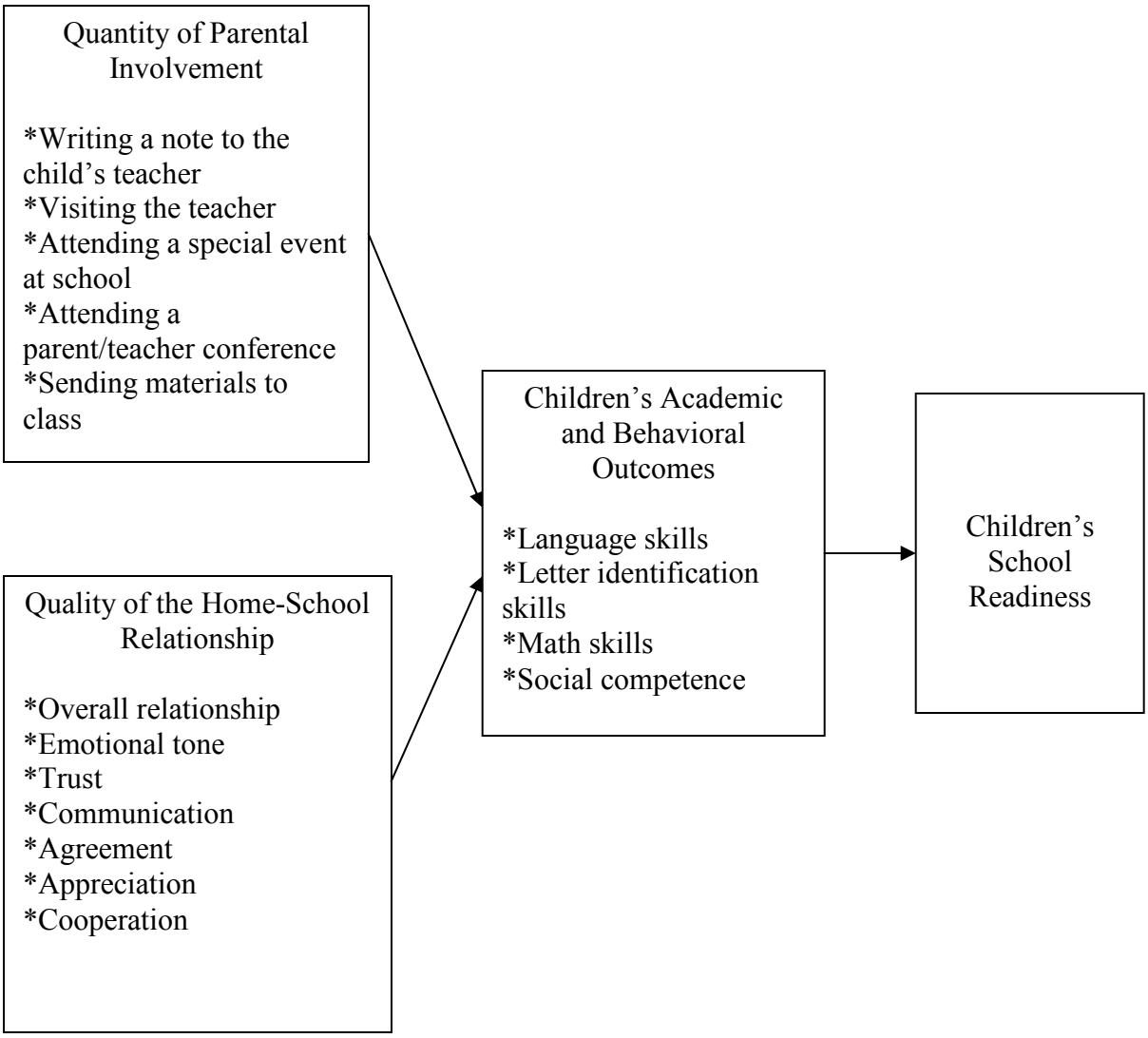


Figure 2. Conceptual framework for the effects of parental involvement at school on children's outcomes



Research Questions

This study seeks to answer the following research questions using a range of analytic methods:

(1a) Effects of parental involvement at home. What are the effects of parental intentional teaching and socialization practices on children's school readiness as indexed by early academic skills and social competence? Are there specific sub-groups of parental practices that predict specific academic skills and social competence?

(1b) Moderating effects of race/ethnicity. Does race/ethnicity moderate the effects of parental involvement at home on children's early academic skills and social competence?

(2a) Effects of parental involvement at school. What are the effects of the quantity of parental involvement at school and the quality of the home-school relationship on children's early academic skills and social competence?

(2b) Moderating effects of race/ethnicity. Does race/ethnicity moderate the effects of parental involvement at school and the quality of the home-school relationship on children's early academic skills and social competence?

Data Source

Data for this study were collected as part of the National Center for Early Development and Learning's (NCEDL) Multi-State Study of Pre-Kindergarten which examined the quality and outcomes of pre-kindergarten programs operated in schools or under the direction of state and local educational agencies. The children were followed from the beginning of pre-kindergarten in 2001 through the end of the kindergarten

school year in 2003. The present study includes child outcome data from the spring of the kindergarten year.

Six states were purposefully selected from among states that have invested significant resources in pre-kindergarten initiatives. The states were selected based on diversity in teacher credentials, location of program (in versus out of school), intensity (length of day/year), and geographical location. Within each state, 40 centers/schools were selected through stratified random sampling to maximize variation in teacher credentials, location of program, and intensity. Following the selection of these 240 centers, one classroom was selected using stratified random sampling to maximize variation in teacher credentials and intensity. Four children (two boys and two girls) were then randomly selected within each classroom to form a total of 960 preschool children. Children's cognitive, language, behavioral, social, and emotional development was assessed along with the educational practices of the programs and the classroom environment.

In five of the six states, parents (N= 296) also agreed to participate in home based interviews and observations of family practices. The goal of the family component was to gather more detailed information about the variations in home learning environments, relationships, and practices and examine their impact on academic motivation, reading, numeracy, and socio-emotional functioning. Parents provided information about their home teaching practices, their relationships with schools and teachers, and their children's development. Additionally, parents and children were videotaped doing three interaction tasks together.

Sample

Two different sub-samples of the NCEDL were used to answer each of the two research questions. The subset of the NCEDL that was used for the first research question (parental involvement at home) were cases that had data available on both the parental self-report intentional teaching practices measure and the videotaped interaction tasks (N=179). The subset of the NCEDL that was used for the second research question (parental involvement at school) were cases that had data available on the teacher questionnaires (N=742). Children with an Individualized Education Program (IEP) in the spring of their kindergarten year were not eligible for study participation.

Tables 1 and 2 report the demographic characteristics of the two samples and compare each sample to the excluded cases. The final sample used in the parental home involvement analysis significantly differed from the excluded cases with respect to several demographic characteristics (see Table 1). The study sample available for analysis was comprised of a greater number of families living above the federal poverty line, a greater number of Euro-American children, and more educated mothers than the excluded sample. Additionally, children in the included sample scored significantly higher on all outcome assessments than children in the excluded sample. In contrast, the final sample used in the parental school involvement analysis did not significantly differ from the excluded cases with respect to child's gender and race/ethnicity, maternal education, poverty level, and child outcomes (see Table 2).

Table 1. Comparison of Final Sample with Excluded Cases for Parental Home Involvement Analysis

	Final sample (n = 179)	Excluded cases (n = 742)	Test statistic
Child's gender			
Male	52%	47%	$\chi^2 = 42.27$
Female	48%	53%	
Child's race/ethnicity			
Euro-American	47%	38%	$\chi^2 = 9.66^{*}$
African American	27%	23%	
Latino	18%	28%	
Other	8%	11%	
Maternal education			
Less than high school	11%	18%	$\chi^2 = 42.27^{***}$
High school diploma	16%	24%	
Some college	44%	46%	
BA or higher	30%	12%	
Poverty level			
Poor	39%	59%	$\chi^2 = 22.00^{***}$
Not poor	61%	41%	
Child Outcome			

PPVT	100.71	96.55	$T = -3.77^{***}$
OWLS	98.80	93.85	$T = -4.57^{***}$
Letter Identification	109.21	106.17	$T = -2.96^{***}$
Math	103.44	100.88	$T = -2.78^{***}$
Social Competence	3.70	3.43	$T = -4.13^{***}$

Note. *p<.05. **p<.01. ***p<.001.

Table 2. Comparison of Final Sample with Excluded Cases for Parental School Involvement Analysis

	Final sample (n = 742)	Excluded cases (n =179)	Test statistic
Child's gender			
Male	52%	52%	$\chi^2 = .01$
Female	48%	48%	
Child's race/ethnicity			
Euro-American	40%	39%	$\chi^2 = 1.27$
African American	24%	25%	
Latino	26%	28%	
Other	10%	8%	
Maternal education			
Less than high school	16%	23%	$\chi^2 = 7.55$
High school diploma	23%	23%	
Some college	47%	37%	
BA or higher	15%	16%	
Poverty level			
Poor	45%	40%	$\chi^2 = 1.43$
Not poor	55%	60%	
Child Outcome			
PPVT	97.72	95.77	$t = -1.47$

OWLS	95.16	93.36	t = -1.39
Letter Identification	106.62	108.09	t = 1.20
Math	101.48	101.10	t = -.35
Social Competence	3.48	3.59	t = 1.00

Measures

Observations of Parent-Child Interactions

Parents and children participating in the in-home interviews were videotaped doing three interaction tasks together. The tasks were those used in the National Institute of Child Health and Human Development (NICHD) Study of Early Child Care (2000). Interviewers explained the activities to the parent while the child was out of the room and informed the parent that s/he and the child would have 15 to 20 minutes to do the three activities, but the parents were responsible for monitoring how much time they spent on them. On average, families spent a total of 20 to 30 minutes on the three tasks. The first task used an Etch-a- Sketch® toy on which a transparency maze had been placed. This task required motor and executive functions skills such as self-control and planning. Parents were instructed to teach the child to move a needle point from the outside of the maze to its center by using two circular knobs on the toy. The child was supposed to get to the center of the maze without crossing over the lines. The second task used rectangular block towers. Parents were instructed to teach the child to combine blocks of different sizes and shapes to build seven towers to match a model tower. This task required skills related to recognition of shapes, pattern matching, and spatial perception.

The final task was free play with puppets. The parent and child were given puppets and told to play however they wished.

Training and procedures for coding. The videotapes were coded by a Masters trained social worker and two doctoral students who specialized in child development and early intervention. The Principal Investigator and a second developmental psychologist served as the gold standard to be used in training and certification of raters. Coders were trained during 10 two hour sessions in which they discussed the constructs of the coding procedure. The gold standard raters initially coded a set up tapes which were used for training. The trainees rated these tapes independently and then discussed any discrepancies with each other. Training continued for each coder until she met the certification criterion of agreeing within one point on the code a minimum of 80% of the time for each practice on 10 consecutive tapes. After the coders met these criteria, two raters each coded an initial set of 20 tapes which were used to assess inter-rater reliability (Cohen's Kappa) for each practice. Inter-rater reliability was re-checked halfway through the coding of the tapes.

Ratings of observed parental practices. The coding scheme for the observed parental practices was adapted from the Study of Early Child Care (NICHD, 2000). The scheme focused on theoretically important practices that could predict early language development and social competence. The observed parental practices included: (a) explain, (b) elaborate/expand, (c) support, (d) direct, and (d) criticize. For each practice, parents were rated on a five point scale according to how often they employed the practice on a 5-point Likert scale, from 1 (*none*) to 5 (*very high)* across all three tasks.

Explain was defined as the extent to which parents use verbal instruction

to provide clear directions to the child on how to complete videotaped tasks. Parents with high ratings on explain provided regular, clear, and organized verbal explanations throughout the session and were able to revise or improve their explanations when the child did not understand. Parents with low ratings on explain said very little to the child about what was to be done and how the child might approach the task. They made little effort to clarify in words when the child did not understand. The estimate of inter-rater reliability (Cohen's Kappa) for this practice rating was .91.

Elaborate/Expand was defined as the parent's ability to facilitate the child's problem solving and learning indirectly by building on and elaborating the child's current knowledge, in contrast to teaching directly or doing the task for the child. Parents with high ratings on elaborate/expand commented or questioned the child often but offered a minimum of assistance. Examples of the elaborate/expand strategy included informing, commenting, demonstrating, or questioning to enable the child to solve a problem with a minimum of direct assistance. Whereas the explain strategy conveyed information without regard to building on the child's current knowledge, elaborate/expand strategies used the child's knowledge as a starting point. Explain involved direct telling whereas elaborate/expand involved indirect and facilitative feedback. The estimate of inter-rater reliability for this practice rating was .67.

Support was defined as the degree of security afforded to the child by parental responsiveness, acceptance, and affirmation. Parents with high ratings on support encouraged the child's investment in and enthusiasm for the task, praised and engendered satisfaction with success at the task, and provided reassurance, especially

when the child was uncertain about what to do. The estimate of inter-rater reliability for this practice rating was .89.

Direct was defined as the degree to which the parent explicitly told the child what to do. High ratings were given when the parent controlled the child's behavior through direct commands or took over the task entirely from the child. The estimate of inter-rater reliability for this practice was .99.

Criticism was defined as the extent to which the parent responded to the child's performance with negative comments with the goal of correcting the child's responses. Parents with high ratings on criticize were sarcastic, harped on mistakes rather than providing guidance, and made negative evaluations and harsh or pejorative statements about aspects of the child unrelated to performance on the task. The estimate of inter-rater reliability for this practice was .99.

Data reduction for parent-child observations. Data reduction was undertaken to combine the practice indicators from the observed parent-child observations. This was done in order to reduce the number of analyses required to test the relation between practices and child outcomes. A principal components analysis with direct oblimin rotation was performed to determine if the observed parental practices grouped into theoretically meaningful factors. The principal components analysis included the following practices: explain, support, elaborate/expand, direct, and criticize. Two factors were extracted that accounted for 61% of the variance. Explain, support, and elaborate/expand loaded on one factor, which was labeled Discourse Practices. Criticism and direct loaded on a second factor, which was initially labeled Control Practices. Cronbach's alpha was .66 for Discourse Practices. However, Cronbach's alpha was only

.39 for Control Practices. Because of the extremely low reliability for this factor, criticism and direct were retained as separate variables.

Parent Questionnaire

Poverty status. The 150% of the federal poverty guideline was adopted as the basis for dividing poor and non-poor families because it was used most often by the states in the current sample in decisions about who constituted the economically needy population when economic need was a condition for access to state supported pre-k programs (U.S. Department of Health & Human Services, 2001). Families whose household income fell below 150% of the index set by the U.S. Government were categorized as poor. Those families whose income fell above this range were categorized as non-poor.

Intentional teaching practices (NCEDL, 2001a). Parents reported how often they engaged in the following intentional teaching practices with their children : (a) reading, (b) practicing letters/sounds, (c) defining words, (d) measuring, and (e) adding/subtracting, Parents rated their frequency in the past week on a 4-point Likert scale from 1 (*never*) to 4 (*every day*). Cronbach's alpha for this five item measure was .77.

The five item measure was further divided into two subscales: (a) a literacy practices subscale which included the average score of how often the parent read a book with the child, how often the child practiced letters or sounds, and how often the parent defined words for the child; and (b) a math practices subscale which included the average score of how often the child measured something and how often the parent showed the

child how to add or subtract. Cronbach's alpha was .65 for the literacy practices subscale and .71 for the math practices subscale.

Teacher Questionnaire

Home-school relationship (NCEDL, 2001b). Teachers were asked to rate the quality of their relationship with the children's parents on several different aspects of their relationship (i.e., overall relationship, emotional tone, trust, communication, agreement, appreciation, and support/cooperation). Teachers used a 5-point Likert scale to rate the parents. The items were reverse coded for the present study so that higher scores indicated a better relationship. Cronbach's alpha was .92 for the current sample.

Family involvement (NCEDL, 2001c). Teachers were asked to rate the quantity of parental involvement in a series of school related activities (i.e., parent called teacher or wrote a note, stopped by to talk to teacher, attended a group function or special event exclusively for parents, attended parent-teacher conferences, sent materials to classroom, and volunteered at school). Teachers used a 5-point Likert scale from 1 (*never*) to 5 (*more than once per week*) to rate the parents. Cronbach's alpha was .64 for the current sample.

Direct Child Assessments and Teacher Report of Child Outcomes

Peabody Picture Vocabulary Test-3rd edition (PPVT-III) (Dunn & Dunn, 1997). Children's receptive vocabulary was assessed using the PPVT-III. The PPVT-III comes in two parallel forms (Forms IIIA and IIIB) and takes approximately 10 to 15 minutes to administer. The test contains 204 items arranged in order of increasing difficulty with each item including four black-and-white pictures. The subject is asked to point to the picture that represents the stimulus word spoken by the examiner (i.e., "Point to the

truck"). Raw scores can be converted to standard scores (M=100, SD=15), percentile ranks, normal curve equivalents, stanines, and test-age equivalents. The alpha coefficient of all items on the PPVT-III ranges from .92 to .98 with a median reliability of .94, and the test-retest reliability ranges from .91 to .94. The test's correlations with other measures of verbal ability range from .40 to .76.

Oral & Written Language Scale (OWLS, Oral Expression Scale) (Carrow-Woolfolk, 1995). Children's expressive language was assessed using the Oral Expression Scale of the OWLS. The scale takes approximately 10 to 25 minutes to administer. During the assessment, the examinee answers questions, completes sentences, or generates sentences in response to oral and verbal stimuli. Raw scores can be converted to standard scores (M=100, SD=15), percentile ranks, normal curve equivalents, stanines, and test-age equivalents. The test-retest reliability for the 4- to 5- year-old age range on the Oral Expression Scale is .86 and correlations between the OWLS and other achievement tests range from .44 to .89.

Woodcock-Johnson III Tests of Achievement (WJ-III) Letter-Word Identification subtest (Woodcock, McGrew, & Mather, 2001). The first five items of the Letter-Word Identification subscale measure symbolic learning, or the ability to match a pictographic representation of a word with an actual picture of the object. The remaining 52 items measure children's reading identification skills in identifying isolated letters and words that are presented in large type on the pages of the test book. The internal consistency reliability is .92.

Woodcock-Johnson III Tests of Achievement (WJ-III) Applied Problems subtest (Woodcock et al. 2001). The Applied Problems subtest of the Woodcock-Johnson II Tests

of achievement measures the ability to analyze and solve relatively simple math problems. The reliability coefficients for the 3- to 5-year-old group age range from .92 to .94.

Teacher Child Rating Scale (TCRS) (Hightower et al., 1986). Teachers rated children's socio-emotional adjustment using the TCRS. Teachers rated each child individually on 32 items using a 5-point Likert scale from 1 (*not at all*) to 5 (*very well*) on how well statements described the child. The factor analytically derived and standardized Total Competence scale (included assertiveness, frustration tolerance, task orientation, and peer social skills items) was used in this study. Internal consistency coefficients range from .85 to .95 and test-retest reliabilities range from .61 to .91.

CHAPTER 5

PARENTAL HOME INVOLVEMENT RESULTS

Data Analysis Approach

Model Testing for Main Effects

Hierarchical multiple regression was employed to investigate the effects of parental intentional teaching and socialization practices on children's academic skills and social competence. Five models were considered, each one adding a predictor to the baseline model. In the first model, the control variable poverty status was included. The second model adds a predictor for intentional teaching practices (the literacy intentional teaching practices subscale was used for the PPVT, OWLS, and letter identification outcomes; the math intentional teaching practices subscale was used for the math outcome; and the combined literacy and math practices scale was used for the social competence outcome). The third model adds the predictor for Discourse and the fourth model adds the predictor for direct. The final model adds the predictor for criticism.

In the first four models, ordinary least squares (OLS) regression was employed. In the final models, weighted least squares (WLS) regression was used since the independent variable criticism violated the homoscedasticity assumption of OLS. A visual inspection of the scatterplots of criticism and the dependent variables revealed a funnel shaped pattern which signified that the variance of residual error was not constant for all values of criticism. If OLS were employed, the estimates of the regression

coefficients would have excessively large standard errors (Tabachnick & Fidell, 2001). Weighted least squares corrects for this problem by weighting the regression by the variable criticism. The result is that the coefficient estimates are similar to what they would be in OLS; however, under WLS their standard errors are smaller.

Due to the data being hierarchically sampled (e.g., children within classrooms), multilevel modeling was also considered as an option for analysis. Typically, multilevel modeling is suggested when autocorrelation, or more formally the intra-class correlation (ICC), is 0.25 or above (Heinrich & Lynn, 2001; Kreft, 1996). Autocorrelation occurs when "information coming from the same unit (such as children from the same classroom) tends to be more alike than information from independent units (such as a data set of *n* unrelated children)" (Guo, 2005, p. 639). In the current study, only one of the five tested models had an ICC above the acceptable cutoff of 0.25. The PPVT model had an ICC of 0.27. However, if multilevel modeling were used in the current study to adjust for intra-class correlation, the study would have been severely under-powered due to the small sample size. Therefore, multiple regression was the best available analysis option. The limitations of using multiple regression are discussed in Chapter 7.

Moderating Effects of Race/Ethnicity

Interaction terms (comprised of each independent variable and a dummy variable for race/ethnicity) were included to test whether race/ethnicity moderated the effect of parental practices on children's academic skills and social competence. The dummy variable for race/ethnicity was coded as 0 (*Euro-American*) and 1 (*African American*). The interaction terms were added to the regression equations in the following order: (a) Intentional Teaching Practices x Race/Ethnicity in the third model (the literacy

intentional teaching practices subscale was used for the PPVT, OWLS, and letter identification outcomes; the math intentional teaching practices subscale was used for the math outcome; and the combined literacy and math practices scale was used for the social competence outcome); (b) Discourse x Race/Ethnicity in the third model; (c) Direct x Race/Ethnicity in the final model; and (d) Criticism x Race/Ethnicity in the final model. If the interaction term was not significant it was removed from the model for subsequent testing of the remaining interaction terms. The variable poverty status was not included in the testing of moderating effects because of multicollinearity issues with race/ethnicity.

Missing Values

In the first stage of data analysis, the data were screened for normality, linearity, outliers, errors, and missing data. For the PPVT, OWLS, and letter identification models, data were complete for 92% of the cases. For the math model, data were complete for 90% of the cases. For the social competence model, data were complete for 91% of the cases. Of the cases with missing data, nearly all (82% to 93% depending on the regression model) had missing data on the poverty status variable. Tabachnick & Fidell (2001) suggest that if only 5% or less of the data points are missing, then almost any procedure for handling missing values will produce similar results. In the current analysis, listwise deletion would have resulted in the deletion of 8% to10% of the cases. When more than 5% of data are missing, listwise deletion is not the preferred method because it leads to a decrease in power and possibly biased results. Therefore, measures were taken to estimate the missing values for poverty status.

The values of the missing data were estimated using the expectation maximization (EM) algorithm for maximum likelihood (ML) estimation in SPSS version 14.0. The EM

algorithm consists of two steps: (a) computing the expected value of the complete data log likelihood given the current parameter values; and (b) substituting the expected values for the missing data calculated in step one and then maximizing the expected log-likelihood to get new parameter estimates. These two steps are repeated until convergence has been obtained (Allison, 2003). This method assumes missing values are missing at random (MAR), or "the probability that data are missing on *Y* may depend on the value of *X*, but does not depend on the value of *Y*, holding *X* constant" (Allison, 2003, p. 545). Unfortunately, it is impossible to test this assumption. In this study, for example, one cannot know whether poor families are more likely than non-poor families to have missing data on poverty status. However, even when data are not MAR, imputation methods that assume MAR still produce better results than using listwise deletion (Sinharay, Stern, & Russell, 2001).

In the original data set, the poverty status variable was created by inspecting the total family income and the number of the people in the child's household and comparing these values to the poverty guidelines set by the U.S. government. Families whose household income fell below 150% of the index set by the U.S. Government were categorized as "poor". Those families whose income fell in the range above this range were categorized as "non-poor". Missing data imputation was performed on the total family income variable and then families were categorized as poor or non-poor based on these imputed values and the number of people in the child's household. The following variables were used to impute the data for total family income: child's race, number of people in household, maternal education, intentional teaching practices, discourse, directiveness, and criticism.

After missing data imputation was performed for the family's income, less than 2% of the cases had missing data on the remaining indicators. For the PPVT, OWLS, and letter identification models, one case had missing data on the literacy practices indicator. For the math model, three cases had missing data on the math practices indicator. For the social competence model, two cases had missing data on the combined practices indicator. Due to the small number of missing cases on these indicators, listwise deletion was applied to these cases.

Results

Descriptive Analyses

Tables 3 and 4 present the descriptive statistics of and correlations among predictors and dependent variables. With respect to socialization practices, on average, parents scored highest on direct (M=3.33) followed by discourse (M=2.75) and criticism (M=1.44). With respect to intentional teaching practices, parents reported an average score of 3.16 for literacy practices (approximately three to six times a week) and an average score of 2.34 for math practices (approximately one to two times a week). Children's scores on the PPVT, OWLS, and math subscale were comparable to the national norms (M=100, SD=15). Children's scores on the letter-word identification subscale were slightly better than the national norm.

Table 3. Descriptive Statistics of Predictors and Dependent Variables

Variable	*M*	*SD*	Range
Socialization Practices			
Discourse (explain, expand, & support)	2.75	.68	1-5
Direct	3.33	.83	1-5
Criticism	1.44	.91	1-5
Intentional Teaching Practices			
Literacy Practices	3.16	.61	1-4
Math Practices	2.34	.79	1-4
Child Outcomes			
PPVT	100.71	12.84	61-132
OWLS	98.80	13.19	61-130
Letter-Word Identification	109.21	12.34	69-138
Math	103.44	11.14	74-137
Social Competence	3.70	.70	2.2-5

Note. PPVT=Peabody Picture Vocabulary Test; OWLS=Oral and Written Language Scale.

The parental discourse practices of explain, expand, and support were moderately correlated with one another. The PPVT and OWLS were positively correlated with explain, expand, and support and negatively correlated with direct and criticism. The Woodcock-Johnson Letter-Word Identification score was only positively correlated with literacy practices. The Woodcock-Johnson Applied Problems score was negatively

correlated with direct and criticism. Social competence, as reported by teachers, was negatively correlated with direct.

Table 4. Zero Order Correlations among Practices and Outcomes

	1	2	3	4	5	6	7	8	9	10	11	12
1. Explain	1.0											
2. Expand	.41**	1.0										
3. Support	.45**	.35**	1.0									
4. Direct	-.26**	-.20**	-.14	1.0								
5. Criticism	.10	-.11**	-.23**	.24**	1.0							
6. Lit Prac	-.08	-.09	-.13	.06	-.06	1.0						
7. Math Prac	-.07	-.22**	-.20**	.10	.03	.59**	1.0					
8. PPVT	.22**	.16*	.21**	-.26**	-.19*	-.04	-.11	1.0				
9. OWLS	.21**	.17*	.15*	-.28**	-.24**	-.01	-.14*	.74**	1.0			
10. Letters	.09	.03	.11	.00	-.10	.16*	.04	.31**	.46**	1.0		
11. Math	.02	-.03	.15*	-.24**	-.22**	.00	.03	.48**	.54**	.42**	1.0	
12. Soc Comp	.09	.05	.05	-.19*	-.10	.07	.06	.35**	.37*	.32**	.42**	1.0

Note. *$p \leq .05$, ** $p \leq .01$

Results of Model Testing for Main Effects

PPVT. The hierarchical regression models for the PPVT are presented in Table 5. After controlling for poverty status, step two indicated that literacy practices were not significantly related to PPVT scores. When discourse strategies were entered in step three, there was a significant increase in the explained variance and discourse strategies significantly predicted PPVT scores, $F(3, 172) = 8.36$, $p<.001$. With other variables held constant, PPVT scores increased by 3.14 points for every one unit increase in discourse strategies. When direct was entered in step four, direct significantly predicted PPVT scores $F(4, 171) = 8.15$, $p<.001$; however, discourse became non-significant. With other variables held constant, PPVT scores decreased by 2.89 points for every one unit increase in direct. Poverty status remained significant across all five models. The final model indicated that non-poor children scored approximately six points higher on the PPVT than poor children $F(5, 170) = 7.27$, $p<.001$. The squared multiple correlation in the final model indicated that the independent variables explained 15% of the variance in PPVT scores for the sample.

Table 5. Hierarchical Regression Analysis for Parental Practices Predicting Children's PPVT Scores

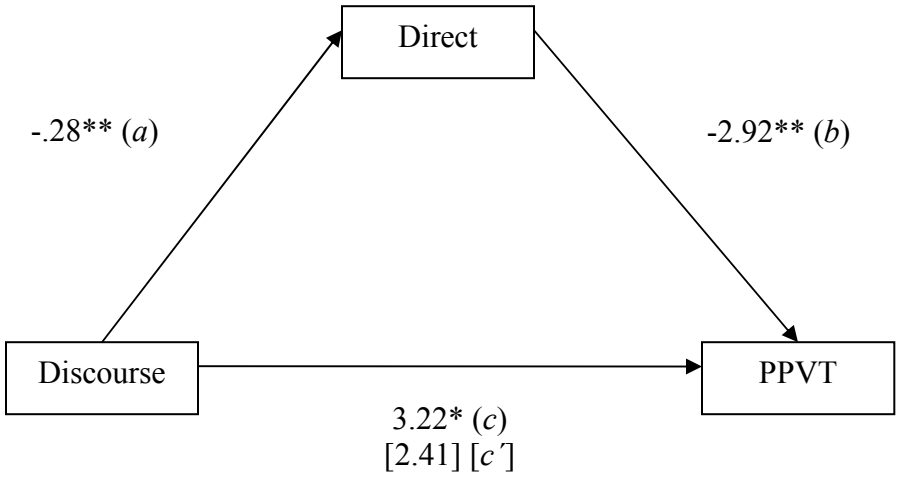
	PPVT (N = 176)				
Variable	Step 1	Step 2	Step 3	Step 4	Step 5
Poverty Status [a]	8.38*** (1.88)	8.35*** (1.90)	6.97** (1.98)	6.53** (1.95)	5.96** (1.89)
Literacy Practices	--	-.17 (1.51)	.18 (1.50)	.25 (1.48)	-.31 (1.39)
Discourse	--	--	3.14* (1.42)	2.38 (1.43)	2.38 (1.40)
Direct	--	--	--	-2.89* (1.12)	-2.41* (1.12)
Criticism	--	--	--	--	-1.18 (.84)
Adj. R^2	.10	.09	.11	.14	.15
F (change)	19.89***	.01	4.86*	6.67*	1.38[b]

Note. Unstandardized coefficients are reported with standard errors in parentheses.
[a]Poor is the reference category.
[b]F (change) for Step 5 based on OLS estimation. All other estimates in Step 5 based on WLS estimation.
*p<.05. **p<.01. ***p<.001.

The fact that discourse was significant in step three but became non-significant in step four when direct was entered, indicated a partial mediation effect. Further steps were taken to determine if this mediation effect was statistically significant using an SPSS macro developed by Preacher and Hayes (2004). This program estimates the paths represented in Figure 3, controlling for poverty level. One of the most widely used significance tests for mediation effects is the Sobel Test, which is based on the assumption that the distribution of the indirect effects (*ab*) are normally distributed

(Sobel, 1982). However, the distribution of *ab* in this analysis was positively skewed. Therefore, the best available alternative for significance testing was to bootstrap the distribution the sampling distribution of *ab* and derive a confidence interval with the empirically derived boostrapped sampling distribution (Preacher & Hayes, 2004). In the current analysis, boostrapping was performed by taking 1,000 samples of size 176 (the original sample size) from the data, sampling with replacement, and computing the indirect effect, *ab*, in each sample.

Figure 3. Mediational model for PPVT



Note: The undstandardized regression coefficient between discourse and PPVT controlling for direct is in brackets. The indirect effect of discourse on PPVT through the mediator direct is significant at $p<.05$. *$p<.05$. **$p<.01$.

The unstandardized regression coefficients for the relationship between discourse and PPVT as mediated by direct are presented in Figure 3. While not depicted in the figure, poverty status was controlled for in all analyses. The boostrapped estimate of the indirect effect was .81 with a 95% confidence interval of .11 to 1.83. Because zero was

not in the 95% confidence interval, it can be concluded that the indirect effect was statistically significant at $p<.05$.

OWLS. The results of the OWLS models were similar to that of the PPVT models (see Table 6). After controlling for poverty status, step two indicated that literacy practices were not significantly associated with OWLS scores. When discourse strategies were entered in step three, there was a significant increase in the explained variance and discourse strategies significantly predicted OWLS scores, $F(3, 172) = 5.04$, $p<.01$. With all other variables held constant, OWLS scores increased by 3.27 points for every one unit increase in discourse strategies. When direct was entered in step four, direct significantly predicted OWLS scores, $F(4, 171) = 6.31$, $p<.001$; however, discourse became non-significant. Holding all other variables constant, OWLS scores decreased by 3.59 points for every one unit increase in direct. Step five indicated that criticism significantly predicted OWLS scores, $F(5, 170) = 7.05$, $p<.001$. With other variables held constant, OWLS scores decreased by 1.99 points for every one unit increase in criticism. Poverty status remained significant across all five models. The final model indicated that non-poor children scored approximately four points higher on the OWLS than poor children. The squared multiple correlation in the final model indicated that the independent variables explained 15% of the variance in OWLS scores for the sample.

Table 6. Hierarchical Regression Analysis for Parental Practices Predicting Children's OWLS Scores

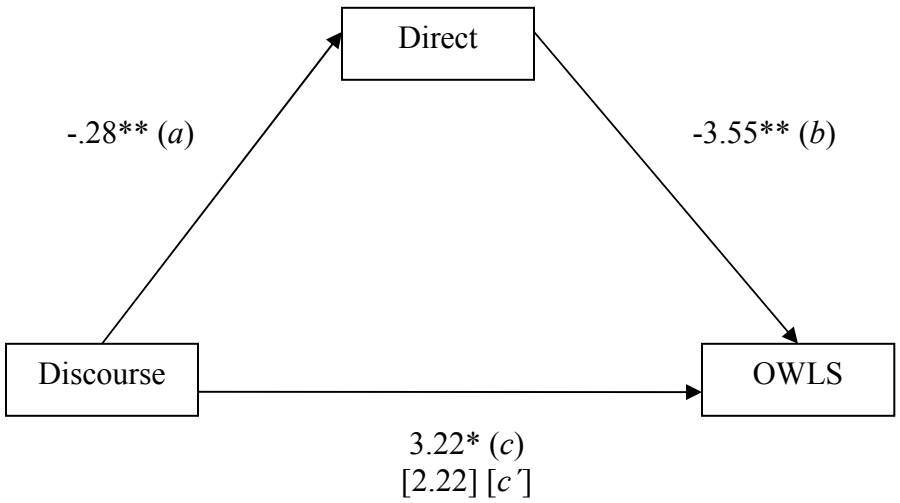
	OWLS (N = 176)				
Variable	Step 1	Step 2	Step 3	Step 4	Step 5
Poverty Status [a]	6.32** (1.98)	6.36** (2.00)	4.92* (2.09)	4.37* (2.04)	4.14* (1.98)
Literacy Practices	--	.31 (1.59)	.67 (1.58)	.77 (1.55)	.66 (1.45)
Discourse	--	--	3.27* (1.5)	2.33 (1.50)	1.84 (1.47)
Direct	--	--	--	-3.59** (1.17)	-3.30** (1.17)
Criticism	--	--	--	--	-1.99* (.88)
Adj. R^2	.05	.05	.07	.11	.15
F (change)	10.18**	.04	4.75*	9.37**	4.08*[b]

Note. Unstandardized coefficients are reported with standard errors in parentheses.
[a]Poor is the reference category.
[b]F (change) for Step 5 based on OLS estimation. All other estimates in Step 5 based on WLS estimation.
*p<.05. **p<.01. ***p<.001.

Again, the fact that discourse was significant in step three but became non-significant in step four when direct was entered, indicated a partial mediation effect. Further steps were taken to determine if this mediation effect was statistically significant. Bootstrapping was used since the distribution of *ab* was positively skewed. The unstandardized regression coefficients for the relationship between discourse and OWLS as mediated by direct are presented in Figure 4. While not depicted in the figure, poverty status was controlled for in all analyses. The bootstrapped estimate of the indirect effect

was .99 with a 95% confidence interval of .21 to 2.03. Because zero was not in the 95% confidence interval, it can be concluded that the indirect effect was statistically significant at $p<.05$.

Figure 4. Mediational model for OWLS



Note: The undstandardized regression coefficient between discourse and OWLS controlling for direct is in brackets. The indirect effect of discourse on OWLS through the mediator direct is significant at $p<.05$. *$p<.05$. **$p<.01$

Letter-word identification. The hierarchical regression models for the letter-word identification models are presented in Table 7. After controlling for poverty status, step two indicated that literacy practices significantly predicted letter-word identification scores, $F(2, 173) = 4.03$, $p<.05$. Letter-word identification scores increased by 3.51 points for every one unit increase in literacy practices. Discourse strategies, direct, criticism, and poverty status did not significantly predict letter-word identification scores. The squared

multiple correlation in the final model indicated that the independent variables explained 4% of the variance in letter identification scores for the sample.

Table 7. Hierarchical Regression Analysis for Parental Practices Predicting Children's Letter-Word Identification Scores

	Letter-Word Identification (N = 176)				
Variable	Step 1	Step 2	Step 3	Step 4	Step 5
Poverty Status [a]	2.99 (1.89)	3.46 (1.88)	2.74 (1.98)	2.81 (1.99)	2.47 (1.95)
Literacy Practices	--	3.51* (1.50)	3.69* (1.50)	3.68* (1.51)	3.54* (1.44)
Discourse	--	--	1.65 (1.43)	1.78 (1.46)	1.48 (1.45)
Direct	--	--	--	.50 (1.14)	.85 (1.16)
Criticism	--	--	--	--	-1.02 (.86)
Adj. R^2	.01	.03	.04	.03	.04
F (change)	2.50	5.50*	1.34	.19	.78[b]

Note. Unstandardized coefficients are reported with standard errors in parentheses.
[a]Poor is the reference category.
[b]F (change) for Step 5 based on OLS estimation. All other estimates in Step 5 based on WLS estimation.
*p<.05. **p<.01. ***p<.001.

Math. The results for the Woodcock-Johnson math models are presented in Table 8. Neither math practices nor discourse strategies predicted math scores. The final model indicated that both direct and criticism significantly predicted math scores, $F(5, 168) = 6.48$, p<.001. With all other variables held constant, math scores decreased by 2.72 points

for every one unit increase in direct and math scores decreased by 2.01 points for every one unit increase in criticism. Poverty status remained significant across all five models. The final model indicated that non-poor children scored approximately five points higher on the Applied Problems subtest than poor children. The squared multiple correlation in the final model indicated that the independent variables explained 13% of the variance in math scores for the sample.

Table 8. Hierarchical Regression Analysis for Parental Practices Predicting Children's Math Scores

	Math ($N = 174$)				
Variable	Step 1	Step 2	Step 3	Step 4	Step 5
Poverty Status [a]	5.53** (1.68)	5.77** (1.70)	5.82** (1.80)	5.49** (1.75)	5.10** (1.71)
Math Practices	--	.94 (1.06)	.92 (1.08)	1.02 (1.05)	.85 (1.00)
Discourse	--	--	-.11 (1.30)	-1.05 (1.30)	-1.44 (1.28)
Direct	--	--	--	-3.23** (1.02)	-2.72* (1.05)
Criticism	--	--	--	--	-2.01* (.78)
Adj. R^2	.05	.05	.05	.10	.13
F (change)	10.84**	.79	.01	10.15**	3.54[b]

Note. Unstandardized coefficients are reported with standard errors in parentheses.
[a]Poor is the reference category.
[b]F (change) for Step 5 based on OLS estimation. All other estimates in Step 5 based on WLS estimation.
*p<.05. **p<.01. ***p<.001.

Social competence. The results of for the social competence models are presented in Table 9. After controlling for poverty status, only direct predicted social competence $F(4, 159) = 3.55$, $p<.01$. Social competence scores decreased by .15 points for every one unit increase in direct. Additionally, the fourth model indicated that non-poor children scored .28 points higher on the teacher rated social competence scale than poor children. The squared multiple correlation in the fourth model indicated that the independent variables explained 6% of the variance in social competence scores for the sample.

Table 9. Hierarchical Regression Analysis for Parental Practices Predicting Children's Social Competence Scores

	Social Competence (N = 164)				
Variable	Step 1	Step 2	Step 3	Step 4	Step 5
Poverty Status [a]	.30** (.11)	.32** (.11)	.30* (.12)	.28* (.12)	.27* (.12)
Combined Practices	--	.11 (.09)	.12 (.09)	.12 (.09)	.12 (.09)
Discourse	--	--	.03 (.08)	-.01 (.09)	-.01 (.09)
Direct	--	--	--	-.15* (.07)	-.14 (.07)
Criticism	--	--	--	--	-.02 (.06)
Adj. R^2	.04	.04	.04	.06	.05
F (change)	7.37**	1.62	.14	4.86*	.13[b]

Note. Unstandardized coefficients are reported with standard errors in parentheses.
[a]Poor is the reference category
[b]F (change) for Step 5 based on OLS estimation. All other estimates in Step 5 based on WLS estimation.
*$p<.05$. **$p<.01$. ***$p<.001$.

Results of Model Testing for Moderating Effects of Race/Ethnicity

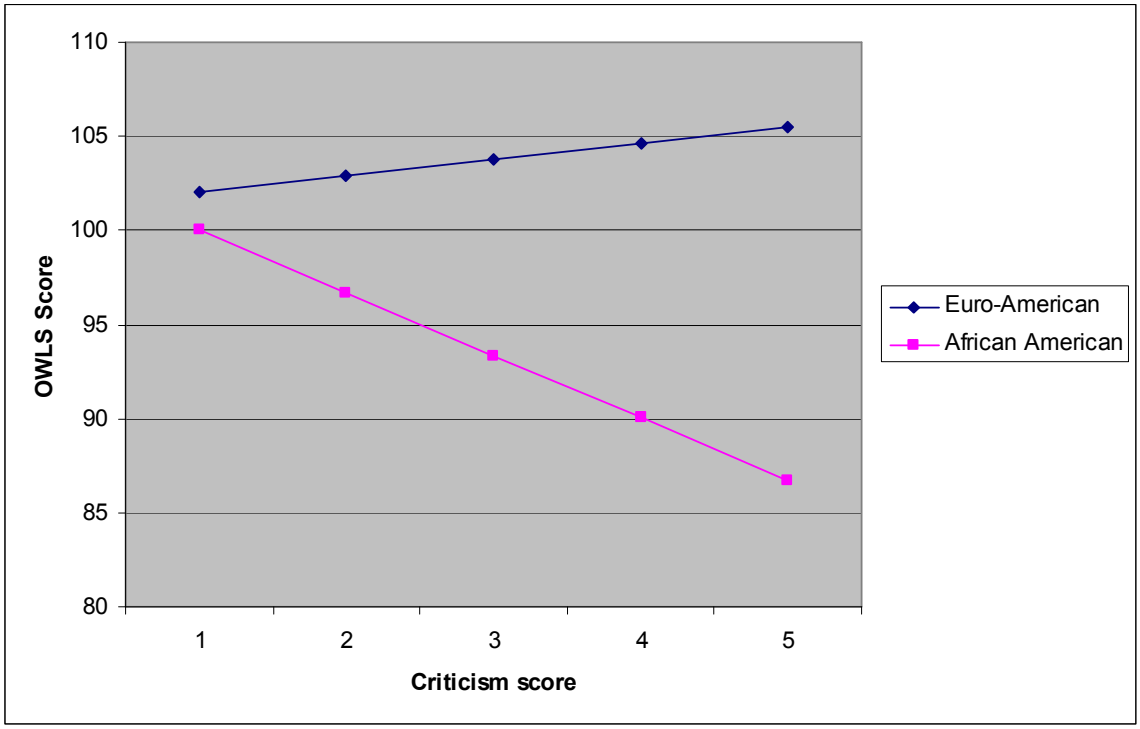
The only significant interaction effect was Criticism x Race/Ethnicity with OWLS as the dependent measure, $F(6, 122) = 9.54$, $p<.001$ (see Table 10). In other words, the effect of parental criticism on children's OWLS scores was conditional on the race/ethnicity of the child. For African American children, there was a negative association between the degree of parental criticism and OWLS score (see Figure 5). However, for Euro-American children there was a slight positive association between criticism and OWLS score. Additionally, African American and Euro-American children scored similarly on the OWLS when parents demonstrated low levels of criticism; however, a noticeable gap in OWLS scores emerged as parents became more critical, with African American children scoring lower than Euro-American children.

Table 10. Coefficients for the Interactive Effects of Criticism and Race on OWLS (N = 132)

	ß	*SE ß*
Race [a]	2.13	4.19
Literacy Practices	2.73	1.54
Discourse	2.39	1.53
Direct	-4.62**	1.35
Criticism	5.50	3.29
Criticism x Race	-4.19*	1.91

Note. Adjusted $R^2 = .29$ Unstandardized coefficients are reported with standard errors in parentheses.
[a]Euro-American is the reference category.
*$p<.05$. **$p<.01$.

Figure 5. Model-predicted OWLS scores: The interactive effects of criticism and race



CHAPTER 6

PARENTAL SCHOOL INVOLVEMENT RESULTS

Data Analysis Approach

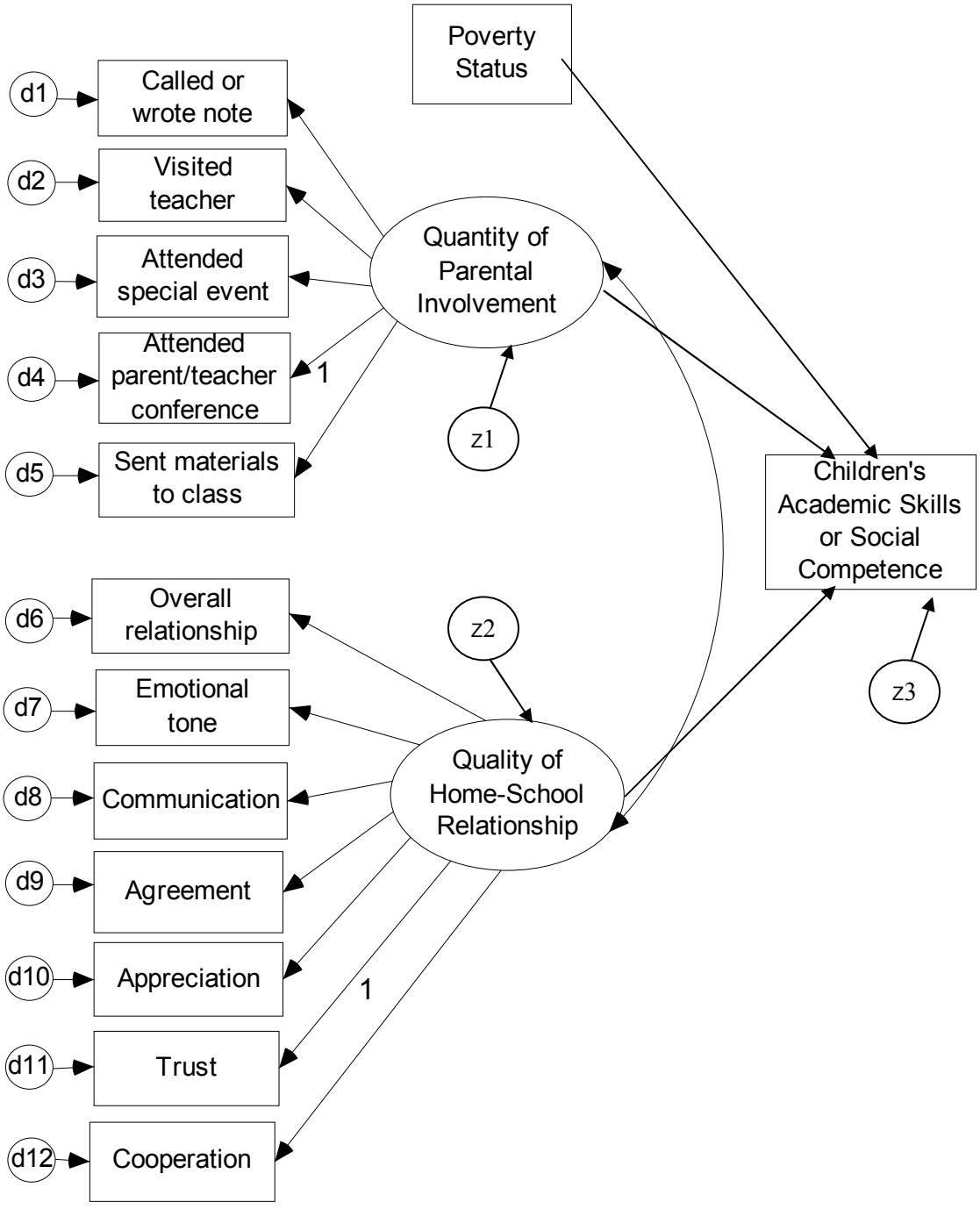
Components of the Model

The initial model tested in the current study is depicted in Figure 6. The model includes a measurement model, which consists of the two latent variables (quantity of parental involvement and quality of the home-school relationship), their respective indictors (represented with rectangles), and the covariance between the two latent variables, and a structural model, which consists of the hypothesized relationships between the independent latent variables, poverty status, and the dependent variable (children's academic skills or social competence). This model was run for each child outcome: PPVT, OWLS, letter identification, math, and social competence.

The two latent variables and poverty status are called exogenous variables because they are specified as causes of another variable in the model. Variables which have arrows pointing to them are called endogenous variables because they have presumed causes. All indicators of the two latent variables, the latent variables themselves, and the dependent variable have error terms, which represent variance unexplained by other variables in the model. The double headed arrow between the two latent variables indicates that they are assumed to covary. The constraint (1.0) that

appears in the figures next to the paths from latent variables to indicators represents the assignment of a metric to each latent variable.

Figure 6. Structural equation model for parental school involvement



Weighting and Clustering

Due to unequal probabilities of selection, sampling weights were calculated at each step in the sampling process (site, classroom, and child). Each weight equaled the inverse of the selection probability at that stage. The overall final child-level weights were the product of these three weights. The child weights were needed for calculating unbiased parameter estimates and their standard errors.

In order to control for clustering effects of children being nested within programs/classrooms, all analyses included the stratification variable, which identified the state the child was sampled from, and the primary sampling unit (PSU) variable, which identified the program/classroom the child was sampled from. When these variables were included in the analysis, Mplus used the Huber-White sandwich estimator (Huber, 1967; White, 1980) which adjusted standard errors for correlations of error terms across observations.

Structural Equation Modeling

Structural equation modeling (SEM) was chosen as the method of analysis because it offers several advantages over regression. First, unlike regression which assumes that variables are measured without error, SEM can take into account measurement error. Two types of unique variance are included in the error terms: random error (score unreliability) and all sources of systematic variance not due to the factors (Kline, 2005). Second, SEM can handle latent independent variables each measured by multiple indicators. A latent variable is not observed directly but is instead inferred from other observed variables. Third, confirmatory factor analysis (CFA) was necessary to test the structure and reliability of the latent variables under study. Finally, SEM allowed for

the components of the models to be tested across groups to see if significant differences existed.

The Mplus 4.1 software program was utilized to conduct the SEM analyses. This program was chosen because of its capacity to handle categorical, weighted, and clustered data. SPSS 14.0 was used to screen the data for missing values, skewness and kurtosis, and to calculate descriptive statistics, frequencies, reliability estimates, and correlation matrices.

Missing Values

Of the 921 cases in the original dataset, 145 had missing data on either the child weight variable, the entire teacher questionnaire, and/or the parent questionnaire. These cases were deleted from subsequent analysis. Of the 776 remaining case, 71 (approximately 10%) had missing data on the variable "How often has the parent attended a group function?". Therefore, due to excessive missing data on this indicator, it was deleted from subsequent analyses (Bowen, 1999). Additionally, 27 cases were deleted because they had data missing on three or more variables.

The remaining variables had missing data for less than 2% of the total sample except for the poverty status variable which had missing data for approximately 5% of the sample (38 out of 749 cases). Because poverty status was a critical variable for inclusion in the analysis, data on the missing cases were imputed using the EM algorithm in SPSS 14.0 (see Chapter 5 for details on the imputation process). The following variables were used to impute the data for total family income: child's race, number of people in household, maternal education, the quantity of parental involvement indicators, and quality of the home-school relationship indicators. For seven of the cases, missing

data on poverty status could not be imputed because the cases also had missing data on the number of people in the household. This variable, in conjunction with family income, was required to compute poverty status. Finally, due to the small amount of missing data on the indicators for the latent variables (less than 2% of cases), missingnesss for these indicators was specified as a function of poverty status (the MPlus default). The available sample for analysis was 742.

In order to determine whether the imputed data for poverty status introduced bias, all models were first run using the imputed data and then the results were compared to models using listwise deletion for poverty status. Both models had almost identical model fit indices and very similar parameter estimates. Therefore, only the models using imputed data are presented here.

Model Estimation and Assessment of Model Fit

Due to the ordinal nature of the variables, an appropriate estimation method needed to be considered. Ordinal variables cannot be treated as continuous because there is no meaningful and interpretable distance between the responses categories. Muthen (1984) states that when ordinal variables are incorporated into the model, a matrix of polychoric correlations based on an assumed underlying continuous distribution of the variables must be analyzed, rather than a covariance matrix based on raw data. The weighted least squares mean variance estimator (WLSMV) in MPlus proceeds through the following steps: (a) thresholds (the expected value of a respondent moving from one category to the next) are estimated by maximum likelihood; (b) these estimates are used to estimate a polychoric correlation matrix and an associated asymptotic covariance matrix; (c) parameters are estimated by replacing the full asymptotic covariance in the

weighted least squares fit function with a diagonal matrix, which contains the asymptotic variances of the thresholds and input correlations; and (e) standard errors and mean- and variance-adjusted chi square statistic are computed using the full weight matrix (Muthen, du Toit, & Spisic, 1997).

The two-step modeling approach suggested by Anderson and Gerbing (1988) was implemented in order to test the fit of the measurement and structural models. First, the general SEM was treated as a CFA to test the adequacy of the measurement model for the observed and latent variables under study. The model was then respecified via post-hoc modifications based on substantive and theoretical considerations. In the second step, the general SEM was run as a path analysis so that the double headed curved arrows between the endogenous and exogenous variables were replaced with one-arrow causal pathways.

To assess how well each hypothesized model fit the data, the following fit indices were examined: the normed chi square; the Comparitive-Fit Index (CFI); the Tucker-Lewis Index (TLI); the Root Mean Square Error of Approximation (RMSEA); and the Weighted Root Mean Square Residual (WRMR). The χ^2 test statistic evaluates the difference between the sample and predicted covariance matrices (Hu & Bentler, 1999). A non-significant *p* value associated with the χ^2 test statistic indicates a good model fit. However, because the χ^2 is sensitive to large sample sizes and may lead to a false rejection of an adequate model, using the normed chi square (χ^2/df) offers a more practical solution (Kline, 2005). Bollen (1989) states that minimal values between 2.0 and 5.0 have been recommended as cut-offs for the normed chi square.

The CFI and TLI are incremental fit indices that compare the improvement of fit of a hypothesized model relative to a baseline model (Hu & Bentler, 1995). They range

between 0 and 1, with values closer to 1 indicating a better fit. Hu & Bentler (1999) suggest a cutoff value of .95. The RMSEA represents the error in the model due to misspecification. The recommended cutoff value is .06 (Hu & Bentler, 1999). Finally, the WRMR measures the weighted average differences between the sample and estimated population variances and covariances (Muthen & Muthen, 1998-2006). This fit statistic is suitable for non-normal outcomes. A value $\leq$ 1.0 is an indication of good model fit (Yu, 2002).

Individual parameter estimates were assessed for significance at the .05 level or lower. In MPlus output, this significance level corresponds to a z-statistic which is the ratio of the parameter estimate to the standard error. An absolute value greater than 1.96 indicates the parameter is significant at $p<.05$. In addition, standardized factor loadings were required to be .40 or higher and factor indicators were required to have squared multiple correlations (SMC) greater than .30.

Invariance Testing of Models for Euro-Americans and African Americans

Before invariance testing was performed, a CFA for the two latent variables was run separately for Euro-Americans and African Americans to determine if the model fit the data well in each group. At the conclusion of this step, model fit was improved through the deletion of one indicator (parent called teacher) which had a SMC= .17 for the African American group.

Invariance testing was then performed to determine whether race moderated the relations specified in the models. First, invariance of the measurement component was tested and then the structural component. One should not proceed to test the structural model for measurement invariance until invariance is evident in the measurement

component. The following sequence of steps for invariance testing of the measurement component suggested by Millsap and Yun-Tein (2004) was used in the current study:

1. No equality constraints across groups[2]
2. Factor loadings constrained to be equal across groups
3. Factor loadings and thresholds constrained to be equal
4. Factor loadings, thresholds, and error variances constrained to be equal

Model 1, or the baseline model, is considered to be the least restrictive model because all parameters are freely estimated. Models 2 through 4 become increasingly more restrictive as they impose additional constraints on the parameters. The fit of models 2 through 4 were compared to the baseline model using an adjusted chi-square difference test statistic (χ^2_D). If χ^2_D was significant, constraining the parameters in the restricted model significantly worsened the fit of the model. This indicated measurement non-invariance. If, however, χ^2_D was not significant, constraining the parameters in the restricted model did not significantly worsen the model fit. This indicated measurement invariance (Muthen & Muthen, 1998-2006).

After the measurement component of the model was tested, invariance testing was performed on the structural component. Because invariance was found in the measurement model, all factor loadings, thresholds, and error variances associated with the latent indicators were constrained to be equal across groups. The following sequence of steps for invariance testing of the structural component was used in the current study:

1. No equality constraints across group (except for factor loadings, thresholds, and error variances)
2. Structural paths from exogenous factors to endogenous factors constrained to be equal across groups
3. Structural paths between endogenous factors constrained to be equal
4. Structural paths from exogenous factors to endogenous factors and structural paths between endogenous factors all constrained to be equal

[2] One threshold per latent variable indicator and one factor loading per latent variable were constrained to be invariant across groups for identification purposes.

5. Variance-covariance matrix of the structural disturbance terms all constrained to be equal
6. Variance-covariance matrix of the exogenous factors all constrained to be equal

Models 2 through 4 were compared to the baseline modeling using the χ^2_D statistic whereas Models 5 and 6 were compared to Model 4. If the χ^2_D statistic was not significant, then the more restricted model was accepted. If all of the above hypotheses were accepted, this indicated there was no moderating effect of race/ethnicity.

Results

Descriptive Analyses

Tables 11 through 13 present the descriptive statistics of all variables included in model testing and the correlations among the latent variable indicators. Both the mean and median are presented because several of the indicators were highly skewed due to their ordinal nature. The quantity of parental involvement indicators were significantly correlated at the .01 level. Additionally, the quality of home-school relationship indicators were significantly correlated at the .01 level. The intercorrelations among the home-school relationship items were higher than the intercorrelations among the parental involvement items.

Table 11. Univariate Descriptives of Variables Included in Model Testing

Item	Mean (S.D.)	Median	Range
Quantity of parental involvement			
Called/wrote a note	2.33 (.87)	2.0	1-5
Visited teacher	2.65 (1.12)	2.0	1-5
Attended special event	1.83 (.69)	2.0	1-5
Attended p-t conference	1.97 (.44)	2.0	1-5
Sent materials to class	2.02 (.83)	2.0	1-5
Quality of the home-school relationship			
Overall relationship	3.44 (.76)	4.0	1-4
Emotional tone	3.55 (.58)	4.0	1-4
Trust	2.58 (.58)	3.0	1-4
Communication	3.54 (.62)	4.0	1-4
Agreement	2.55 (.54)	3.0	1-4
Appreciation	3.09 (.89)	3.0	1-4
Cooperation	3.35 (.77)	4.0	1-4
Child outcomes			
PPVT	97.73 (12.55)	99	57-132
OWLS	95.18 (12.86)	94	61-135
Letter-Word Identification	106.67 (12.07)	107	69-153
Math	101.50 (11.04)	101	53-144
Social Competence	3.48 (.75)	3.5	1.4-5

Table 12. Zero Order Correlations among the Quantity of Parental Involvement Indicators

	1	2	3	4	5
1. Called/wrote	1.0				
2. Visited	.28*	1.0			
3. Special event	.26*	.37*	1.0		
4. P-T conference	.18*	.21*	.28*	1.0	
5. Sent materials	.27*	.25*	.34*	.21*	1.0

Note. *Significant at the $p<.01$ level.

Table 13. Zero Order Correlations among the Quality of the home-school relationship Indicators

	1	2	3	4	5	6	7
1. Overall relationship	1.0						
2. Emotional tone	.70*	1.0					
3. Trust	.71*	.71*	1.0				
4. Communication	.71*	.65*	.71*	1.0			
5. Agreement	.49*	.52*	.58*	.50*	1.0		
6. Appreciation	.65*	.65*	.68*	.59*	.51*	1.0	
7. Cooperation	.71*	.71*	.72*	.66*	.54*	.74*	1.0

Note. *Significant at the $p<.01$ level.

Confirmatory Factor Analysis

Confirmatory factor analysis was conducted for each latent construct to determine the adequacy of the hypothesized measurement models. The two latent constructs under examination were: (a) the quantity of parental involvement which was indicated by five measured variables; and (b) the quality of the home-school relationship which was indicated by seven measured variables. Preliminary analyses in SPSS revealed that when one item for the parental involvement scale (parent volunteered at school) was removed, Cronbach's alpha for the scale increased substantially (from .46 to .64). Therefore, all subsequent analyses excluded this scale item. Cronbach's alpha for the quantity of parental involvement scale was .64. Cronbach's alpha for the quality of the home-school relationship scale was .92.

Table 14 provides the results from the CFA. All factor loadings were significant and the data fit the model well, $\chi^2/df = 2.50$, CFI = .99, TLI = 1.00, RMSEA = .05, WRMR = .94. Factor loadings were lower for the quantity of parental involvement factor, which was expected since the intercorrelations among these items were lower than the quality of the home-school relationship items. From these results, it can be concluded that the hypothesized measurement model of the two latent variables was supported by the data.

Table 14. Estimates of Standardized Factor Loadings

Item	Quantity of parental involvement	Quality of the home-school relationship
Called/wrote a note	.55	
Visited teacher	.65	
Attended special event	.64	
Attended parent/teacher conference	.73	
Sent materials to class	.61	
Overall relationship		.94
Emotional tone		.92
Trust		.94
Communication		.90
Agreement		.72
Appreciation		.72
Cooperation		.94

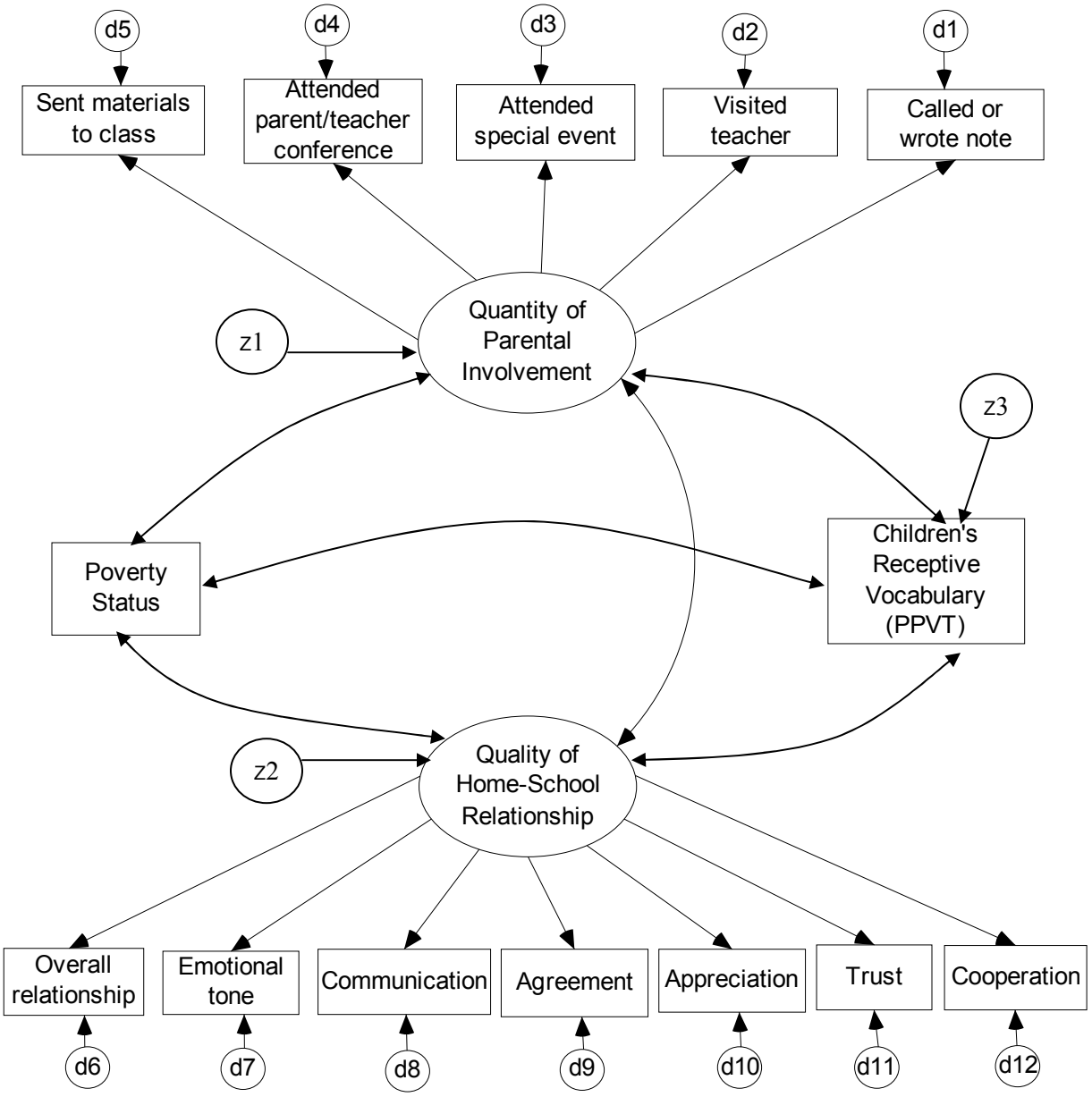
Note. All factor loadings are significant at $p<.05$.

Measurement Models

Five separate measurement models were run for each child outcome. Because results were similar across outcomes, only the results for the PPVT measurement model will be discussed here. In the measurement model, unlike the structural model, the independent variables were allowed to correlate with the dependent variable. Results for the PPVT measurement model are shown in Appendix A. The model did not fit the data well according to three out of the five fit indices, $\chi^2/df = 7.70$, RMSEA = .10, WRMR = 1.53. Modification indices revealed that adding paths from poverty status to quantity of

parental involvement and to quality of the home-school relationship would significantly improve the model fit (see Figure 7). This modification was justified by a number of studies which have shown that low socioeconomic status may be linked to lower levels of parental involvement, as well as lower-quality parent-teacher relationships (Castro, Bryant, Peisner-Feinberg, & Skinner, 2004; Fantuzzo, Tighe, & Childs, 2000; Hoover-Dempsey & Sandler, 1997; Kohl et al., 2000). Therefore, the literature supported modifying the model to include direct paths from poverty status to the parental involvement latent variable and to the quality of the home-school relationship latent variable.

Figure 7. Revised measurement model for parental school involvement



Results from the revised measurement model are presented in Appendix B. The revised model fit the data well according to all five fit indices, $\chi^2/df = 3.24$, CFI = .99, TLI = .99, RMSEA = .06, WRMR = .90. This model was then compared to a more restricted model in which the direct path from poverty status to PPVT was constrained to be zero (figure not pictured). The χ^2_D statistic was significant, indicating that the constraining the parameter from poverty status to PPVT significantly worsened the model fit. Therefore, the model shown in Appendix B, in which the parameter from poverty status to PPVT is freely estimated, was retained for all further analyses.

Structural Models

Separate structural models were run for each child outcome: PPVT, OWLS, letter identification, math, and social competence. In the structural models, the double headed arrows between poverty status and the two latent variables, and between the two latent variables and the dependent variable, were replaced with one arrow causal pathways. The raw scores for the PPVT, OWLS, letter identification, and math variables were divided by a factor of 10. This transformation was necessary because their variances in relation to the variances of the other variables in the model were excessively high and therefore caused convergence problems. After the analyses were complete, the parameter estimates that were affected by this transformation were multiplied by a factor of 10 in order to get the estimate back to its original metric. All estimates presented in the final models are in their original metric.

PPVT. The PPVT structural model fit the data well, $\chi^2/df = 2.35$, CFI = .99, TLI = 99, RMSEA = .04, WRMR = .82 (see Appendix C). As expected, the following direct paths were significant: (a) poverty status to quantity of parental involvement, ß = -.49, *p*

< .01; (b) poverty status to quality of the home-school relationship, ß = -.71, $p < .01$; and (c) poverty status to PPVT, ß = -9.63, $p < .01$. Thus, results showed that poor families demonstrated lower levels of parental involvement as reported by teachers and had lower-quality parent-teacher relationships than non-poor families. Additionally, poor children scored 9.63 points lower on the PPVT than non-poor children. The direct paths from quantity of parental involvement to PPVT, and quality of the home-school relationship to PPVT were not significant. All indirect paths were also not significant. The squared multiple correlation for PPVT indicated that poverty status and the two latent variables explained 14% of the variance in PPVT scores for the sample.

OWLS. The OWLS structural model fit the data well, $\chi^2/df = 2.42$, CFI = .99, TLI = 99, RMSEA = .05, WRMR = .83 (see Appendix C). Similarly to the PPVT model, the following direct paths were significant: (a) poverty status to quantity of parental involvement, ß = -.49, $p < .01$; (b) poverty status to quality of the home-school relationship, ß = -.72, $p < .01$; and (c) poverty status to OWLS, ß = -7.95, $p < .01$. Poor children scored 7.95 points lower on the OWLS than non-poor children. The direct paths from quantity of parental involvement to OWLS, and quality of the home-school relationship to OWLS were not significant. All indirect paths were also not significant. The squared multiple correlation for OWLS indicated that poverty status and the two latent variables explained 9% of the variance in OWLS scores for the sample.

Letter-word identification. The letter identification structural model fit the data well, $\chi^2/df = 2.34$, CFI = .99, TLI = 99, RMSEA = .04, WRMR = .81 (see Appendix C). The following direct paths were significant: (a) poverty status to quantity of parental

involvement, ß = -.49, $p < .01$; (b) poverty status to quality of the home-school relationship, ß = -.71, $p < .01$; (c) poverty status to letter-word identification, ß = -2.65, $p < .01$; and (d) quality of the home-school relationship to letter-word identification, ß = 4.48, $p < .01$. Thus, unlike the PPVT and OWLS models, higher-quality home-school relationships were associated with higher letter identification scores. For each one unit increase in the latent variable quality of the home-school relationship, children's letter identification scores increased by 4.48 points. Additionally, the indirect path from poverty status to letter identification via quality of the home-school relationship was significant, ß = -2.72, $p < .01$. This means that the mediating variable, quality of the home-school relationship, accounted for a significant amount of the shared variance between poverty status and letter identification scores. The squared multiple correlation for letter identification indicated that poverty status and the two latent variables accounted for 14% of the variance in letter identification scores for the sample.

Math. The math structural model fit the data well, $\chi^2/df = 2.38$, CFI = .99, TLI = 99, RMSEA = .04, WRMR = .82 (see Appendix C). The following direct paths were significant: (a) poverty status to quantity of parental involvement, ß = -.49, $p < .01$; (b) poverty status to quality of the home-school relationship, ß = -.71, $p < .01$; and (c) poverty status to math, ß = -3.87, $p < .01$. Similarly to the PPVT and OWLS models, the direct paths from quantity of parental involvement to math, and quality of the home-school relationship to math were not significant. All indirect paths were also not significant. The squared multiple correlation for math indicated that poverty status and the two latent variables explained 4% of the variance in math scores for the sample.

Social competence. The social competence structural model fit the data well, χ^2/df = 2.57, CFI = .99, TLI = 99, RMSEA = .05, WRMR = .83 (see Appendix C). The following direct paths were significant: (a) poverty status to quantity of parental involvement, ß = -.47, $p < .01$; (b) poverty status to quality of the home-school relationship, ß = -.64, $p < .01$; and (c) quality of the home-school relationship to social competence, ß = .37, $p < .01$. The results indicate that similarly to the letter identification model, higher-quality home-school relationships were associated with higher social competence scores. For each one unit increase in the latent variable quality of the home-school relationship, children's social competence scores increased by .37 points. Additionally, the indirect path from poverty status to social competence via quality of the home-school relationship was significant, ß = -.24, $p < .01$. Therefore, the quality of the home-school relationship mediated the relationship between poverty status and social competence scores. The squared multiple correlation for social competence indicated that poverty status and the two latent variables accounted for 24% of the variance in social competence scores for the sample.

Summary of results for structural models. In all five models, the following direct paths were statistically significant: (a) poverty status to quantity of parental involvement, and (b) poverty status to quality of the home-school relationship. In all models except the social competence model, the direct path from poverty status to each child outcome was significant. Additionally, higher-quality home-school relationships were significantly associated with higher children's scores only in the letter identification and social competence models. Furthermore, quality of the home-school relationship mediated the relationship between poverty status and children's scores in the letter identification and

social competence models. Quantity of parental involvement was not significantly associated with children's outcomes in any of the five models.

Invariance Testing Results for Euro-Americans and African Americans

Invariance testing was first performed on the two latent variables that comprised the measurement model. The fit information and conclusions drawn from the invariance testing are presented in Table 15. An adjusted chi-square difference test was performed at each step, comparing the χ^2_D statistic for the current step to the preceding step. If the χ^2_D statistic was not significant, this indicated that constraining the parameters did not significantly worsen the model fit. As can be seen in Step 4, the final model is accepted. Therefore, it can be concluded that the measurement model does not significantly differ for Euro-Americans and African Americans.

Table 15. Fit Information and Conclusions for Invariance Testing of Measurement Model

P-value for χ^2_D statistic	Conclusion
Step 1: Same form	
--	--
Model fit: χ^2/df = 1.85; CFI = 1.0; TLI = 1.0; RMSEA = .06; WRMSR = 1.0	
Step 2: Same factor loadings	
.53	Accept
Model fit: χ^2/df = 1.76; CFI = 1.0; TLI = 1.0; RMSEA = .06; WRMSR = 1.02	
Step 3: Same factor loadings and thresholds	
.12	Accept
Model fit: χ^2/df = 1.78; CFI = 1.0; TLI = 1.0; RMSEA = .06; WRMSR = 1.15	
Step 4: Same factor loadings, thresholds, and error variances	
.08	Accept
Model fit: χ^2/df = 1.79; CFI = 1.0; TLI = 1.0; RMSEA = .06; WRMSR = 1.30	

PPVT, math, and social competence. The fit information and conclusions drawn from the invariance testing for the PPVT, math, and social competence structural models are shown in Appendix D. The results from all three models followed similar patterns. Constraining both the path coefficients from poverty status to the two latent variables and to the dependent variable, and the path coefficients from the two latent variables to the dependent variable (step 4) did not significantly worsen the model fit. However, constraining the variance-covariance matrix of the exogenous factors to be equal across groups (step 6), did significantly worsen the model fit. From these results, it can be concluded that the covariance between the quantity of parental involvement and the quality of the home-school relationship differed for Euro-Americans and African Americans. As shown in Figures E1 through E3 in Appendix E, the covariance between these two latent variables ranged from .41 to .42 for Euro-Americans and .71 to .72 for African Americans. This corresponds to a correlation of .47 to .48 for Euro-Americans and .84 to .85 for African Americans.

OWLS. The results from invariance testing for the OWLS model followed a different pattern than the PPVT, math, and social competence models (see Appendix D). Constraining the path coefficients from poverty status to the two latent variables and to OWLS (step 2) did not significantly worsen the model fit. However, constraining the path coefficients from quantity of parental involvement to OWLS and quality of the home-school relationship to OWLS (step 3) did produce a significant decline in the model fit, meaning that these parameters were not equal across groups. The structural disturbance terms for the two latent variables and OWLS were also significantly different across groups. Quantity of parental involvement had almost no relationship with children's

OWLS scores within the Euro-American group, while parental involvement was negatively associated with children's OWLS scores in the African American group (see Figure E4 in Appendix 4). Additionally, the quality of the home-school relationship was positively associated with children's OWLS scores in the Euro-American group, but negatively associated with OWLS scores in the African American group. However, it should be noted that although the coefficients were statistically different *between* groups, they were not statistically significant *within* groups. Finally, as in the PPVT, math, and social competence models, the covariance between the two latent variables was higher for African Americans than Euro-Americans.

Letter identification. As shown in Appendix D, constraining the variance-covariance matrix of the structural terms to be equal across groups (step 4) in the letter identification model was not accepted. Therefore, the structural disturbance terms for the two latent variables and letter identification outcome were significantly different for Euro-Americans and African Americans. Additionally, as in the other models, the covariance between the two latent variables was significantly different across groups (see Figure E5 in Appendix E).

Summary of results for invariance testing. Partial measurement invariance was shown for all five models. In the PPVT, math, and social competence models, all parameter estimates were found to be invariant for Euro-Americans and African Americans, except for the covariance between the quantity of parental involvement and the quality of the home-school relationship. In the OWLS model, only the parameter estimates from poverty status to the two latent variables were invariant across groups. Finally, in the letter identification model, all parameter estimates were invariant across

groups except for the structural disturbance terms and the covariance between the two latent variables.

CHAPTER 7

DISCUSSION

This study examined the relationship between parental involvement and kindergartners' academic skills and social competence. More specifically, the study investigated the effects of intentional teaching and socialization practices, parental participation in school-based activities, and the quality of the parent-teacher relationship on children's early academic skills and social competence. Furthermore, the study examined whether race/ethnicity moderated these relationships. The findings and implications are discussed in detail below.

Parental Home Involvement

Overall, the present findings provide empirical support for the hypothesis that both intentional teaching and socialization practices are critical for the development of children's early academic skills. Most importantly, the results indicate that parental practices may be differentially related to children's outcomes. Greater use of discourse practices by parents was associated with children's significantly higher receptive and expressive vocabulary scores. However, intentional teaching practices were associated with children's significantly higher scores on children's nominal knowledge. These findings are similar to those of Barbarin et al. (2007), who found that discourse practices predicted language skills but not math or socioemotional competence, and of Weigel et

al. (2006), who demonstrated that intentional teaching practices predicted children's print knowledge but not their receptive or expressive vocabulary.

Taken together, these findings suggest that socialization practices, such as discourse strategies, appear to be more important for the development of children's higher-order linguistic skills, as reflected in richer vocabularies and ability to express themselves, whereas intentional teaching practices may be more important for rote skills such as letter knowledge. When parents use discourse strategies such as asking questions and expanding on what children say, children are encouraged to become active participants in their environment.

Children's vocabulary skills can be enhanced through engagement in high-quality dialogue with their parents. However, the use of discourse strategies may not foster children's letter knowledge. Children often learn the names of letters through rote memorization and repeated exposure to the alphabet. These learning processes may be better achieved through direct teaching by parents (e.g., by practicing letters and sounds) rather than through back-and-forth dialogue between parent and child.

Although discourse strategies were significantly related to children's vocabulary skills, directiveness partially mediated this relationship. When directiveness was added into the model, the relationship between discourse and children's vocabulary skills was no longer significant. In addition, directiveness was negatively related to children's math skills and social competence, and criticism was negatively associated with OWLS, math, and social competence scores.

These relationships speak to the powerful impact of parental directiveness and use of criticism with young children. Controlling parents may inhibit children's vocabulary

development by making harsh judgments about children's performance and not giving children ample opportunities to freely express themselves. In fact, discourse was negatively correlated with direct and criticism. Parents who expanded on their child's current knowledge and exhibited a highly supportive presence also were less directive and critical.

The data did not support the hypothesis that intentional teaching practices would be related to children's math skills. However, this is not surprising, because Barbarin et al. (2007) reported similar findings. In the present study, the math intentional teaching practices subscale included only two parental practices (measuring and adding/subtracting). Therefore, there could be other parental practices (e.g., practicing counting) that better predict children's math abilities.

The data also did not support the hypothesis that discourse strategies would predict social competence scores. Again, Barbarin et al. (2007) obtained similar results. However, in contrast to Barbarin et al.'s findings, results of the present study indicate that direct and criticism predicted social competence. Parents who were more directive and critical had children with lower social competence scores.

One difference between the present study and Barbarin et al.'s (2007) study is in the nature of the samples. The present study included kindergarten children, whereas Barbarin et al. examined preschool children. These contrasting findings could speak to the difference between two developmental periods. As children get older, parental directiveness and criticism may have a more negative impact on children's development. Kindergartners may derive more benefit from being able to take the lead and explore their worlds with less direction.

Moderating Effects of Race/Ethnicity on Home Involvement

The only significant interaction effect was the effect of criticism and race/ethnicity on children's expressive vocabulary. Among Euro-American children, there was a negative association between the degree of parental criticism and OWLS scores, but this association was negligible. Among African American children, higher levels of parental criticism were associated with lower scores on the OWLS.

There are two possible explanations for this finding. First, parents of African American children may become more critical and involved when their children are not doing well academically. Second, the amount of parental criticism is just one factor that affects children's academic skills. Certainly, we must consider other contextual factors that can affect children's development.

For example, African American children in the sample were more likely than Euro-American children to live below the federal poverty line, and poverty level was significantly associated with children's expressive vocabulary skills. Several studies have indicated that the stresses associated with living in poverty (e.g., limited maternal social support) can negatively affect young children's academic skills (McLoyd, 1998). Therefore, the effects of parental criticism on African American children's expressive vocabulary skills must be considered in the context of other life circumstances.

Parental School Involvement

Poverty status was consistently associated with less parental involvement and a lower-quality home-school relationship. Although these relationships were significant, the magnitude of the effects was not large. Poor families scored approximately .5 points lower than other families on the quantity of parental involvement measure, and .7 points

lower on the quality of the home-school relationship measure. These findings are consistent with other research, which has found significant differences in parental involvement by socioeconomic status (Grolnick et al., 1997; U.S. Department of Education, 2005b). Lower-income families may experience more barriers to parental involvement (e.g., inflexible work schedules and lack of transportation) than middle- and upper-income families.

The findings did not provide empirical support for the hypothesis that the quantity of parental involvement in school-based activities would be positively associated with children's early academic skills and social competence. Previous research in this area has demonstrated mixed findings. For example, Izzo et al., 1999 found a significant relationship between parent participation in school activities and math and reading achievement whereas Bennett et al. (2002) and McWayne (2004) found no such relationship. In the present study, the null findings on the effects of parental involvement at school could be due to the types of parental involvement studied. Only two of the types of parental involvement (visiting the teacher and attending parent-teacher conferences) required direct contact with the teacher and thus provided a medium for dialogue between the parent and teacher. For both of these parental involvement indicators, the median frequency was once to twice a year. One mechanism by which parent involvement can be effective for promoting children's academic and social development is through parents and teachers having similar expectations and thus providing the child with congruence between the home and school environments. However, if parents and teachers only talk once or twice a year, this may not be enough time to achieve such congruence.

There are other types of parent-teacher contact that were not measured in this study but that could make a significant difference in children's outcomes. For example, parents and teachers may have informal conversations about a child's progress or difficulties when parents drop off or pick up their children at school. This back-and-forth dialogue may occur more frequently than either formal appointments or parent-teacher conferences.

The data partially supported the hypothesis that the quality of the home-school relationship would be positively related to children's outcomes. A higher-quality relationship was associated with significantly higher children's letter identification and social competence scores, but not with vocabulary or math skills. Additionally, the quality of the home-school relationship mediated the relationship between poverty status and children's outcomes in the letter identification and social competence models. These results suggest that higher-quality relationships between parents and teachers may buffer the negative effects of poverty on children's outcomes.

Other studies have found similar differential effects of the home-school relationship on children's outcomes. For example, Hill (2001) demonstrated that the quality of the parent-teacher relationship was a significant predictor of sound-letter correspondence but not of math skills. In addition, Izzo et al. (1999) found that the quality of the relationship was related to social competence but not to reading skills.

There are several possible explanations for why the quality of the parent-teacher relationship may be associated with children's social competence and letter identification skills but not with the other outcomes under study. First, children's expressive and receptive vocabulary skills tend to be more child-driven, whereas social competence and

letter identification tend to be more teacher- and parent-driven. In other words, children's vocabulary skills may develop through informal interactions with their environment, whereas children's social competence and letter identification skills may be best fostered through more direct guidance by parents and teacher. Parents and teachers who have close and trusting relationships may be better able to work together to develop children's letter identification skills and social competence in both the home and school settings.

A second explanation is that those parents who have a close and trusting relationship with their child's teacher may be more likely to emphasize the importance of listening to the teacher, a result of the parents' high regard for the child's teacher. In other words, parents with high-quality teacher relations may reinforce for the child the authority of the teacher. Moreover, when parents and teachers send similar messages to children about behavioral expectations, children are given a sense of continuity between their home and school environments.

Third, it is possible that teachers may rate their relationships with parents as being of higher-quality when the parents' children are doing well in school, both academically and behaviorally. These relationships may be less strained than in cases where children are struggling in the classroom.

Moderating Effects of Race/Ethnicity on School Involvement

Race/ethnicity significantly moderated only a few relationships in the five statistical models. First, in the cases of the PPVT, letter identification, math, and social competence, race/ethnicity moderated the relationship between the quantity of parental involvement and the quality of the home-school relationship. The correlation between these two latent variables was approximately .47 for Euro-Americans and .84 for African

Americans. These findings suggest that parents of both African American and Euro-American children are more likely to be involved when they have a high-quality relationship with the teacher, but this relationship is stronger for parents of African American children. Therefore, African American family involvement may be more contingent on whether there is a close and trusting relationship with the teacher than is the case with Euro-American families.

Second, in the OWLS model, race/ethnicity moderated the relationships between quantity of parental involvement and children's OWLS scores, and between quality of the home-school relationship and OWLS scores. Quantity of parental involvement was negatively correlated with OWLS scores for African Americans, but there was almost no association for Euro-Americans. The quality of the home-school relationship was negatively associated with OWLS scores for African Americans but positively associated with OWLS scores for Euro-Americans.

It is challenging to explain this finding, especially because it occurred for only one outcome. One possible explanation is that parents of African American children may be less involved when their children are doing well in school and more involved when their children are having difficulty in school. This, in turn, could be related to the quality of the home-school relationship for African Americans. If parents are not as involved when children are doing better in school, teachers may rate their relationships with these parents as lower-quality because they do not perceive any level of parental involvement at all. Therefore, teachers may have more negative perceptions of these parents.

However, extreme caution should be taken when interpreting these findings, because a moderating effect of race/ethnicity was found for only one child outcome.

Certainly, these findings could be an artifact of the data, and future research should further investigate whether similar patterns exist in other data.

Study Limitations

Several methodological limitations of the present study require mention. First, only a small number of items comprised the intentional teaching practices scale (three literacy practices and two math practices). However, there could be a whole host of other parental practices that may affect children's emergent literacy and math skills. Some examples include whether parents teach children how to print letters and write their own name, show them how books are organized, point out words while they are reading, and practice counting with their children. Unfortunately, the particular indicators that could be included in the current study were constrained by the bounds of using secondary data.

Similarly, the independent variables used in both the parental home and school involvement models accounted for a small amount of variance explained in the child outcomes. Certainly, there are other variables that were not included in the models but that could have explained additional variance in children's outcomes. For example, evidence suggests that teacher-child interactions, and maternal characteristics (e.g., mental health and social support) can influence children's academic skills and social competence (Catalano et al., 2003; NICHD, 2005; Walker, Stiller, Severson, Feil, & Golly, 1998).

Second, although using observational data in addition to self-report data is a major strength of this study, it also poses some limitations. Observational data offers only a small glimpse into a single period of time and may not capture the variety of socialization practices parents use when interacting with their children. Moreover, the

behavior of the parents and children may have been affected by the presence of the camera and interviewer.

Third, there are several limitations regarding the use of the quantity of parental involvement measure and the quality of the home-school relationship measure. Most importantly, both measures were teacher self-report. However, parents' and teachers' views may differ on their amount of involvement in school and the nature of the parents' relationship with the teacher. If the present study used the parental self-report measures, the results may or may not have been different.

In addition, there could be other parental involvement indicators that were not captured in this study. For example, informal contact between parents and teachers (e.g., conversations that may occur when parents pick up their children from school) was not measured. It is also not known whether the parent or the teacher initiated the contact. For example, often a teacher may contact a parent when the child is having academic or behavioral problems in the classroom. This could have major implications for determining the direction of the relationship between quantity of parent-teacher contact and children's outcomes. If it is the case that teachers contact parents more often when children are having difficulties, then one would expect a negative relationship between parental involvement and children's outcomes.

Moreover, parent-teacher contact and parental involvement at school were combined into one construct in the present study due to the limited number of indicators for each dimension. However, it is possible that parent-teacher contact and parental involvement at school may have separate and unique effects on children's outcomes. It is also important to note that the parental involvement scale used in the current study had a

reliability of .64, which is below the generally acceptable cutoff value of .70 (Nunnally, 1978).

A fourth limitation is that this study is based on correlational, cross-sectional data, and therefore no claims of causality can be made. As discussed, it is impossible to determine whether the quantity of parental involvement and the quality of the parent-teacher relationship preceded or occurred in response to children's academic skills and social competence. Similarly, it is not known whether parental socialization practices (e.g., discourse strategies, direct, and criticism) influence children's outcomes or such practices are in response to children's academic skills and social competence.

Fifth, the reduction of sample size in the parental home involvement analysis from 960 to 179 could have led to some violations of assumptions embedded in the regression method. Due to the small sample size, the OLS estimator may have been asymptotically biased, meaning that OLS may have overestimated the slope of the true relationship between the independent variables and the dependent variable and underestimated the variance of the error terms (Kennedy, 2003). Additionally, the sample used in the parental home involvement analysis significantly differed from the excluded cases with respect to several demographic characteristics. The study sample was comprised of a greater number of families living above the federal poverty line, a greater number of Euro-American children, and more educated mothers than the excluded sample. Therefore, the sample used in the current analysis may not be representative of the larger population that was sampled.

Sixth, although multiple regression was the best available option for the parental home involvement analysis, it also presents several limitations. Multilevel modeling is

often used when the intra-class correlation is 0.25 or above (Heinrich & Lynn, 2001; Kreft, 1996). In the current study, only the PPVT model in the parental home involvement analysis had an intra-class correlation slightly above the generally accepted cutoff. However, due to the small sample size, multilevel modeling could not be used. One limitation of not using multilevel modeling in the current study is that the standard errors may have been underestimated, which could have led to biased significant testing. Therefore, parameters that came out to be significant in the PPVT model may not have been significant had multilevel modeling been used.

Finally, the sample size used for invariance testing in the parental school involvement models was slightly smaller than the recommended sample size. Although there have been very few empirical studies that address this issue, Flora and Curran (2004) recommend a minimum of sample size of 200 when the WLSMV estimator is used in Mplus. The sample used in the invariance testing comprised 290 Euro-American children and 172 African American children. The sample size for the African American group was only slightly under the recommended size, but the difference could have affected the reliability of the findings. Nonetheless, given the ordinal nature of the variables, the statistical technique used in the present study was the best available option.

Implications for Practice

The current study has important implications for developing and delivering interventions for young children and their parents. With regard to parental involvement in the home, the findings suggest that altering parental practices through school readiness interventions for parents of young children may be an effective way to reduce the onset of early learning difficulties. Several existing interventions are based on the premise that

shared storybook reading between parents and children can lead to increased emergent literacy and language skills (Baker, Piotrkowski, & Brooks-Gunn, 1999; Jordan, Snow, & Porche, 2000; Lonigan & Whitehurst, 1998). For example, Lonigan and Whitehurst (1998) have developed one of the most well-known interventions, based on the method of dialogic reading, in which children become active participants in the reading process. Although studies have found dialogic reading to be effective in fostering children's language skills (e.g., Lonigan & Whitehurst, 1998), this intervention has a very specific focus on improving parental discourse strategies. However, the present study provides evidence that whereas discourse strategies better predict children's language skills, intentional teaching practices better predict children's letter knowledge. Therefore, school readiness interventions for parents and children should emphasize the importance of both intentional teaching and socialization practices and the differential effects that parental practices may have on children's academic skills.

The present study provides some support for the notion that strengthening partnerships between parents and teachers can improve children's outcomes. There are several existing interventions that seek to achieve such a goal. For example, the Comer School Development Program (SDP) is a comprehensive, school-based program that promotes collaboration between school personnel, parents, and members of the community in order to design and implement social and academic programs that support children's growth and school success (Haynes, 2003). A major goal of the program is to build trusting and respectful relationships with parents by encouraging and valuing their active participation with staff in making major program decisions. The Comer SDP schools have produced significant gains in their students' academic achievement, social

competence, behavior, and school attendance compared to students not enrolled in Comer SDP schools (Cauce, Comer, & Schwartz, 1987; Haynes, Comer, & Hamilton-Lee, 1988; Haynes, Emmons, & Woodruff, 1998). The results of the present study provide added evidence that interventions such as the Comer SDP should continue to focus on building close and trusting relationships between parents and teachers.

Future Research

Based on the study limitations, several recommendations can be made for future research. First, future studies should survey parents on a wider variety of intentional teaching practices. Self-report questionnaires should include both a preset checklist of parental practices and open-ended questions that may capture practices not included in the checklist.

Second, data on the quantity of parental involvement and the quality of the home-school relationship should be obtained from both the parents and teachers. Although several studies in the elementary and high school years also include self-report data from the students themselves, this data would not be as reliable when the sample comprises preschool- and kindergarten-aged children.

Third, future research should utilize more naturalistic observation methods. Relying solely on videotaped parent-child interaction tasks may limit the generalizability of the findings. Studies that use multiple methodological techniques, such as naturalistic observation, ethnographic interviews, and self-report data, could provide more reliable results as well as uncover important cultural variations in parent-child interactions.

Fourth, the majority of studies on parental involvement examine whether parental involvement is associated with children's academic and behavior outcomes. However,

these studies do not uncover *why* parental involvement in early childhood may foster children's academic skills and social competence. More qualitative research is needed to understand the dynamic of the interactions between parents and teachers. Focus groups should be conducted with both parents and teachers to explore how they define high-quality partnerships. In addition, focus groups would help uncover whether factors such as the race/ethnicity of the teacher and parent affects how they view their relationship with each other.

Finally, future research should examine whether some types of parental involvement have stronger effects on children's outcomes than other types of involvement. For example, some indicators of parental involvement may have differential effects on children's school achievement. It is important to know exactly what types of parent involvement might make a difference in improving children's school readiness skills so interventions can be tailored to specific types of involvement. In addition, studies should explore threshold effects of parental involvement, or the amount of parental involvement that is necessary to positively impact children's academic and behavioral skills.

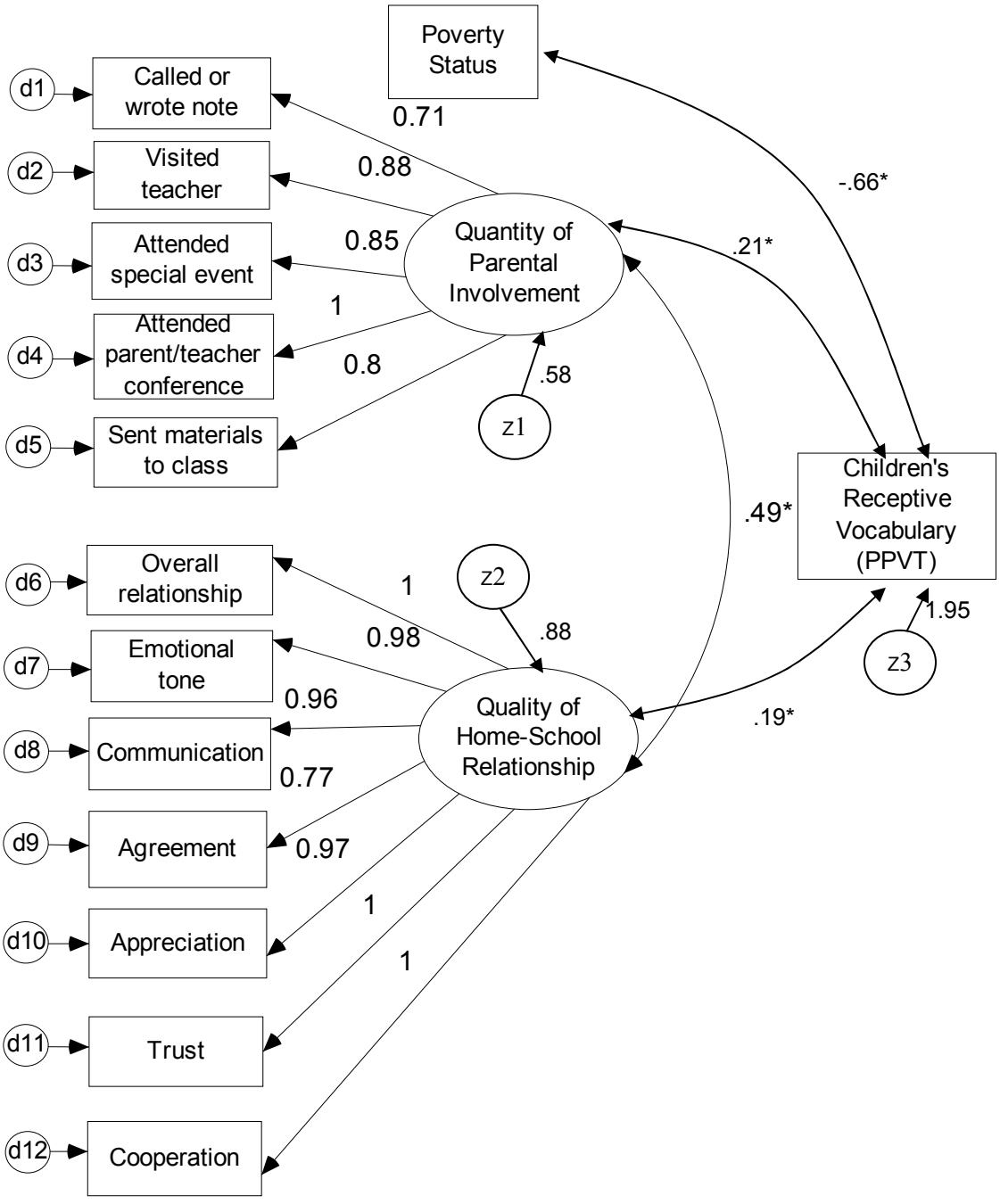
In conclusion, results from this study support the relationship between parental involvement at home and improved children's school readiness skills. The present findings extend previous research by demonstrating the differential effects of parental socialization and intentional teaching practices on children's early emergent literacy skills. In addition, this study provides preliminary evidence that close and trusting relationships between parents and teachers can foster children's academic skills and social competence. Future research should continue to examine these relationships. The

present investigation is just a stepping-stone toward understanding the effects of parental involvement on children's early development.

Appendix A

Results of PPVT Measurement Model I

Figure A1. PPVT measurement model

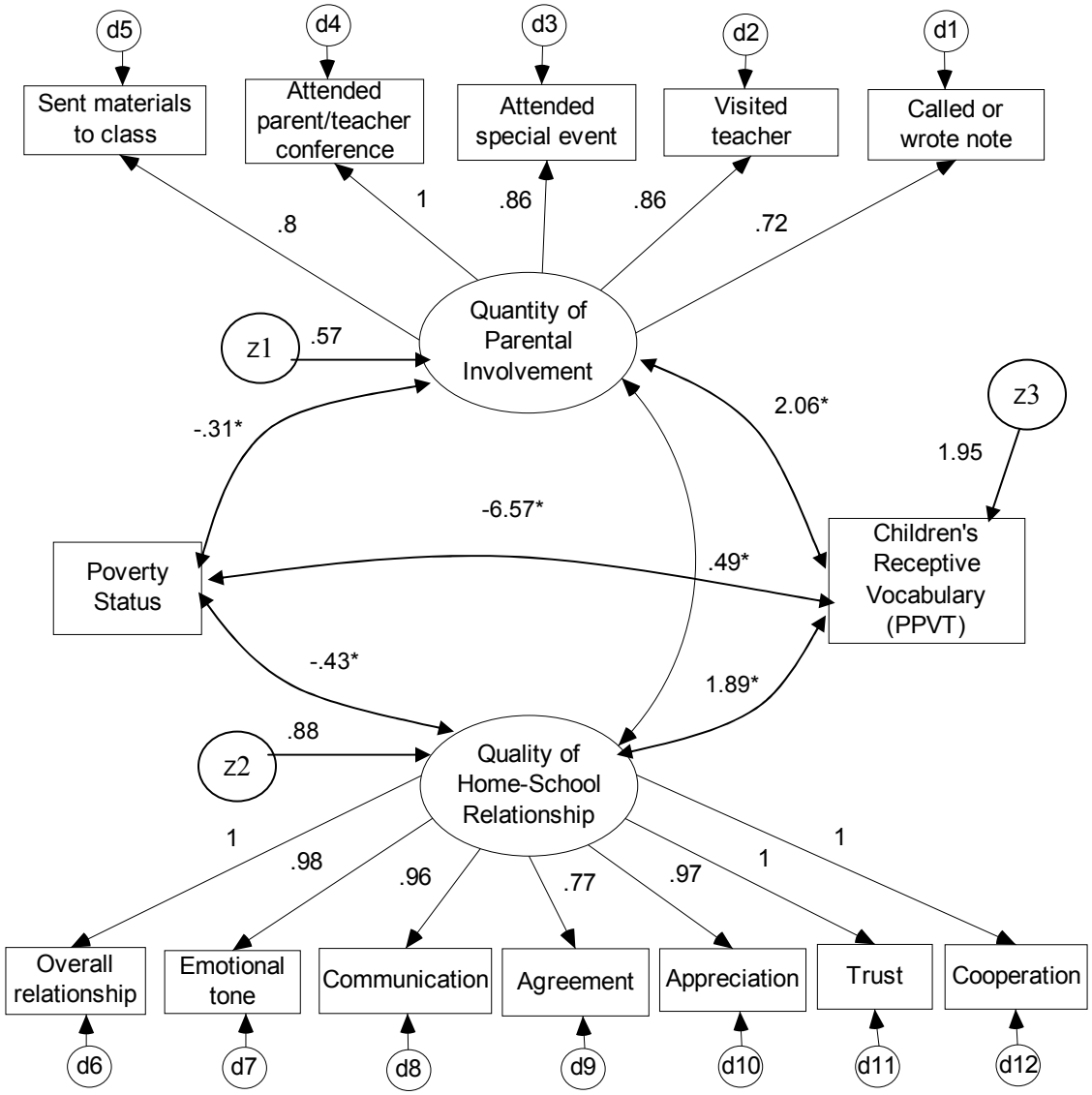


Note. Unstandardized coefficients are presented. All factor loadings are significant. *Indicates significant regression coefficient. $\chi^2/df = 7.70$; CFI = .97; TLI=.97; RMSEA=.10; WRMSR=1.53.

Appendix B

Results of Revised PPVT Measurement Model

Figure B1. Revised PPVT measurement model

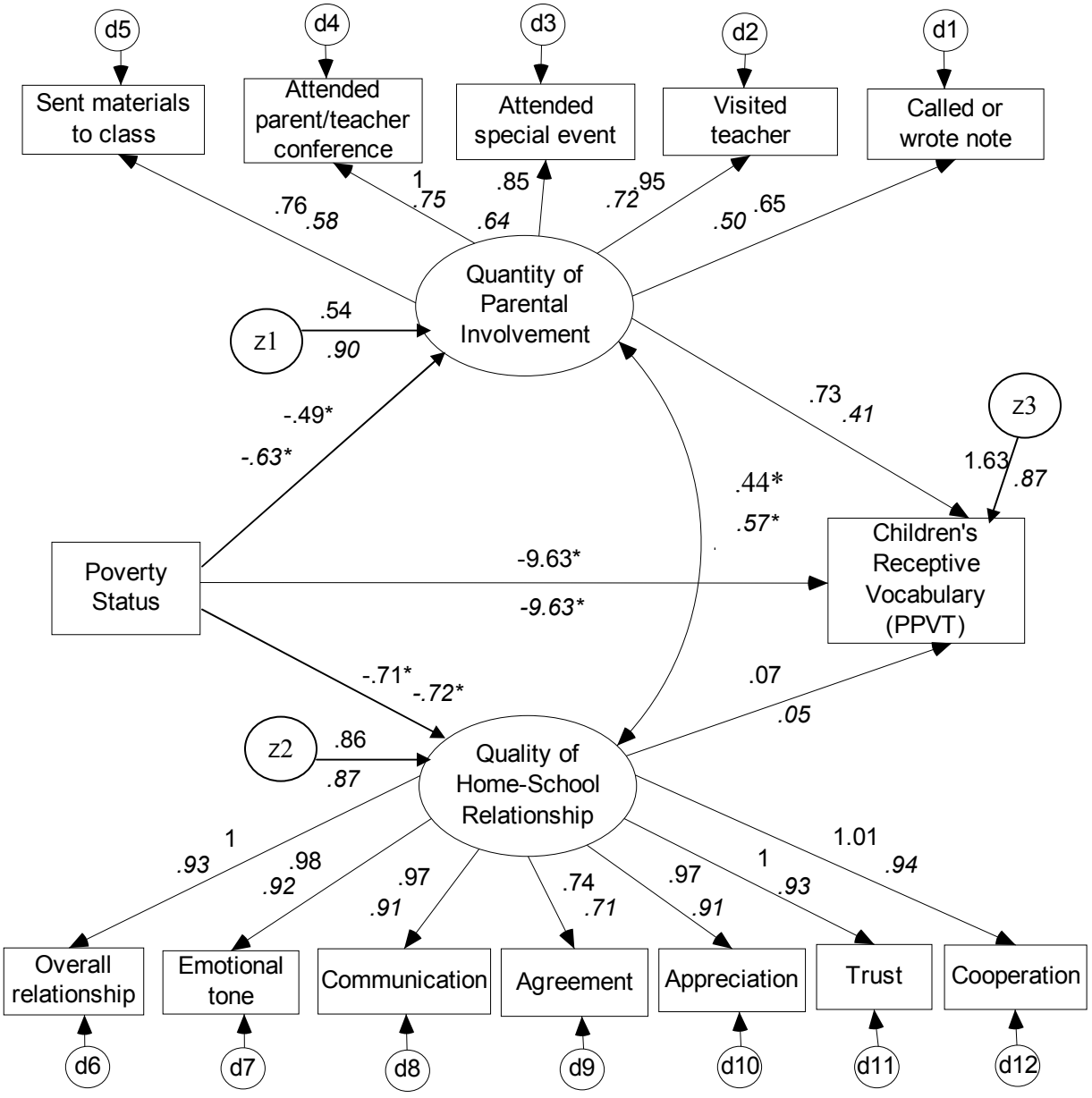


Note. Unstandardized coefficients are presented. All factor loadings are significant. *Indicates significant regression coefficient. $\chi^2/df = 2.40$; CFI = .99; TLI=.99; RMSEA=.05; WRMSR=.77.

Appendix C

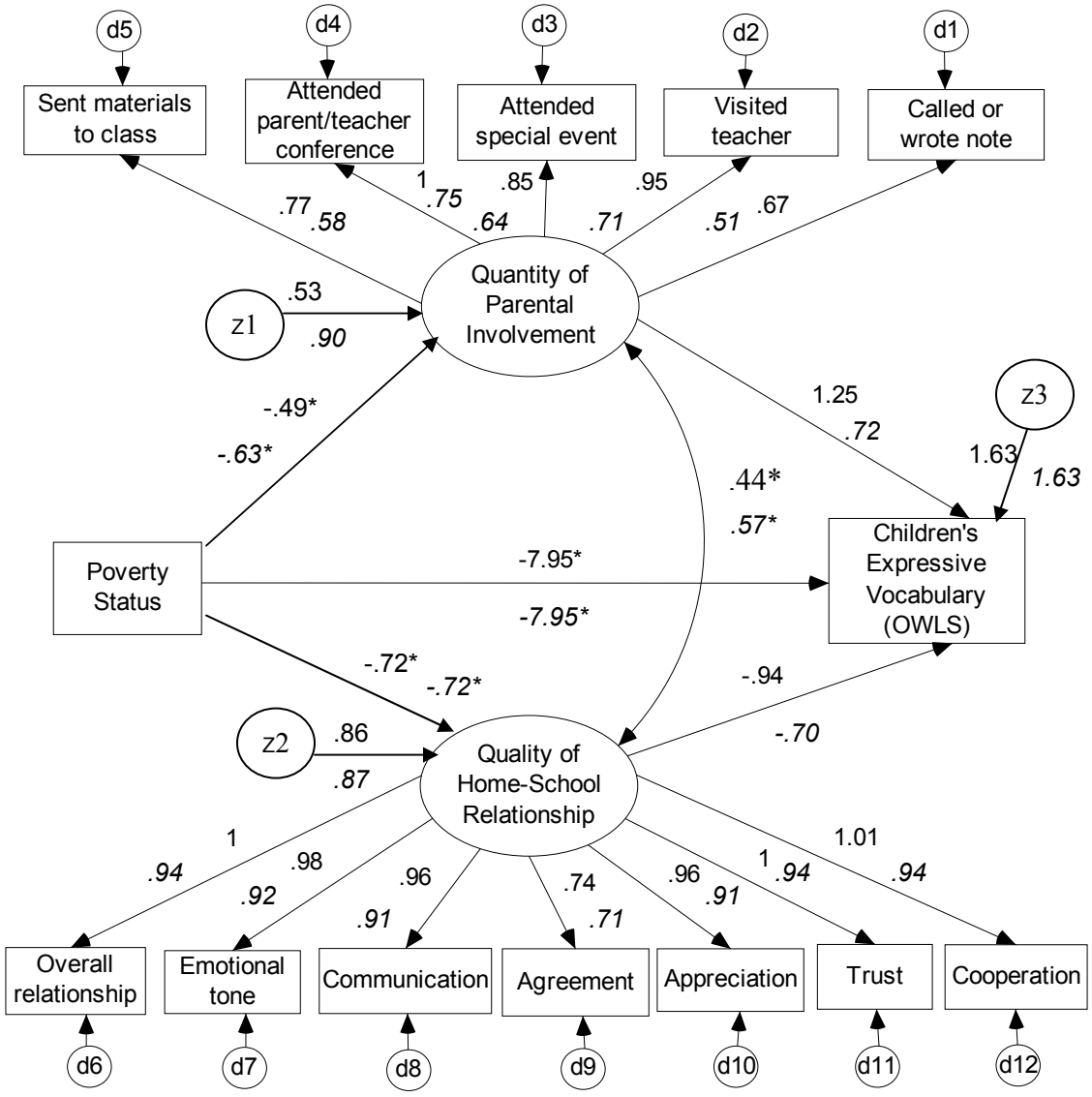
Results of Structural Models

Figure C1. PPVT structural model



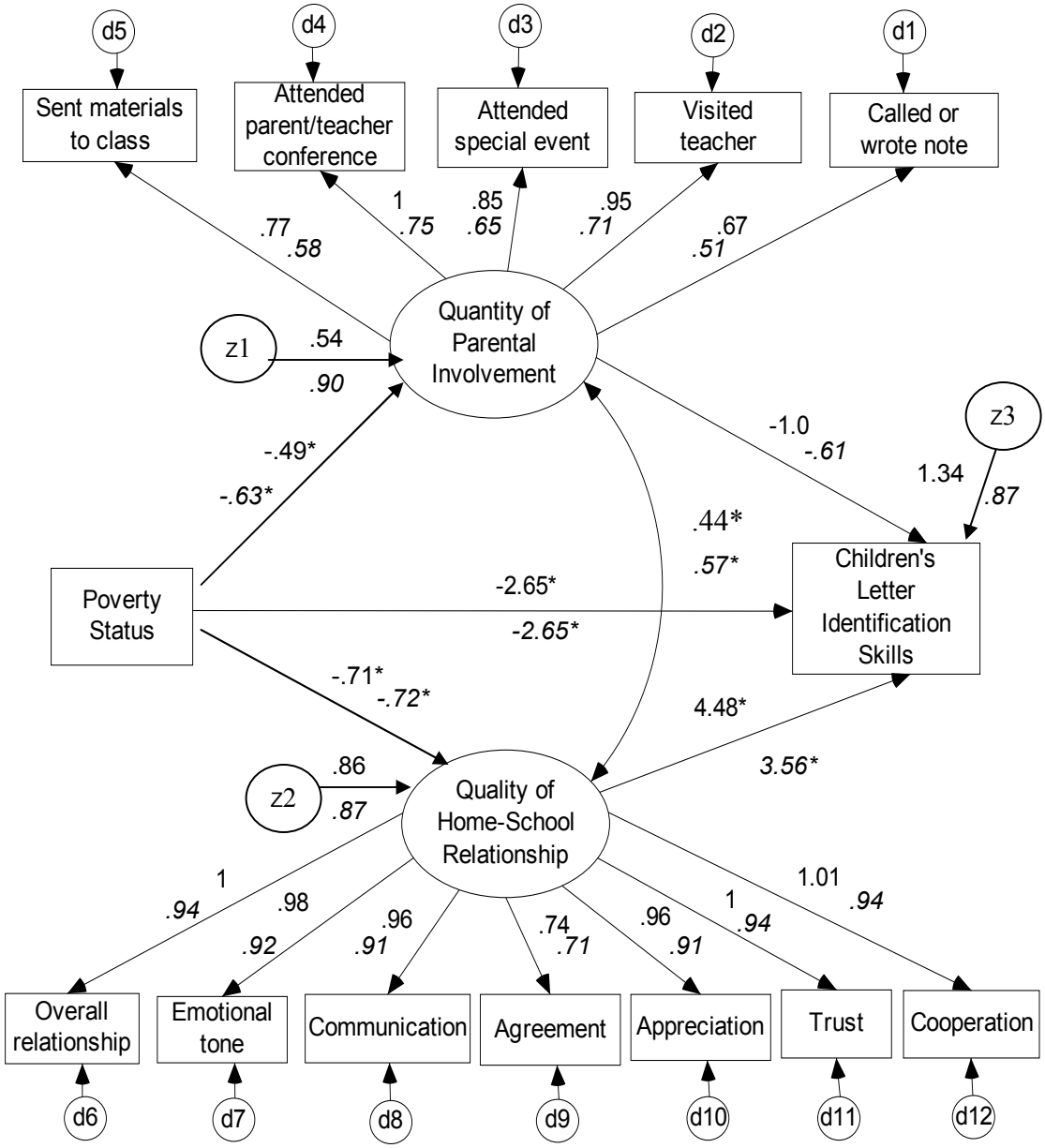
Note. Unstandardized and standardized coefficients (in italics) are presented. All factor loadings are significant. *Indicates significant regression coefficient. $\chi^2/df = 2.35$; CFI = .99; TLI=.99; RMSEA=.04; WRMSR=.82.

Figure C2. OWLS structural model



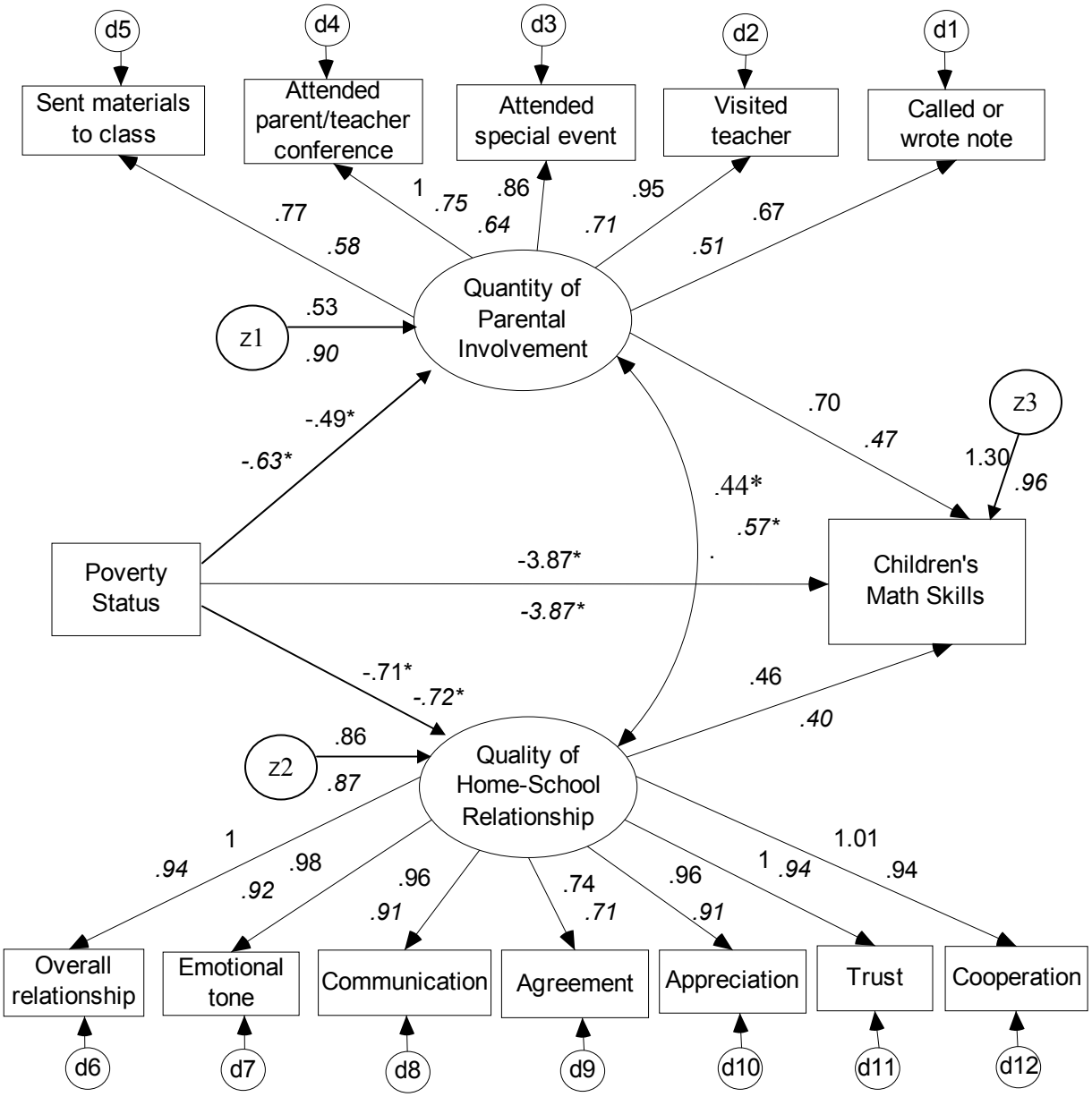
Note. Unstandardized and standardized coefficients (in italics) are presented. All factor loadings are significant. *Indicates significant regression coefficient. $\chi^2/df = 2.42$; CFI = .99; TLI=.99; RMSEA=.045; WRMSR=.83.

Figure C3. Letter identification structural model



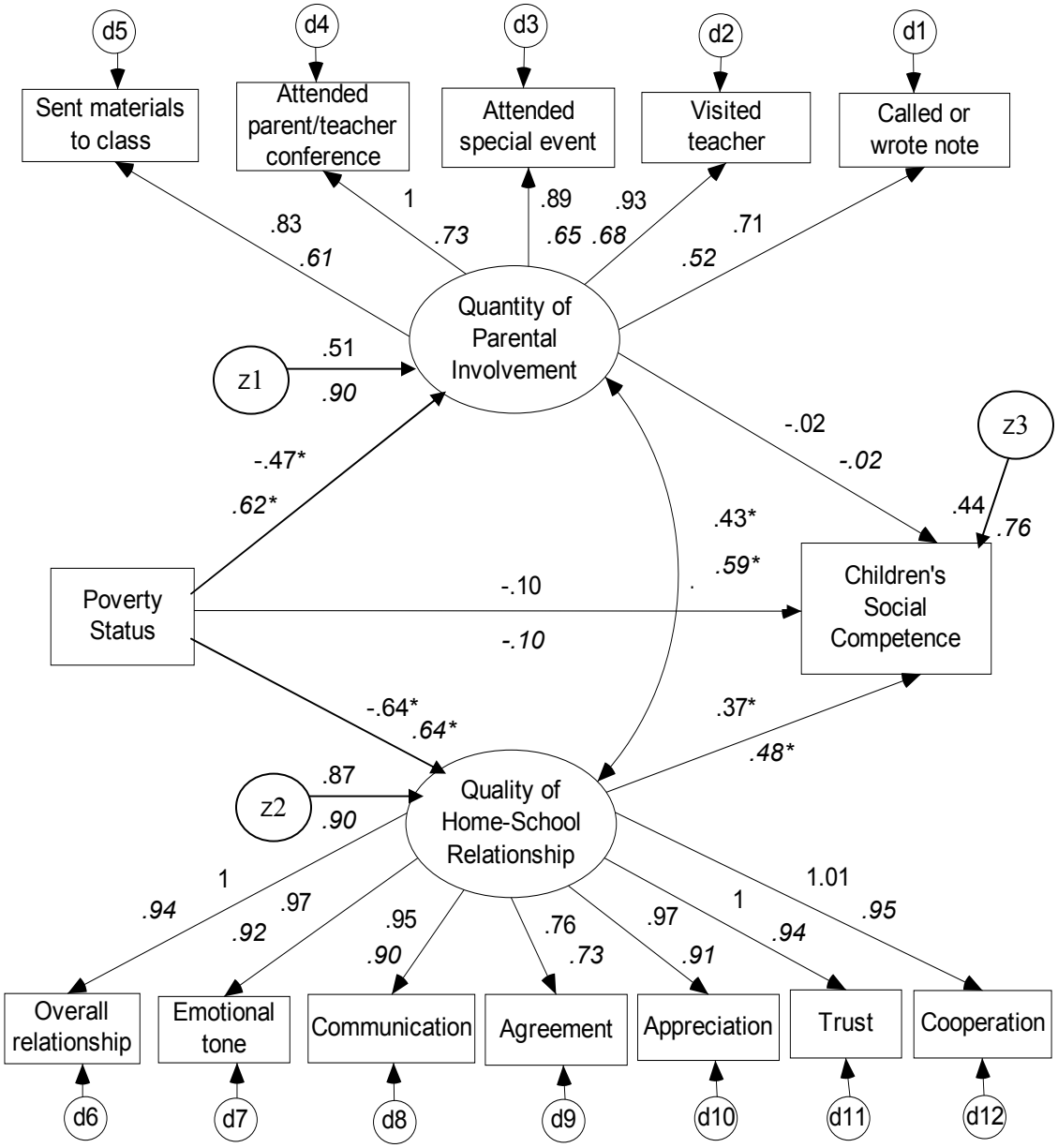
Note. Unstandardized and standardized coefficients (in italics) are presented. All factor loadings are significant. The indirect effect of poverty status on letter identification skills through the mediator quality of the home-school relationship is significant at $p<.05$. *Indicates significant regression coefficient. $\chi^2/df =$ 2.34; CFI = .99; TLI=.99; RMSEA=.04; WRMSR=.81.

Figure C4. Math structural model



*Not*e. Unstandardized and standardized coefficients (in italics) are presented. All factor loadings are significant. *Indicates significant regression coefficient. $\chi^2/df = 2.38$; CFI = .99; TLI=.99; RMSEA=.04; WRMSR=.82.

Figure C5. Social competence structural model



Note. Unstandardized and standardized coefficients (in italics) are presented. All factor loadings are significant. The indirect effect of poverty status on social competence through the mediator quality of the home-school relationship is significant at $p<.05$. *Indicates significant regression coefficient. $\chi^2/df = 2.57$; CFI = .99; TLI=.99; RMSEA=.046; WRMSR=.83.

APPENDIX D

Fit Information and Conclusions for Invariance Testing of Structural Models

Table D1. PPVT Model

p value for χ^2_D statistic	Conclusion
Step 1: Same form	
--	--
Model fit: χ^2/df = 1.54; CFI = 1.0; TLI = 1.0; RMSEA = .05; WRMSR = 1.12	
Step 2: Same paths from exogenous factors to endogenous factors	
.34	Accept model
Model fit: χ^2/df = 1.50; CFI = 1.0; TLI = 1.0; RMSEA = .05; WRMSR = 1.15	
Step 3: Same paths between endogenous factors	
.27	Accept model
Model fit: χ^2/df = 1.53; CFI = 1.0; TLI = 1.0; RMSEA = .05; WRMSR = 1.14	
Step 4: Same paths from exogenous to endogenous factors and same structural paths between endogenous factors	
.32	Accept model
Model fit: χ^2/df = 1.62; CFI = 1.0; TLI = 1.0; RMSEA = .05; WRMSR = 1.17	
Step 5: Same variance-covariance matrix of structural disturbance terms	
.08	Accept model
Model fit: χ^2/df = 1.56; CFI = 1.0; TLI = 1.0; RMSEA = .05; WRMSR = 1.25	
Step 6: Same variance-covariance matrix of exogenous factors	
<.001	Not accepted
Model fit: χ^2/df = 2.05; CFI = .99; TLI = .99; RMSEA = .07; WRMSR = 1.45	

Table D2. OWLS Model

p value for χ^2_D statistic	Conclusion
Step 1: Same form	
--	--
Model fit: χ^2/df = 1.58; CFI = 1.0; TLI = 1.0; RMSEA = .05; WRMSR = 1.13	
Step 2: Same paths from exogenous factors to endogenous factors	
.31	Accept model
Model fit: χ^2/df = 1.55; CFI = 1.0; TLI = 1.0; RMSEA = .05; WRMSR = 1.16	
Step 3: Same paths between endogenous factors	
.01	Not accepted
Model fit: χ^2/df = 1.78; CFI = 1.0; TLI = 1.0; RMSEA = .06; WRMSR = 1.22	

Table D3. Letter Identification Model

p value for χ^2_D statistic	Conclusion
Step 1: Same form	
--	--
Model fit: χ^2/df = 1.64; CFI = 1.0; TLI = 1.0; RMSEA = .05; WRMSR = 1.14	
Step 2: Same paths from exogenous factors to endogenous factors	
.27	Accept model
Model fit: χ^2/df = 1.61; CFI = 1.0; TLI = 1.0; RMSEA = .05; WRMSR = 1.17	
Step 3: Same paths between endogenous factors	
.50	Accept model
Model fit: χ^2/df = 1.57; CFI = 1.0; TLI = 1.0; RMSEA = .05; WRMSR = 1.14	
Step 4: Same paths from exogenous to endogenous factors and same structural paths between endogenous factors	
.43	Accept model
Model fit: χ^2/df = 1.54; CFI = 1.0; TLI = 1.0; RMSEA = .05; WRMSR = 1.18	
Step 5: Same variance-covariance matrix of structural disturbance terms	
.03	Not accepted
Model fit: χ^2/df = 1.64; CFI = 1.0; TLI = 1.0; RMSEA = .05; WRMSR = 1.26	

Table D4. Math Model

p value for χ^2_D statistic	Conclusion
Step 1: Same form	
--	--
Model fit: χ^2/df = 1.63; CFI = 1.0; TLI = 1.0; RMSEA = .05; WRMSR = 1.13	
Step 2: Same paths from exogenous factors to endogenous factors	
.32	Accept model
Model fit: χ^2/df = 1.59; CFI = 1.0; TLI = 1.0; RMSEA = .05; WRMSR = 1.16	
Step 3: Same paths between endogenous factors	
.16	Accept model
Model fit: χ^2/df = 1.64; CFI = 1.0; TLI = 1.0; RMSEA = .05; WRMSR = 1.16	
Step 4: Same paths from exogenous to endogenous factors and same structural paths between endogenous factors	
.24	Accept model
Model fit: χ^2/df = 1.60; CFI = 1.0; TLI = 1.0; RMSEA = .05; WRMSR = 1.19	
Step 5: Same variance-covariance matrix of structural disturbance terms	
.06	Accept model
Model fit: χ^2/df = 1.68; CFI = 1.0; TLI = 1.0; RMSEA = .05; WRMSR = 1.28	
Step 6: Same variance-covariance matrix of exogenous factors	
<.001	Not accepted
Model fit: χ^2/df = 2.17; CFI = .99; TLI = .99; RMSEA = .07; WRMSR = 1.48	

Table D5.

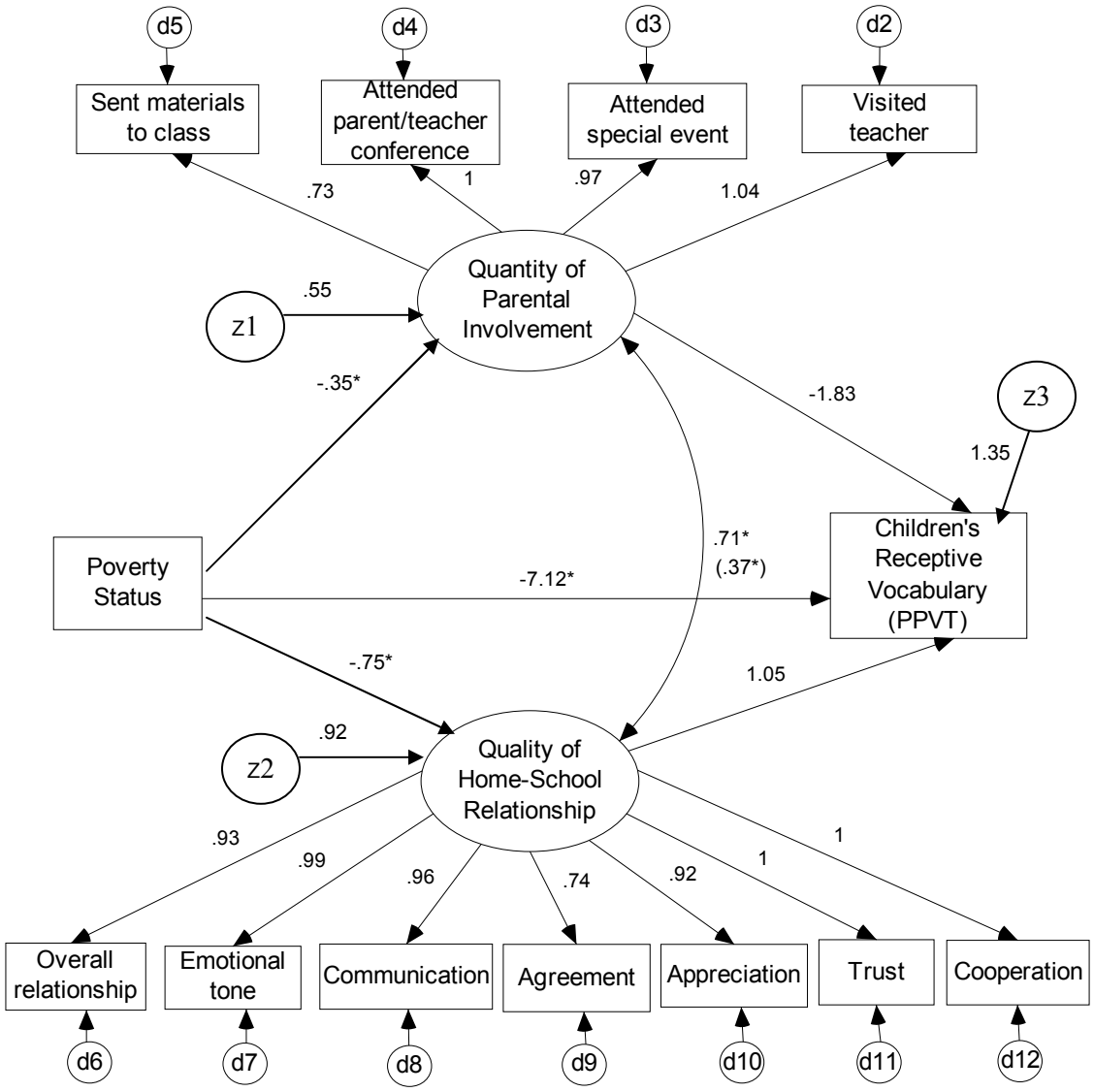
Social Competence Model

p value for χ^2_D statistic	Conclusion
Step 1: Same form	
--	--
Model fit: χ^2/df = 1.58; CFI = 1.0; TLI = 1.0; RMSEA = .05; WRMSR = 1.12	
Step 2: Same paths from exogenous factors to endogenous factors	
.28	Accept model
Model fit: χ^2/df = 1.55; CFI = 1.0; TLI = 1.0; RMSEA = .05; WRMSR = 1.15	
Step 3: Same paths between endogenous factors	
.31	Accept model
Model fit: χ^2/df = 1.55; CFI = 1.0; TLI = 1.0; RMSEA = .05; WRMSR = 1.16	
Step 4: Same paths from exogenous to endogenous factors and same structural paths between endogenous factors	
.38	Accept model
Model fit: χ^2/df = 1.63; CFI = 1.0; TLI = 1.0; RMSEA = .05; WRMSR = 1.22	
Step 5: Same variance-covariance matrix of structural disturbance terms	
.07	Accept model
Model fit: χ^2/df = 1.56; CFI = 1.0; TLI = 1.0; RMSEA = .05; WRMSR = 1.22	
Step 6: Same variance-covariance matrix of exogenous factors	
.01	Not accepted
Model fit: χ^2/df = 2.14; CFI = .99; TLI = .99; RMSEA = .07; WRMSR = 1.46	

Appendix E

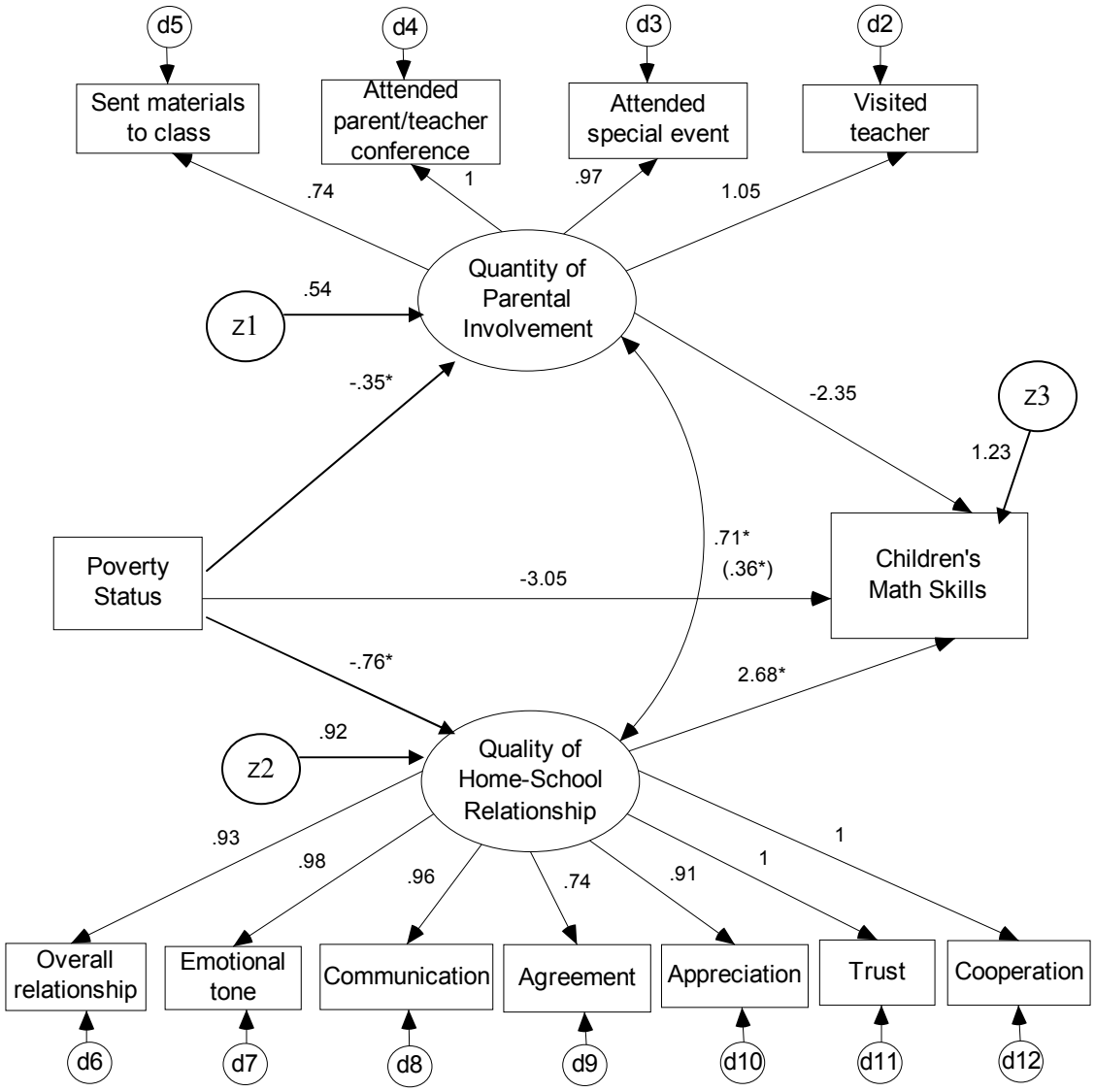
Results of Invariance Testing for Structural Models

Figure E1. PPVT multiple groups model



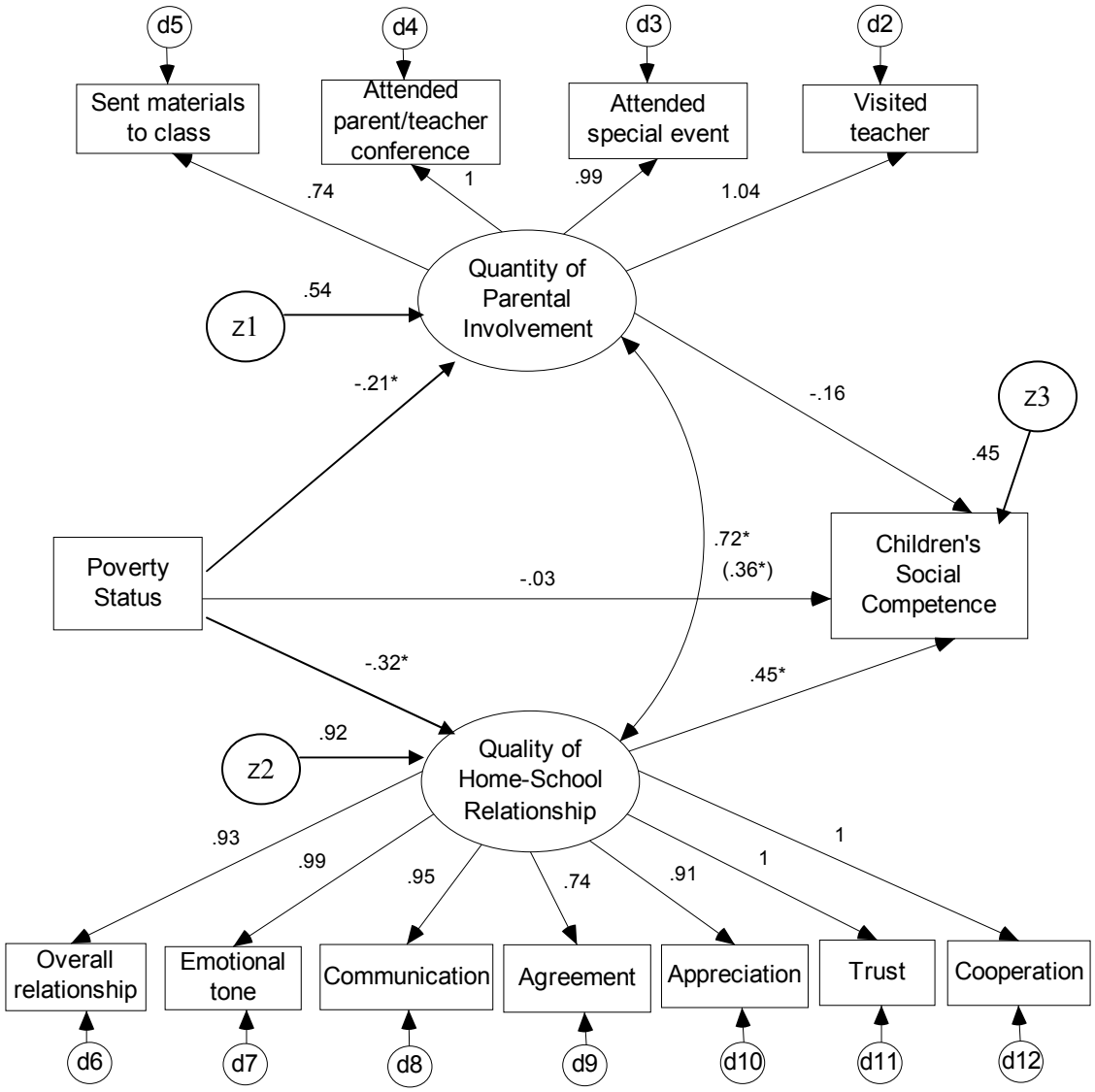
Note. One estimate is presented when there are no significant differences between Euro-Americans and African Americans. Two estimates are presented (Euro-Americans in parentheses) when there are significant differences between groups. All factor loadings are significant. *Indicates significant regression coefficient. $X^2/df = 1.56$; CFI = .996; TLI=.996; RMSEA=.05; WRMSR=1.25.

Figure E2. Math multiple groups model



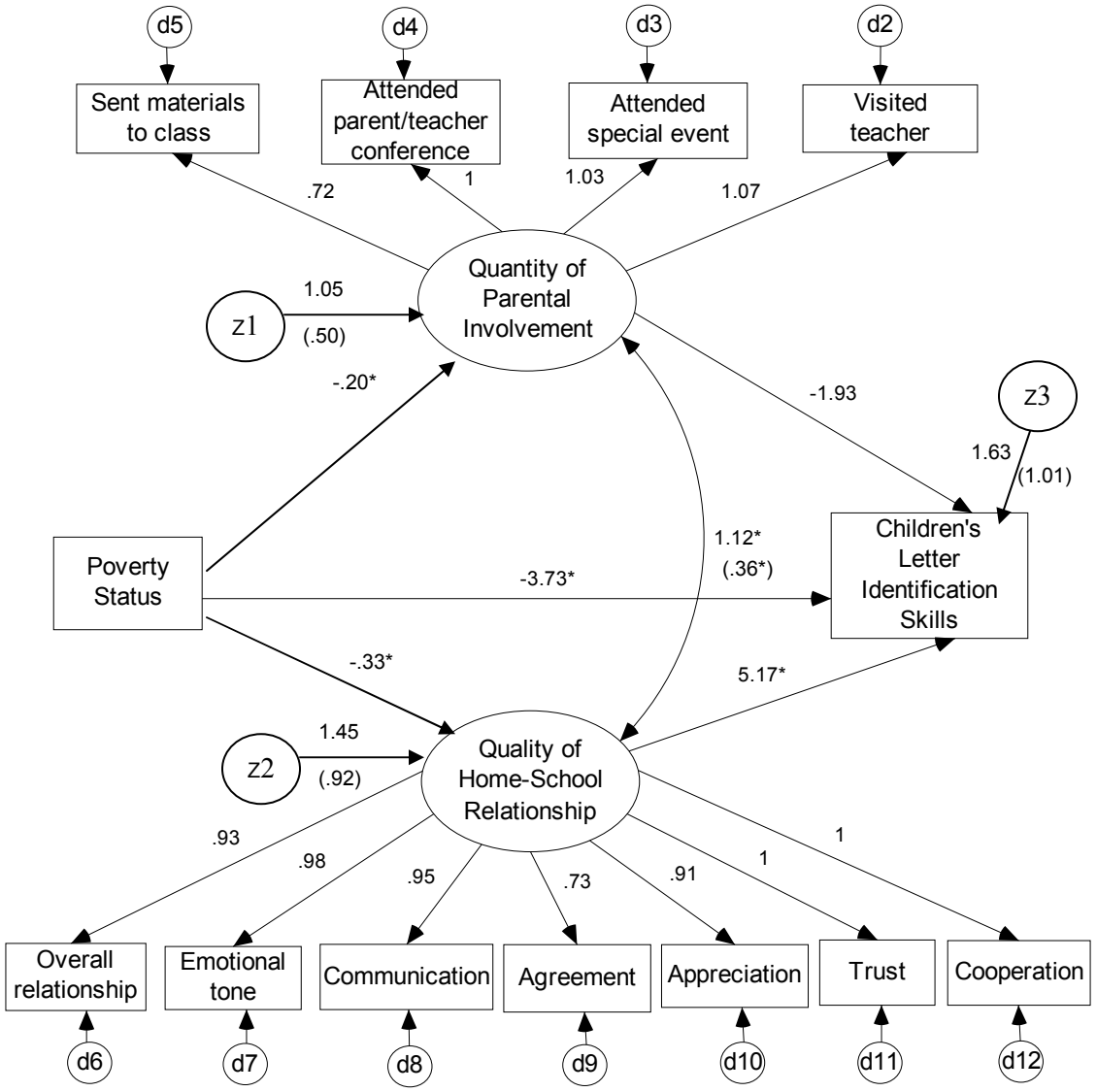
Note. One estimate is presented when there are no significant differences between Euro-Americans and African Americans. Two estimates are presented (Euro-Americans in parentheses) when there are significant differences between groups. All factor loadings are significant. *Indicates significant regression coefficient. $\chi^2/df = 1.68$; CFI = .997; TLI=.995; RMSEA=.05; WRMSR=1.28.

Figure E3. Social competence multiple groups model



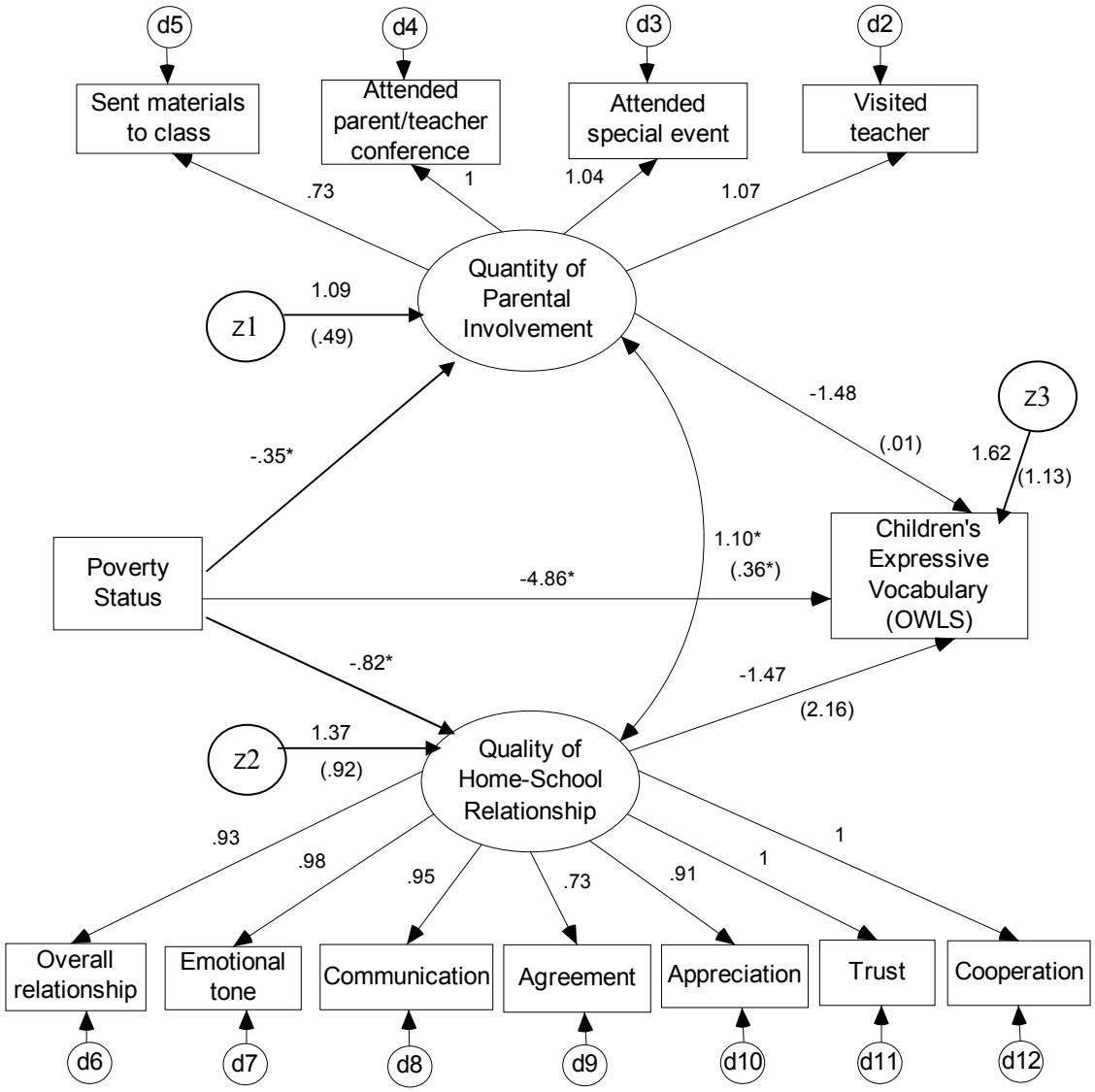
Note. One estimate is presented when there are no significant differences between Euro-Americans and African Americans. Two estimates are presented (Euro-Americans in parentheses) when there are significant differences between groups. All factor loadings are significant. *Indicates significant regression coefficient. $\chi^2/df = 1.56$; CFI = .997; TLI=.996; RMSEA=.05; WRMSR=1.22.

Figure E4. Letter identification multiple groups model



Note. One estimate is presented when there are no significant differences between Euro-Americans and African Americans. Two estimates are presented (Euro-Americans in parentheses) when there are significant differences between groups. All factor loadings are significant. *Indicates significant regression coefficient. $\chi^2/df = 1.54$; CFI = .997; TLI=.996; RMSEA=.048; WRMSR=1.18.

Figure E5. OWLS multiple groups model



Note. One unstandardized estimate is presented when there are no significant differences between Euro-Americans and African Americans. Two unstandardized estimates are presented (Euro-Americans in parentheses) when there are significant differences between groups. All factor loadings are significant. *Indicates significant regression coefficient. χ^2/df = 1.55; CFI = .996; TLI=.996; RMSEA=.05; WRMSR=1.16.

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