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Child Cognitive Development as Examined Using the Family Stress Model

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CHILD COGNITIVE DEVELOPMENT AS EXAMINED USING THE FAMILY
STRESS MODEL

A Thesis
Presented to
the Graduate School of
Clemson University

In Partial Fulfillment
of the Requirements for the Degree
Master's of Science
Applied Sociology

by
Aimee Nicole Hanvey
August 2009

Accepted by:
Dr. Ellen Granberg, Committee Chair
Dr. Melinda Denton
Dr. Ye Luo

ABSTRACT

This study used the Family Stress Model to investigate the relationship between economic distress and child cognitive development. A number of family and community processes have been theorized to mediate the relationship between income and child cognitive functioning. Warm parenting, parental stress, and punitive parenting practices were examined as possible mediators in a sample of 12,440 kindergarten children from the Early Childhood Longitudinal Study – Kindergarten (ECLS-K). Cognitive development was evaluated by reading and mathematical standardized tests, and economic distress was measured using the United States Department of Agriculture (USDA) Food Insecurity Scale. The results of this study found support for the link between economic distress and all three described parenting practices. However, this study was not able to validate the idea behind the Family Stress Model which proposes that the link between financial distress and child cognitive development is mediated by parenting practices. In addition, further results did not support the notion that financial problems have a longitudinal influence on child cognitive development.

DEDICATION

To my son, Landon.

ACKNOWLEDGMENTS

I wish to express my heartfelt appreciation to Dr. Granberg. Thank you for guiding me through this process. Your suggestions, answers to my many questions, and patience were so very important to finishing this thesis. Thank you to my other committee members, Dr. Denton and Dr. Luo, for providing me with invaluable advice, support, and encouragement. You all have helped me to better my life and the life of my son, and for this, I wish to convey my earnest gratefulness.

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And finally, thank you to my adventurer, Andy. Your love and companionship bring my life fulfillment and untold happiness. How lucky I am to have you.

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CHAPTER ONE

BACKGROUND AND LITERATURE REVIEW

Introduction

Poverty is associated with an increased risk of negative developmental outcomes for children. One aspect of development that is especially important for young children is cognitive functioning. Past research has demonstrated that poverty has a detrimental influence on cognitive development (Korenman, Miller, and Sjaastad 1995), with both poverty duration and timing being linked with cognitive growth (Burchinal, Campbell, Bryant, Wasik, and Ramey 1997; McLoyd 1998; Engle and Black 2008).

The association between poverty and cognitive development has been well-established, but the reasons behind the cognitive differences between those in poverty and those living in the higher levels of the socio-economic status (SES) hierarchy are not as well understood. Poverty has been associated with lower quality home environment, neighborhood, and child care. These factors, in turn, have been linked with the cognitive development of preschool age children. For the purposes of this study, I will use the Family Stress Model to explain the link between poverty and school readiness; the Family Stress Model theorizes that variations in quality of parenting are the primary mediating factor that link poverty with deficits in child development.

The Family Stress Model posits that economic stress creates difficulties in everyday living; these difficulties cause distress for parents, and this in turn, disrupts those parenting practices that are warm, involved, and encouraging. According to the Family Stress Model, this disruption in parenting is the link that connects poverty with poorer child

outcomes of all types. The current study will apply this argument to cognitive development and school readiness. These associations have been extensively recognized in adolescent outcomes; however few studies have employed this model when focusing on young children. The importance of understanding how poverty has such a harmful influence on child cognitive development cannot be disregarded. School readiness in kindergarten often sets the path for future success in school (Engle and Black 2008).

For this study, my purpose is to explain the established association between poverty and cognitive development using the Family Stress Model. In order to do this, the remainder of this chapter will first give a brief description regarding the influence of poverty on cognitive development. Then, a more detailed explanation of the Family Stress Model will be presented, followed by a summary of the research that has utilized the Family Stress Model to examine cognitive development in preschool age children. I will conclude the chapter by stating my hypotheses for the current research study.

Poverty and Cognitive Development

Children living in poverty are less school ready than their peers not living under such circumstances. Poverty has been negatively linked to performance on cognitive tests (Korenman, Miller, and Sjaastad 1995; Ryan, Fauth, Brooks-Gunn 2006; Mackner, Black, and Starr 2003). Poverty has also been associated with lower scores on IQ, verbal ability, and achievement tests (Smith, Brooks-Gunn, Klebanov 1997). These impediments in cognitive development influence the school readiness of preschool age children and put them in a position in which they are not entering school with the same level of cognitive development as their economically advantaged counterparts.

These disadvantages in developmental outcomes that occur during the preschool years can have long-term influence. School readiness in kindergarten often sets the path for future success (Engle and Black 2008; Hill and Sandfort 1995). Luster and McAdoo (1996), using the Perry Preschool sample, found that cognitive development and academic motivation in kindergarten were predictive of achievement test scores in elementary school. Success achieved during the elementary school grades, conceptualized as scores on achievement tests, was linked to how long the student stayed in school. Furthermore, children who were characterized as well-adjusted during the kindergarten year achieved higher levels of education, or in other words, they went farther in school (Luster and McAdoo 1996). Since these early cognitive and behavioral outcomes predict success in school achievement, the differences between children living in poverty as compared to those not experiencing the influences of low income are vital in comprehending early education as well as later outcomes.

It is also important to be aware that family poverty statuses can vary over time. Many families move in and out of poverty across a child's life course. Therefore, an important topic in the research on poverty and school readiness is the extent to which the timing of poverty's onset (e.g. infancy versus early childhood) influences the impact of poverty on school readiness. In the early years, children from poorer families show normal cognitive development; it is during the preschool and early elementary school years that a difference appears (Burchinal, Campbell, Bryant, Wasik, and Ramey 1997; Black, Hess, Berenson-Howard 2000).

In addition to the effect of timing, the duration of poverty spells also influences the degree of cognitive deficit children develop. Children from families subsisting on means below the poverty line for an extended period of time are at a greater risk for lower cognitive and academic performance in comparison to children who do not live in poverty (Engle and Black 2008; McLoyd 1998; Duncan, Brooks-Gunn, and Klebanov 1994) and also in comparison to peers experiencing shorter term poverty (National Institute of Child Health and Human Development Early Child Care Research Network 2005; McLoyd 1998). Income effects actually seem to be strongest when poverty is severe, constant, and the child is young, for example during preschool and the early years of elementary school (Brooks-Gunn and Duncan 1997).

The link between poverty and cognitive development has been well-documented; the reasons behind this difference in cognitive functioning have been attributed to several factors, such as the home environment, neighborhood characteristics, and quality of daycare. These ideas pertaining to why children in poverty have deficits in cognitive development when compared to those in the upper levels of the SES hierarchy consider several important factors in the lives of preschool age children. In this study, I will be focusing on quality of parenting as a mediator of the association between poverty and school readiness using the Family Stress Model.

Family Stress Model

According to the Family Stress Model, economic stress generates adversity in day to day living circumstances, which molds the emotions, moods, and behaviors of family members. These financial difficulties are proposed to exacerbate marital problems and

disrupt those parenting practices that are warm, involved, and supportive. The link between economic stress and marital relations/parenting in this base model is depression or the manifestation of depressive symptoms. Basically, the feelings of depression that are connected with economic problems will cause spousal disagreements to be worse and will cause the energy invested in parenting to be less. This disruption in parenting is the key mechanism that relates the earlier parts of the model (economic distress) with child and adolescent outcomes (e.g., school readiness) (Conger and Elder 1994).

The Family Stress Model was formulated by Rand Conger and Glen Elder (1994) based on three different sources: 1) work surrounding families of the Great Depression, 2) research on economic stress, and 3) the conception that emotional distress is a condition prevalent throughout society. Broadly speaking, research on families during the Great Depression found that the emotions and behaviors of parents decided, to a large degree, the ways that their children were influenced by financial problems (Conger and Elder 1994). More specifically, Elder, van Nguyen, and Caspi (1985), building on an earlier 1974 study, found that economic changes increased psychological distress and self-inadequacy among adolescents through the father's rejecting behaviors. Maternal behavior was not influenced by such financial problems. This research also looked at the differences in father's rejecting behavior toward girls and boys. It was primarily among girls that the causal sequence from economic problems to rejecting behavior to the child outcomes appeared (Elder et al. 1985).

In addition to Elder's research, three "linking mechanisms" discovered during work on the Great Depression were a central part of the formation of the Family Stress

Model. First, based on the “life stage principle”, the effect of a social change on life outcomes depends on the developmental stage at which a person goes through the change. In other words, the same transition or event can influence people in different ways depending on the age of the individual. This is due to the fact that people at different ages bring various abilities, understandings, and choices to the change. The second idea is that economic problems include some loss of control over the situation and inspire efforts to take back control. These family control strategies, such as cutting back on money spent, are ways to regain control. Finally, families with economic problems are thrust into a different way of living; more specifically, these families have to deal with scarcity. The demands of this new situation are known as “situational imperatives” (Conger and Elder 1994).

Research indicates that economic pressures link financial troubles with parental emotional distress, which can upset successful parenting practices (Conger et al. 1990; Conger, Conger, Elder, Lorenz, Simons, and Whitbeck 1992; Whitbeck, Simons, Conger, Lorenz, Huck, and Elder 1991). Economic pressures have been shown to reduce the parental effectiveness of both Black and White individuals (Elder, Eccles, Ardedlt, and Lord 1995; Simons, Lorenz, Conger, and Wu 1992). More specifically, economic pressures have been associated with less positive and more negative parenting practices measured with a variety of indicators, such as sensitivity, responsiveness, discipline, and parenting beliefs (Barnett 2008).

Such financial problems are also proposed to intensify marital tribulations (Conger and Elder 1994). Based on the ideas of the model, the feelings of depression

associated with economic problems will make spousal conflicts worse and reduce the amount of energy invested in parenting leading, in turn, to deficits in child well-being. Furthermore, parents who have arguments with their spouses will be preoccupied, causing them to have less time and energy to devote to their parental role. It is also likely that anger in the marriage may transfer over into the interactions between parents and their children (Conger and Elder 1994).

The interference in parenting is vital in linking the earlier parts of the model with child adjustment. Poverty plays a role because economic hardships increase parents' experiences with negative life events and other stressors, which in turn, disrupts responsive parenting practices and increases harsh parenting styles (McLoyd 1998). Heightened levels of hostility and force by parents toward their children have been shown to exacerbate conduct and emotional problems and to hinder development and well-being (Conger and Elder 1994).

Literature demonstrates not only that income influences parenting but also that parenting impacts cognitive development. Mother-infant interactions have been found to be associated with cognitive development (Olson, Bates, and Bayles 1984). A similar link also holds true for fathers; fathers influence language and cognitive development through the quality of their play time and their influence on the mother's engagements with the child (Tamis-LeMonda, Shannon, Cabrera, and Lamb 2004).

This documentation of the association between parenting and cognitive development has been shown in samples from the United States. In a Latino sample, an association was found between parenting stress and the Peabody Picture Vocabulary Test

as well as social functioning, both of which are conceptualized as school readiness factors in the study (Farver, Xu, Eppe, Lonigan 2006). In another American sample, high levels of warmth and cognitive stimulation by parents have been related to cognitive development in children (Ryan, Fauth, and Brooks-Gunn 2006).

When examining the role of economic hardship on certain child outcomes, the Family Stress Model also takes into account the influence of resilience and personal and social capital that may lessen the effects of stressful life events or situations (Conger and Elder 1994). For parents, there are three main resilience strategies: 1) emotional support by a spouse, 2) effective problem solving skills, and 3) a sense of self-confidence and the idea that the trouble can be surmounted with time. For youth, resilience appears to be prompted by social support from parents, brothers and sisters, and adults outside the family, such as teachers, pastors, and school counselors (Conger and Conger 2002).

The Family Stress Model has been primarily used to study adolescent populations. In a study of adolescent boys using both the Oregon Youth Study of 75 families and Iowa Youth and Families Project made up of 451 families, Conger, Patterson and Ge (1995) found that stressful life events are positively related to depressed mood in parents. This depressed mood is then associated with more irritability and interferences in how the parent carries out disciplinary procedures, which in turn, influences child adjustment, including normative failure in school (Conger et al. 1995). This same association was found for female adolescents: economic stress leads to marital conflict and ineffective parenting which in line impacts academic competence (Conger, Conger, Elder, Lorenz, Simons, and Whitbeck 1993).

In addition to looking at White adolescents, using the model for explaining outcomes in African-American adolescents must also be considered. Brody and Flor (1997) use the Family Stress Model to examine academic and psychological adjustment among 156 African American 6-9 year olds living in a single mother household. Family routines and the quality of the mother-child relationship were positively connected with the child's self-regulatory abilities (conceptualized as thinking ahead before planning), which in line, were positively associated with school achievement. In this study, maternal depression was not associated with family routines or the mother-child relationship; instead, mother's self-esteem mediated the link between family income and family processes (Brody and Flor 1997).

Such findings about maternal depressive symptoms are not consistent with the work done on contemporary White families. As explained above in the Conger et al. (1992) and Conger et al. (1993) pieces, depression in both mothers and fathers, stemming from economic hardship, was related to conflict in the marriage and quality of parenting. These inconsistent findings may be due to a difference in the life experiences of the two populations. The sample used by Conger et al. (1992; 1993) was in a situation where they happened upon a sudden drop in income from the farm crisis of the 1980s; whereas, the sample in the Brody and Flor study had not gone through such sudden declines in income, possibly explaining the differences in results for the two populations (Brody and Flor 1997).

Family Stress Model and Preschool Age Children

The research that has been carried out concerning adolescents is vital in showing support for the applicability of the Family Stress Model. However, the model also applies to younger children. In a study of 753 children between the ages of 3 and 5, Yeung, Linver, and Brooks-Gunn (2002) considered how income is linked with developmental outcomes for preschool age children. As outlined by the Family Stress Model, low income was linked with more economic pressure, which in turn, was related to emotional distress and harsh parenting actions by the mother. The researchers did not find support that distress or harsh parenting had any influence on the applied problem score for the preschool children. However, the researchers did find support for the Family Stress Model concerning letter-word scores. More specifically, economic stress was linked with heightened levels of maternal emotional distress, which was then related to harsh parenting actions and significantly lower letter-word scores.

Another study by Linver, Brooks-Gunn, and Kohen (2002) of both White and Black preschool age children found similar results. The researchers found that family income was directly and indirectly associated with child cognitive development. In this instance, the Family Stress Model shows that family income influences maternal emotional distress, which impacts parenting practices. This change in parenting practices impinges on child cognitive development. However, since the income to child cognitive development pathway was not reduced, the researchers concluded that such constructs did not mediate the relationship (Linver et al. 2002).

The Family Stress Model can also be expanded to look at neighborhood disadvantages and cognitive development. A study focusing on preschool age children

examines specifically the influence that neighborhood socioeconomic status had on verbal outcomes for children in the Canadian National Longitudinal Study. Structural disadvantage in one's neighborhood was linked with less cohesion between neighbors. Neighborhood cohesion is significantly related to enhanced family functioning and lower maternal depression. Following this line of reasoning, better functioning within the family was linked with increased levels of literacy, more consistent parenting, and less harsh parenting. Moreover, higher levels of maternal depression were related to lower levels of consistent parenting and higher levels of parenting practices that are based on punishment. Finally, literacy was significantly associated with higher verbal ability scores. In summary, neighborhood socioeconomic status does not have a significant effect on verbal ability or behavior problems; however, there is a significant indirect influence through neighborhood cohesion, depression in the mother, and parenting based on punishment (Kohen, Dahinten, Leventhal, and McIntosh 2008).

To further understanding of the influence of economic stress of preschool outcomes, Jackson, Brooks-Gunn, Huang, and Glassman (2000) studied 93 single, Black mothers and their children. The analyses show that higher levels of education are related to improved earnings. This higher level of income is linked with a reduced amount of financial strain. This financial strain, along with lower levels of education, predicted heightened levels of depressive symptoms, which in turn, were connected to parenting and child development. Finally, school readiness was found to be associated with quality of parenting (Jackson et al. 2000).

Research involving preschoolers shows mixed results. Yeung et al. (2002) found that economic pressure influences behavioral outcomes, but was not as important when considering scores on achievement tests; whereas, Jackson et al. (2000) and Linver et al. (2002) found that economic stress was related to both child ability and behavioral outcomes through parenting.

Although the Family Stress Model has been used to examine cognitive development, there are limitations to these previous studies. Of the studies mentioned concerning the application of the Family Stress Model with preschool age children, only two studies use samples based on a socio-economically and racially diverse population. Jackson et al. (2000) use a sample of 188 current and former welfare recipients, which presents a class bias. On the other hand, Brody and Flor (1997) use a slightly older group of children (6-9 year olds) and only focus on African American kids. Finally, the Linver et al. (2002) piece is based on a clinical trial sample.

Two studies do use a representative sample: Kohen et al. (2008) and Yeung et al. (2002) use the National Longitudinal Study of Children and Youth (NLSCY) and the Panel Study of Income Dynamics (PSID) respectively, and both measured cognitive development through verbal ability. My study will use the Early Childhood Longitudinal Study – Kindergarten (ECLS-K) and will incorporate measures not included in previous studies based on representative samples. Cognitive development, for example, will be measured using both verbal and mathematical test scores. It is essential that both literacy and math are measured because the early years of school are especially important for gaining basic literacy and numeracy skills. Children who fail to obtain such skills are

faced with a major hindrance because such subjects are highly cumulative. In particular, math is a subject which very much relies on understanding basic functions in order to comprehend other concepts within the discipline (Entwisle and Alexander 1993). The cognitive assessments used in this study are based on national and state standards, showing that the cognitive measurements used in this study are good quantifiers of school readiness.

In addition to measuring cognitive development, this study will also assess parenting in a manner different from previous studies. The Yeung et al. (2002) piece measures both warm and punitive parenting practices; however, the only punitive parenting practices that are examined are physical punishment. In this study using the ECLS-K data, both physical punishment and other punitive parenting practices, such as shaming, will be assessed. The Kohen et. al (2008) study does not assess warm parenting practices; instead, the study examines consistent parenting and punitive parenting. Although the Kohen study does look at a range of punitive parenting practices, it does not tap the warm parenting construct as will this study. This study will use measures of parenting that are more similar to the basic ideas of the Family Stress Model than the two studies mentioned above by looking at both warm and emotional supportiveness as well as punitive parenting behaviors.

Hypotheses

This thesis examines the connection between economic distress and child cognitive development and suggests that parenting may mediate this relationship. Based

on the literature review and the ideas posited by the Family Stress Model, the following hypotheses are tested:

Hypothesis 1: Economic distress is negatively associated with positive parenting practices.

Hypothesis 2: Economic distress is negatively associated with child cognitive development scores and parenting explains this association.

Hypothesis 3: Economic distress at Time 1 is negatively associated with the change in child cognitive development score.

CHAPTER TWO

METHOD

The principal purpose of this thesis is to examine the relationship between poverty and cognitive development using the Family Stress Model. This chapter outlines the methods used in the current study to accomplish such a research objective. This section begins with a description of the data set followed by an account of the dependent, independent, and control variables included in this study. The statistical analysis plan is outlined at the end of this chapter.

Description of Data

The dataset used in the current study is the Early Childhood Longitudinal Study – Kindergarten (ECLS-K), a nationally representative, longitudinal study sponsored by the U.S. Department of Education, National Center for Education Statistics. The ECLS-K tracked a total of 21,260 children from kindergarten through eighth grade. The study utilized a multistage probability sample design. Data collection began in the fall and spring of 1998-1999, when the children were in kindergarten and continued the fall and spring of 1999-2000 (1st grade), the spring of 2002 (3rd grade), the spring of 2004 (5th grade), and finally in the spring of 2007 (8th grade). The full sample was included in each of these data collection phases, except for fall of the 1st grade year. During the fall of the 1st grade year, only a thirty percent subsample was surveyed in order to allow researchers to measure the scope of summer learning loss and to better unravel school and home influences on children's learning. The children of the ECLS-K attended both public and private schools and participated in full-day and half-day kindergarten programs. The

sample is also demographically diverse, with a range of socioeconomic as well as racial backgrounds (Tourangeau, Pollock, Atkins-Burnett et al. N.d).

Cognitive, social, emotional, and physical development was evaluated at the child's school through partaking in various one-on-one activities with a trained researcher. The information gathered from the parents was collected over the telephone and included topics relating to the child's development and experiences with family members. Finally, teachers and school administrators were asked to complete surveys at their schools. Teachers completed surveys about their background, teaching methods, experience, and their classroom. Teachers also completed individual assessments of the students participating in the study. Finally, school administrators completed questionnaires about the physical, organizational, and fiscal characteristics of their schools (Tourangeau, Pollock, Atkins-Burnett et al. N.d).

The main goal of the ECLS-K was to follow a group of children from kindergarten through eighth grade. This study was intended to afford researchers with data to be used in describing and understanding the family, school, community, and individual factors that impact early success in school. In addition to understanding these factors, the study also aims to expand knowledge of how early school experiences influence later development. The goal of the current study is to determine whether the relationship between income and child cognitive outcomes can be explained using the Family Stress Model. It is proposed that economic stress leads to disruptions in parenting, which in turn, negatively influences child cognitive development. The 1998-1999 kindergarten data will be used along with the spring first grade cognitive

development scores data. Data regarding economic distress, depression, and parenting style will be used to predict cognitive development during the baseline 1998-1999 Kindergarten year. In addition, data collected during the first grade year will reveal any longitudinal influences of economic distress on cognitive development as explained through parenting practices. Although the full sample is included in the base-year data, the first grade year consists of only 17,487 cases.

Measures

Dependent Variables

Cognitive Development

In this study, child cognitive development is conceptualized as both reading and mathematical functioning. In the ECLS-K, reading and mathematical scores are assessed through direct measurements. The direct child cognitive evaluation scores resulted from the child's performance on reading and mathematical tests. The mathematical and reading t-scores will be collected for the fall of the kindergarten year as well as the spring of the first grade year. These assessments were administered as two-stage adaptive tests. To explain this type of test administration further, all children start with a routing test made up of between 12 and 20 questions for each particular subject area. The routing test is made up of questions at all difficulty levels and is used to determine which test the child is given for the second stage form. The second stage form is comprised of items of appropriate difficulty based on the number correct from the initial routing test. These direct cognitive assessments were administered individually to each child and matched the child's level of development (West, Denton, and Reaney 2000).

The ECLS-K presents the data in four different types of scores that can be used to explain children's performance on the direct cognitive assessments: (1) number right scores, (2) IRT scale scores, (3) standardized t-scores, and (4) proficiency scores. In this study, children's overall reading and mathematics knowledge is presented as a standardized t-score. T-scores offer norm-referenced measurements of achievement, or in other words, estimates of achievement level in comparison to the population as a whole. For example, a high t-score mean for one particular subgroup specifies that the group's performance is high in comparison to other groups. A change in t-score means over a period of time indicates a change in the group's status in comparison to other groups. Stated differently, t-scores give information regarding status compared to children's peers. Both the reading and mathematics t-scores have a mean score equal to 50 and a standard deviation of 10. The range of values for both the reading and math t-scores is from 0 to 90 (Tourangeau, Pollock, Atkins-Burnett et al. N.d).

The mathematics test used in the ECLS-K is based on principles derived from the *Mathematics Framework for the 1996 National Assessment of Educational Progress (NAEP)*. The mathematics test items were intended to evaluate skills in conceptual knowledge, procedural knowledge, and problem solving. About half of the mathematical test was made up of questions relating to number sense, number properties, and operations. The rest of the evaluation focused on measurement, geometry, data analysis, probability and statistics, patterns, algebra, and functions. The mathematical test was made up of 64 total items (Tourangeau, Pollock, Atkins-Burnett et al. N.d).

The *NAEP* standards are also the basis for the ECLS-K reading test specifications. The language and literacy evaluation included questions designed to assess basic skills (letter recognition, rhyming sounds, word recognition, beginning and ending sounds), vocabulary, and comprehension. The comprehension items refer to the child's ability to understand, interpret, and reflect on the text. The reading test was made up of 92 total items (Tourangeau, Pollock, Atkins-Burnett et al. N.d).

Reliability statistics were calculated for each type of score and subject area for both the fall and spring of the kindergarten year as well as during the first grade year. In regards to the IRT-based scores (IRT scale scores, the t-scores, and the proficiency scores), the reliability of theta is based on the variance of repeated estimates of theta. The reliability of theta for the Fall kindergarten IRT-based reading scores is .93, and the reliability of theta for the Fall kindergarten IRT-based mathematical scores is .92 (Tourangeau, Pollock, Atkins-Burnett et al. N.d). Likewise, the reliability of theta for the spring first grade IRT-based reading score is .97, and the reliability of theta for the spring first grade IRT-based mathematical scores is .94 (Tourangeau, Pollock, Atkins-Burnett et al. 2002)

Independent Variables

Economic Distress

Economic distress will be measured using the United States Department of Agriculture Food Insecurity Scale. This scale includes 18 questions that were incorporated into the spring parent questionnaire: "Now I am going to read you several statements that people have made about their food situation. For these statements, please

tell me whether the statement was often true, sometimes true, or never true for (you/your household) in the last 12 months, that is, since last interview (current month). (1) We worried whether our food would run out before we got money to buy more. (2) The food that we bought just didn't last and we didn't have money to get more. (3) We couldn't afford to eat balanced meals. (4) Did you or other adults in the household ever cut the size of your meals or skip meals because there wasn't enough money for food? (Yes/No) (5) (If yes to Question 4) How often did this happen—almost every month, some months but not every month, or in only 1 or 2 months? (6) Did you ever eat less than you felt you should because there wasn't enough money for food? (Yes/No) (7) Were you ever hungry, but didn't eat, because you couldn't afford enough food? (Yes/No) (8) Did you lose weight because you didn't have enough money for food? (Yes/No) (9) Did you or other adults in your household ever not eat for a whole day because there wasn't enough money for food? (Yes/No) (10) (If yes to Question 9) (10) How often did this happen—almost every month, some months but not every month, or in only 1 or 2 months? (11) We relied on only a few kinds of low-cost food to feed our children because we were running out of money to buy food. (12) We couldn't feed our children a balanced meal, because we couldn't afford that. (13) The children were not eating enough because we just couldn't afford enough food. (14) Did you ever cut the size of any of the children's meals because there wasn't enough money for food? (Yes/No) (15) Were the children ever hungry but you just couldn't afford more food? (Yes/No) (16) Did any of the children ever skip a meal because there wasn't enough money for food? (Yes/No) (17) (If yes to Question 16) How often did this happen—almost every month, some months but

not every month, or in only 1 or 2 months? (18) Did any of the children ever not eat for a whole day because there wasn't enough money for food? (Yes/No)." This scale will be recoded so that higher values equal more food insecurity and ranges from 18 to 45. The reliability for the food insecurity scale is Cronbach's alpha equals .89.

Depression

Personal psychological characteristics may influence parenting (Belsky 1984). In addition, the Family Stress Model posits that depression interrupts those parenting practices that are warm and supportive. Poor mental health among parents has been linked with impaired child-parent interactions (Brooks-Gunn and Duncan 1997). This scale was created by Radloff (1977) and the reliability of the measure was consistent across a variety of demographics of the general population. The CES-D was correlated with clinical ratings of depression and also with other self-reported depression scales (Radloff 1977). Depression was measured using the short version of the Center for Epidemiologic Studies Depression (CES-D) Scale. The respondents were asked to indicate how often they felt a certain way within the past week with answer categories: "never", "some of the time", "a moderate amount of the time", or "most of the time". The 12-item scale asks: how often in the past week have you felt "that you were bothered by things that don't usually bother you", "that you did not feel like eating, that your appetite was poor", "that you could not shake off the blues even with help from your family or friends", "that you had trouble keeping your mind on what you were doing", "depressed", "that everything you did was an effort", "fearful", "that your sleep was restless", "that you talked less than usual", "lonely", "sad", "that you could not get

going”. These items will be summed on a scale of 12 through 48 and coded so that a higher score indicates more depressive symptoms. The reliability for this scale is Cronbach’s alpha equals .86.

Parenting

In this study, parenting will be assessed using a series of questions relating to discipline, warmth, and the emotional supportiveness of the parent found in the spring parent questionnaire. First, the respondents are asked to indicate whether a series of statements are “completely true”, “mostly true”, “somewhat true”, or “not at all true”. These questions include the following: “{CHILD} and I often have warm, close times together”, “Most of the times I feel that {CHILD} likes me and wants to be near me”, “I am usually too busy to joke and play around with {CHILD}”, “Even when I’m in a bad mood, I show {CHILD} a lot of love”, “By the end of a long day, I find it hard to be warm and loving toward {CHILD}”, “I express affection by hugging, kissing, and holding {CHILD}”, “Being a parent is harder than I thought it would be”, “{CHILD} does things that really bother me”, “I find myself giving up more of my life to meet {CHILD}'s needs than I ever expected”, “I feel trapped by my responsibilities as a parent”, “I often feel angry with {CHILD}”, “{CHILD} seems harder to care for than most”, and “I find taking care of a young child more work than pleasure”. A factor analysis of these questions revealed two underlying constructs, which I will label “warmth” and “parental stress”.

Warmth. This scale includes the questions regarding “warm, close times together”, “I feel that {CHILD} likes me”, “I show {CHILD} a lot of love”, and “express

affection". This scale ranges from 4 to 16, with higher values representing more warm parenting practices. This scale was created based on a summary score of the items. The reliability of this scale is Cronbach's alpha equals .57.

Parental Stress. This scale includes all of the other above questions: "usually too busy to joke or play", "find it hard to be warm and loving", "being a parent is harder", "bother me", "giving up more of my life", "feel trapped by responsibilities", "feel angry", "harder to care for", and "more work than pleasure". This scale ranges from 9 to 36, which higher values indicating more parental stress. Like the warm parenting scale, this scale was constructed based on a summary score of the items. The reliability for this scale is Cronbach's alpha equals .70.

Punitive. In addition to gauging parenting behaviors and attitudes, discipline will also be examined. An index will be created based on the "Yes" count of the subsequent four discipline strategies: "If {CHILD} got so angry that he/she hit you, what would you do? Would you (1) spank him/her, (3) hit him/her back, (7) make fun of him/her, and (11) yell at {CHILD} or threaten him/her. This count of punitive parenting practices will range from 0 to 4. This scale will then be recoded so that 0=no punitive parenting practices and 1=at least one punitive parenting practice.

Covariates

Parent's Marital Status. In previous studies using the Family Stress Model, spousal support was related to supportive parenting practices for both mothers and fathers (Simons, Lorenz, Conger, and Wu 1992). In addition, married parents report fewer depressive symptoms than single parents, and as already noted, depression upsets positive

parenting practices (Cunningham and Knoester 2007). This variable is also incorporated as a control variable so as to avoid (as much as possible) confounding income with marital status. Information about marital status is gathered through the composite variable “Family type” that considers both parent and sibling information. Answer categories include: “1 = Two parents and sibling(s)”, “2 = Two parents, no siblings”, “3 = One parent and sibling(s)”, “4 = One parent, no siblings”, and “5 = Other”. This variable is recoded so that two parent families are distinguished from other family types. This composite variable is recoded so that 0=single parent home or other and 1=two parent home.

Child’s Race. Race is included as a control so as to avoid (as much as possible) confounding income with race. In this study information about race is gathered through the question: “What is {your/{NAME}'s } race?” with answer categories of American Indian or Alaska Native, Asian, Black or African American, Native Hawaiian or other Pacific Islander, White, or another race. Here race is coded as a dummy variable where “1” indicates Whites and “0” indicates African Americans and all other races.

Child’s Gender. Previous studies using the Family Stress Model have controlled for this variable, such as the Yeung et al. (2002) piece. As mentioned in the discussion of the Family Stress Model, the economic problems that lead to disruptions in warm parenting practices may influence male and female children in different ways (Elder et al. 1985). Information about the child’s gender is collected during the fall parent interview with the question, “I have {CHILD} recorded as {male/female}. Is that correct?” Child gender will be coded as 0=boy and 1=girl.

Respondent's Relationship to Child. Since this survey questions respondents regarding their parenting practices, a dummy variable will indicate that someone other than the mother is answering the survey. Relationship to the respondent will be coded as 0=someone other than the mother or father answered questionnaire and 1=mother or father provided answers.

Mother's Age. Conger, McCarty, Yang, Lahey, and Burgess (1984) found that chronological age had a negative influence on the positive behaviors of the mother and that age at first birth was positively associated with supportive maternal behaviors, such as praise and physical affection and negatively linked to aversive interactions, such as criticism and physical punishment. In another study, Ragozin, Basham, Crnic, Greenberg, and Robinson (1982) demonstrate that maternal age impacts both reported parental satisfaction and observed parent-child interactions. Information about the respondent to the parental questionnaire is collected during the fall parent interview: “{How old {are you/is {NAME}}?}”.

Parent's Education. The ethnographic piece by Annette Lareau (2002) demonstrates that social class may influence parenting, with middle class and working class parents using different strategies to raise their children. Middle class parents practice “concerted cultivation” by endeavoring to encourage children’s talents via leisure activities and reasoning. Working class parents tend to practice a parenting style labeled “accomplishment of natural growth” where in parents’ make available the conditions under which the child can grow but leave leisure activities to the children themselves. In addition, such parents use directives with their children as opposed to

reasoning. Information about parental education is collected during the fall parent interview with the question, “{Now I have a few questions about education and job training.} What {is/was} the highest grade or year of school that {you/{NAME}/{CHILD}}’s {biological/adoptive} {mother/father}} {have/has/had} completed?” Answer categories for this question range from “8th grade or below”, “9th to 12th grade”, “high school diploma/equivalent”, “voc/tech program”, “some college”, “Bachelor’s degree”, “graduate/professional school”, “Master’s degree”, and “Doctorate or professional degree”. The highest level of education for either parent will be used in this study.

Overview of Analysis

All analyses in this study are performed using the Statistical Package for the Social Sciences (SPSS) version 16.0. First, frequencies of the basic descriptive characteristics will be presented to gain a basic understanding of the ECLS-K data set. These characteristics of the sample include child’s gender, child’s race, age of the respondent to the parental questionnaire, relationship of person answering the questionnaire to the child, parents’ highest level of education, and parental marital status. In addition, the mean and standard deviation of the reading and mathematical scores for this sample will also be confirmed. For the independent variables, a number of scales and an index will be created. All scales will be created by taking the mean of all valid answers and summing that result by the total number of items in the scale. In addition to the descriptive analyses, correlations between the dependent, independent, and covariates will be evaluated before carrying out the regression models.

A series of Ordinary Least Squares (OLS) Regression models will be performed to examine the independent variables and their ability to explain variance in the dependent variable, child cognitive development. The first set of multivariate analyses will examine the association between the different parenting skills/feelings and economic distress, controlling for the above mentioned variables as well as depression. The second set of multivariate analyses will examine the cognitive development scores, as explained by parenting skills and financial distress controlling for depression in addition to the variables cited above. The third set of multivariate analyses will include financial distress and the parenting variables to study the influence of these variables on change in cognitive development scores, controlling for cognitive development as measured during the fall of the kindergarten year as well as child's gender, child's race, parental marital status, age of the parental respondent, parent's education, relationship of the respondent to the child, and parental depression. Verbal and mathematical cognitive development scores will be examined in separate models.

CHAPTER THREE

RESULTS

The current study focuses on the relationship between economic distress and child cognitive development and proposes that parenting practices may mediate this relationship. This chapter outlines the results of the statistical analyses employed to test hypotheses regarding these associations. To begin with, a series of descriptive analyses are conducted. Then, the correlation matrix is assessed before multivariate regression models are executed. The first set of models examines parenting practices while the remaining sets of models consider the child cognitive development scores in both kindergarten and first grade.

In order to take into account missing data, I excluded any respondent who did not have a valid answer, such as those respondents who gave replies such as “I don’t know”. Such answers were recoded as missing. In addition, only respondents who had valid answers for *all* the measures were included in the descriptive analyses as well as the regression models. After performing these two procedures, my sample came to 12,440 respondents. The results based on this sample number are described in the following sections.

Descriptive Statistics

The unweighted descriptive statistics are shown in Table 1. For the fall of the kindergarten year and the spring of the first grade year, the mean and standard deviation of the math and reading t-scores were standardized to 50 and 10, respectively. For my study, the kindergarten math score has a mean of 51.89 and a standard deviation of 9.62.

Likewise, the reading score has a mean of 51.17 and the standard deviation is 9.93. For the first grade year, the math score has a mean of 51.53 and a standard deviation of 9.11. Similarly, the reading score has a mean of 51.53 and a standard deviation of 9.12.

The prime independent variable in this study is economic distress, which was measured using the USDA Food Insecurity Scale. In this sample, the economic distress scale has a mean of 18.84 and the standard deviation is 2.55. Warm parenting practices, parental stress, and punitive parenting practices were included as mediating variables. The warm parenting scale has a mean of 14.79 and the standard deviation is 1.48. The parental stress scale has a mean of 13.98 and the standard deviation for this scale is 3.66. Finally, 73.9% of respondents reported no punitive parenting behaviors, and 26.1% of respondents reported using at least one punitive parenting technique. Depression is also included as an independent variable in the parenting models and as a control in the cognitive development models. The mean of the depression scale is 17.44 and the standard deviation is 5.39.

The child's gender and race, age of the parental respondent, the parent's highest education level, family type, and relationship of the respondent to the child were included as control variables in all the models. The percentage of male children in the sample is slightly higher than the percentage of female children, with 50.7% of the children being boys and 49.3% of children being girls. There is also a higher percentage of White children in the sample compared to other ethnicities: 63.7% of children are white, and 36.3% of children are another ethnicity. The mean age for the parental respondent is 33.93.

The parents in this study ranged in education levels from not completing high school through attaining a doctorate or professional degree. About 6% of the sample did not graduate from high school, and the percentage of respondents with a high school diploma is 24.5%. About 34% of the sample has some college or vocational program training, and an additional 20.1% completed college to achieve Bachelor's degrees. The percentage of respondents who went on to graduate school, either attending some graduate school or obtaining a Master's degree is 10.5. Finally, 5.1% of respondents were able to acquire their doctorate or other professional degree.

Table 1. Descriptive Statistics

Variable	Mean	Standard Deviation	Minimum	Maximum
Female Child	.49	.50	0	1
White	.64	.48	0	1
Age of Parental Respondent	33.93	6.64	0	83
Highest Level of Education	4.96	1.86	1	9
Relationship of Respondent to Child	.98	.15	0	1
Two Parent Family	.78	.41	0	1
Kindergarten Reading Score	51.17	9.93	23.20	87.76
Kindergarten Math Score	51.89	9.62	20.77	90.61
First Grade Reading Score	51.53	9.12	1.06	79.167
First Grade Math Score	51.53	9.11	0	70.91
Depression Scale	17.44	5.39	12	48
Economic Distress Scale	18.84	2.55	18	45
Warm Parenting Scale	14.79	1.48	6	16
Parental Stress Scale	13.98	3.66	9	33
Punitive Parenting	.26	.44	0	1

N=12440

A great majority of the children live in a two-parent home, more specifically, 78% of respondents reported an environment with both parents living in the home. About 22% reported a single-parent family type. Lastly, most of the respondents for this survey were the parents of the children; 97.7% of the respondents are the mother or father of the

target child, and only 2.3% of the respondents are a family member or friend living in the household.

Correlation Matrix

Table 2 presents the correlation coefficients between the dependent, independent, and control variables. The correlation matrix was utilized to assess the extent to which study variables were associated (negatively or positively) with each other as would be expected based on the literature review. The primary dependent variables are the child's kindergarten reading and math scores (T1 R & T1 M). The primary independent variable is economic distress (Econ.). Both the reading and math scores are associated with economic distress; children living in families with higher rates of economic distress have significantly lower math and reading scores both at Time 1 (T1R, T1M) and Time 2 (T2R, T2M). Warm parenting (WP) is significantly associated with the first grade math score; children living in homes with more warmth have lower math scores. However, warm parenting is neither associated with kindergarten math or reading scores nor first grade reading scores. Both parental stress (PS) and punitive parenting (PP) practices are associated with the cognitive development scores. Parents reporting higher levels of parental stress have children with significantly lower reading and math scores at Time 1 and Time 2. Similarly, parents reporting more punitive parenting practices have children with significantly lower math and reading scores at Time 1 in addition to Time 2.

The primary dependent variables are also associated with many of the control variables. Gender (Gen) is associated with Time 1 reading score in addition to Time 2 reading and math scores; however, it is not associated with Time 1 math score. Girls

have significantly higher Time 1 and Time 2 reading scores, and significantly lower Time 2 math scores. Both math and reading scores at Time 1 and Time 2 are associated with race, with analyses indicating that White children have significantly higher scores on all the cognitive development measures. In addition, parental respondent's age (PA) is associated with the dependent variables. Children with an older respondent have significantly higher math and reading scores as measured during the kindergarten and first grade years. The highest level of education achieved by the parents (Ed. L) is associated with the dependent variables as well. Children with parents who have higher education levels have significantly higher math and reading scores as measured at Time 1 and Time 2. Family type (FT) also seems to play a role in the child's reading and math score; the correlation matrix shows that children from two parent families have significantly higher reading and math scores at Time 1 and Time 2. Finally, parental depression (Dep.) is associated with cognitive development scores. Parents who report more depressive symptoms have children with significantly lower Time 1 and Time 2 reading and math scores. Depression is also related to the primary independent variable, economic distress; the correlation matrix reveals that parents experiencing more economic distress have significantly higher levels of depressive symptoms.

The hypothesized mediators, warm parenting, parental stress, and punitive parenting are associated with economic distress; parents experiencing higher rates of economic distress have significantly lower warm parenting practices and significantly higher parental stress and punitive parenting practices. These mediators can also be observed in terms of their association with many of the control variables. Warm

parenting and punitive parenting are associated with gender. When the target child is a female, parents report significantly more warmth and significantly less punitive parenting practices. Race is associated with warm parenting practices, parental stress, and punitive parenting practices. White parents report significantly less parental stress as well as punitive and warm parenting practices. The age of the parental respondent is associated with warm parenting practices, parenting stress, and punitive parenting practices. Older respondents report significantly more warmth and significantly less parental stress and punitive parenting practices. Education level is significantly associated with parental stress and punitive parenting practices; parents with higher levels of education report less parental stress and the use of less punitive parenting practices. Finally, depression is associated with all three measures of parenting. Parents reporting more depressive symptoms report significantly fewer warm parenting practices and significantly more parental stress and punitive parenting practices.

Table 2. Correlation coefficients for selected variables

	Gen	Race	PA	Ed. L	RTC	FT	T1 R	T1 M	T2 R	T2 M	Dep.	Econ.	WP	PS	PP
T1 R	.090**	.183**	.172**	.394**	.065**	.175**	1								
T1 M	.003	.243**	.178**	.397**	.085**	.202**	.766**	1							
T2 R	.096**	.163**	.126**	.346**	.078**	.189**	.679**	.666**	1						
T2 M	-.032*	.238**	.133**	.351**	.092**	.197**	.575**	.716**	.709**	1					
Dep.	-.024**	-.081**	-.099**	-.181**	-.013	-.136**	-.135**	-.139**	-.135**	-.130**	1				
Econ.	.004	-.152**	-.089**	-.206**	-.025**	-.163**	-.158**	-.163**	-.138**	-.150**	.262**	1			
WP	.022*	-.026**	.021*	-.006	-.011	-.044**	.000	-.013	.004	-.021*	-.113**	-.079**	1		
PS	-.015	-.076**	-.047**	-.040**	.008	.050**	-.043*	-.069**	-.069**	-.083**	.311**	.197**	-.241**	1	
PP	-.027*	-.099**	-.061**	-.107**	-.032**	-.080**	-.053**	-.058**	-.062**	-.065**	.140**	.072**	-.083**	.134**	1

*Correlation is significant at the 0.05 level

**Correlation is significant at the 0.01 level

Gen = Child's Gender

Race = Child's Race

PA= Parental Respondent's Age

Ed.L = Parents' Highest Level of Education

RTC = Respondent's Relationship to the Child

FT = Family Type

T1 R = Kindergarten Reading T Score

T1 M = Kindergarten Mathematical T Score

T2 R = 1st Grade Reading T Score

T2 M = 1st Grade Mathematical T Score

Dep. = Parental Depression

Econ. = Economic Distress

WP = Warm Parenting
PS = Parental Stress
PP = Punitive Parenting

Multivariate Analyses

The first hypothesis, drawn from Family Stress Theory, was that economic distress would be negatively associated with positive parenting practices. I conceptualized parenting practices as the expression of warmth, parent reports of stress due to parenting, and the use of punitive parenting practices. Each of these forms of parenting was assessed separately. The results of regressing warm parenting practices on economic distress are shown in Table 3. Model 1 shows the association between warm parenting and the control variables. Two-parent homes report less warmth at a statistically significant level. In addition, parental respondent's age is significantly associated with warmth; older respondents reported greater warmth. Gender, race, parental education level, and relationship of the respondent to the child were not significantly associated with parental warmth.

Model 2 adds the association between economic distress and parental warmth while still accounting for the effect of the control variables. These results show that a one unit increase in economic distress is associated with a .053 point decrease in parental warmth. Family type and parental respondent's age remained significant. In addition, after adding economic distress to the model, race become significantly associated with warm parenting; parents of White children report less warmth.

The family stress model argues that economic distress degrades parenting, in part, because it makes parents depressed which in turn reduces the energy and effort they put into interactions with their children. I tested this portion of the argument in Model 3 by adding in the effect of parental depression. Depression is negatively associated with

warmth, as would be predicted by Family Stress Theory and controlling for depression produced a small decrease (~27%) in the size of the economic distress coefficient. This small attenuation is consistent with the expectations of the Family Stress Model.

Table 3. Warm Parenting Regressed on Economic Distress
(Standard errors shown in parentheses)

	Model 1	Model 2	Model 3
Female Child	.062 (.026)	.063 (.026)	.054 (.026)
White	-.055 (.029)	-.082* (.029)	-.083* (.029)
Parental Respondent's Age	.007* (.002)	.006* (.002)	.005 (.002)
Two Parent Family	-.160** (.035)	-.192** (.035)	-.218** (.035)
Highest Ed. Level	.001 (.008)	-.011 (.008)	-.019 (.008)
Respondent is a Parent	.129 (.101)	.150 (.100)	.162 (.100)
Economic Distress		-.053** (.005)	-.039** (.005)
Parental Depression			-.029** (.003)
Constant	14.563	15.659	15.995
Adjusted R-Sq	.003	.011	.021

*p value<.010, ** p value<.001
N=12440

I ran similar tests of my other two measures of parenting: stress and use of punitive parenting techniques. The results for the analysis of parental stress are shown in Table 4. Model 1 shows the link between parental stress and the control variables. Parents of White children report experiencing less parental stress. In this model, age of the parental respondent is also significantly associated with parental stress; older respondents report less parental stress. Furthermore, family type is significantly associated with parental stress, with two parent families reporting less parental stress.

Gender, parental education level, and relationship of respondent to the child are not associated with parental stress.

Model 2 adds the relationship between economic distress and parental stress while still taking into consideration the effect of the control variables. These results show that a one unit increase in economic distress is associated with a .274 point increase in parental stress. Controlling for economic privation also caused the association between family type and parental stress to become insignificant. Child's gender, highest level of education for the parents, and relationship of the respondent to the child remained insignificant.

Table 4. Parental Stress Regressed on Economic Distress
(Standard errors shown in parentheses)

	Model 1	Model 2	Model 3
Female Child	-.117 (.065)	-.121 (.064)	-.068 (.062)
White	-.484** (.072)	-.349** (.071)	-.342** (.068)
Parental Respondent's Age	-.022** (.006)	-.020** (.006)	-.014* (.005)
Two Parent Family	-.244* (.087)	-.079 (.086)	.091 (.083)
Highest Ed. Level	-.008 (.020)	.049 (.020)	.106** (.019)
Respondent is a Parent	-.155 (.249)	-.266 (.245)	-.341 (.235)
Economic Distress		.274** (.013)	.182** (.013)
Parental Depression			.192** (.006)
Constant	15.481	9.864	7.668
Adjusted R-sq	.008	.042	.115

*p value<.010, **p value<.001

N=12440

To test the Family Stress Model, I stepped in the effect of parental depression in Model 3 as explained in the warm parenting section. Depression is positively associated

with parental stress as would be expected using the Family Stress Model and controlling for depression produced a small decrease (~34%) in the size of the economic distress coefficient. This small attenuation is consistent with the expectations of the Family Stress Model.

Table 5. Punitive Parenting Regressed on Economic Distress
(Standard errors shown in parentheses)

	Model 1	Model 2	Model 3
Female Child	-.025* (.008)	-.025* (.008)	-.022* (.008)
White	-.063** (.009)	-.060** (.009)	-.060** (.009)
Parental Respondent's Age	-.003** (.001)	-.002** (.001)	-.002* (.001)
Two Parent Family	-.036* (.010)	-.031* (.010)	-.023 (.010)
Highest Ed. Level	-.016** (.002)	-.014** (.002)	-.012** (.002)
Respondent is a Parent	-.058 (.030)	-.060 (.030)	-.064 (.029)
Economic Distress		.007** (.002)	.002 (.002)
Parental Depression			.009** (.001)
Constant	.563	.420	.313
Adjusted R-sq	.020	.022	.033

*p value<.010, **p value<.001

N=12440

The third parenting measure was punitive practices, which was tested by regressing reports of punitive parenting practices on economic distress. The results are shown in Table 5. Model 1 illustrates the relationship between punitive parenting and the control variables. If the target child is a girl, parents report lower levels of punitive parenting practices. Parents of White children report using fewer punitive parenting practices as do parents with higher education levels. In addition, two parent families report fewer punitive parenting techniques. Finally, parental respondent's age was also

significantly associated with punitive parenting practices; older respondents report fewer punitive parenting techniques. Relationship of the respondent to the child was the only control variable that did not reach the desired significance level.

Model 2 includes the relationship between economic distress and punitive parenting while still taking into consideration the effect of the control variables. These results show that a one unit increase in economic distress is associated with a .007 point increase in punitive parenting. All the control variables remain significant when economic distress is added to the model except for relationship of the respondent to the child.

In Model 3 parental depression is stepped in to test the Family Stress Model. Depression is positively associated with punitive parenting practices as would be predicted by the Family Stress Theory and controlling for depression produces a decrease (~72%) in the size of the economic distress coefficient. When depression is added to the model, economic distress becomes insignificant. This attenuation validates the ideas posited by the Family Stress Model.

The second major hypothesis, drawn from the Family Stress Model, asserts that economic distress is negatively associated with reading cognitive development and the poor quality parenting explains this association. This hypothesis was tested by regressing two of the target child's academic test scores, reading and math, on parent reports of economic adversity. The results of the regression for reading scores are shown in Table 6. Model 1 presents the association between the reading t-score and the control variables. Because the prior analysis showed that depression partially explained the association

between economic distress and the parenting measures, it is now included as a control. The results in Model 1 show that girls have higher reading t-scores as do White children. Better educated parents have children that do better in reading. Child from two parent families have higher reading scores. When the respondent of the parental survey was a parent, the child had a higher reading score. In addition, if the parental respondent was older, the child had a significantly higher reading score. Furthermore, parents who report more depressive symptoms have children with lower reading t-scores. All of the control variables were found to be significantly associated with the child's reading score.

Model 2 adds the association between economic distress and reading t-score while still taking into account the effect of the control variables. These results demonstrate that a one unit increase in economic distress is associated with a .220 point decrease in the reading t-score. All of the control variables remained significant after economic distress was added to the model.

Model 3 steps in warm parenting practices, which is not significantly associated with reading t-scores. All of the control variables as well as economic distress remained significant when warm parenting practices were added to the model. Model 4 steps in parental stress, which is also not significantly associated with reading t-scores. Warm parenting remains insignificant. Finally, Model 5 steps in punitive parenting practices, which is also not significantly associated with reading t-score. Parental warmth and stress remain insignificant. After including these three parenting practices, there is a small increase in the size of the economic distress coefficient. These results do not support the Family Stress Model which argues that parents experiencing economic

problems are able to devote less time and energy to their parenting duties, which upsets supportive parenting practices. This disruption is proposed to link such economic hardships with child outcomes.

Table 6. Reading T-Score Regressed on Economic Distress
(Standard errors shown in parentheses)

	Model 1	Model 2	Model 3	Model 4	Model 5
Female Child	1.762** (.161)	1.771** (.161)	1.774** (.161)	1.774** (.161)	1.778** (.161)
White	1.795** (.176)	1.693** (.177)	1.689** (.177)	1.695** (.177)	1.706** (.177)
Parental Respondent's Age	.098** (.014)	.097** (.014)	.097** (.014)	.097** (.014)	.098** (.014)
Two Parent Family	.835** (.216)	.729* (.216)	.719* (.216)	.719* (.216)	.725* (.217)
Highest Ed. Level	1.762** (.049)	1.725** (.049)	1.724** (.049)	1.723** (.049)	1.726** (.049)
Respondent is a Parent	1.834* (.614)	1.910* (.613)	1.918* (.613)	1.922* (.613)	1.933* (.613)
Parental Depression	-.100** (.015)	-.077** (.016)	-.078** (.016)	-.081** (.016)	-.082** (.016)
Economic Distress		-.220** (.033)	-.222** (.034)	-.224** (.034)	-.224** (.034)
Warm Parenting			-.049 (.055)	-.041 (.056)	-.038 (.057)
Parenting Stress				.015 (.024)	.013 (.024)
Punitive Parenting					.197 (.188)
Constant	36.410	40.426	41.209	40.975	40.877
Adjusted R-sq	.180	.183	.183	.183	.183

*p value<.010, **p value<.001

N=12440

As a further test of the family stress model, the models were rerun using mathematical t-scores as the outcome measure. The results are shown in Table 7. Model 1 shows the link between math t-score and the control variables. White children have higher math t-scores as do children with parents who have achieved higher levels of education. Moreover, children living in a two-parent family had higher math scores.

Children whose parents answered the questionnaire also had significantly higher scores as did children who had older respondents answer the parental survey. Finally, parents reporting more depressive symptoms have children with lower math t-scores. The child's gender showed no association with child's math t-score.

Model 2 adds the association between economic distress and math t-scores while still accounting for the effect of the control variables. These results show that a one unit increase in economic distress is associated with .200 point decrease in the math t-score. When economic distress is added to the model, child's gender does not reach the desired significance level and all other control variables remained significant.

Model 3 adds the association between warm parenting and math score while still taking into account the variables mentioned above. Warm parenting is not significantly associated with math t-score. All variables remain significant, excluding child's gender. Model 4 steps in parental stress, which is a significant predictor of mathematical t-score. For every one unit increase in parental stress there is a .059 point decrease in the math t-score. Parental warmth becomes significant when parental stress is added to the model, though not in the expected direction. The results show that for every one unit increase in parental warmth there is a .139 point decrease in the math t-score. This is not consistent with the ideas behind the Family Stress Model. In the final model, punitive parenting is stepped in. Punitive parenting is not significantly associated with child's math t-score. Parental stress remains significant, but warm parenting practices does not. Adding these three control variables produces only a small (~3%) decrease in the economic distress

coefficient. This very small attenuation is consistent with the Family Stress Model, but does not validate it.

Table 7. Math T-Score Regressed on Economic Distress
(Standard errors shown in parentheses)

	Model 1	Model 2	Model 3	Model 4	Model 5
Female Child	.043 (.155)	.052 (.155)	.058 (.155)	.055 (.155)	.059 (.155)
White	2.871** (.170)	2.778** (.170)	2.769** (.170)	2.746** (.170)	2.758** (.171)
Parental Respondent's Age	.112** (.013)	.111** (.013)	.112** (.013)	.111** (.013)	.111** (.013)
Two Parent Family	1.066** (.208)	.971** (.208)	.947** (.208)	.946** (.208)	.952** (.208)
Highest Ed. Level	1.609** (.047)	1.576** (.047)	1.574** (.047)	1.579** (.047)	1.582** (.047)
Respondent is a Parent	2.860** (.591)	2.929** (.590)	2.947** (.590)	2.931** (.590)	2.943** (.590)
Parental Depression	-.101** (.015)	-.081** (.015)	-.084** (.015)	-.073** (.016)	-.075** (.016)
Economic Distress		-.200** (.032)	-.204** (.032)	-.194** (.032)	-.194** (.032)
Warm Parenting			-.109 (.053)	-.139* (.054)	-.136 (.054)
Parenting Stress				-.059* (.023)	-.061* (.023)
Punitive Parenting					.199 (.180)
Constant	36.410	40.059	41.803	42.738	42.639
Adjusted R-sq	.193	.195	.195	.196	.196

*p value<.010, **p value<.001

N=12440

It is also possible that the influence of economic stress and parenting on child school test scores may accumulate over time. In order to assess this, the two previous regressions were rerun using reading and math scores from the first grade year and controlling for the child's kindergarten score. Thus, these models assess the association between economic distress and change in relative standing in the child reading and math scores. In this study, the dependent variable, child cognitive development is measured

using the child's t-score on mathematical and reading tests. This standardized score shows how far a child scored from the mean. In other words, these results will indicate whether the child moved ahead of his/her peers, stayed the same, or fell behind. The results for the regression on change in relative standing for reading scores are shown in Table 8. Model 1 shows the association between Time 2 reading t-score and Time 1 reading t-score. Higher relative reading scores in Time 1 are associated with even higher scores by Time 2.*¹

Model 2 illustrates the relationship between change in relative standing for reading score from Time 1 to Time 2 and the control variables. Girls show an increase in the change in relative standing for reading t-scores from Time 1 to Time 2 as do children with better educated parents. In addition, children from two parent families show an increase in change in relative standing for the reading t-score from Time 1 to Time 2. Holding all other measures constant, a one unit increase in parental depressive symptoms is associated with a .048 point decline in relative reading score rank. Race, age of the person answering the parental survey, and respondent's relationship to the child are not significantly associated with the change in relative score for the reading t-score. Time 1 reading t-score remains significant after the other control variables are added to the model.

Model 3 adds the association between Time 1 economic distress and the change in relative standing for reading t-score while still accounting for the effects of the control

¹ The correlations between both kindergarten and first grade reading and mathematical scores are quite high; however, technical problems with the ECLS-K data prevented me from running later waves as a second measure.

variables. Economic distress is not associated with the change in relative standing for the reading t-score. Depression and the other above mentioned control variables remain significant, while race, parental respondent's age, and respondent's relationship to the child remain insignificant.

Models 4, 5, and 6 add the relationship between the parenting variables at Time 1 and the change in relative standing for reading t-score while still taking into consideration the effects of the control variables. Warm parenting practices at Time 1 are not significantly associated with the change in relative standing for reading t-score. Economic distress at Time 1, respondent's relationship to the child, parental respondent's age, and race remain insignificant. Depression at Time 1, family type, parental education level at Time 1, gender, and Time 1 reading t-score remain significant. In model 5, parental stress at Time 1 is significantly associated with the change in relative standing for the reading t-score. These results show that a one unit increase in parental stress is associated with a .079 point decline in relative reading score rank. In the final model, punitive parenting practices at Time 1 is not significantly associated with change in relative standing for reading t-score. However, parental stress at Time 1 does remain significantly associated with change in relative standing for the reading t-score. Economic distress at Time 1 remains insignificant, and these results are not consistent with the Family Stress Model.

Table 8. Change in Relative Standing of Reading Score Regressed on Economic Distress (Standard errors shown in parentheses)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
T1 Score	.624** (.006)	.580** (.007)	.580** (.007)	.580** (.007)	.580** (.007)	.580** (.007)
Female Child		.705** (.119)	.707** (.119)	.709** (.119)	.705** (.119)	.702** (.119)
White		.302 (.131)	.290 (.131)	.287 (.131)	.257 (.131)	.247 (.131)
Parental Respondent's Age		-.013 (.010)	-.013 (.010)	-.013 (.010)	-.014 (.010)	-.015 (.010)
Two Parent Family		1.028** (.159)	1.016** (.160)	1.009** (.160)	1.007** (.160)	1.002** (.160)
Highest Ed. Level		.373** (.038)	.369** (.038)	.369** (.038)	.376** (.038)	.374** (.038)
Respondent is a Parent		.600 (.453)	.610 (.453)	.616 (.453)	.595 (.452)	.585 (.452)
Parental Depression		-.048** (.011)	-.046** (.012)	-.047** (.012)	-.033* (.012)	-.032* (.012)
Economic Distress			-.026 (.025)	-.028 (.025)	-.015 (.025)	-.015 (.025)
Warm Parenting				-.035 (.041)	-.075 (.042)	-.077 (.042)
Parenting Stress					-.079** (.018)	-.077** (.018)
Punitive Parenting						-.168 (.138)
Constant	19.608	19.356	19.852	20.410	21.643	21.724
Adjusted R-sq	.461	.473	.473	.473	.474	.474

*p value<.010, **p value<.001

N=12440

The final test presented here states that economic distress during the kindergarten year influences mathematical cognitive development during the first grade year. The results are shown in Table 9. Model 1 shows the relationship between first grade math t-scores and kindergarten math t-score. Time 1 math t-score is significantly associated with Time 2 math t-score. Higher relative math scores at Time 1 are associated with even higher scores by Time 2.

Model 2 shows the association between the change in relative standing for the math t-score from Time 1 to Time 2 and the control variables. Girls show a decline in relative standing for the math t-score from Time 1 to Time 2. White children exhibit an increase in relative standing for the math t-score from Time 1 to Time 2 as do children with better educated parents. In addition, children with older respondents to the parental questionnaire have an increase in relative standing for the math score. Holding all other measures constant, a one unit increase in parental depression is associated with a .032 point decline in relative math score rank. Age of the person answering the parental survey and relationship of the respondent to the child were not significantly associated with the change in relative standing for the Time 2 math t-score. Time 1 math t-score remained significantly associated with Time 2 score.

Model 3 adds the association between economic distress at Time 1 and the change in relative standing for the math t-score while still considering the effect of the control variables. Economic distress at Time 1 is not significantly associated with the change in relative standing for math t score between Time 1 and Time 2. Depression becomes insignificant when economic distress is added to the model.

Model 4 steps in warm parenting practices at Time 1, and results show that warm parenting is not significantly associated with change in standing for math t-score from Time 1 to Time 2. Model 5 steps in parental stress at time 1, which reaches the desired significance level. These results show that a one unit increase in parental stress is associated with a .062 point decline in relative math score rank. When parental stress is added to the model, warm parenting practices becomes significant. The results show that

a one unit increase in warm parenting practices is associated with a .111 point decline in relative math score rank. This is not in line with the expectations of the Family Stress Model; however, it can be noted that warm parenting practices was negatively associated with Time 2 math score at a significant level in the correlation analysis. Model 6 steps in punitive parenting practices at time 1, which is not significantly associated with change in relative standing for math t-score. Economic distress remains insignificant while parental stress and warm parenting at time 1 remain significant. Economic distress never reaches the desired significance level. These results do not support the Family Stress Model.

The most unexpected finding in this study was that warm parenting was associated with a decrease in math score as well as a decrease in the change in relative standing for math score from Time 1 to Time 2. After examining the questions used in this scale, I did not notice any questions that may lead to such an assumption. In response, I would imagine this result is due to a problem with whole scale. It can also be noted that most respondents rated themselves high in terms of warmth towards their children.

Table 9. Change in Relative Standing of Math Score Regressed on Economic Distress
(Standard errors shown in parentheses)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
T1 Score	.678** (.006)	.636** (.007)	.636** (.007)	.635** (.007)	.635** (.007)	.635** (.007)
Female Child		-.613** (.113)	-.612** (.113)	-.608** (.113)	-.611** (.113)	-.615** (.113)
White		.983** (.125)	.964** (.125)	.959** (.125)	.932** (.125)	.920** (.125)
Parental Respondent's Age		-.014 (.010)	-.014 (.010)	-.013 (.010)	-.014 (.010)	-.014 (.010)
Two Parent Family		.506* (.151)	.486* (.151)	.470* (.152)	.469* (.152)	.464* (.152)
Highest Ed. Level		.312** (.036)	.306** (.036)	.305** (.036)	.313** (.036)	.311** (.036)
Respondent is a Parent		.709 (.430)	.726 (.430)	.738 (.430)	.721 (.429)	.709 (.430)
Parental Depression		-.032* (.011)	-.027* (.011)	-.029* (.011)	-.016 (.011)	-.014 (.011)
Economic Distress			-.044 (.023)	-.047 (.024)	-.035 (.024)	-.035 (.024)
Warm Parenting				-.073 (.039)	-.111* (.040)	-.114* (.040)
Parenting Stress					-.075** (.017)	-.073** (.017)
Punitive Parenting						-.203 (.131)
Constant	16.339	16.562	17.386	18.558	19.771	19.867
Adjusted R-sq	.513	.524	.524	.524	.525	.525

*p value<.010, **p value<.001
N=12440

CHAPTER FOUR

SUMMARY AND CONCLUSIONS

Discussion

The purpose of this study was to examine whether the association between poverty and cognitive development can be explained using the ideas behind the Family Stress Model, which states that economic distress within a family diminishes the energy devoted to parenting, creating disruptions in those parenting practices that are warm and supportive. This degradation in parenting leads to poorer child outcomes, the model states.

Previous studies using the Family Stress Model to study preschool age children have found mixed results. Yeung et al. (2002) found that low income was related to greater economic pressures, which in turn was associated with an increase in maternal emotional distress and punitive parenting practices. Even so, neither maternal emotional distress nor parenting practices had any direct influence on applied word score, one measure of cognitive development used in this study. However, when considering the child's letter-word score, an association was found between punitive parenting practices and this cognitive development score. In another study from the same year, Linver et al. found that maternal emotional distress and parenting practices alone do not mediate the association between income and child cognitive development. However, they did conclude that a combination of a stimulating home environment, less maternal emotional distress, and more positive parenting practices were associated with higher cognitive development scores.

Based on studies such as these, I expected to find support for the Family Stress Model concerning both language and mathematical cognitive development scores. Previous studies have demonstrated that financial stress influences parenting, and in turn child language and literacy outcomes. This study was the first to my knowledge to look at the mathematical abilities of young children when using the Family Stress Model. I postulated that the ideas behind the Family Stress Model would apply to math as well, especially since math, like reading, is a subject which heavily relies on an understanding of the basic principles of the discipline in order to move forward in the subject.

According to the results of the present study, economic distress does appear to interfere with parenting practices. The parents facing economic adversity reported lower levels of warm parenting practices and higher levels of parental stress as well as punitive parenting practices. These results may indicate that as economic distress increases, parents are less likely to show the child love and express affection towards him or her. These results may also show that the feelings that parents have towards their role as caregiver may change with the extenuating circumstances. Finally, the results point toward the notion that economically distressed parents are more likely to spank, shame, or yell at their child, which is probably due to the stress experienced as a consequence of economic problems within the family.

These results show support for the first part of the Family Stress Model; however, the findings of the current study do not explain the relationship between economic distress and cognitive development as has been outlined using the Family Stress Model. The kindergarten math t-score appears to be influenced by economic distress, and there is

a small attenuation in this coefficient's influence when the parenting variables are added to the model. This is consistent with the Family Stress Model, but the results were not strong enough to be considered a validation of the theory itself. The kindergarten reading t-score was not influenced by the proposed relationship between economic distress and the parenting variables. In addition, there was no support for the idea that the change in relative standing for both the mathematical and reading t-scores from kindergarten to first grade is influenced by the processes outlined in the Family Stress Model. These results indicate that for this group of children, even though economic distress may have an impact on parenting practices, this impact does not appear to carry over into the child's reading functioning. Furthermore, the effect that economic distress has on parenting does not influence the change in relative standing concerning both reading and mathematical t-scores from kindergarten to first grade.

Limitations of the present study

As is the case with any research, there are limitations to the present study that must be addressed before any conclusions can be drawn from the results. The primary concern is that the ECLS-K affords researchers with a reliable measure of parental stress; however, the warm parenting scale only reached a reliability level of Cronbach's alpha = .57. This scale included questions about parental affection toward the child, but did not include questions relating to interactions with child or how often the parent talks to or praises child. Besides gauging affection, the warm parenting construct could be more encompassing by including questions relating to emotional supportiveness and nurturing behaviors. It is also possible that since parents usually rate themselves highly on such

measures it would be beneficial for researchers to videotape such interactions as has been done in previous studies.

In addition, the punitive parenting index could have been more representative of such parenting practices by including other forms of this parenting construct, such as how often the parent gets angry or annoyed or how often the parent hits the child with an object. The punitive parenting construct could have also tapped into the consistency of discipline. Studies using the Family Stress Model to study adolescents have conceptualized this construct by using variables such as to what extent the child's punishment depends on the parent's mood, how often the parent gives up on carrying out a punishment, how often the child can get out of a punishment after it has already been decided upon, and how often the parent punished the child for something in one case but not in another.

The parenting measures have been discussed, but it is useful to cite other possible measures of economic distress, especially considering that the mean for the economic distress scale for this sample was 18.84 on a scale of 18 to 45. I would propose several different measures of this variable, including scales created to measure trouble paying bills and disruptions in lifestyle habits. Such measures may be able to better capture economic distress. Food insecurity appears to be an extreme type of financial distress experienced by only a very small portion of the sample.

In addition to the concerns about the parenting scales, a second issue is that weights were not applied to the descriptive analyses or the regression analyses, so these results cannot be considered generalizable to all families within the United States with

young children. However, these results are indicative of the sample. Finally, the correlations between the kindergarten and first grade scores are so high that this should be cited as a weak longitudinal test. The correlation matrix shows that kindergarten reading scores are significantly associated with first grade reading scores, and the correlation between the two is .679. The same concern exists among the math scores, with the correlation being .716. I ordered the 3rd grade data CD from the NCES, but the CD that I received contained an error and could not be extracted to SPSS. With time demands, further longitudinal tests could not be carried out.

Conclusions

Just as existing research has demonstrated, this thesis presents further support for the notion that economic distress influences parenting practices. When facing an economic hardship, parents may find it more difficult to engage in those parenting practices that are warm and supportive. Especially relevant to this study is the idea that when faced with economic distress, parents may begin to see their parental role in a different light. The stress that is experienced due to economic changes may spill over into how the parent interacts with their child, especially since the parenting role requires so much investment. It would be in the best interest of policy makers to consider such findings when developing programs geared toward parents needing financial assistance, and would be especially useful if the program was available shortly after experiencing the economic distress.

Based on the hypotheses outlined in this study and the results conducted to gain a greater understanding of the utilization of the Family Stress Model with preschool age

children, I would suggest that future studies continue to study the application of this theory for young children. Studies occupying more appropriate measures of economic distress and the parenting measures may be able to better understand the pathway proposed by the Family Stress Model. I would also suggest that future studies explore mathematical cognitive development more closely. Finally, future studies may also expand the knowledge of this theory by carrying out a more appropriate longitudinal test.

APPENDICES

Appendix A

Dependent Variables

Variable	Measurement	Mean	Standard Deviation
Fall Kindergarten Reading	Continuous, Standardized T Score	51.17	9.93
Fall Kindergarten Mathematical	Continuous, Standardized T Score	51.89	9.62
Spring 1 st Grade Reading	Continuous, Standardized T Score	51.53	9.12
Spring 1 st Grade Mathematical	Continuous, Standardized T Score	51.53	9.11

N=12440

Appendix B

Independent Variables

Variable	Measurement	Answer Categories	Range of Scale	Coding	Mean
Warm Parenting	Scale, composed of 4 items	1=completely true 2=mostly true 3=somewhat true 4=not at all true	4-16	Recoded so that higher values equal more warm parenting practices	14.79
Parenting Stress	Scale, composed of 9 items	1=completely true 2=mostly true 3=somewhat true 4=not at all true	9-36	Recoded so that higher values equal reports of more stress in parenting	13.98
Punitive Parenting	Index, Index recoded as a dummy variable	0=no punitive parenting practices 1= at least one punitive parenting practice	0,1		.26
Depression	Scale, composed of 12 items	1=never 2=some of the time 3=a moderate amount of the time 4=most of the time	12-48	Recoded so that higher values equal more depressive symptoms	17.44
Economic Distress	Scale, composed of 18 items	1=often true 2=sometimes true 3=never true OR 1=yes 2=no OR 1=almost every month 2=some months but not every	18-45	Recoded so that higher values equal more economic distress	18.84

month
3=in only 1 or 2
months

N=12440

Appendix C

Covariates

Variable	Measurement	Range	Mean
Child's Gender	Dichotomous	0=male 1=female	.49
Child's Race	Dichotomous	0=Other Ethnicity 1=White	.64
Family Type	Dichotomous	0=Single parent home 1=2 parent home	.78
Age of Parental Respondent	Continuous	0-83	33.93
Highest Level of Education for Parents	Categorical	1=8 th grade of below 2= 9 th – 12 th grade 3= High school diploma or equivalent 4= Voc/Tech Program 5= Some college 6=Bachelor's degree 7= Some graduate school 8=Master's degree 9=Doctorate or prof degree	4.96
Relationship of Respondent to Child	Dichotomous	0=respondent not mother or father 1=respondent is mother or father	.98

N=12440

Appendix D

USDA Food Insecurity Scale

<p>Now I am going to read you several statements that people have made about their food situation. For these statements, please tell me whether the statement was often true, sometimes true, or never true for (you/your household) in the last 12 months, that is, since last interview (current month).</p>		
	Question	Answer Categories
(1)	We worried whether our food would run out before we got money to buy more.	Often true Sometimes true Never true
(2)	The food that we bought just didn't last and we didn't have money to get more.	Often true Sometimes true Never true
(3)	We couldn't afford to eat balanced meals.	Often true Sometimes true Never true
(4)	Did you or other adults in the household ever cut the size of your meals or skip meals because there wasn't enough money for food?	Yes/No
(5)	(If yes to Question 4) How often did this happen—almost every month, some months but not every month, or in only 1 or 2 months?	Almost every month Some months but not every month Only 1 or 2 months
(6)	Did you ever eat less than you felt you should because there wasn't enough money for food?	Yes/No
(7)	Were you ever hungry, but didn't eat, because	Yes/No

	you couldn't afford enough food?	
(8)	Did you lose weight because you didn't have enough money for food?	Yes/No
(9)	Did you or other adults in your household ever not eat for a whole day because there wasn't enough money for food?	Yes/No
(10)	(If yes to Question 9) (10) How often did this happen—almost every month, some months but not every month, or in only 1 or 2 months?	Almost every month Some months but not every month Only 1 or 2 months
(11)	We relied on only a few kinds of low-cost food to feed our children because we were running out of money to buy food.	Often true Sometimes true Never true
(12)	We couldn't feed our children a balanced meal, because we couldn't afford that.	Often true Sometimes true Never true
(13)	The children were not eating enough because we just couldn't afford enough food.	Often true Sometimes true Never true
(14)	Did you ever cut the size of any of the children's meals because there wasn't enough money for food?	Often true Sometimes true Never true
(15)	Were the children ever hungry but you just couldn't afford more food?	Yes/No
(16)	Did any of the children ever skip a meal because there wasn't enough	Yes/No

money for food?		
(17)	(If yes to Question 16) How often did this happen—almost every month, some months but not every month, or in only 1 or 2 months?	Almost every month Some months but not every month Only 1 or 2 months
(18)	Did any of the children ever not eat for a whole day because there wasn't enough money for food?	Yes/No

Appendix E

CES - Depression Scale

How often in the past week have you felt...	Question	Answer Categories
	That you were bothered by things that don't usually bother you?	Never Some of the time A moderate amount of the time Most of the time
	That you did not feel like eating, that your appetite was poor?	Never Some of the time A moderate amount of the time Most of the time
	That you could not shake off the blues even with help from your family or friends?	Never Some of the time A moderate amount of the time Most of the time
	That you had trouble keeping your mind on what you were doing?	Never Some of the time A moderate amount of the time Most of the time
	Depressed?	Never Some of the time A moderate amount of the time Most of the time
	That everything you did was an effort?	Never Some of the time A moderate amount of the time Most of the time
	Fearful?	Never Some of the time A moderate amount of the time Most of the time
	That your sleep was restless?	Never Some of the time

	A moderate amount of the time Most of the time
That you talked less than usual?	Never Some of the time A moderate amount of the time Most of the time
Lonely?	Never Some of the time A moderate amount of the time Most of the time
Sad?	Never Some of the time A moderate amount of the time Most of the time
That you could not get going?	Never Some of the time A moderate amount of the time Most of the time

Appendix F

Warm Parenting Scale

Questions	Answer Categories
{CHILD} and I often have warm, close times together	Completely true Mostly true Somewhat true Not at all true
Most of the times I feel that {CHILD} likes me and wants to be near me	Completely true Mostly true Somewhat true Not at all true
Even when I'm in a bad mood, I show {CHILD} a lot of love	Completely true Mostly true Somewhat true Not at all true
I express affection by hugging, kissing, and holding {CHILD}	Completely true Mostly true Somewhat true Not at all true

Appendix G

Parental Stress Scale

Questions	Answer Categories
I am usually too busy to joke and play around with {CHILD}	Completely true Mostly true Somewhat true Not at all true
By the end of a long day, I find it hard to be warm and loving toward {CHILD}	Completely true Mostly true Somewhat true Not at all true
Being a parent is harder than I thought it would be	Completely true Mostly true Somewhat true Not at all true
{CHILD} does things that really bother me	Completely true Mostly true Somewhat true Not at all true
I find myself giving up more of my life to meet {CHILD}'s needs than I ever expected	Completely true Mostly true Somewhat true Not at all true
I feel trapped by my responsibilities as a parent	Completely true Mostly true Somewhat true Not at all true
I often feel angry with {CHILD}	Completely true Mostly true Somewhat true Not at all true
{CHILD} seems harder to care for than most	Completely true Mostly true Somewhat true Not at all true
I find taking care of a young child more work than pleasure	Completely true Mostly true Somewhat true Not at all true

Appendix H

Punitive Parenting Index

If {CHILD} got so angry that he/she hit you, what would you do? Would you...	Questions	Answer Categories
	Spank him/her	Yes/No
	Hit him/her back	Yes/No
	Make fun of him/her	Yes/No
	Yell at {CHILD} or threaten him/her	Yes/No

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