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# The Relationship Among Maternal Parenting Stress, Coping, and Depressive Symptoms Across Time

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THE RELATIONSHIP AMONG MATERNAL PARENTING STRESS, COPING, AND  
DEPRESSIVE SYMPTOMS ACROSS TIME

by

Karen Foren Lake

A Dissertation Submitted in

Partial Fulfillment of the

Requirements for the Degree of

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at

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## ABSTRACT

The Relationship Among Maternal Parenting Stress, Coping and Depressive Symptoms  
by

Karen Foren Lake

The University of Wisconsin-Milwaukee, 2012  
Under the Supervision of Dr. Rachel Schiffman

This study was a secondary analysis in which the relationship among maternal parenting stress, coping, and depressive symptoms over time in 161 low-income mothers who participated in an Early Head Start Pathways Project were examined. Measurements were assessed longitudinally over a 12 year period of time. Direct and indirect relationships were proposed between maternal mastery, pre-existing depressive symptoms, relationship with significant other, child behavior, child temperament, maternal parenting stress, coping, and later depressive symptoms.

Results from path analyses showed that when assessed earlier in the childbearing years, mastery, depressive symptoms, relationship with significant other, child temperament, child behavior, and maternal parenting stress are associated with later depressive symptoms in the mother at 36 months, Pre-Kindergarten and at Grade Five. There were no direct effects of maternal parenting stress on later depressive symptoms, and coping did not serve as mediator between maternal parenting stress and later depressive symptoms.

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## **Chapter 1**

### **Introduction**

It is estimated that more than 16 million Americans are affected by depression each year, and many of them are mothers. Women are twice as likely as men to have depression, with those in the childbearing and childrearing years at particular risk (National Women's Health Resource Center, 2003). A negative variation in mental and emotional health in the form of depression in the mother may lead to a poorer outcome for the family as a whole and for the child specifically, resulting in anxiety and behavioral problems (Anthony et al., 2005). Many factors or causal antecedents, including increased daily and cumulative stress, stress in the role of parenting, poor mastery in the maternal role, and negative coping mechanisms, have been proposed as contributing to eventual negative outcomes for both the mother and the child (Crnic & Acevedo, 1995; McKelvey, Fitzgerald, Schiffman, & Von Eye, 2002). The negative outcomes of cumulative stress, parenting stress, and poor coping by the mother may be behavioral problems in the child (McKelvey et al., 2002), whereas for the mother in the childrearing years, the adaptational outcome may be depressive symptoms. However, the relationship among maternal parenting stress, coping, and depressive symptoms in the mother over time is still unclear.

Depressive symptoms as a whole are a devastating condition, affecting maternal roles in the functionality of the family and in society in general. Mothers residing in rural areas, who are low income, and who live in neighborhoods where violence occurs, are at increased risk for depressive symptoms due to financial strain, the deterioration of interpersonal relationships, and the lack of social supports (Martin, 2000). Left untreated,

depressed mothers have poorer outcomes than their non-depressed counterparts, such as more disruption in family functioning, more marital conflict, and more financial strain (Seto, Cornelius, Goldschmidt, Morimoto, & Day, 2005). Women who are depressed are less likely to be married, have less education, less family income, and more substance abuse (Seto et al., 2005).

The causal antecedents associated with maternal depressive symptoms include increased overall stress levels, maternal parenting stress, and poor coping strategies (Bynum & Brody, 2005; Livneh & Wilson, 2003). Coping has also been proposed as a moderator or mediator of maternal stress and negative psychological outcome (Lee, 2003; Wadsworth, Raviv, Compas, & Connor-Smith, 2005). However, the complicated relationship and iterative nature of maternal parenting stress, coping, and depressive symptoms is still unclear. Researchers have proposed many models to describe the relationship among these concepts, with little agreement of how these concepts change and interact with each other over a period of time, such as during the mother's childrearing years.

### **Significance**

Not only do women suffer when depressed, but their children and families do as well (Nicholson, Biebel, Hinden, Henry, & Stier, 2001). Mothers who experience depressive symptoms may exhibit a decreased ability to respond appropriately to their child's emotional (McKelvey et al., 2002; Willinger, 2005) and physical (McLennan & Kotelchuck, 2000) needs. Maternal depressive symptoms are associated with poorer child-health status, instability of food supply in the household, and a subsequent loss of federal aid (Casey et al., 2004). Depression in mothers may also affect the well-being of

children by impeding prevention (child-safety) practices (McLennan & Kotelchuck, 2000), and health care-seeking patterns (Minkovitz et al., 2005). The children of depressed mothers exhibit more behavior problems by 4 years of age (Hoffman, Crnic, & Baker, 2006). The presence of maternal depressive symptoms is a major problem that needs to be addressed comprehensively.

Depression screening routinely takes place when women are pregnant and in the postpartum period, and again post-menopause. These are periods when women are particularly vulnerable to depression (Martin, 2000). However, after women transition into the childrearing years, they primarily access the healthcare system for their children's health needs. The emphasis then moves to the child's immunization and childhood illness state, not the mother's mental health condition. Women could progress with undetected low-level depressive symptoms until the child is well into adolescence.

Depression screening for mothers therefore is now being recommended at well-child visits, and then throughout the childrearing years (Olson, Diedrich, Prazar, & Hurley, 2006). The U.S. Prevention Task Force (2009) recommended that for adults who receive health care in clinical practices that have staff-assisted care supports in place (such as referrals), there is a net benefit for depression screening. Nurses have played a pivotal role in making such referrals. The problem is that the rest of healthcare system has been slow or unable to accommodate these recommendations, and mothers can progress through their childrearing years with depressive symptoms undetected.

Runquist (2007) stated that "underestimating the incidence and clinical significance of depressive symptoms and a lack of systematic response to sub-threshold depression are

missed opportunities for reducing health disparities related to PPD in at-risk infant” (p.268).

Despite the threat of devastating effects to the woman and her family, low-income mothers frequently do not receive the same treatment that women of middle or upper socioeconomic status receive (Asch et al., 2002). Former U.S. Surgeon General David Satcher (1999) reported that people do not seek mental health care because they may be worried about the stigma that mental illness carries, or they believe that the problem will correct itself. Kanter, Rusch, and Brondino (2008) suggest a model where negative public stereotypes of depression such as stigma prevent an individual from seeking treatment. As a result, they may become more secretive and avoid seeking treatment or social support. Women in particular may be at risk for self-stigmatizing behavior, and may avoid treatment for depression because of it (Oakley, Kanter, Taylor, & Duquid, 2012). A lack of health literacy has been suggested as a possible barrier to accessing health care, possibly more so in patients who are already depressed (Pizur-Barnekow, Doering, Cashin, Patrick, & Rhyner, 2010). Patients may also feel a lack of trust for healthcare providers who appear culturally incompetent to address their needs.

Satcher (1999) stated that concerns about the cost of treatment, however, are the primary reason people do not seek mental health care. A lack of access to care is particularly evident in low-income individuals and their families. Satcher also feels that the mental healthcare system is disorganized and fragmented with little or no follow-up available (1999). These barriers, which are particularly pertinent to low-income, unemployed or underemployed mothers, need to be addressed.

Improving and increasing access sites for mental health care will cost money, but when done in the context of already existing services and programs, there should be minimal disruption to the system. Mental health networks and tracking systems for at-risk mothers could be combined with other services offered at a multitude of clinics and hospitals. The current use of postpartum depression scales within the hospital is one example of how accurate and easy assessment of depression can take place in a comprehensive manner. Nurses administer such scales in the hospital, calculate the total score, and make referrals to mental health resources if needed. However, that is often where the attention to depressive symptoms ends. There is an opportunity for continued assessment and referral when the patient returns for outpatient postpartum care, and for well-and sick-child visits to the pediatrician. Continuing assessment for depressive symptoms in other venues where mothers commonly appear could be quick, and prove extremely beneficial to the mother, child, and the family.

The Satcher (1999) report speaks of the obligation of “public and private agencies to facilitate entry into mental health care and treatment through multiple ‘portals of entry’, including primary health care, schools, and the child welfare system” (p.457). For mothers, this could translate to the creation of a mental health network which would include health departments (in well-child and child immunization clinics), hospitals, pediatric offices, and obstetric offices. These are the “portals of entry” where mothers of young children could be assessed and referred to appropriate mental health providers, social workers, parental support groups (Goff, 2002). Referrals from hospital postpartum units for women who score higher on depression scales could be followed through these mental health networks as well. Health care professionals would manage these networks

and would monitor the women throughout their child's early years to intervene if depressive symptomatology occurred (Kalil & Danzinger, 2000). Nurses, by virtue of their contact with depressed women in childbearing and pediatric settings, are uniquely positioned to help focus on these mental health issues (Hegner, 2000). Nurses recognize their role in the multi-disciplinary care of individuals, as well as serving as a voice to those who can affect policy. One of the primary needs, however, is longitudinal research studies that help explain the relationship among maternal parenting stress, coping, and depression. These could increase the nursing knowledge base in these areas, and provide a basis for nursing care of these patients. The ability to predict which women might experience maternal parenting stress and which are at greater risk for the development of depressive symptoms later could lead to the development of better assessment protocols at the onset of motherhood. Once effective assessments are in place, interventions could be developed and implemented to change the likely course of depressive symptoms. Inquiry into the coping strategies utilized might also help explain whether coping has a mediating or moderating effect on depression, and whether interventions could affect coping.

Predictors of depressive symptoms have been described as “environmental factors, other biologic and genetic components, and interpersonal processes” (Martin, 2000). In young women, specifically mothers, predictors of depressive symptoms include having at least one child under the age of 6, being African American, lacking support with child care, lacking a supportive confidante, having a low-income or poverty status (Secco & Moffat, 2003; Ostberg, Hagekull & Hamelin, 2007)), and exhibiting poor mastery in the parenting role (Rexburg, Stephens, Tootsies, & Adkins, 2001). Many of

the identified predictors, such as poverty and lack of social support, can be considered stressors themselves (Belle & Doucette, 2003; Raikes & Thompson, 2005).

Although the predictors of depression are well identified in research literature, what is missing is how the stress and coping process in young, low-income mothers might be associated with depressive symptoms. It is not clear how pre-existing depressive symptomatology affects mothers who are under stress, or if depressive symptoms are the outcome of stress over time; and if coping affects that process. This leads to the question of whether the process is linear (stress leads to depression) or cyclic (depressive symptoms lead to more stress, which in turn leads to more depressive symptoms) in nature.

One of the biggest questions regarding maternal parenting stress and depressive symptoms is their effect on women over time. Researchers have long posited that valuable inroads could be made into stress research with longitudinal studies querying the effects of stress over time. Somerfield and McCrae (2000) suggested that cross-sectional research in stress fails to capture “the dynamic effects of adaptational efforts” (p. 621). The relationship of coping to depression also remains unclear. A better understanding of the relationship among stress, coping, and depressive symptoms in mothers could identify those at risk based on personal and environmental characteristics. This could lead to more consistent screening and subsequent treatment.

### **Purpose of the Study**

The focus of the current study was to examine the relationships among maternal parenting stress, coping, and depressive symptoms in mothers over time. As a guide, this study used the foundational work of Lazarus and Folkman Transactional Stress Theory



(1984), which proposes a cyclic process of stress, coping, and negative outcomes. This theory describes an adaptational course for the stress process. The process moves from causal antecedents, through mediating processes, to adaptational outcomes.

The current study proposed the causal antecedents of maternal parenting stress as the maternal characteristics of mastery and depressive symptoms, and the environmental variables of maternal relationship with a significant other, child temperament, and child behavior problems. The relationship of coping to the stress process and depressive symptoms was also examined. Demographic variables such as age, income level, marital status, education level, and race are often predictors associated with maternal parenting stress, and as such, they were defined in this study sample. Finally, the direct relationship between maternal parenting stress and the adaptational outcome of depressive symptomatology was tested.

### **Research Questions**

Using an adapted version of the Lazarus and Folkman's transactional stress theory (1984), this study examined the relationship among maternal parenting stress, coping, and depressive symptoms in women with children under the age of 12. The research questions were:

1. How do characteristics of low-income mothers (mastery and depressive symptoms) and environmental variables (child temperament and behavior problems, and maternal relationship with a significant other) relate to the process of maternal parenting stress, coping, and the adaptational outcome of depressive symptomatology over time?

2. What are the direct effects of maternal parenting stress on adaptational outcomes (depressive symptomatology) over time?

### **Theoretical Framework**

This study used Lazarus and Folkman's Transactional Stress Theory (1984) as its basic guiding model, with the addition of Abidin's Parenting-stress Theory (1992) and Pearlin's Mastery Theory (1981). The Transactional Stress Theory was an adaptation of the foundational work of Selye's General Adaptation Syndrome (1956). The frameworks are described below, with the combined adapted model following.

**Transactional stress theory.** Selye (1956) spoke of coping in his stress–coping–adaptation theory, the General Adaptation Syndrome, as a body's response to a stressor. To Selye, coping was merely a physiological reaction to a perceived threat. Lazarus and Folkman (1984) expanded Selye's General Adaptation Syndrome theory by adding the concept of cognitive appraisal. Lazarus and Folkman (1984) believed that human beings are capable of a thought-provoked response to stress called cognitive appraisal. Cognitive appraisal includes primary appraisal (the determination of the stressor as negative, resulting in harm; or positive, resulting in a chance to grow), and secondary appraisal (how the situation can be controlled). This appraisal process generates emotion, which influences the coping phase of the process. Coping is the behavioral component of Transactional Stress Theory (Lazarus & Folkman, 1984). Coping is defined in the theory as “constantly changing cognitive and behavioral efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person” (Lazarus & Folkman, 1984, p. 178).

Once appraisal has taken place, a stress response is mounted, and is comprised of not only a physiological and emotional component, but a behavioral or coping component as well. This theory gives credence to the idea that humans are thinking, rational beings who can assess or appraise a stressor, and then determine how to handle it. Lazarus and Folkman's (1984) Transactional Stress Theory is helpful in guiding research on stress but not necessarily for research on specific types of stress such as parenting stress.

**Parenting stress theory.** Although it is the classic work on stress as a process, Lazarus and Folkman's Transactional Stress Theory (1984) is a general stress theory, and does not acknowledge parenting stress specifically. One of the groundbreaking parental stress theorists is Richard Abidin, whose Parenting Stress Theory (1992) represents a specific application of stress theory. Abidin (1992) built on previous parenting models such as Belsky's Parenting Process Model (1984). Belsky (1984) had "attempted to define major global and sociological and personality characteristics which related to parenting behavior" (Abidin, 1992, p. 408). However, Abidin (1992) thought that Belsky's model, although an improvement on previous stress research, failed to "fully capture the parent as a thinking, planning, goal-oriented individual" (p. 410). In response, Abidin (1992) added more elements to the stressors category of the model, and a coping component which included appraisal. Stressors are defined by Abidin as variables that influence appraisal (Abidin, 1992).

Abidin's current Parenting Stress Theory includes three levels of stressors: those emanating from the parental domain, the child domain, and the situational or contextual (also called social factors) domain. The parental domain includes characteristics of the parent, including depressive symptoms (unhappiness and guilt), perceptions of health,

sense of competence as a parent, attachment with the child, social isolation, and perceived role restrictions as a parent. The child domain includes characteristics such as adaptability to situations, acceptability, demandingness, mood, hyperactivity, and parental reinforcement from the child. The third level of Abidin's (1992) parenting stress theory is the situational or contextual domain. This domain includes potential life stresses such as work environment, relationship with a significant other, daily nuisances, and life events.

These three domains work together to elicit appraisal by parents of their role relevance. Appraisal is defined by Abidin (1992) as the "harm or benefit that confronts [one] in the role of the parent" (p.410). The appraisal of one's role or commitment as a parent serves as a moderator of the influences of the domains. The result is the level of stress a parent experiences, "Parenting stress is, thus, the result of a series of appraisals made by each parent in the context of his or her level of commitment to the parenting role" (Abidin, 1992, p.410). Parenting stress can also be viewed as a motivation for parents to use the resources available to them, including coping to support parenting behavior. Abidin (1992) proposed that parenting behavior, including parent-child interactions, resulted in negative or positive child-based outcomes.

Thus, Abidin's (1992) theory, as a specific application of parenting to Lazarus and Folkman's (1984) Transactional Stress Theory, has as its outcome parenting behavior and child-based outcomes. Because the current study proposed a parental-based outcome, the addition of Pearlin's Mastery Theory (1978) became appropriate.

**Pearlin mastery theory.** Mastery theory (Pearlin & Schooler, 1978) was an addition to the above models as a guide for the current study. In their model, Pearlin and

Schooler (1978) added the concept of mastery to the traditional stress model, such that individuals who become proficient at dealing with adversity (mastery) experience a positive change in self-esteem, thereby decreasing the chance of negative outcomes such as depression.

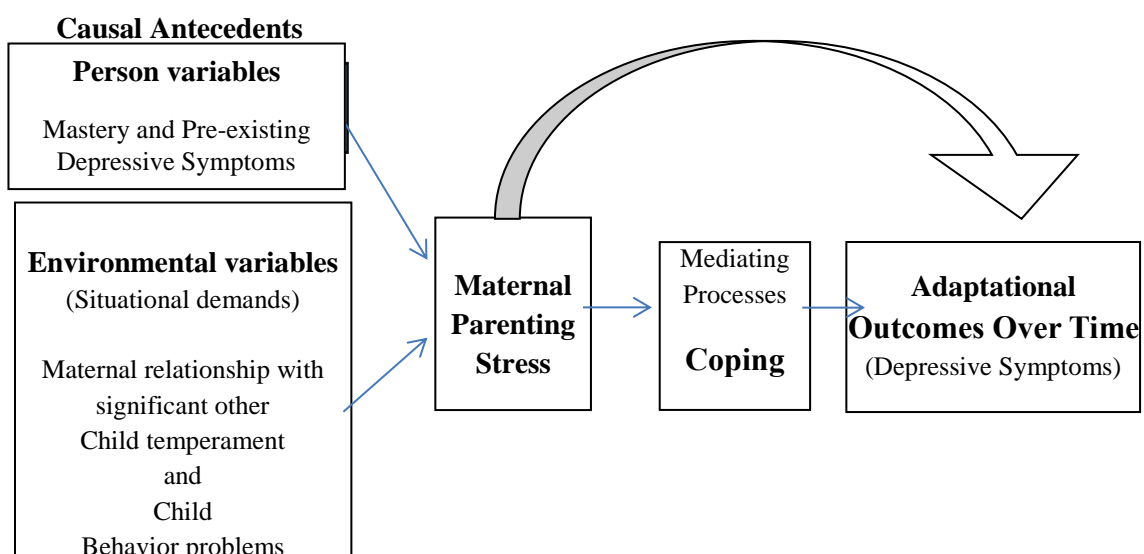
Mastery involves the extent to which a person regards their life as being under their own control. Mastery “is responsive to environmental pressures, yet is also influenced by a personal belief system” (Raikes & Thompson, 2005), and is therefore a useful concept to examine when studying parents, particularly mothers, and the stress process.

#### **Adaptation of transactional stress, parenting stress, and mastery theories.**

The theoretical framework used for this study was Lazarus and Folkman’s Transactional Stress Theory (1984) with the addition of Abidin’s Parenting Stress Theory (1992), and Pearlin and Schooler’s (1978) Mastery Theory. The Lazarus and Folkman (1984) theory emphasizes the role that cognitive appraisal and coping plays in the determining the outcome of stress. Although Lazarus and Folkman did not specify depression as a potential outcome of stress, one could surmise that their “health consequences” outcome component could include depressive symptoms. Abidin’s (1992) Parenting Stress Theory, and Pearlin and Schooler’s (1978) Mastery Theory were added to the Lazarus and Folkman (1984) Stress Model to guide the current study. The final adapted model for the current study is illustrated in *Figure 1*.

In the adapted model, the causal antecedents of maternal parenting stress are both person and environmental variables. The person variables include mastery in the role of mothering, and pre-existing depressive symptoms. Environmental variables are those

situational demands of the relationship with a significant other, as well as the temperament of one's child and their behavior. There are both direct and indirect relationships in the model. Coping is considered a mediator of parenting stress and depressive symptoms, and maternal parenting stress is hypothesized as having direct and indirect effects on depressive symptoms.



*Figure 1.* The Relationship Among Maternal Parenting Stress, Coping and Depressive Symptoms

**Maternal Parenting Stress.** In the model (*Figure 1*), the causal antecedents of personal characteristics and situational demands were proposed to be associated with maternal parenting stress as described in the Abidin's (1992) Parenting Stress Theory. Parenting stress is defined by Abidin as the attitudes and beliefs that parents have about their children and their abilities to perform their responsibilities as parents (1992). These attitudes could include a sense of competence (mastery), and restrictions imposed by other aspects of life including conflict with another parent, a poor relationship with a

significant other, lack of social support, child temperament and behavior, and depressive symptoms (Anderson, 2008; Paulussen-Hoogeboom, Stams, Hermanns & Peetsma, 2008; Raikes & Thompson, 2005; Sevigny & Loutzenhiser, 2009). Negative attitudes are proposed as being associated with parenting stress. Because mothers are more often the daily caregiver of the child, they appear to have more parenting stress than fathers (Scher & Sharabany, 2005), and therefore may be at greater risk for depressive symptoms.

**Coping.** Coping is the behavioral component of Transactional Stress Theory (Lazarus & Folkman, 1984). In Transactional Stress Theory, one experiences stimuli, and engages in a series of thought processes called cognitive appraisals. Cognitive appraisal includes primary appraisal (if the stressor negative, resulting in harm; or positive, resulting in a chance to grow), and secondary appraisal (how the situation can be controlled). This appraisal process generates emotion, which influences the coping phase of the process. Coping is defined in transactional stress theory as “constantly changing cognitive and behavioral efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person” (Lazarus & Folkman, 1984, p.178).

Coping has been hypothesized to take place on two levels of interaction, that of the individual to the family system, and the family to the social environment. Families with more coping behaviors on both levels of interaction are able to adapt better to stressful situations (McCubbin, Olsen, & Larsen, 1987). The meaning a family attaches to a stressful situation, or their reappraisal of the situation, also contributes to their coping behavior. Without meaning, or an explanation of events that lead to family stress, families may be unable to make sense of what happened and how one’s “environment

could be arranged to overcome undesirable situations” (McCubbin, Olsen & Larsen, 1987). Such re-arrangement, or coping, is modified over time and is accomplished by promoting member independence and self-esteem, as well as developing and maintaining social supports within the community. It is that member independence and self-esteem that is hypothesized as reflective of the mother as a parent.

**Adaptational Outcomes Over Time-Depressive Symptoms .** In the adapted model (*Figure 1*), maternal parenting stress was hypothesized as having a direct and indirect effect on the adaptational outcome of depressive symptoms. The first research question reflects the indirect path that maternal parenting stress has through the mediation of coping. The second research question refers to maternal parenting stress’s direct effect on the adaptational outcome of depressive symptoms. In Transactional Stress Theory, adaptational outcomes can include functioning at work and in social situations, morale or life satisfaction, and somatic health. A relatively long-term state of dissatisfaction or low morale can result in a poor state of somatic health, including depressive symptoms.

In the adapted model shown in *Figure 1*, depressive symptomatology is defined as a having feelings of learned helplessness which may result in feeling sad, fatigued, or depressed. It should be noted that in much of the literature, depressive symptoms such as crying, feeling hopeless, fearful, sad and depressed are referred to as depression. While major depression is a clinically-diagnosed condition, depressive symptoms can exist without a diagnosis of depression actually having been made. In the current study, depressive symptoms were the focus and not a diagnosis of depression, clinical depression, or major depression.



## Summary of Chapter 1

An adapted version of the Lazarus and Folkman's Transactional Stress Theory (1984) was used for this study. Transactional Stress Theory is a general stress theory which emphasizes that stress is a process. This theory was well suited to this study because it acknowledged the complicated, iterative nature of the stress process. The addition of Abidin's Parenting Stress Theory (1992) allowed a specific application of the Transactional Stress Theory to the proposed maternal parenting stress process. In adapted model used for this study, the causal antecedents of maternal parenting stress were person and environmental variables. The person variables were represented by the concepts of mastery as described by the Pearlin Mastery Theory (Pearlin & Schooler, 1978), and by the presence of pre-existing depressive symptoms. The environmental variables included the mother's relationship with significant other, and her child's temperament and behavior. These variables were hypothesized as being associated with maternal parenting stress, and coping was hypothesized as a mediator of maternal parenting stress and depressive symptoms.

The adapted model (*Figure 1*) was used to guide the study which helped answer the following research questions:

1. How do the person characteristics of low-income mothers (mastery and depressive symptoms) and environmental variables (child temperament and behavior problems, and maternal relationship with a significant other) relate to maternal parenting stress, the process of coping, and the adaptational outcome of depressive symptomatology over time?

2. What are the direct effects of maternal parenting stress on the adaptational outcome of depressive symptomatology over time?

The model in the current study was proposed as changing over time to acknowledge that as the child grew, a mother's maternal parenting stress level changed, and through coping, depressive symptoms may or may not have occurred. The model for this study was hypothesized as predictive in nature, with the assumption that more difficult circumstances and stress would predict later depressive symptoms. It was felt that this model accurately reflected the longitudinal relationship among maternal parenting stress, coping, and depressive symptoms in a sample of low-income women. Chapter 2 reviews literature that addresses maternal parenting stress, coping, and depression and their proposed relationships.

## Chapter 2

### Review of Literature

This is a synthesis of the empirical literature on maternal parenting stress, coping, and maternal depressive symptoms, and what is known, not known, and needs to be known about the relationship among those. A literature search was conducted using the keywords of maternal parenting stress, maternal stress, parenting stress, coping, appraisal, reappraisal, reframing, depressive symptoms, depression, and maternal depression. The databases reviewed were CINAHL, PubMed, and PsychINFO. A large number of articles were identified, and a system was instituted for inclusion in this literature review. Articles that defined or clarified the major concepts were included. Studies which examined or speculated on the relationship of at least two of the major concepts (maternal parenting stress, coping, and depressive symptoms) were reviewed. Research studies which utilized one or more of the measures used in this proposal were also reviewed. Articles that were considered foundational and classic were also included.

The following are the results of that search, grouped and presented according to the major components of the model used for this study- first, maternal parenting stress (person and environmental variables), then coping, then adaptational outcomes over time (depressive symptoms). Causal antecedents for each of the concepts are included in the review. Included with each of these components are a summary and then an overall critique. Because much of the current literature uses terms such as mastery and self-efficacy, parenting stress and maternal parenting stress, and depression and depressive symptoms interchangeably, those articles were included in the literature review with the concept terminology noted.

## Maternal Parenting Stress

### Causal Antecedents

**Mastery.** Mastery is the “extent to which people see themselves as being in control of the forces that importantly affect their lives” (Pearlin et al., 1981). Mastery can apply to women’s roles as mothers, and how competent they see themselves in that role. Parenting stress may be the result of that perception. The mother who perceives her role as worthwhile, and her situation within her control, generally exhibits more confidence and self-satisfaction in that role (O’Neil, Wilson, Shaw, & Dishion, 2009).

For mothers of toddlers, general self-efficacy was found to be related to levels of parenting self-efficacy (Sevigny & Loutzenhiser, 2009). General self-efficacy as a trait appears to be predictive of more specific parenting efficacy, or the ability to address those stresses related to parenting. Those who have greater self-efficacy have greater levels of parenting stress efficacy. In the Sevigny and Loutzenhiser (2009) cross-sectional study ( $n=62$ ), general self-efficacy and one’s relationship with her spouse were predictive of parenting self-efficacy in women with toddlers aged 18-36 months. Women who exhibited self-efficacy and had a good relationship with a spouse were found to be more confident in their ability to parent.

Raikes and Thompson (2005) also found that mothers with greater self-efficacy (a term they used interchangeably with mastery) had consistently lower levels of parenting stress. Their cross-sectional study included low-income mothers of infants and toddlers enrolled in Early Head Start ( $n=65$ ). The authors asserted that mastery, as measured by the Pearlin Mastery Scale, provides individuals with the psychological resources that help

to reduce the risk of parenting stress (as measured by the Parenting Stress Index Short Form, Abidin, 1995).

Muslow, Caldera, Pursley, Reifman, and Huston (2002) conducted a three year longitudinal study that included 134 mothers with infants aged one month to 36 months. They found that mothers who experience maternal parenting stress over 3 years may do so in response to their perception of the situation and their role in meeting the demands of motherhood. Women who had higher levels of self-efficacy (which they referred to as perception and competence in the role of a mother) had the belief that they were better equipped to perform the role of mothering, and therefore reported decreased levels of parenting stress. Parenting stress in this study was measured by the Parenting Stress Index (Abidin, 1995).

Positive internal resources such as mastery also may influence coping strategies. In a cross-sectional study, Taubman-Ben-Ari, Shlomo, Sivan, and Dolizki (2009) studied 102 first time mothers two months after delivery. They found that women who had greater mastery (as measured by the Pearlin Mastery Scale; Pearlin & Schooler, 1978) used more problem-focused coping measures. They also found an association between maternal mental health symptoms and mastery in that those with higher levels of mastery had lower levels of anxiety. The relationship between mastery and mental health, however, remains complex and unclear.

**Pre-existing depressive symptoms.** Women with more depressive symptoms report higher levels of maternal parenting stress over time. These symptoms, in combination with other factors such as life circumstances, family environment, and the behavior and temperament of the child can lead to greater levels of maternal parenting

stress. In a 6 month longitudinal study, Viana and Welsh (2010) found that women with pre-existing depressive symptoms reported more maternal parenting stress than women who did not have these symptoms.

**Other causal antecedents.** A mother's age when giving birth, particularly if she is an adolescent, puts her at higher risk for maternal parenting stress. In a longitudinal study with a convenience sample of 78 adolescent mothers, Secco and Moffat (2003) found that women younger than 20 years old had lower levels of mastery and higher levels of maternal parenting stress. Younger mothers may find they struggle with the demands of a child while trying to attain their own psychological developmental milestones. This study, which utilized the Parenting Stress Index (Abidin, 1995), was conducted from the time the infant was five weeks old until he/she was 12-18 months old.

A mother's education level is indicative of maternal stress levels as well. Kalil and Danzinger (2000) found that higher education levels in teen mothers were positively related to a decrease in maternal parenting stress. Their study used a cross-sectional design with 88 low-income adolescent mothers. The authors asserted that educational attainment may cushion the stress of parenting, whether through increased self-esteem or increased employment opportunities. The authors utilized the Parenting Stress Index (Abidin, 1995) to measure parental stress in teen-aged mothers.

LeCuyer-Maus (2003), in a small cross-sectional pilot study of 20 mothers with 12-month-old toddlers, found that limited maternal education along with difficult life circumstances or a lack of formal social supports, contributed positively to parenting stress levels (as measured by the Parenting Stress Index Short Form, Abidin, 1995). Coleman and Karraker (2000) found that higher educational attainment in combination

with higher income and better child behavior (as measured by the Emotionality, Activity Level, Socialability, Impulsivity Scale, Buss & Plomin, 1984) resulted in higher levels of mastery (self-efficacy) in mothers of school-age children in a cross-sectional study.

Oyserman, Bybee, Mowbray and MacFarlane (2002), in a cross-sectional study, also found that in low-income African-American women, less education was related to more maternal parenting stress, measured by the Parenting Stress Index (Abidin, 1995). These authors affirmed that education influences maternal appraisal of stressful circumstances and their own coping abilities. Those women with higher education were able to appraise their situations as within their control and coping abilities.

Income appears to have strong effects on parenting stress levels and subsequent maternal well-being. Cain and Combs-Orme (2005) reported that single African-American women in their cross-sectional study ( $n=246$ ) were poorer than their Caucasian counterparts, and had comparable levels of maternal parenting stress (as measured by the Parenting Stress Index Short Form; Abidin, 1995) but were equally responsive and accepting as parents.

Race has an uncertain relationship to maternal parenting stress, however. Roxburgh, Stephens, Toltzis, and Adkins (2001) studied 285 urban, low-income African-American women in a cross-sectional study. They found that the women had high levels of parenting stress and depressive symptoms, which was measured by the Centers for Epidemiological Studies Depression Scale (CES-D; Radoff, 1977). The authors felt this was due to beliefs about the cost of children and the potential emotional fulfillment of having them. In contrast, in another cross-sectional study, O'Neil, Wilson, Shaw and Dishion (2009) found that Caucasian women who were socioeconomically disadvantaged

had higher levels of parenting stress and depression than African American or Hispanic mothers of the same economic status. They utilized the CES-D (Radloff, 1977) to measure depressive symptoms in 607 low-income mothers of disadvantaged two-year old children. Singh (2003) also found in a cross-sectional study that in both African American ( $n=70$ ) and Caucasian mothers ( $n=70$ ), more education led to greater mastery as a parent and decreased parenting stress (as measured by the PSI; Abidin, 1995). This suggests that race is as yet an inconclusive predictor of maternal parenting stress.

Copeland and Harbaugh (2005) found that mothers who were married appeared to have lower parenting stress levels than those who were single. This cross-sectional study, using a convenience sample of 22 single and 52 married mothers, concluded that marital status implies increased social support, and therefore decreases the perception of parenting stress (as measured by the PSI-SF; Abidin, 1995). In contrast, Cain and Combs-Omre (2005) reported that marital status in women with newborns had no impact on their level of parenting stress. In their cross-sectional study of 246 women, those who were single had the same parenting stress levels (measured by the PSI-SF; Abidin, 1995) as those who were married. Single women were also found to be as accepting and nurturing as their married counterparts. This study did not address the presence of a significant other, but only the marital status of the mother. Again, many demographic variables have been inconsistent as predictors of maternal parenting stress.

### **Environmental Variables (Situational Demands) of Maternal Parenting Stress**

**Maternal relationship with significant other.** It is posited that a woman's relationship with her significant other can either add to or decrease her parenting stress. The Muslow et al. (2002) study included 134 mothers of infants who were studied



longitudinally from the time their infants were age one to age three. Mothers who reported more satisfaction with partner intimacy also reported lower levels of parenting stress over time (measured by the PSI; Abidin, 1995). These reports were most significant when the child was less than 6 months old and when they were 16 months old. The significant other varied in this study- some were the father of the child, others were an in-residence or out-of-residence partner.

**Child temperament and behavior problems.** Certain child characteristics and behaviors have been associated with higher parenting stress levels in mothers that could later be linked to depressive symptoms. Psychological or behavioral characteristics of the child such as pro-social behavior or externalization were related to lower levels of maternal parenting stress (Beck, Hasting, Daley, & Stevenson, 2004). In contrast, mothers of children with behavior problems such as emotionality and hyperactivity reported higher levels of maternal parenting stress because those mothers often feel responsible for or the need to control their child's behavior (Beck et al., 2004; Anthony et al., 2005; Paulussen-Hoogeboom, Stams, Hermanns, & Peetsma, 2008). Maternal stress was also associated with child behaviors such as internalizing symptoms, which then produced more maternal parenting stress (Rodriquez, 2011).

Secco and Moffatt (2003) found that a combination of infant temperament, the perception of infant care-competence, and potentially stressful situations, all impacted parenting stress in mothers. The authors, using a convenience sample of 78 adolescent mothers, found that those who perceived their infants as fussy or having a difficult temperament had higher levels of parenting stress, as measured by the PSI (Abidin, 1995). Ostberg, Hagekull, and Hagelin (2007) had similar findings in that a high workload

(domestic chores) and low social support in combination with the perception of the child as fussy or difficult were directly related to higher levels of parenting stress. Their cross-sectional study included 1081 mothers of children aged six months to 3 years. Muslow et al. (2002) also found that a number of situational variables including child temperament between ages one and 36 months were highly predictive of maternal parenting stress.

In a longitudinal study (of two years) of 189 families with children, Neece and Baker (2008) found that as children grew, the predictability of behavior problems, which were measured using the Child Behavior Checklist (Achenbach & Rescorla, 2000), to maternal parenting stress increased. In this study of mothers with children aged six to eight, less adaptive behavior skills and more negative personalities in the children were predictive of parenting stress in their mothers. Sales, Greeno, Shear, and Anderson (2004) had similar findings in a cross-sectional study of 222 children with a mean age of 11.3 years. Those authors found that mothers of children who had behavior problems (as measured by the Child Behavior Checklist, Achenbach & Rescorla, 2000) were more likely to experience maternal caregiver strain and greater disruption in the mother's mental health status.

Child temperament and behavior alone do not determine maternal parenting stress. It appears that there are many factors that determine whether and how much a mother feels maternal parenting stress. In a study of 59 dyads over a five month period, Paulussen-Hoogeboom, Stams, Hermanns, and Peetsma (2008) determined that mothers who experienced parenting stress (measured by the PSI; Abidin, 1995) did so only as a result of child negativity in their male children. Scher and Sharabany (2005) had similar findings in a cross-sectional study that compared stress (measured by the PSI; Abidin,

1995) in 90 mothers and fathers of boys and girls when their child was three months of age. They found that the mothers of sons reported more parenting stress than the mothers of daughters or the fathers of either gender.

### **Summary of Maternal Parenting Stress Literature**

Although it is clear that parenting stress is a unique type of stress that emanates from many sources, it is unclear exactly what those sources are. There is conflicting empirical evidence of whether maternal age, education, marital status, and psychological disposition of either the mother or the child are related to parenting stress. It is also unclear exactly which child characteristics are useful predictors for parenting stress.

Likewise, the empirical evidence of social factors influencing parenting stress is not unequivocal. These variables may be part of a cascade of events (young maternal age at first birth, not finishing high school, and then limited employment prospects) that add to the perception of parenting stress. It may also be that these women have a psychological make-up (such as poor self-esteem) that predisposes them to become young mothers with poor education, limited resources, and increased parental stress levels. Because these factors frequently occur together, it is difficult to discern their specific contribution to parenting stress.

The literature almost always focuses on the negative impact of parenting stress as it relates to the child. Most researchers have been concerned with how parenting stress might lead to dysfunctional parenting, and the subsequent punitive behavior and abuse of the child. This is a justifiable concern, but there could be effects of parenting stress in mothers that have not yet been explored. There is a definitive paucity of longitudinal studies on the effects of chronic stress in mothers (Ostberg, Hagekull, & Hagelin, 2007).

Because of this, it is difficult to discern the long-term effects of parenting stress.

### **Mediating Processes**

Coping is the behavioral component of Transactional Stress Theory (Lazarus & Folkman, 1984). Lazarus and Folkman described coping as a mediator between stressful encounters and adaptational outcomes. Coping, along with social support and psychological characteristics such as self-esteem, has been theorized as being the link between stress and illness. Increased stress can result not only in somatic illness, but in the development of depression and other psychological disorders. Coping is the adaptive mechanism through which an individual manages stress, and can be a determinant in the extent to which physical and psychological symptoms develop (Sommerfield & McCrae, 2000).

Individuals use many factors to appraise a stressful situation and then determine coping mechanisms. One such approach involves a re-interpretation, or reappraisal of the problem (Carver, Scheier, & Weintraub, 1989). Lazarus and Folkman (1984) felt that reappraisal was an emotion-based response because one was not directly dealing with the stressor or problem itself. Emotion-based coping strategies have been generally thought of as less adaptive than active-based coping strategies. Now, however, it is believed that individuals have “coping styles” (Carver, Scheier, & Weintraub, 1989, p. 268) that include both emotion and active-based strategies. How those coping styles develop, however, are still in question.

LeCuyer-Maus (2003) found in a cross-sectional study of 20 mothers that factors such as psychiatric/mental health symptoms, family of origin, and education all determine how a mother appraises and copes with her situation. Mothers with fewer

mental health symptoms, a more adaptive family of origin, and a better education generally appraised stressful parenting circumstances as more manageable. Parenting stress in this study was measured using the PSI-SF (Abidin, 1995).

Coping has been proposed as either a mediator or moderator of maternal parenting stress and depressive symptoms. Wadsworth, Raviv, Compas, and Connor-Smith (2005) tested several models of association between economic strain, parental life stress, coping, and psychological symptoms. They looked at 57 parent–adolescent dyads from rural lower-income families in a cross-sectional design study. They found that during childhood, coping had a mediational role to general stress and psychological symptomatology, while in adulthood, it had a moderational role. In contrast, Samuels-Dennis (2007) reported that coping did not mediate between stress and depressive symptoms. This study included 96 young low-income mothers (with at least one child aged 4-18 years) in a cross-sectional study.

In examining an early intervention program for mothers of low birth weight children, Klebanov, Brooks-Gunn, and McCormick (2001) studied 843 mothers of children aged one through 3 years in a longitudinal study of an early intervention program. They found that coping was not influenced by the intervention, and that coping did not moderate the influence of the intervention on child outcomes. In contrast, Tein, Sandler, and Zautra (2000) reported that coping did moderate the relationship between parenting stress and mothers' discipline practice. The sample for this longitudinal (two interviews spaced 5.5 months apart) study was of 222 mothers of children ages 8 to 12 years old.

Lee (2003) concurred that adaptive coping skills moderated the effects of stress and maternal depression. Studying 605 infant-mother dyads in a secondary analysis of a cross-sectional study, Lee found that mothers of children up to 36 months who used such adaptive coping skills as problem-solving and seeking information reported significantly less depression than mothers who used less adaptive skills such as avoidance.

### **Summary of Coping Literature**

Of the empirical evidence of coping in the context of parenting stress and maternal depressive symptoms, there is no clear support for coping as a mediator or moderator of maternal parenting stress and depressive symptoms. Various theories have held that age and other factors may be associated with the role that coping plays in the stress process. It is evident that active, problem-focused coping strategies have a more positive outcome, whereas passive, emotion-based coping is almost always correlated with negative outcomes such as depression or depressive symptoms. It is clear that understanding the type of coping utilized is essential to understanding the stress process that has depressive symptoms as an adaptational outcome.

### **Adaptational Outcomes Over Time (Depressive Symptoms)**

There are many variables associated with maternal depressive symptoms and depression, and the outcome of those are almost always poor. Those women who reported chronic or long-term depression over 10 years after giving birth had poorer outcomes than those who were never depressed or reported depression only intermittently. In a longitudinal study of 476 low-income mothers, women who were chronically depressed were less likely to be married, had less education, lower family income, and more substance abuse (Seto, Cornelius, Goldschmidt, Morimoto, & Day, 2005). This

study, which took place from the time of the mother's pregnancy until their child was 10 years old, used the CES-D (Radloff, 1977) to measure depressive symptoms.

Seifert, Bowman, Helfin, Danzinger, and Williams (2000) found that the demographic variables of socioeconomic status, race, and age were all predictive of maternal depression. Their study, using a cross-sectional design with 705 low-income women, found that black women who were living alone with their children under difficult economic circumstances were at especially high risk for depressive symptoms. This study did not specify the age of the children.

Women who perceived themselves as having less financial control over their lives reported increased symptoms of depression (Casey et al., 2004). This study was a cross-sectional study of 5306 mothers of children less than 36 months of age. According to Huang, Wong, Ronzio & Yu (2007), women with depressive symptoms tend to be black teenagers with low incomes. This longitudinal study looked at 7676 mothers of various ethnicities, and took place over six years (from the birth of the child until entrance into school). Esbaugh (2008) found that age was also a consistent predictor of depression in women, regardless of their race. Younger mothers tended to have fewer depressive symptoms than older mothers. These studies utilized the CES-D (Radloff, 1977) to measure depressive symptoms.

In women with young children, the duration of depressive symptoms may continue well into the childrearing years. In a longitudinal study, Cornish et al. (2005) assessed 860 women after the birth of their child and then one year later for elevated depressive symptoms. Forty-six percent of the women with initial elevated depressive symptoms continued to have them at the one year follow-up. This suggests the need for

identification and treatment of maternal depression beyond the postpartum period (one year after giving birth).

### **Summary of Adaptational Outcomes Over Time (Depressive Symptoms) Literature**

Most of the maternal depression research studies reviewed focused on the predictors of depression, such as poverty, life events, age and education. The literature is clear that less-educated women with lower incomes are at higher risk of developing depressive symptoms across time.

The strength of the literature is also clear when linking the causal antecedent variables and maternal parenting stress. Increased mastery and less family conflict (as related to relationship with significant other) were related to lower levels of maternal parenting stress. More child behavior problems and a perceived “difficult” child temperament were associated with more reported maternal parenting stress. Women with younger children had more maternal parenting stress, but women who were younger themselves reported less parenting stress. The level of parenting stress reported appears to decrease over time, possibly as both the mother and the children age.

The literature linking maternal parenting stress and coping is less strong. Coping has been variously hypothesized as a mediator or a moderator between maternal parenting stress and depressive symptoms. Coping appears to change over time, possibly as the coping strategies and styles become more adaptive, and that may change its role as mediator or moderator. It is clear from the literature that adaptive coping skills (which are active-and problem-focused) result in fewer depressive symptoms, but the role of coping (mediator or moderator) in the stress process not clear in the literature.



It is, however, clear that pre-existing depressive symptoms are strongly linked to depressive symptoms as an outcome. Younger women tended to report less depressive symptoms than older women, but the presence of depressive symptoms remained in all women if reported earlier. If a woman reported depressive symptoms earlier, left untreated, those were almost always present at a later date according to the literature. There was not necessarily an increase of symptoms over time, only a persistence of symptoms.

### **Final Summary and Critique**

This has been a review of the literature of maternal parenting stress, coping, and depressive symptoms. There is conflicting evidence of the definitions, predictors, and relationship among these concepts.

The major concepts in this study, mastery, maternal parenting stress, coping, and depressive symptoms, are ill-defined in the literature. Mastery has been variously referred to as self-efficacy, and although the two concepts are related, they are not the same. Mastery characteristics were also referred to as self-esteem, positive thinking, and self-confidence. Stress was used interchangeably with parenting stress, which is a more specific type of stress seen in parents. Maternal parenting stress was a term rarely used, as it was assumed that if parenting stress was present in mothers, it was then maternal parenting stress. In the current study, maternal parenting stress was defined as the attitudes and beliefs that mothers have about their children and their abilities to perform their responsibilities as mothers (Abidin, 1992).

The demographic predictors of the concepts were fairly consistently defined: African-American, low educational attainment, low socio-economic status, and

unmarried mothers. These women demonstrated poor mastery in the role of a mother and they utilized less adaptive coping skills. They were more likely to experience maternal parenting stress and to have depressive symptoms.

Child temperament and behavior problems were generally predictive of maternal parenting stress in the literature. Mothers who perceived their children as fussy, temperamental, anxious, aggressive, or difficult to care for often experienced more maternal parenting stress than mothers with less difficult children. Most studies focused on either maternal predictors exclusively or only on child characteristics. The current study included both maternal predictors and child characteristics as they relate to maternal parenting stress.

The literature focused almost exclusively on child outcomes of maternal parenting stress and depressive symptoms. Mothers with more maternal parenting stress and more depressive symptoms were less likely to employ positive parenting skills and health measures for their children. Little of the literature reviewed explored the outcome of stress and depressive symptomatology on the mothers themselves. The mother was the focus in the current study and the measures of maternal parenting stress, coping, and depressive symptoms were all measured from her perspective.

Coping was frequently defined in terms of coping mechanisms rather than a process. Coping was originally posited by Lazarus and Folkman (1984) as a mediator of stress and adaptational outcomes in the stress process. That has been generally unsupported in the literature, and there is a paucity of current research examining this hypothesis. Coping was posited as a mediator in the current study because it was thought

to help explain the relationship between maternal parenting stress and depressive symptoms.

None of the literature reviewed linked more than one concept (maternal parenting stress, coping, or depressive symptoms) with another. There were varying hypotheses of the effects of positive and negative coping to mediate the process of stress, without any clear answer. Depressive symptoms as an outcome of maternal parenting stress were not explored. Overall, the process of how mothers move through stress, coping, and depressive symptoms remains unclear. The current study attempted to link maternal parenting stress, coping, and depressive symptoms.

The sample characteristics included in most of the studies were appropriate, with most being low-income young women with multiple risk factors. There were, however, inconsistent income guidelines for inclusion, and little control for confounding factors such as pre-existing depression. Some studies used convenience samples, which brings into question the validity of the results. Most studies had small sample sizes, with some using as little as 20 subjects.

The instruments used to measure the concepts of mastery, maternal parenting stress, coping, and depressive symptoms were also inconsistent. Mastery was frequently measured using efficacy tools, instead of using a tool that is specific for mastery such as the Pearlin Mastery Scale (Pearlin & Schooler, 1978). Maternal parenting stress was almost always measured by the Parenting Stress Index (Abidin, 1995) but some authors used other stress measures not specific to parenting. Coping was measured with instruments that were specific to coping behaviors, not the coping process.

The vast majority of the studies reviewed used cross-sectional designs, with subjects tested at one point in time. A few researchers retested subjects at a later date, usually within a year or two, and sometimes as little as 2 weeks apart. Only one, Seto et al. (2005), used more than 200 (*n*<sub>tr</sub>=476) participants over 10 years of time. This study featured a design where mothers were interviewed regarding their depressive symptoms 5 times (last trimester of pregnancy, at 18 months, 3 years, 6 years, and 10 years in the child). This study, however, used depressive symptoms as a predictor of later poor socio-economic outcomes. Stress and coping was not examined in that study.

As repeatedly called for, more longitudinal studies on the effects of stress are needed to examine the adaptational process (Lazarus & Folkman, 1984; Somerfield & McCrae, 2000). It was clear from the literature that over time, maternal parenting stress was perceived as lower, but it was not clear how coping might be related to that and the outcome of depressive symptoms. Lazarus and Folkman (1984) are implicit that as the stress process takes place, individuals can become more competent at using appraisal and coping strategies. This could explain why some people with chronic stress develop depression while others do not. The current study employed a longitudinal design, with subjects tested at multiple points on measures across a 12 year time span.

The methods used to address the current research questions will be described in Chapter 3.

## **Chapter 3**

### **Methods**

This research examined the relationship among maternal parenting stress, coping style, and maternal depressive symptoms. A secondary analysis of data that were collected for one site in the national Early Head Start Research and Evaluation Project (EHSREP) was employed. The EHSREP was led by a consortium with Mathematica Policy Research Inc. as the primary contractor. Representatives from the Administration on Children, Youth and Families (ACYF), and investigators from the 15 universities partnering with 17 Early Head Start (EHS) programs were selected to participate in the EHSREP. The EHSREP project included both local and national components collecting data for evaluation and research purposes.

The current project used a selection of those existing data to examine two research questions:

1. How do the characteristics of low-income mothers (mastery and depressive symptoms) and environmental variables (child temperament and child behavior problems, and maternal relationship with a significant other) relate to maternal parenting stress, the process of coping, and the adaptational outcome of depressive symptomatology over time?
2. What are the direct effects of maternal parenting stress on adaptational outcomes (depressive symptomatology) over time?

In this chapter, the current research project, in the context of national and local components of the EHSREP, is presented, along with the sample, measures, procedures,

and analysis for the current study.

### **National Component of the Early Head Start Research and Evaluation Project**

The current study was a secondary analysis of an existing data source that came from a randomized longitudinal study of families that were eligible for the national EHSREP, a federally mandated effort. In 1994, the ACYF implemented 68 Early Head Start programs with the goal of enhancing children's development and health, and to support the delivery of services by strengthening partnerships between families and community agencies.

The program was modeled after the Head Start program but the target population was low-income families that included pregnant mothers, infants, and toddlers. Congress also mandated an extensive evaluation and research program to ensure the quality of the Early Head Start components and to provide for its reauthorization (ACYF, 2011). The focus of the national EHSREP program was to evaluate:

- Children's development (including health, resiliency, social competence, and cognitive and language development);
- Family development (including parenting and relationships with children, the home environment and family functioning, family health, parent involvement, and economic self-sufficiency);
- Staff development (including professional development and relationships with parents); and
- Community development (including enhanced child-care quality, community collaboration, and integration of services to support families with young

children)

([http://www.acf.hhs.gov/programs/opre/ehs/ehs\\_resrch/ehs\\_aboutus.html](http://www.acf.hhs.gov/programs/opre/ehs/ehs_resrch/ehs_aboutus.html))

The role of research for continuous program improvement at the national and local level was explicated as follows:

1. Did Early Head Start have a positive impact on children and families?
2. With which types of families was Early Head Start most successful?
3. Which types of programs were most successful?
4. What can we learn from the research for program improvement?

([http://www.acf.hhs.gov/programs/opre/ehs/ehs\\_resrch/ehs\\_aboutus.html](http://www.acf.hhs.gov/programs/opre/ehs/ehs_resrch/ehs_aboutus.html))

In 1995, the ACYF selected 15 university research teams who eventually partnered with 17 local programs from the first and second EHS cohorts to participate in a large-scale evaluation and research project. These partnerships were chosen for their unique contribution to the research and evaluation process of EHS, and also for the diverse families they served. The programs were located in rural and urban areas, and tailored specifically to meet the needs of the families they served. Each of the sites collected the data identified for the national study. The local, site-specific studies varied in their design and focus. This has contributed to the rigor of the research and evaluation process of EHSREP (Love et al., 2005).

### **The Local Early Head Start Research and Evaluation Project**

The Pathways Project was one of the university program partnerships chosen for the EHSREP. This was the collaborative research effort of Michigan State University College of Nursing, the disciplines of Developmental Psychology, Community Psychology, Family-Child Ecology, and Nutrition, and the Early Head Start Program of

the Community Action Agency in Jackson, Michigan. The Pathways Project examined family health status and the use of area services and programs by focusing on family interaction, coping, and biophysical well-being. In addition to the national measures, the Pathways Project team chose to collect variables of interest that were unique to their specific clientele such as coping among low-income mothers (Schiffman, 1996). The Pathways Project used the experimental design of the national evaluation, combining qualitative and quantitative data collection and analytic approaches.

To be eligible for inclusion in the national project, and thus the local Pathways Project, the following criteria had to be met: (a) having a child who was younger than one year, born between 9/1/1995 and 9/30/1998; (b) during the five years preceding the birth of that child, the family could not have participated in any comprehensive child-development program for three months or longer; (c) the family could not have participated in Early Head Start or a similar program for 3 months or longer within the last year; and (d) the family had to fall at or below the federal definition of the 100% poverty line. The eligibility criteria allowed that 10% of the enrolled families could fall above the poverty line if their child had been diagnosed as having a developmental delay. Those families who met the criteria were asked to participate in the research study during health-related visits for the mother or child. A total of 196 families were recruited for the Pathways Early Head Start Project (McKelvey, 2003) and 3,001 families for the EHSREP national project.

Families in the EHSREP were randomly assigned into the Early Head Start program or a comparison group by the national contractor (Mathematica Policy Research Incorporated). After random assignment and withdrawal considerations, 189 families



were retained in the Pathways Project sample. There were no differences between the national level groups of random assignment (Love et al., 2005) and those at the local level (McKelvey, Fitzgerald, Schiffman, & Von Eye, 2002).

Data collection for the Pathways Projects began at enrollment when the infant was approximately five months of age. The data collection included parent interviews and child observations completed in the home when the child was 14 months, 24 months, and 36 months of age, with follow-up studies at pre-Kindergarten (Pre-K), and Grade 5 (G5) (McKelvey, 2003). Some measures (Pearlin Mastery and EASI) were completed only once, when the child was 14 months old.

### **Methods for Current Study**

#### **Sample for the current study**

The sample for the current study was drawn from the 189 families who participated in the Pathways Project. Randomization was not retained since the current study was not testing the impact of the program. The criteria for the current study included: mother of a Pathways Project-enrolled child, demographic characteristics available at enrollment of the Pathways Project, and completion of all the measures at the initial data collection. All measures utilized for the current study were from reports of the mother for herself and about her child.

The mothers were an average of 22 years ( $SD = 4.8$ ) of age. Approximately one third of those mothers were younger than 19 years. The majority of the mothers were Caucasian (76.2%), 15.9 percent were African American, and 7.9 percent were of other ethnic backgrounds. Forty-two percent of this sample had not completed high school, while 35.8% had, and another 21.6% had attended college (McKelvey, 2003).

More than half (62.7%) of the sample reported being single parents, while 37.3% were married or in two-parent families through cohabitation. The average family size was 3.5 persons with a range of 1 to 9. The median annual household income at baseline was \$7920 (range = \$0 to \$35,000). Eighty-two percent of the families reported living at or below 100% of the poverty level. Almost all (98.7%) were receiving one type of public assistance (McKelvey, 2003).

All measures for the current study were from self-report of the mothers in the Pathways Project. Not all mothers completed all assessments. For example, some mothers failed to complete all assessments beyond the original base enrollment of their child in the Pathways Project. However, because it was felt that this base data was still valuable for use in many of the models for this study, those mothers were retained in the sample for this study. The final sample for this study was 161.

### **Human Subjects Protection**

The principal investigator for this study applied for and received an Exempt Review from the University of Wisconsin-Milwaukee Institutional Review Board. An Exempt Review is granted when there is no more than minimal risk to the subjects of the study. This study was a secondary analysis and as such, qualified for a Category 4 Exempt status which includes the study of existing data (Appendix B). This status ensures that subjects cannot be identified directly or through identifiers linked to the subjects. The data received for this study excluded all identifiers linked to the original Pathways Project subjects.

### **Power Analysis and Sample Size**

Having an adequate sample size ensures that a proposed model accurately fits

the data, and that the desired outcome could be reasonably identifiable if the study was reproduced. Power analysis allows one to not only determine an adequate sample size but to determine the chance that an effect or outcome will be detected (MacCallum, Browne, & Sugawara, 1996). Power analysis consists of power ( $1-\beta$ ), effect size (ES), sample size (N), and alpha. In this secondary analysis, the power was set at .80 (the standard power), ES was medium, and alpha was .05. When effect size is not available (by comparing the mean of the sample group with the mean of a control group, or by previous knowledge of effect size in this area of research), one estimates the effect size to be medium (Coe, 2002). A medium effect size (.5) indicates a moderate difference would be detectable.

With the fully saturated proposed path analysis models for this study, there were 44 distinct sample moments and 38 distinct parameters, leaving 6 degrees of freedom. According to Cohen (1992), with the above settings for power, effect, and alpha, an adequate sample size for this study would be 151. The sample size available for this study was 161, above that required.

### **Procedure**

Data were received after approval from the Pathways Project principal investigator, and was based on the sample selection and the variables of interest.

### **Measures**

The measures used for this study were collected as part of the national or local component (Schiffman, 1996). Those measures were chosen as indicators of the study variables: child behavior problems (Child Behavior Checklist-CBCL); depressive symptoms (Centers for Epidemiological Studies Depression Scale-Short Form -CESD-SF); child temperament (Emotionality, Activity Level, Sociability, and Introversion

scale-EASI); coping (Family Crisis Oriented Personal Evaluation Scale -F-COPES); maternal relationship with significant other (Family Environment Scale -FES), maternal parenting stress (Parenting Stress Index-Short Form-PSI-SF) , and mastery (Pearlin Mastery Scale (PMS), in mothers of young children as they relate to the research questions. The measures are described in Table 1, where the reliabilities from the EHS national data or Pathways Project are also shown at the corresponding measurement points in for the original 189 subjects of the Pathways Project.

**Table 1:**

*Summary of Measures*

Instrument	Framework/Concept	Description	Measurement Points	Reliability (Cronbach's Alpha)* at measurement points in N=189
Centers for Epidemiological Studies Depression Scale-Short Form (CESD-SF) (Ross, Mirowsky, & Huber, 1983)	Adaptational Outcomes over Time-Depressive Symptoms	Designed for use in non-psychiatric population to measure depressive symptoms	14 months 36 months Pre-K Grade Five	$\alpha=.87$ $\alpha=.88$
Child Behavior Checklist (CBCL) Ages 1 ½-5 (Achenbach & Rescorla, 2000) Aggression Sub-Scale	Environmental Variables (Situational Demands-Child Behavior)	Designed to measure behavior problems	24 months 36 months Pre-K	$\alpha=.90$
Emotionality, Activity Level, Sociability, Impulsivity (EASI) (Buss & Plomin, 1984) Emotionality Sociability Sub-Scales	Environmental Variables (Situational Demands-Child Temperament)	Designed to measure child temperament	14 months	$\alpha=.72$ $\alpha=.58$

Family Crisis Oriented Personal Evaluation Scales (F-COPES) (McCubbin, Olson, & Larsen, 1987)	Mediating Processes-Coping	Designed to measure family problem solving-Reframing	Base 14 months 24 months 36 months Pre-K	
(*McKelvey, Fitzgerald, Schiffman, & Von Eye, 2002-rescaled for Pathways Project)		*Seeking Support from Friends and Family		$\alpha=.69$
		*Seeking Support from Neighbors		$\alpha=.82$
		*Seeking Support from Service Providers		$\alpha=.76$
Family Environment Scale (FES) (Moos & Moos, 1994)-Conflict Scale	Environmental Variables (Situational Demands-Relationship with Significant Other	Designed to measure stability of family environment Conflict subscale	14 months 24 months	$\alpha=.78$ $\alpha=.68$
Parenting Stress Index-SF (PSI-SF)-Parental Distress Subscale (Abidin, 1995)	Maternal Parenting Stress	Designed to measure parenting stress Parenting Distress Subscale	14 months 24 months 36 months Pre-K	$\alpha=.82$ $\alpha=.84$

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**\*Note: All Cronbach's Alpha are from the EHS Pathways Project except FCOPEs.**

**Child Behavior Checklist (CBCL).** The CBCL consists of 100 items which query parents about behavior problems in their children in the following areas: anxious/depressed, withdrawn, sleep problems, somatic problems, aggressive behavior, destructive behavior, social withdrawal, social problems, thought problems, attention problems, externalization, and internalization (Achenbach & Rescorla, 2000). For the EHS study and for the current study, only the Aggression Scale was used. The aggression subscale consists of 19 items rated on a Likert scale from 0 (*not true*) to 2 (*very true*). Scores range from 0 to 38 with higher scores (no cut-offs) indicating more aggressive behavior in the child as observed by his/her mother. Reliability for the CBCL is shown in Table 1. For the EHSREP, the CBCL Aggression Scale was completed by mothers at 24 and 36 months, and Pre-K.

**Center for Epidemiologic Studies Depression Scale-Short Form (CESD-SF).**

The CESD-SF consists of 12 items that measure cognitive, affective, behavioral, and somatic symptoms associated with depression and positive moods (Ross, Mirowsky & Huber, 1983). The original 20-item long form CES-D was developed by Radloff (1977) to identify affective and somatic aspects of depression in community populations. It was developed to track health correlates and depressive symptoms over time. The 20-item long form consisted of items that addressed feeling of hopelessness and helplessness, loss of appetite and sleep, and poor concentration (Boyd, Weissman, & Thompson et al., 1982). Those behaviors were characterized by Radloff (1977) as being most closely associated with depressive symptomatology, but not a diagnosis of clinical depression itself.

The original CES-D was shortened to 12 items for research use in the general non-psychiatric population and has been determined to accurately differentiate symptoms between the depressed and non-depressed population (Ross, Mirovsky, & Huber, 1983). Respondents rate each symptom experienced in a previous 7-day period on a 4-point Likert scale from 0 (*rarely*) to 3 (*most or all of the time*). Possible scores range from 0 to 36, with higher scores indicating greater likelihood of depression. The cut-off score of 10 indicates the possible presence of depressive symptoms in the mother. The Short Form CES-D (CESD-SF) was used for the current study to determine depressive symptoms in mothers whose children were aged 14 months, 36 months, Pre-K, and G5. Reliability for the CES-D is in Table 1.

#### **Emotionality, Activity, Sociability, and Impulsivity Temperament Survey**

**(EASI).** The EASI is a 50-item survey designed to evaluate children based on four dimensions: emotionality, activity, sociability, and impulsivity (Buss & Plomin, 1984). The subscales of emotionality and sociability (5 items each) only were used for the EHSREP, and for the current study. Mothers are asked to determine how accurately behaviors or personality traits characterize their child on a scale of 1 (*less characteristic of the behavior*) to 5 (*more characteristic of the behavior*). Mean scores range from 1 to 5, with higher mean scores representing more behavior problems (less sociable and more emotional) as perceived by the mother. The responses to the EASI are used to evaluate the child's various social tendencies, emotional characteristics, and personality traits. Traits are stable characteristics individual, as opposed to states which change and develop across time (Buss & Plomin, 1984). Therefore, child temperament was measured only

once in the current study, when mothers were asked to evaluate their child to determine levels of temperament at 14 months. Reliability for the EASI is in Table 1.

**Family Crisis Oriented Personal Evaluation Scale (F-COPES).** The F-COPES is a 30-item scale designed to measure problem solving attitudes and behaviors that families use to respond to problems (McCubbin, Olson, & Larson, 1987). The original tool consists of five subscales: Acquiring Social Support (the family's ability to actively engage in acquiring support from relatives, neighbors, and friends)-9 items; Mobilizing the Family to Acquire and Accept Help (the family's ability to seek out community resources and accept help from others)-4 items; Passive Appraisal (the family's ability to accept problematic issues minimizing reactivity)-4 items; Reframing (the family's capability to redefine stressful events in order to make them more manageable)-8 items; and Seeking Spiritual Support (the family's ability to acquire spiritual support)-4 items (McCubbin, Olson & Larsen, 1987).

Due to low consistency reliabilities in the Pathways Project sample, a factor analysis was done and new subscales were created (McKelvey, 2002). The original subscales of Reframing was retained, and new subscales of Seeking Support from Friends and Family (6 items), Seeking Support from Neighbors (3 items), and Seeking Support from Service Providers (3 items) were added. The total of these subscales was used for the current study. Responses for the F-COPES are given on a 5-point Likert scale from 1 (*never*) to 5 (*always*). Scores range from 1-5 on each subscale, and from 5 to 25 for the total. Higher scores indicate greater positive coping skills as operationalized by reframing by the mother and her perception of her ability to acquire support from various sources. (McKelvey, 2002). The F-COPES was completed by Early Head Start mothers at their



initial program enrollment, and then when their child was 14, 24, and 36 months old as well as at Pre-K and G5. Reliability for the F-COPES is shown in Table 1.

**Family Environment Scale (FES).** The FES is a 90-item scale designed to measure the environmental and social characteristics of the family (Moos & Moos, 1994). There FES examines a family member's perception of the family. Family members score on a 1 (*strongly disagree*) to 5 (*strongly agree*) scale with higher scores representing more agreement with statements about the family. In the original EHREP study, only the FES Conflict subscale was completed by the Early Head Start mothers at 14, 24, and 36 months, and G5. The Conflict subscale was used for this study also, where higher scores represent more conflict (such as fighting and aggressive behavior) in the maternal relationship with significant other. The Conflict subscale consists of 5 items scored on a 1 (*strongly agree*) to 5 (*strongly disagree*) scale. The mean of these scores is averaged, making the possible scores from 1 to 5. Reliability for the FES Conflict subscale is in Table 1.

**Parenting Stress Index-Short Form (PSI-SF).** The PSI-SF is a 36-item tool developed to measure the stress a parent perceives under various conditions. The original PSI (Abidin, 1992) consisted of 120 items in 13 subscales. However, the original PSI was considered by researchers as too time consuming, so Abidin developed a 36-item Short Form (Abidin, 1995). The PSI-SF consists of three subscales: Parental Distress, Parent-Child Dysfunctional Interaction, and Difficult Child. Each subscale consists of 12 items. The Difficult Child subscale was not used in the EHSREP, and therefore, not in the Pathways Project. As the Parent-Child Dysfunctional Interaction subscale addresses interaction with the child, it was not used in the current study.

The 12-item Parental Distress (PD) subscale only was used for this study as it reflects the stress associated with being a parent (McKelvey, 2003). The subscale also represents a parent's perception of child-rearing competence, conflict with his or her spouse, social support, and stresses associated with restrictions placed on other life roles (Reitman, Currier, & Stickle, 2002). Responses are given on a five-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Scores range from 12 to 60 for the subscale. High scores on the PD subscale indicate greater levels of stress. The PSI-SF was completed at 14, 24, and 36 months, Pre-K, and G5 by mothers. Reliability for the PSI-SF Parental Distress subscale is presented in Table 1.

**Pearlin Mastery Scale (PMS).** The PMS is a 7-item measure of self-concept that examines the extent to which individuals perceive themselves in control of forces that significantly impact their lives (Pearlin & Schooler, 1978). In this study, the Pearlin Mastery Scale was used to examine how women perceive their role as a mother and how much control they report they have in that role. The responses are given on a one to four Likert-formatted scale from 1 (*strongly disagree*) to 4 (*strongly agree*). A range of 7 to 28 is possible with a higher score representing mastery of one's competency in a role. In this study, the PMS was used to measure mastery of the mother in her role. The PMS was completed only once by the EHS mothers, when their infants were 14 months old. Reliability for the Pearlin Mastery Scale is in Table 1.

### **Data Analysis-Plan**

#### **Preliminary data review**

The investigator received a data set specific to this study from the data manager after approval of the principal investigator. The variables of interest in this study were

identified and defined using the original data set from the Pathways Project data set. All data from the child aged of 0 to 3 years old had been previously cleaned, coded, and screened for missing values (McKelvey, 2002). The mean, standard deviation, and range for all variables had been determined. The demographic characteristics were obtained and included age, income level, education level, occupation, marital or relationship status, and level of assistance. Means and standard deviation were calculated for all continuous variables, while count and percent were used for dichotomous and categorical variables.

### **Missing Data**

As this was a secondary analysis, there was the possibility of missing values for some of the variables. Imputation methods had been utilized in the original data set (when the child's age was 0 to 3 years) using expectation maximization (McKelvey, 2002). Expectation Maximization (EM) estimates the parameters of missing data and then maximizes that parameter (Dempster, Laird, & Rubin, 1977). One condition for EM is randomness, so the data were explored again for this study for any patterns that might indicate that data were not missing at random (MAR). Each variable was checked for missing values. Each wave or time point was explored for missing data, and any pattern of missing data was noted. If more than 50 % of items on a scale were missing, the subscale was not computed. Across waves, 80% of measures must have been completed to be included in the wave or the case was dropped.

### **Data analysis**

Path analysis was used to perform a secondary analysis of the data from the Pathways Project using the research questions. Path analysis is an extension of multiple regression, a multivariate statistical procedure used to test the relationship between two

or more independent variables and one dependent variable. Unlike correlation, which describes only the strength of a relationship between variables, multiple regression adds the ability to predict the values of a dependent variable by using the independent variables. The multiple regression equation produced allows researchers to make the best prediction possible (Olobatuyi, 2006).

Path analysis allows a researcher to go one step further. A matrix model is shown with predicted relationships. That model is compared to the observed model and assessed for goodness of fit. This process implies causation between independent, intermediate, and dependent variables (Olobatuyi, 2006). In this study, the independent variables were the causal antecedents of person and environmental variables of the mother, which are related to maternal parenting stress. The intermediate variable was the mediating process of coping. The dependent or outcome variable was the presence of depressive symptoms.

### **Model Building: Base Models**

Three base models were constructed, one each for the prediction of depressive symptoms at 36 Months, Pre-Kindergarten, and at Grade Five with all possible paths included. The models were designed via AMOS to reflect the various time points in which each variable was measured. For example, Base Model for 36 Months included the predictor variables of mastery, depressive symptoms, family environment, and child temperament as measured in the mother when her child was 14 months old. Pre-existing depressive symptoms at 14 months were included as a covariate. Child behavior, the fifth predictor variable, was measured initially at 24 months. For model building, the logical sequence was that those predictors preceded parenting stress at 24 months and coping at 24 months, and that parenting stress and coping at 24 months was associated with later

depressive symptoms at 36 months, and so on. To help answer the first research question, paths were then added from the predictors to stress, coping, and depressive symptoms. A path was also added from stress to depressive symptoms to answer the second research question.

All of the time points for the predictor variables remained the same for each model: mastery at 14 months, family environment at 14 months, child temperament at 14 months, and child behavior at 24 months. The mediator variables (maternal parenting stress and coping) were kept at the 24 month time point for each model. This was done to accurately represent the earliest possible predictors and mediators of later depressive symptoms in each model. A variable representing pre-existing depressive symptoms in the mother (when the child was 14 months old) was added as a covariate of later depressive symptoms.

Because there was the possibility of significant paths that were not included in the original hypothesized framework, paths were added to all predictor variables (except pre-existing depressive symptoms) and to maternal parenting stress, coping, and later depressive symptoms. These paths represent an exploration into possible relationships that had not previously been identified by the researcher, and an investigation into the effect of predictor variables directly on the mediator and the outcomes. It was also speculated that there could be a significant direct effect of pre-existing depressive symptoms on later symptoms, so that path was also added. The result was one fully saturated model for each outcome of depressive symptoms at 36 months, Pre-Kindergarten, and at Grade Five.

A series of multiple regressions was performed first to estimate the pathways from the causal antecedents to maternal parenting stress, coping, and depressive symptoms; from maternal parenting stress to coping; and from coping to depressive symptoms. Another multiple regression was performed to determine the coefficients of the path from maternal parenting stress to depressive symptoms. Next, maximum likelihood (ML) was employed to maximize the likelihood that obtained values were correctly identified when compared to the multiple regression results. If the results were the same, the model was identified and paths were systematically eliminated (Olobatuyi, 2006).

Next, goodness of fit statistics was employed. Chi Square was used to test the null hypothesis that the reduced model fits the data as well as the just-identified model. The Chi Square should be greater than .8. An absolute fit index, Root Mean Square Error of Approximation (RMSEA), was also obtained. RMSEA estimates the lack of fit when compared to the just-identified model when adjusted for sample size. RMSEA should be .05 or greater to be significant (Olobatuyi, 2006). Finally, fit indices were examined. The fit indices of Normative Fit Index (NFI) and Comparative Fit Index (CFI) were analyzed for this study.

### **Final Model Modification**

According to Olobatuyi (2006), theory or model trimming should take into account, “a) the primary guideline is the theory of the researcher... b) the statistical significance of the path... c) some researchers may prefer to adopt the criterion of meaningfulness...What is meaningful to one researcher in one setting may not be meaningful to another in another setting”, (p.49). In this case, the researcher was not only

striving for parsimonious models that fit the data well but that helped answer the research questions. Several tests are available for determining path deletion or addition: Chi Square change (for theory-driven deletion of paths), Breusch-Pagan (for addition of paths), or Wald tests (for deletion of paths). Additionally, model fit indices should also be assessed, and those used include NFI, CFI, and RMSEA.

Each Base model was modified or trimmed by assessing the p-value for each path's regression weight. The p-value for each path assesses the value of a particular path to the model. Non-significant p-values represent paths that are not statistically significant, however, these paths may contribute to the overall model fit.

In the models for this study, each path was deleted sequentially in order of non-significance (higher non-significant *szdx* paths were deleted first). The Chi Square was analyzed after each path removal. Once the Chi Square changed significantly ( $>3.84$ , according to the Cohen table of significance), the path was considered for deletion. If the fit indices of NFI, CFI and RMSEA also changed above or below the recommended standards for good model fit, the path was analyzed for its theoretical contribution to the model. Those paths that had a significant Chi Square change ( $> 3.84$ ), but whose removal caused detrimental changes in the three model fit indices were not deleted (Olobatuyi, 2006). That produced the Final (over-identified) Models. One final model for the outcome of depressive symptoms at the three time points of 36 months, Pre-Kindergarten, and Grade Five was chosen because the models fit the data well and showed meaningful and significant paths that help answer the research questions.

### **Summary of Chapter 3**

This research study examined the relationship among maternal parenting stress,

coping style, and maternal depressive symptoms. This was a secondary analysis of data that were collected for one site in the national Early Head Start Research and Evaluation Project (EHSREP). The sample for this study ( $n=161$ ) was drawn from the 189 cases available in the data for the Pathways Project. The measures completed by the subjects are summarized in Table 1. Not all of the measures were completed by every subject, so missing data were imputed via EM.

Models were built for each outcome of depressive symptoms at 36 months, Pre-Kindergarten, and at Grade Five. All possible paths were included, reflecting the possible direct and indirect effects of the variables to the outcomes and mediator. Each model was analyzed via several fit indices to determine the goodness of the fit with the data. After that, the models were modified to delete non-significant paths that did not contribute to the model or were not part of the original hypothesized framework. The result was three final models that best describe the relationship among maternal parenting stress, coping, and depressive symptoms. Those will be further discussed in Chapter 4.



## **Chapter 4**

### **Results**

In this chapter, the results of this secondary analysis of collected data for one site in Michigan of the national Early Head Start Research and Evaluation Project (EHSREP) are presented.

#### **Preliminary Data Review**

The Pathways Project data set was part of a national research project (EHSREP) and utilized a randomized longitudinal design. The data set received from the original Pathways Project for this study included 161 eligible subjects with demographical information and data that reflected assessments for child behavior problems, coping, family environment, parenting stress, mastery, depressive symptoms, and child temperament. The mothers of children enrolled in the Pathways Project had completed the data when their child was enrolled in the program, at 14 months old, at 24 months, at 36 months, Pre-Kindergarten, and at Grade Five. The original data were coded to protect the subjects' identities and was in an interval or nominal scale form.

#### **Outlier Analysis**

The data set obtained for this secondary analysis had been previously cleaned for outliers. When the original data set was analyzed, several values were identified as outliers because they were out of range, and therefore likely to change the results of the analyses (McKelvey, 2003). Outliers were identified in the Parenting Stress Index at 24 months (four outliers), the Family Conflict Scale at 24 months (four outliers) and 36 months (two outliers), and Cognitive Reframing at 24 (two outliers) and 36 months (one outlier). These outlier values were truncated to the next nearest value or windsorized (McKelvey, 2003). Windsorizing (Foster, 1986), involves calculating a mean for the

values after replacing the highest and lowest values with the next highest and lowest. Either truncating or windsorizing suppresses the effect that outliers may have on the data analysis without eliminating that effect completely (as omitting outliers does). The original data set received had been truncated for outliers (McKelvey, 2003).

### **Missing Values Estimation**

The data set received had been previously analyzed for missing data and it was determined at that time that 82% to 91% of the cases had complete data (McKelvey, 2002). In the original study, missing data was imputed using expectation maximization (EM). The EM method examines existing data and fits the best values to the covariance structure that has been determined. This produces less bias than using the sample mean or deleting cases as a means for handling missing data (Acock, 1997).

The data set received, including that from the Pre-Kindergarten and Grade Five, was again assessed for missing values. Very few were found (less than 20% across cases). Of the original 189 cases available from the Pathways Project data set, 28 had failed to complete more than 80% of the measures. Those cases were dropped from this sample, leaving the current sample of 161. Not all measures were completed by all mothers, therefore the number of mothers completing measures varies pre-imputation (see Table 2). The missing data for these were evaluated, and no patterns were observed, therefore the data were considered Missing at Random (MAR). Before analysis, the missing data were imputed using EM. After imputing data, the number of total cases with complete data was 161 (see Table 3).

There were very few differences in the scores for all variables pre-and post-imputation (see Univariate Descriptives Pre- and Post-Imputation, Tables 2 and 3). The

descriptive characteristics of the variables (pre-imputation) are presented below.

### **Descriptive Characteristics of Variables**

Variables were chosen from the data set received to best represent the concepts in each research question. Those concepts include mastery and depressive symptoms in the mother, family environment, child temperament, and child behavior as predictors of maternal parenting stress at the same or a later date, coping at the same or a later date, and depressive symptoms in the mother at a later date. Most of the variables were measured at multiple time points. The variables chosen for the models were sequentially placed for the prediction of depressive symptoms. Missing data were imputed via EM to make a total of complete cases of data at 161. Variables were analyzed for descriptive both pre-and post-imputation.

Examining the pre-imputation causal antecedents in the mother (Table 2), the mean score for mastery (at 14 months) was 21.16 ( $SD = 4.12$ ). Using the range of 0-28, this showed mastery in this sample as fairly high. The levels of pre-existing depressive symptoms had a mean of 11.28 ( $SD = 7.07$ ) in a range of possible scores of 0-36. Since the cutoff for “possibly depressed” in the CESD-SF is 10, this would indicate that some in the sample could be depressed. The variable of family environment or conflict with a significant other was low, with a mean of 1.82 at 14 months ( $SD = .521$ ). The range for this variable was 1-4. This variable also remained low throughout the study. The other environmental variables were related to the child. The mean for the variable of child behavior was 25.36 ( $SD = 12.79$ ) at 24 months, indicating a low to moderate level of child behavior problems when using the range of 0-68. The other causal antecedent related to the child, child temperament, was in the higher range with a mean of 7.10

( $SD = 1.03$ ). Using the range of 1-10, this indicated that the mother perceived her child as being more difficult at age 14 months.

There was also a moderately high level of parenting stress in this sample, with the mean being 46.46 ( $SD = 14.70$ ) in a range of 12-60. Coping levels were higher, with a mean of 15.89 ( $SD = 3.09$ ) and a range of 0-20. The outcome of depressive symptoms at 36 months had a mean of 11.30 ( $SD = 8.37$ ) and a range of 0-36, indicating the possible presence of depressive symptoms. Those levels of depressive symptoms remained moderate throughout the study, with a mean of 10.81 ( $SD = 7.51$ ) at Pre-Kindergarten, and a mean of 10.14 ( $SD = 6.96$ ) at Grade Five (see Table 2).

In summary, using the original conceptual model, the causal antecedents of maternal parenting stress had varying levels in this sample. Family conflict was low, and mastery in the mother was moderate to high. The child's behavior was rated as fair (well-behaved) by the mother, but the child's temperament was generally rated as difficult. There was the existence of depressive symptoms initially in the mother. The mother, however, had fair to higher levels of coping over time, but the outcome of depressive symptoms also remained higher (over 10) over time.

Table 2:

*Univariate Descriptives Pre-Imputation*

	<i>N</i>	<i>Mean</i>	<i>Range</i>	<i>Std.Dev</i>
Child Behavior Problems (24 months)	151	25.36	0-68	12.79
Coping-total (24 months)	151	15.89	0-20	3.09
Family Environment/Conflict (14 months)	138	1.82	1-4	.521

Table 2, cont:

<i>Univariate Descriptives Pre-Imputation</i>				
	<i>N</i>	<i>Mean</i>	<i>Range</i>	<i>Std.Dev</i>
Parenting Stress (24 months)	154	46.46	12-60	14.70
Mastery (14 months)	159	21.16	0-28	4.12
Depressive Symptoms (14 months)	161	11.28	0-36	7.07
Depressive Symptoms (36 months)	151	11.30		8.37
Depressive Symptoms (Pre-Kindergarten)	133	10.81		7.51
Depressive Symptoms (Grade Five)	114	10.14		6.96
Child Temperament (14 months)	161	7.10	1-10	.882
<i>Univariate Descriptives Post-Imputation (N=161)</i>				
Child Behavior Problems (24 months)	161	26.04		11.91
Coping-total (24 months)	161	15.89		2.66
Family Environment/Conflict (14 months)	161	1.79		.427
Parenting Stress (24 months)	161	46.90		13.31
Mastery (14 months)	161	20.91		3.90
Depressive Symptoms (14 months)	161	10.83		6.25
Depressive Symptoms (36 months)	161	11.12		7.64
Depressive Symptoms (Pre-Kindergarten)	161	11.09		6.78
Depressive Symptoms (Grade Five)	161	10.09		6.23
Child Temperament (14 months)	161	7.11		.993

## Model Summary

The fit indices indicate that for the Base Model for Depressive Symptoms at 36 Months, the model fit the data fairly. There was less fit with the Base Model for Depressive Symptoms at 36 Months. The fit was slightly better with the Base Model for Depressive Symptoms at Grade Five. However, the RMSEA for the Base Models at 36 Months, Pre-Kindergarten, and Grade Five was lower, indicating that the Base models fit the data poorly (see Table 4).

The models were then modified (or trimmed) using path analysis, and paths were deleted according to criterion described in Chapter 3. Fit indices were again evaluated (see Table 4). One final model for each of the outcomes of Depressive Symptoms at 36 Months, Pre-Kindergarten, and at Grade Five was chosen as best fitting the data and most closely describing the relationship among maternal parenting stress, coping, and depressive symptoms.

**Table 4:**

*Fit Indices for All Models*

	$X^2$	<i>df</i>	<i>NFI</i>	<i>CFI</i>	<i>RMSEA</i>
Models for Depressive Symptoms at 36 Months					
Base ( <i>Figure 2</i> )	14.97	6	.902	.923	.087
Final ( <i>Figure 3</i> )	17.79	11	.883	.942	.056
Models for Depressive Symptoms at Pre-Kindergarten					
Base ( <i>Figure 4</i> )	14.32	6	.886	.907	.084
Final ( <i>Figure 5</i> )	17.72	12	.859	.936	.049

## Models for Depressive Symptoms at Grade Five

Base	( <i>Figure 6</i> )	14.15	6	.906	.928	.083
Final	( <i>Figure 7</i> )	18.93	12	.874	.939	.054

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NOTE: All Base models are saturated; all Final models are over-identified.

**Prediction of depressive symptoms at 36 months-base to final model.** The Base Model for Depressive Symptoms at 36 Months (*Figure 2*) represents predictor variables with depressive symptoms as a maternal outcome when the child was 36 months old. This model is fully saturated (all paths added), and it fit the data well. This model includes the predictor variables of Mastery, Family Environment, and Child Temperament at 14 months, and Child Behavior at 24 months. The covariate of Pre-existing Depressive Symptoms at 14 months is also included. These predictors are proposed to be associated with Maternal Parenting Stress and Coping at 24 months. The outcome of Depressive Symptoms is shown in the model at 36 months. All possible paths are shown.

When the model was trimmed in the Final Model for Depressive Symptoms at 36 Months, the fit was better (*Figure 3*). The paths from mastery to depressive symptoms, from child temperament to coping and depressive symptoms, and from child behavior to coping had been deleted. The model shows paths from Mastery to Parenting Stress ( $p < .01$ ) and Coping; from Family Environment to Parenting Stress ( $p < .05$ ), Coping and Depressive Symptoms; from Child Temperament to Parenting Stress ( $p < .05$ ); from Child Behavior to Parenting Stress ( $p < .01$ ) and Depressive Symptoms ( $p < .05$ ); and from Pre-existing Depressive Symptoms to the Depressive Symptoms outcome ( $p < .01$ ). There is also a path from Parenting Stress to Depressive Symptoms through Coping, which was retained due to its

integral part of the original framework.

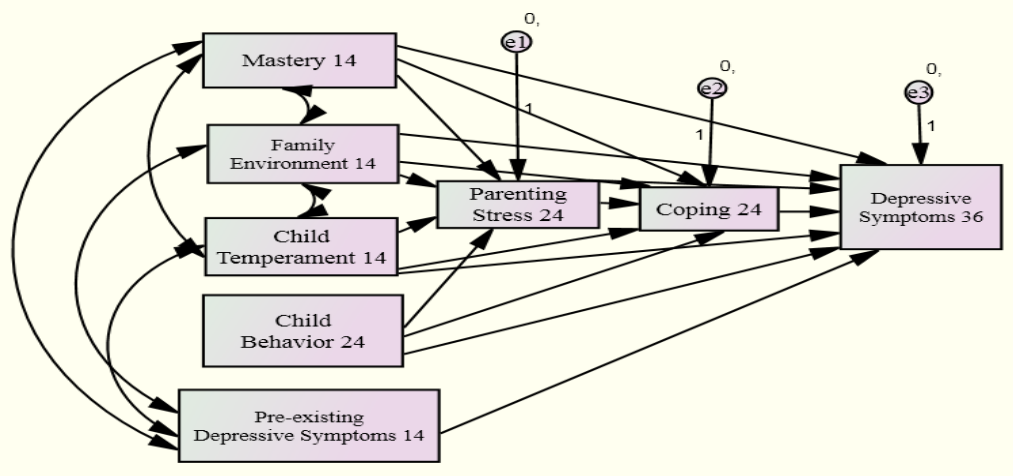


Figure 2: Base Model for Depressive Symptoms at 36 Months

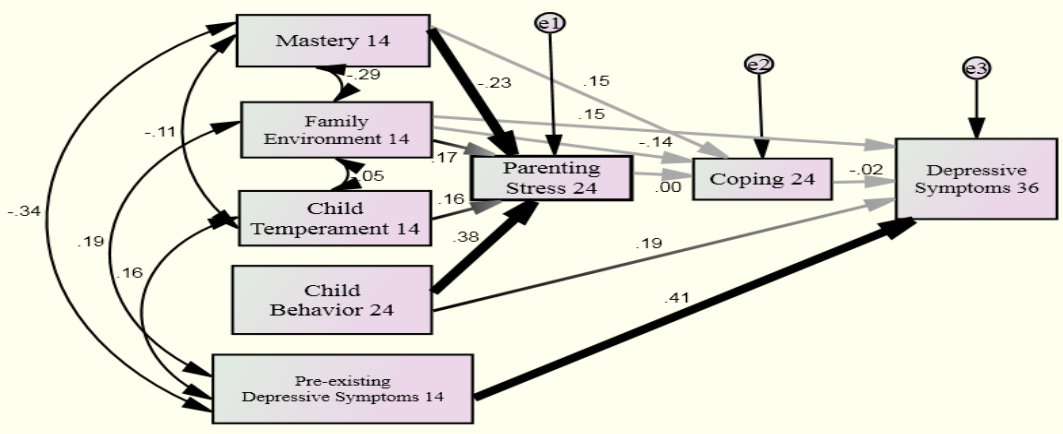


Figure 3: Final Model for Depressive Symptoms at 36 Months  
(Note: Paths in very bold are  $p < .01$ ; paths in gray/black are  $p < .05$ ; paths in gray are  $p > .05$ )



### **Prediction of depressive symptoms at pre-kindergarten-base to final model.**

The Base Model for Pre-Kindergarten (*Figure 4*) represents the predictor variables with depressive symptom as the outcome in the mother when her child was in Pre-Kindergarten. This model includes the predictor variables of Mastery, Family Environment, and Child Temperament at 14 months, and Child Behavior at 24 months. The covariate of Pre-existing Depressive Symptoms at 14 months is also included. These predictors are proposed to be associated with Maternal Parenting Stress and Coping at 24 months. The outcome of Depressive Symptoms is shown at Pre-Kindergarten. All possible paths are shown. The Base Model for Pre-Kindergarten fit the data fair (Table 4).

When the model was modified, there was better fit in the Final Model for Depressive Symptoms at Pre-Kindergarten (Table 4)). The paths from mastery to pre-existing depressive symptoms, family environment to coping, child temperament to coping, and child behavior to both coping and later depressive symptoms had been deleted. The path from maternal parenting stress to depressive symptoms had also been eliminated in the Final Model for Pre-Kindergarten. Although statistically non-significant at the .05 level, the paths from mastery to coping, family environment to depressive symptoms, family environment to coping, maternal stress to coping, and coping to depressive symptoms added a positive effect to overall model fit, and were therefore kept in the model.

The overall fit indices (CFI and NFI) changed significantly when those paths were deleted. According to Olobatuyi (2006), the decision to retain these paths is up to the

researcher. In this case, the decision was made to retain the paths to illustrate any relationship (significant or otherwise) that had been hypothesized.

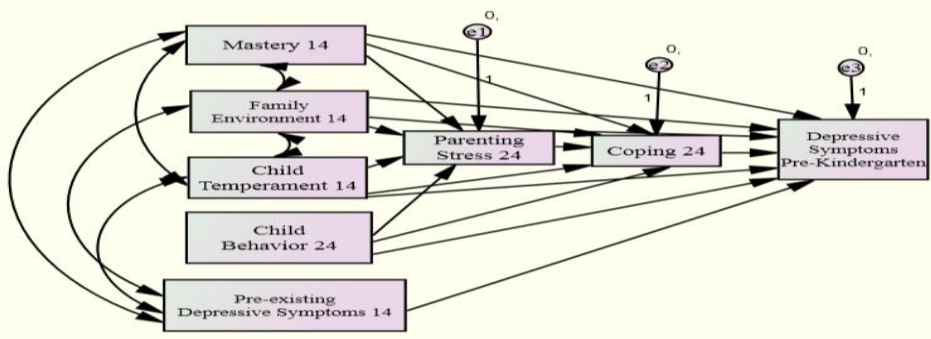


Figure 4: Base Model for Depressive Symptoms at Pre-Kindergarten

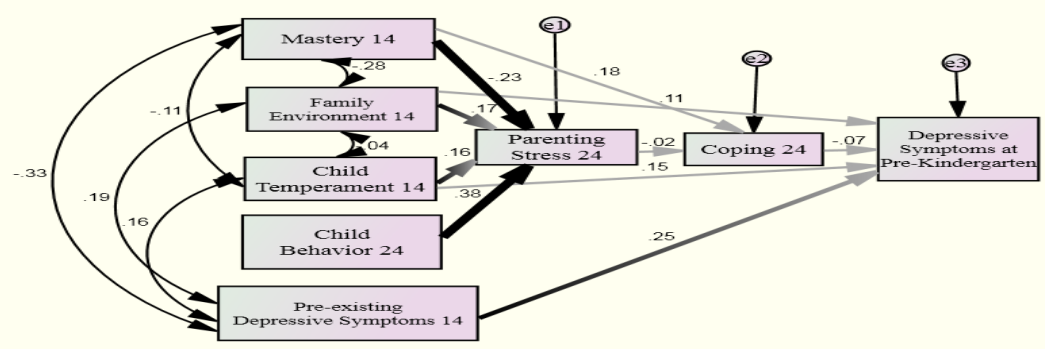


Figure 5: Final Model for Depressive Symptoms at Pre-Kindergarten (Note: Paths in bold are  $p < .01$ ; paths in gray/bold are  $p < .05$ ; paths in gray are  $p > .05$ )

**Prediction of depressive symptoms at grade five-base to final model.** The Base Model for Depressive Symptoms at Grade Five (*Figure 6*) represents predictor variables with depressive symptoms as the outcome in the mother when her child was in Grade Five. The Base Model (Table 4) for Grade Five is fully saturated (all paths added), and it fit the data well. This model includes the predictor variables of Mastery, Family Environment, and Child Temperament at 14 months, and Child Behavior at 24 months. The covariate of Pre-existing Depressive Symptoms at 14 months is also included. These predictors are proposed to be associated with Maternal Parenting Stress and Coping at 24 months. The outcome of Depressive Symptoms is shown in the model at Grade Five. All potential paths are shown.

When this model was modified, the fit was also good (Table 4). In the Final Model for Grade Five (*Figure 7*), the paths from mastery to depressive symptoms, family environment to coping, child temperament to both coping and depressive symptoms, and child behavior to coping had been deleted. The path from maternal parenting stress to later depressive symptoms had also been deleted.

Although statistically non-significant at the .05 level, the paths from mastery to coping, from family environment to depressive symptoms, from child temperament to depressive symptoms, from stress to coping, and from coping to depressive symptoms had a positive effect on overall model fit, and were therefore retained in the model. The overall fit indices (CFI and NFI) changed significantly when those paths were deleted. According to Olobatuyi (2006), the decision to retain these paths is up to the researcher. In this case, the decision was made to retain the paths to illustrate any relationship (significant or otherwise) that had been hypothesized.

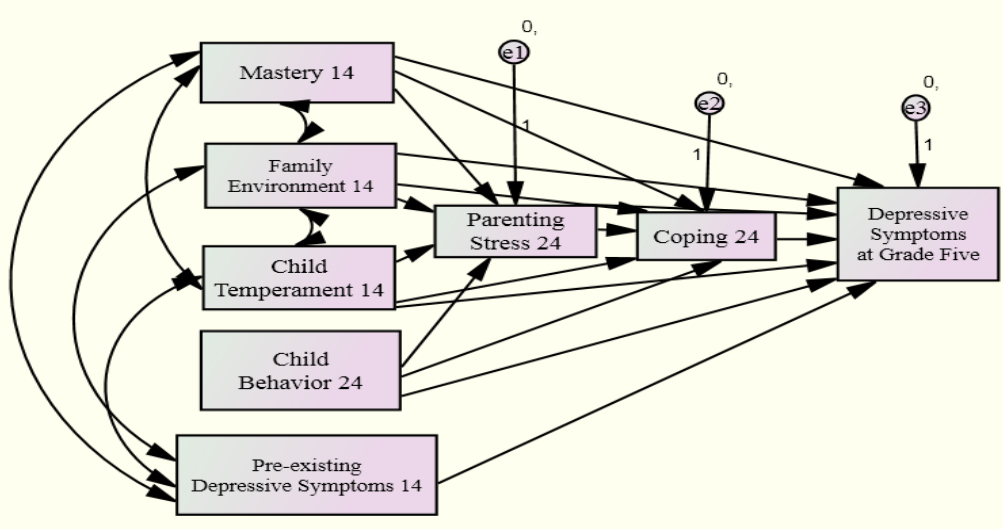


Figure 6: Base Model for Depressive Symptoms at Grade Five

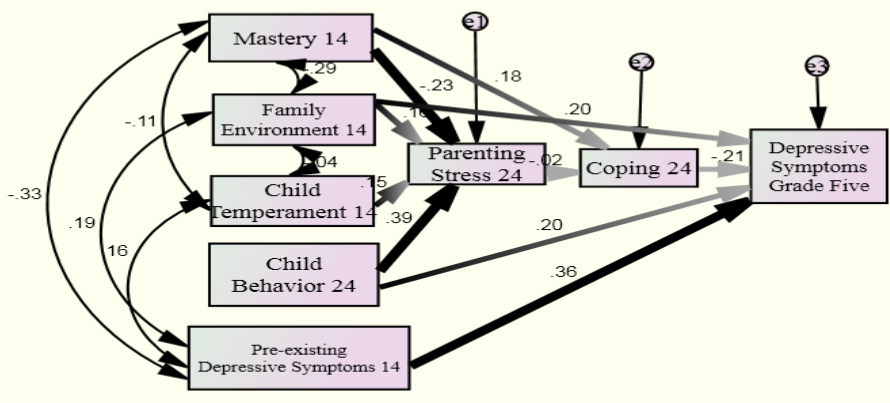


Figure 7: Final Model for Depressive Symptoms at Grade Five  
(Note: Paths in bold are p < .01; paths in gray/black are p < .05; paths in gray are p > .05)

### Summary of Chapter 4

In this study, models were constructed hypothesizing the relationship among maternal parenting stress, coping, and depressive symptoms at 36 Months, Pre-Kindergarten and Grade Five. Base models included all possible paths and relationships. These models were then tested for fit to the data. Path analysis was performed to modify or trim the models. The final models represent the relationship among maternal parenting stress, coping, and depressive symptoms in this sample.

To review, the research questions which guided this study were:

- 1) How do the person characteristics of low-income mothers (mastery and depressive symptoms) and environmental variables (child temperament and behavior problems, and maternal relationship with a significant other) relate to maternal parenting stress, the process of coping, and the adaptational outcome of depressive symptomatology over time?
- 2) What are the direct effects of maternal parenting stress on the adaptational outcome of depressive symptomatology over time?

In answer to the first question, there appears to be many factors and paths that lead to depressive symptoms over time. The relationship is complex, but stable across time. The person characteristic of mastery and the environmental variables of child temperament, child behavior problems, and family conflict are associated with current or later maternal stress and coping, and of later depressive symptoms. Pre-existing depressive symptoms were predictive of later depressive symptoms in this sample, although the strength of the prediction varied. There were direct and indirect effects from the person and environmental variables through maternal parenting stress and coping to

depressive symptoms over time. There was very little change in these paths over time.

For the second research question, there was no direct effect of maternal parenting stress on depressive symptoms. There were also no indirect effects of parenting stress through coping. The research questions will be further discussed in Chapter 5.

## **Chapter 5**

### **Discussion**

The goal of this study was to help explain the relationship among maternal parenting stress, coping, and depressive symptoms in low-income women. The sources of maternal parenting stress were hypothesized to be the maternal characteristics of mastery and pre-existing depressive symptoms, and the environmental factors of family environment, child behavior, and child temperament. Coping was proposed as a mediator of maternal parenting stress and depressive symptoms. There was also a hypothesized direct effect of maternal parenting stress on depressive symptoms.

Maternal parenting stress and its sources, plus coping, were examined earlier in the course of motherhood, with the outcome of depressive symptomatology proposed as occurring later. A number of models were tested using path analysis and structural equations modeling to investigate these relationships, and one model for each outcome of depressive symptoms at 36 months, Pre-Kindergarten, and Grade Five was chosen as best representative of the relationship for the sample of this study.

### **The Relationship Among Maternal Parenting Stress, Coping, and Depressive Symptoms**

#### **Depressive symptoms**

The outcome of this study was the presence of depressive symptoms in mothers, and how those related to previously measured variables. Depressive symptom levels were on the higher side (*possibly depressed*) in mothers when their children were 14 months, 36 months old, in Pre-Kindergarten, and in Grade Five. At 14 months, depressive symptoms were the same, and at 36 months, they were slightly higher. Depressive

symptoms decreased at Pre-Kindergarten and were even lower at Grade Five. Depressive symptoms remained above the risk threshold at all time points.

In this study, mothers reported the highest levels of depressive symptoms when their child was 36 months old ( $M=11.28$ ). The factors associated with these symptoms were family environment, child behavior, and the presence of pre-existing depressive symptoms. The relationship between higher levels of maternal parenting stress was not mediated by coping. These relationships were predictive in nature, changing very little over the course of the study.

When the child was in Pre-Kindergarten, the mothers reported fewer depressive symptoms. Pre-existing depressive symptoms continued to be an accurate predictor of later depressive symptoms. Coping again did not mediate the relationship from maternal parenting stress to depressive symptoms.

By Grade Five, the level of depressive symptoms in mothers had dropped to its lowest in the study, but remained above the risk threshold. Family environment continued to have an association with those symptoms, as did child behavior. Coping was not a mediator of maternal parenting stress and depressive symptoms.

In summary, the most consistent predictors of depressive symptoms in mothers across time were family environment (relationship with significant other), child behavior, and the presence of depressive symptoms at 14 months. Other variables (mastery and child temperament) had indirect effects on depressive symptoms through maternal parenting stress at 24 months.

### **Causal Antecedents**

The theories used to guide this study were an adaptation of Lazarus and



Folkman's (1984) Transactional Stress Theory, Abidin's Parenting Stress Theory (1992) and Pearlin, Lieberman, Menaghan, & Mullen's (1981) Mastery Theory. The Transactional Stress Theory (1984) describes stress as emanating from multiple sources or causal antecedents, while the Pearlin Mastery Theory (1981) speaks of a lack of mastery as a source of stress. Abidin's theory (1992) describes a specific type of stress, parenting stress, as coming from sources within and outside of the mother's control. In this study, the causal antecedents correlated with maternal parenting stress were the personal characteristic (of the mother) of mastery, and the environmental variables of family environment (conflict-relationship with significant other), child temperament, and child behavior. The hypothesis was that these causal antecedents, when measured at an earlier time point, almost always have later and lasting effects on the outcome of depressive symptoms.

One of the personal characteristics, mastery, was conceptualized as being associated with maternal parenting stress. Mastery involves a self-efficacy component (Pearlin, Lieberman, Menaghan & Mullen, 1981), which, when well developed, can increase feelings of worth in one's role. Although self-efficacy is generally considered a trait (Sevigny & Loutzenhiser, 2009), mastery of one's role can be altered by repeated successful performance of the tasks in that role. Worth in one's role, particularly as a parent, is indicative of the level of stress one may experience (Abidin, 1992). As described in the literature, if mastery is higher, one would expect lower levels of stress, and inversely, if mastery is lower, levels of stress rise.

In this study, mastery was measured by the Pearlin Mastery Scale (Pearlin & Schooler, 1978), and indicated fairly high levels of mastery. The Parenting Stress

Subscale used for this study indicated moderate levels of maternal parenting stress. The relationship between higher mastery and moderate levels of stress was unexpected. One would expect that in this sample of low-income, lower education level, single women, there would be lower levels of mastery and then higher levels of stress. It may be that although a mother has higher mastery, changes in negative external circumstances have a greater effect on her maternal parenting stress level. Mastery was measured in this study only once, when the child was 14 months old, so examination of mastery over time was not possible.

The direct path from mastery to coping showed a relationship in the G-5 model only. This may indicate that the mother's levels of mastery had some influence on their coping abilities. In the Taubman-Ben-Ari, Shlomo, Sivan, and Dolizki (2009) study, women who had greater mastery levels also exhibited better coping skills. However, the Taubman-Ben Ari, Shlomo, Sivan, Dolizki study was done using a sample of first-time mothers who were post-partum. Still, the implication is that a relationship between mastery and coping exists and should be further explored in studies of women beyond the post-partum (one year) period.

As an external circumstance, maternal relationship with significant other was proposed as having an effect on maternal parenting stress in the original model. In this study, that relationship was operationalized as part of the family environment, particularly family conflict. In the measurement of this variable (using the Family Environment Scale-Conflict Subscale; Moos & Moos, 1994), it was found that the mothers in this study had fairly low levels of family conflict. This was an unexpected finding, since most of the women in this study were single with many negative life

circumstances. However, the literature regarding the relationship between marital statuses and parenting stress has been inconclusive, with the consensus being that the quality of the relationship between significant others mattered more than marital status (Cain & Combs-More, 2005; Maslow et al., 2002). The fact that the women in this study had only moderate levels of maternal parenting stress could be due in part to having a stable relationship with a significant other.

Although consistent throughout the study, the family environment and depressive symptom relationship is less easily explained. In the Lazarus and Folkman model (1984), stress and coping can occur simultaneously, with a potentially negative outcome occurring as the result. They conceptualized this as an iterative process. In this study, family environment had a direct relationship with depressive symptoms, bypassing stress and coping in the G-5 model only. The level of conflict in the family was low in all models, while the depressive symptoms remained higher. This could mean that there are other factors (including the presence of higher earlier depressive symptoms) that were more positively related to the prediction of depressive symptoms. This is one aspect of the stress process that would need further examination in a longitudinal study.

Family environment (specifically family conflict) did not have a significant relationship with maternal parenting stress, coping, or depressive symptoms. The relationship between family environment, specifically family conflict, and coping has been discussed in previous studies, with no real answer as to how they are related. The general consensus is that as family conflict increases, coping mechanisms previously utilized become less effective. Because coping can include a combination of both emotion-based and problem-based strategies, it may be that coping mechanisms change

over time, and in relation to other factors. An investigation into the types of coping mechanisms used by mothers in dealing with recurrent issues of stress and depressive symptoms could help explain this relationship.

The other environmental variables in this study were associated with characteristics of the child behavior and temperament. The first, child temperament, was measured by the EASI when the child was 14 months old because it is considered a trait. It was proposed in the original model for this study that child temperament would be related to maternal parenting stress since it was clear from previous literature that the two were related. Previous studies found that the parenting stress levels were higher in mothers of children perceived as fussy or difficult (Beck et al., 2004; Oostburg & Hangeul, 2000). In this study, women perceived their children as mid-range in emotionality, and higher in lack of sociability, and they had moderate levels of parenting stress. This may indicate that mothers with depressive symptoms may naturally perceive their child as having a more difficult temperament (Berk, 2007). Child temperament may require unbiased third-party observation to be accurately rated in future studies.

The environmental variable of child behavior was also examined in this study. Previous literature about child behavior held that mothers of children with behavior problems such as hyperactivity had higher levels of maternal parenting stress (Niece & Baker, 2008; Beck et al., 2004; Anthony et al., 2005). The original model of this study proposed a relationship between child behavior and maternal parenting stress, both measured when the child was 24 months old. In this study, child behavior was rated low to moderate, indicating that the mothers felt their child did not have excessive behavior problems. Child behavior, parenting stress, and coping were also measured at the same

time (24 months), indicating that once again, earlier measurements of the causal antecedents were associated with later depressive symptoms (either directly or indirectly).

There was also a significant path from child behavior to later depressive symptoms in the mother, but only in 36 Month and Grade Five models. In the original model for this study, later depressive symptoms were an outcome conceptualized as emanating from maternal parenting stress and its causal antecedents (including child behavior), and being mediated by coping. In this study, child behavior had a direct effect on depressive symptoms earlier (at 36 months) and later (at Grade-Five), but not in Pre-Kindergarten. That forces the question of what might be happening in the mother that somehow lessens the effect that child behavior has on the development of depressive symptoms. At Pre-Kindergarten, the mother may feel some autonomy as the child is most likely toilet-trained, more independent, and preparing for school. Past child behavior may have less of an impact on the mother's mental health state as the child grows and changes. This relationship could be investigated by more closely examining the behavior of the child at multiple times longitudinally.

The last variable measured as a causal antecedent in this study was pre-existing depressive symptoms. In the original study model, pre-existing depressive symptoms were conceptualized as being a causal antecedent of maternal parenting stress. However, it became clear that the relationship of pre-existing depressive symptoms to later depressive symptoms could be better understood if tested as a direct effect instead of through maternal parenting stress and coping. As predicted by previous literature, pre-existing depressive symptoms in mothers often persist at low levels and progress as the

child ages (Cornish et al., 2005; Seta et al., 2005; Kanter, Rush, & Borodino, 2008). The women in this study reported moderate levels of depressive symptoms, and there remained a strong relationship between the earlier symptoms and the later ones. This relationship was evident in the 36 Months, Pre-Kindergarten, and Grade-Five Final Models, indicating that in this sample, the presence of pre-existing depressive symptoms was associated with later symptoms, in combination with the measurement of other factors.

In summary, as hypothesized, the causal antecedents of mastery, family environment, child behavior, and temperament had relationships with maternal parenting stress. These relationships remained consistent and stable throughout the course of the study, up to when the child was in grade five. The other proposed causal antecedent, pre-existing depressive symptoms at 14 months, was related to later depressive symptoms at 36 months, Pre-Kindergarten, and Grade Five.

### **The Direct and Indirect Effects of Maternal Parenting Stress on Depressive Symptoms**

The other relationship proposed in this study was one from maternal parenting stress to depressive symptoms. This was posited in the original model as being not only mediated by coping, but also as maternal parenting stress having a direct effect on depressive symptoms. Both of these theories were discussed in previous literature. Coping has been proposed as either a mediator or a moderator in the stress process (Wadsworth et al., 2005). A mediator explains the presence of a condition, while a moderator defines under what circumstances the condition exists. Overall, the stress process in mothers has been unclear.

In this study, maternal parenting stress was reported as moderate by the mothers of children aged 24 months. The mothers also reported that their coping at 24 months (as measured by the F-COPES) was relatively high. The F-COPES used in this study had been revised to include the original Reframing subscale, plus four additional scales which reflect the mother's ability to access support for herself and her family. The results of the current study suggest that although the mothers in this study had some parenting stress, they were able to cope well. Their ability to reframe, or reappraise situations to make them more manageable, was especially high. This is contrary to the LeCuyer-Maus (2003) study, which found that women with less education were not able to adequately appraise situations as manageable. This was also not supported in the original model hypothesized for this study.

The stress-coping connection was not clear in this study, across all study time points. In the current study, coping was proposed to have a mediational role, as originally theorized by Lazarus and Folkman (1984). Coping has been proposed as a mediator or moderator of stress and depression in previous studies. Some authors (Samuels-Dennis, 2007; Lebanon, Brooks-Gunn & McCormick, 2001) found that coping did not moderate stress and depressive symptoms, while Wadsworth et al. 2005, found a mediational role of coping earlier, and a moderational role later in adulthood. In the current study, coping was not found to have a mediational role between maternal parenting stress and depressive symptoms.

Additionally, a relationship between stress to depressive symptoms was posited in the second research question. This was not found to be the case in this study, as maternal parenting stress had no direct effect on the development of depressive symptoms later.

This does not follow the stress theory proposed by Lazarus and Folkman (1984), where the level of coping tempers the effect of stress on an adverse outcome. Lazarus and Folkman (1984) felt that coping was the key to general stress theory, and that the addition of this cognitive piece was essential to understanding the stress process.

This did not prove to be the case in the current study in all of the models tested, indicating that although the maternal parenting stress was higher, coping did not help explain the relationship between that stress and depressive symptoms. This could be because of the way coping was measured in this study (total family coping), as opposed to individual coping styles of mothers. The smaller sample size in this study could also be a factor for this effect.

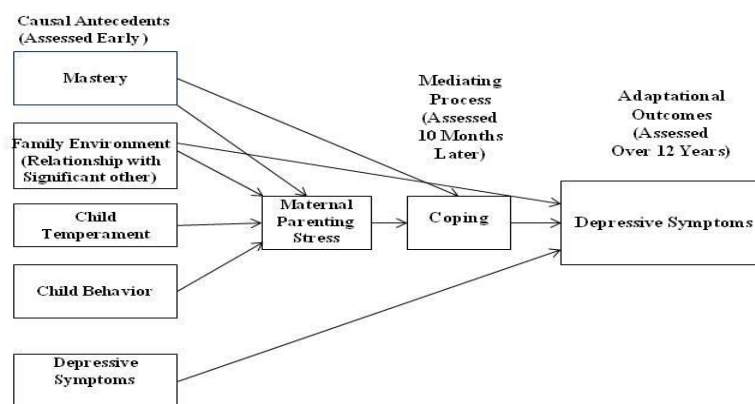
### **Examining the Original Conceptual Model**

The original conceptual model for this study (*Figure 1*) was used to guide this study. In that model, the causal antecedents of personal characteristics of the mother (mastery and pre-existing depressive symptoms) were hypothesized to have a direct effect on maternal parenting stress. Environmental variables (child behavior and temperament, and relationship with significant other) were also hypothesized as having a direct effect on maternal parenting stress. Coping was seen as a mediator from maternal parenting stress to outcome depressive symptoms. There was also a hypothesized direct effect from maternal parenting stress to depressive symptoms.

After this study, the model requires some revisions. Although all of the causal antecedents had a direct effect on maternal parenting stress, some also had direct effects on coping and on depressive symptoms. There was always a direct effect from pre-existing depressive symptoms to outcome depressive symptoms. There was no evidence



of a significant path from maternal parenting stress to later depressive symptoms (see *Figure 8*).



*Figure 8.* The Relationship Among Maternal Parenting Stress, Coping, and Depressive Symptoms-Revised

## Implications

All research findings add to the knowledge pool of a discipline, but the application of knowledge is what makes it useful. There are implications for the findings of this study in four main areas: theory, research, practice, and policy. In the area of theory, the findings suggest that although general stress theories such as Lazarus and Folkman's (1984) Transactional Stress Theory accurately describe the stress process, the addition of other specific stress theories must be considered when addressing specific populations. General stress theories help explain the stress process, but more may be needed to fully describe the process in populations with specific characteristics such as parents.

**Theory.** The specific parenting stress theory of Abidin (1992) states that parenting stress emanates from many sources. The findings of this study support this

theoretical tenet. Parenting stress in mothers appears to come from both external and internal factors, some of which are out of the mother's control. It appears that the combination of maternal characteristics, child characteristics, and environmental factors are good predictors of a mother's stress level, coping, and the development of later detrimental outcomes such as depressive symptoms. Maternal characteristics such as pre-existing depressive symptoms must be considered when evaluating the development of later depressive symptoms. Also, the presence of depressive symptomatology should always be considered.

The model used for this study was an adaptation of the Lazarus and Folkman model (1984). Although the Lazarus and Folkman model (1984) remains valuable in guiding stress and coping research, there are some things to consider. One is that the model remains a general stress and coping theory, and may need to be adapted to accurately address the sample being studied. In this study, two other theories were combined with the Lazarus and Folkman model in order to address the special considerations that this sample of low-income mothers required. Other theories related to parenting, coping with life circumstances, and personal characteristics may need to be considered in other studies.

Additionally, although the Lazarus and Folkman theory describes stress as a process, the adapted model failed to reflect the iterative nature of stress-coping-outcome sequence. The time points in this study made it clear that the linear approach to stress, coping and adaptation is not as useful in guiding this type of study. A better approach may be to develop and test theories which are more circular in nature.

**Research.** In the realm of research, the findings of this study have many

implications. This study was one of the few longitudinal maternal stress studies in recent years. Sommerfield and McCrae (2000) called for more longitudinal studies to better understand the stress process. Because this study yielded some new and interesting findings, it would be beneficial to continue to look at the stress process and the outcomes that occur over time. More longitudinal studies could better explain the complex relationship between causal antecedents and later detrimental outcomes of stress.

There is the need for more longitudinal studies of stress with bigger sample sizes. It is well known that smaller sample sizes limit the effect and power of the study's results. Although these results may still be worthy, they will have greater meaning and impact if the power increased. One way to do that would be to increase the sample size in future stress research studies. The focus of the original Pathways Project was on children, not mothers. As such, the data available for this study were limited to what was pertinent to the mothers. That also limited the sample size available for this study and the analytical approach. Structural equations modeling and path analysis require large sample sizes to achieve the power desired for a significant result. However, since this was a secondary analysis, the data had already been gathered and there was no possibility of increasing the sample size.

There is also a need for additional research using other instrumentation that measures specific causal antecedents, stress, and coping. Studies that use other valid measures would give more information on this complex relationship. The use of other analytic techniques such as some of the qualitative approaches would add to the understanding of this as well.

Additionally, this study holds implications for the advancement of nursing

science. Many of the previous works on depressive symptoms in mothers has been confined to other disciplines (psychology and medicine in particular). The fact that nurses are integrally involved in the care of patients with depressive symptoms serves as a reminder that nursing must be involved in the study of assessment and interventions applicable to this population.

**Practice.** The implications for the findings of this study are nursing practice based, although some cross other disciplines. For nursing practice, this study illustrates the need for the continued assessment of mothers with multiple stress factors. The assessment should include not only observation of the mother's stress level and pre-existing depressive symptoms, but of her coping abilities. It is important that the assessment for postpartum depressive symptoms continues, but also that there are assessments periodically throughout the childbearing years, as this study illustrates that depressive symptoms can occur much later. The timing of and access for those assessments is something that nursing professionals can and should be involved in. There is an opportunity for continued assessment and referral when the patient returns for outpatient postpartum care, and for well-and sick-child visits to the pediatrician. Continuing assessment for depressive symptoms in other venues where mothers commonly appear could be quick, and prove extremely beneficial to the mother, child, and the family.

Beyond the assessment for stress and depressive symptoms in mothers, there is the need for early intervention once those are identified. As previously discussed, enrollment in early intervention programs for both the parent and child could be implemented at any time throughout motherhood. These interventions may include

counseling referrals, programs which help develop early childhood cognitive and socialization skills while providing respite for the mother, and peer groups which support and validate the challenges of motherhood. The study of the efficacy of these programs is also important, as new interventions emerge and as needs change (IOM, 2009). Without intervention, the stress and depression cycle will likely continue to affect family functioning.

**Policy.** As called for earlier, this study illustrates the need for improving access to mental health care by increasing the number of sites for referral, assessment, and treatment. The accurate and consistent use of postpartum depression scales in access sites is necessary. Beyond that, ongoing assessment for depressive symptoms should continue after the first postpartum year in easy-to-access sites. For mothers, the access sites may be where their children are also cared for, as these may offer better access to care than those designed for women's health care only.

Further legislative efforts should be focused on providing low-cost mental health care for those who are employed with companies of less than 50 employees, and for those who are not employed at all. All employer-provided insurance (no matter how many employees make up the company) should cover mental health services at the same level as those for somatic illness. That is currently not the case. Out-of-pocket expenses and annual and lifetime limits should be the same, no matter what the diagnosis.

### **Strengths and Limitations**

As discussed earlier, one of the strengths of this study is that it was longitudinal. This study looked at early indicators (at 14 and 24 months) of maternal parenting stress and coping and the outcome of depressive symptoms later (at 36 months, Pre-

Kindergarten, and Grade Five). The longitudinal design allows for the change of many factors of stress over time, but also helps describe the outcome of chronic or cumulative stress. The fact that the early causal antecedents could have a strong relationship with such later outcomes speaks to the value of continuing to examine the stress process in mothers over time.

This study was limited by the fact that it was a secondary analysis of an original data set. Secondary analyses, although useful in verifying the results of previous studies, are inherently a weaker research design. A stronger design would have included a primary study with more specific measures of the variables.

This data set for this study, although quite large with many variables, was originally gathered to look at outcomes in the child, not the mother. Because so many variables were available, it was not difficult to develop constructs to reflect maternal characteristics and outcomes. However, use of a data set for what it was not originally intended can be cumbersome and manipulative.

As with any research study, causation can never be proven, only implied. In this study, although the design closely followed a recursive model, causation was never established. The flow of the causal antecedents to stress and coping, and then to depressive symptoms implies that there is a direct, positive relationship that progresses over time. However, no design can fully capture and control for all factors that may be confounding that progression.

The sample size for this study was small, and not enough to invoke the power and effect originally desired. The sample size, if increased, may have been sufficient to significantly affect power. However, because this study was a secondary analysis, the

sample could not be increased beyond the original sample used in the Pathways Project. Future research designs would need to allow for at least 200 subjects, plus a sizable amount to allow for attrition.

Additionally, the small sample size was not necessarily conducive to analysis by path analysis. Path analysis is designed to estimate not only the relative importance of each path, but the overall fit of the data to the default model. One condition of this is an adequate sample size to detect any difference between the fully saturated model and the trimmed model. The less-than-ideal sample size of this study brings into question the validity of the model fit results.

Finally, although the measures used to represent the variables in each model were psychometrically sound, not all were sufficient to adequately measure the variable. This was the case for the variable for family environment, which was measured by the Family Environment Scale, Conflict subscale. This subscale, which addresses conflict with a significant other, was useful in establishing some aspects of the mother's relationship with a significant other, but probably did not capture the whole relationship, and certainly not that of the whole family environment. In the future, other subscales of the Family Environment Scale should be considered for use in operationalizing that variable.

### **Summary**

This study sought to develop more understanding of the relationship among maternal parenting stress, coping, and depressive symptoms of low-income mothers. That relationship was proposed in stress models as having causal antecedents including maternal and child characteristics. The causal antecedents were proposed as having a relationship with maternal parenting stress and depressive symptoms, which is mediated

by coping. These relationships were examined in mothers over time, from age 14 months of the child, to the time when the child was in Grade Five.

This study found that the relationship among maternal parenting stress, coping and depressive symptoms is complex, but changes very little over time. The proposed associations between the causal antecedents and stress did exist weakly. There was no support for the mediational role of coping. There was no support for the hypothesized direct relationship between stress and depressive symptoms. There were also other relationships present which had not been hypothesized originally.

Limitations of this study included a small sample size which limited power, design limitations caused by secondary analysis, and a limited availability of appropriate measures. One of the strengths of the study is that it was longitudinal, which made for a better understanding of the proposed relationships. These limitations and strength suggest that future research in this area include longitudinal designs with large sample sizes and original data. The inclusion of many measures to describe the variables is also essential.

In summary, this study helped to define the relationship between maternal parenting stress, coping, and depressive symptoms in mothers over time. This relationship is complex and iterative, with many factors coming into play. An understanding of this relationship will not come from one study, but from many using stronger and more rigorous research designs. The continued examination of the relationship among maternal parenting stress, coping, and depressive symptomatology is essential to alleviating the detrimental outcomes associated with it.



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**Appendix A: Bivariate Correlations**

	BH36	BHPK	CB	C14	C24	C36	CPK	FE14	FE24	FE36	PSI14	PSI24	PSI36	M14	D36	DPK	DG5	BH24	T14	D14	
BHPK	.38**																				
CB	.03	.16																			
C14	-.09	.10	.41**																		
C24	.02	.04	.33**	.32**																	
C36	.01	.10	.30**	.37**	.49**																
CPK	.09	-.05	.28**	.31**	.34*	.43**															
FE14	.09	.01	-.05	-.04	-.14	.09	-.01														
FE24	.13	.16	.05	.22*	.00	-.02	.08	.28*													
FE36	.04	.13	.12	.01	.03	.06	.11	.16	.43**												
PSI14	.17*	.11	-.05	-.14	-.16*	-.15	-.10	.28**	.23	.09											
PSI24	.41**	.21*	-.10	-.06	-.07	-.13	.17*	.24*	.26**	.22*	.50**										
PSI36	.45**	.21*	.03	-.04	-.10	-.18*	.05	.17*	.24*	.27**	.53**	.66**									
M14	.04	-.04	.07	.08	.18*	.17*	.06	-.27**	-.17*	-.12	-.49**	-.30**	-.229*								
D36	.27**	.23*	-.04	-.10	-.05	-.12	-.10	.22*	.23**	.29**	.35**	.26**	.42**	-.20*							
DPK	.00	.16*	-.03	-.08	-.05	-.09	-.20	.13	.19*	.35**	.21*	.13	.14	-.20*	.33**						
DG5	.07	.14	-.01	-.07	-.28*	-.05	-.16	.24*	.12	.14	.32**	.21*	.32*	-.26*	.47**	.57**					
B24	.48**	.33**	-.08	-.07	-.54	-.02	.01	.10	.16*	.09	.39**	.43**	.39**	-.09	.27**	.06	.25*				
T14	.05	.08	.01	-.01	.04	.11	.15	-.06	.14	-.09	.19*	.24*	.05	-.09	.01	.17*	.19*	.26**			
D14	.10	.07	-.08	-.17*	.00	-.10	-.16	.19*	.11	.19*	.42**	.21*	.33**	-.33**	.43**	.28*	.43**	.18*	.15*		

KEY  
 BH=Child Behavior  
 C=Coping  
 FE=Family Environment  
 PSI=Parenting Stress  
 M=Mastery  
 D=Depression  
 T=Temperament

\*p<.05

\*\*p<.01



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**New Study - Notice of IRB Exempt Status**

**Date:** December 12, 2011  
**To:** Rachel Schiffman, PhD  
**Dept:** College of Nursing  
**Cc:** Karen Foren Lake, MSN  
**IRB#:** 12.193  
**Title:** The Relationship among Maternal Parenting Stress, Coping and Depressive Symptoms

After review of your research protocol by the University of Wisconsin – Milwaukee Institutional Review Board, your protocol has been granted Exempt Status under **Category 4** as governed by 45 CFR 46.101(b).

Unless specifically where the change is necessary to eliminate apparent immediate hazards to the subjects, any proposed changes to the protocol must be reviewed by the IRB before implementation. It is the principal investigator's responsibility to adhere to the policies and guidelines set forth by the UWM IRB and maintain proper documentation of its records and promptly report to the IRB any adverse events which require reporting.

It is the principal investigator's responsibility to adhere to UWM and UW System Policies, and any applicable state and federal laws governing activities the principal investigator may seek to employ (e.g., [FERPA](#), [Radiation Safety](#), [UWM Data Security](#), [UW System policy on Prizes, Awards and Gifts](#), state gambling laws, etc.) which are independent of IRB review/approval.

Contact the IRB office if you have any further questions. Thank you for your cooperation and best wishes for a successful project

[Redacted Signature]

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