May 2014

The Relationships Between Stress, Social Support, Maternal Self-Efficacy, Maternal Depression, Maternal Reports of Child Demandingness and Maternal Reports of Child Social and Emotional Quality of Life in a Sample of Overweight and Obese Women Two Years Post Childbirth

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Abstract

Emotional problems in the postpartum period affect both mothers and children. This is particularly salient for mothers who are overweight or obese, who have been shown to be more at risk for adverse postpartum outcomes than mothers who were of a normal weight before pregnancy. The current study examined the relationships between maternal stress, maternal depression, social support, maternal self-efficacy, maternal perceptions of child demandingness, and child social and emotional quality of life (as the outcome variable) in the two years after a second childbirth among a sample of overweight and obese women. The subjects of this analysis were the mother-child dyad, specifically relating to the mother’s perceptions of the ‘demandingness’ of her older child (not the child to which the mother had recently given birth). This study was grounded in Bandura’s theory of social cognition, and looked at the forces that converge to influence mother’s perceptions of child social and emotional quality of life among a group of obese and overweight women approximately two years post childbirth. This study was a secondary data analysis, and multiple regression analysis was used to determine what predicted perceptions of child social and emotional quality of life. Results showed that maternal self-efficacy and maternal reports of child demandingness significantly predicted mother’s report of her child’s social and emotional quality of life, with maternal reports of child demandingness emerging as a slightly stronger predictor. Maternal depression, social support, and stress had far less predictive value. Clinicians may use the results from this study to more effectively work with overweight and obese mothers in the postpartum period who may struggle with negative perceptions of their children and child behavior problems.
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by

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Dissertation
Submitted in partial fulfillment of the requirements for the degree of
Doctor of Philosophy in Marriage and Family Therapy.

Syracuse University
May 2014
Acknowledgments

So many people have been a part of my journey and I have many people to thank. This dissertation would not have been possible without the generosity of Marissa Stroo and the rest of the KAN-DO research team at Duke University, who provided me access to this data set. I cannot thank you enough. I also want to thank the faculty at Syracuse University who facilitated my paradigmatic shift, never let me sit comfortably in my own privilege, and changed the way I experienced the world—particularly Suzanne Haas-Cunningham, Ken Hardy, Jonathan Sandberg, Linda Stone Fish, and Mona Mittal.

Thank you to my doctoral cohort who challenged me, helped me find voice, and taught me about difficult dialogues, intimacy through intensity, and remaining in relationship in and through adversity—particularly Kiran Arora, Nickolas Jordan, Liang-Ying Chou, Meng-Ning Wang, Amy Zavada, Ileana Ungureanu, Tim Baima, and Cadmona Hall. Thank you to Mel Swanson for your encouragement, guidance, and invaluable statistical expertise. Thank you to Ellen deLara, Dyane Watson, Kyle Possemato, Mary Ann Middlemiss, and Suzanne Haas-Cunningham for agreeing to be on my committee and helping me finally reach this finish line.

Thank you to my mother Martha, and my father Bert, who remained in relationship with me in encouraging and loving ways through incredible trial and struggle. I know I have not always made it easy for you, but you have always helped me in every way you could. Thank you to Adam, the father of my children, without whose support this degree would never have been completed. Thank you to Jennifer, Nanda, Thomas, Gary, Wilson, and Kristen (in no particular order). Your editing assistance, shared meals, long afternoon walks and runs, love, support, and general cheerleading has meant more than you know.
Thank you to my children, for keeping me humble and blessing me beyond all measure.

Thank you to those who have loved, encouraged, and accepted me at moments when I had fallen flat on my face, and all felt lost. It has been an incredible journey that I was not always sure I would finish. A special thank you to Linda Stone Fish who would not let me give up on this degree. I am so grateful for all of you.
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Through the blur, I wondered if I was alone or if other parents felt the same way I did - that everything involving our children was painful in some way. The emotions, whether they were joy, sorrow, love or pride, were so deep and sharp that in the end they left you raw, exposed and yes, in pain. The human heart was not designed to beat outside the human body and yet, each child represented just that - a parent's heart bared, beating forever outside its chest.

- Debra Ginsberg

**Chapter I: Introduction to the Study**

This quote speaks to the subject of the study, which is motherhood and the emotions that go with it. While pregnancy and childbirth are often characterized and widely perceived as universally joyous events, for many women the postpartum period is a time of emotional vulnerability and stress. This dissertation spoke to this time of life and the factors that converge to create different mothering and child outcomes.

My expectation in studying this population was that I would find connections between mothers’ perceptions of how demanding their children are and their perceptions of how their children are doing emotionally and socially. I hypothesized that mothers who perceive their children as being very demanding would perceive their children to have a poorer social and emotional quality of life. In the sections below, I review the literature that led me to believe this, the gap that my study will fill in the literature, and the methods by which I showed these connections.

The greater context of the study is the period of life after a woman gives birth to a child. There is a great deal of research outlining the upheaval and change that many women experience during this time of life. Resulting from this literature is an emphasis on how the ways in which a mother experiences, processes, and behaves during this time of life inform her mothering and her perceptions of her children’s functioning.
Description of the Problem

Emotional problems around pregnancy and childbirth have far reaching implications, not only for mothers and for family life, but also for children (Snyder, Cramer, Afrank, and Patterson, 2005). Many women suffer from some type of prenatal or postnatal psychopathology, ranging from mild to severe (Leahy-Warren & McCarthy, 2007). Children of depressed and stressed mothers have been found to have more behavior problems (Bates, Maslin, & Frankel, 1985), cognitive problems (Kingston, Tough, & Whitfield, 2012), and emotional problems (Pomerantz & Dong, 2006), even years after the postpartum period (Fihrer, McMahon, & Taylor, 2009). For women who are overweight or obese, this problem takes on increased significance (Carpenter, Hason, Allison, & Faith, 2000; Carter, Wood Baker, & Brownell, 2000; LaCoursiere, Baksh, Bloebaum, & Varner, 2006; Lacourseire, Barrett-Connor, O’Hara, Hutton, & Vamer, 2010; Sundaram, Harman, Peoples-Sheps, Hall, & Simpson, 2012).

The focus of this study was the connections between maternal depression, stress, social support, maternal self-efficacy, and maternal perceptions of child demandingness in the two years after childbirth among a sample of overweight and obese women. The outcome variable in this study was maternal perceptions of child social and emotional quality of life, and how it is ultimately affected by the interactions of the aforementioned factors.

Need for the Study

Many women experience difficulties adjusting emotionally after they have given birth (Kingston et al., 2012). This is of particular salience to overweight and obese women, as studies have shown that women with a pre pregnancy Body Mass Index (BMI) of 25 experience symptoms of depression in the postpartum period at a significantly higher rate than their counterparts of a normal weight. This is particularly true for women who were obese prior to
pregnancy (Anderrson, Sundstrom-Poromaa, Wulff, Astron, & Bixo, 2006; Carter et al., 2000; Lacoursiere et al, 2006). Rates of depression in the postpartum period and beyond vary, but even under the best of circumstances the transition to mothering, and/or the added responsibility of an additional child, can make for a stressful and difficult adjustment for many women (Wisner et.al, 2013). Often women do not receive the social support that they need, and for many women this can be a lonely time (Razurel, Kaiser, Sellenet, & Epiney, 2013).

This study sought to generate new knowledge around the connections between stress, maternal depression, perceptions of child demandingness, maternal self-efficacy, and maternal perceptions of child social and emotional quality of life. It is known that maternal perceptions, both of themselves and of their children, have a significant impact on child outcomes (see Conroy et al., 2012). There is also a documented link between maternal depression, social support, and stress (see. Leung, 2002). As mentioned previously, there is also a connection between obesity and depression (Carpenter et al., 2000; Carter et al., 2000; LaCoursiere et al., 2006; Lacourseire et al., 2010; Sundaram et al., 2012).

Based on the available literature, these connections make sense. What is less understood is the causality and the direction in which these processes converge to create different outcomes (Jones & Prinz, 2005). If the processes that contribute to child outcomes are to be understood, it is critical that what drives and influences the factors involved are also understood. This study endeavored to untangle these connections by utilizing an existing dataset that recorded the experiences of a sample of mothers and their children who were participating in an intervention designed to prevent childhood obesity. I hypothesized that most of the women in this study would view their children as demanding, and report that their older children had poorer emotional and social functioning.
Overview of the Study

This study aimed to delineate the connections between maternal depression (with an emphasis on overweight and obese women), stress, social support, maternal self-efficacy, maternal perceptions of child demandingness, and maternal perceptions of child social and emotional quality of life. Of particular interest in the analysis were the relationships that exist between maternal self-efficacy, maternal reports of child demandingness, and child social and emotional quality of life. To date, I was unable to find any published research studies that measured relationships between maternal self-efficacy and maternal reports of demandingness, and its subsequent effects on maternal perceptions of child outcomes. It is important to understand the relationships between these variables from the perspective of health care providers who may work with mothers of young children, so that they may effectively intervene and address maternal cognitions that may adversely affect their perceptions of child social and emotional quality of life, particularly among overweight and obese women.

In the next section, I will define terms that will be used frequently throughout this dissertation. Then I will explain its theoretical underpinnings. Then the extant literature on women, obesity, pregnancy and depression will be reviewed, followed by maternal depression, stress, social support, maternal self-efficacy, and maternal perceptions, with a particular focus on the effects of the former on reports of child social and emotional quality of life in the postpartum period. Then the gap in the literature that this dissertation aimed to address will be identified. Following the review of the literature, the methods that will be used to measure the relationships between the constructs of interest are described.
Chapter II: Literature Review

This dissertation seeks to illuminate the relationship between maternal depression, social support, stress, maternal reports of child demandingness, maternal self-efficacy processes, and the ways these factors ultimately impact maternal perceptions of child social and emotional quality of life. Specifically, I was looking at the relationship between maternal reports of child demandingness and child social and emotional quality of life. This review of the literature represents a combination of existing theoretical and research findings regarding mothers’ emotional and social resources during the period approximately two years after childbirth, and perceptions of their children’s social and emotional quality of life.

This chapter begins with a list of definitions for frequently used terms in this dissertation. Then I explain the theoretical underpinnings of this study. This is followed by the available literature on women, obesity, pregnancy and depression. Next I review the impact of maternal mental health in the postpartum period, including symptoms, prevalence, risk factors, and connections with mothering and maternal perceptions of child social and emotional quality of life. Then, social support, and the ways in which it impacts the postpartum period, will be reviewed. Also interwoven into all sections is the impact of stress on this period of life. The available literature on maternal self-efficacy is reviewed next, followed by the research based literature on the impact of and connections between maternal self-efficacy and other constructs of interest. These will include maternal depression (including its relationship to obesity), stress, social support, and mothering and child outcomes. Of particular interest is the ways in which maternal self-efficacy may serve as a buffer.

Following this section, the extant literature regarding maternal perceptions of child behavior and subsequent child and mothering outcomes will be reviewed. Of particular interest
in this section is maternal perceptions of child demandingness, a construct that’s relationship to maternal self-efficacy is not clear. Finally, the ways in which this study will bridge the gap in the available literature, and will add new knowledge to the field, will be reviewed.

**Delineation and Definition of Terms**

**BMI** - BMI refers to Body Mass Index. A BMI of over 25 is considered overweight, and over 30 is considered obese (National Institutes of Health, National Heart, Lung, and Blood Institute, 1998).

**Maternal self-efficacy**- Kohlhoff and Barnett (2013) define self-efficacy as “an individual's belief in his or her ability to successfully perform a given task” (p.1). In this dissertation, maternal self-efficacy will refer to a mother’s belief that she has the ability to mother well and influence her child or children in desired ways. This is a broadly defined concept consistent with current conceptualizations (Jones & Prinz, 2005). This will be measured by the competence subscale of the Parenting Stress Index (PSI, Abidin, 1990), which will be described in more detail later in the proposal.

**PSE**- PSE refers to parental self-efficacy. Many articles use this abbreviation.

**Maternal depression** - Women who score at least a 13 on the Edinburgh Postnatal Depression Scale (EPDS, Cox, Holden & Sagovsky, 1987), two years after childbirth will be referred to as having maternal depression.

**Maternal reports of child demandingness**- This term will refer to maternal perceptions of how demanding a mother perceives her child to be. This will be measured by the demandingness subscale of the Parenting Stress Index (PSI, Abidin, 1990), which will be described in more detail later in the proposal.
**Child social and emotional quality of life** – In the literature review, this term will refer generally to child emotional and social outcomes. In the methods section, this term will refer to maternal scores on the social and emotional subscales of the Pediatric Quality of Life Inventory, and inventory that measures maternal perceptions of children’s functioning (PedsQL, Varni, Seid, & Rode, 1999). This measure will be described in detail later in this dissertation.

**AMP study** – The AMP study refers to the Active Mothers Postpartum study, which was the precursor to the KAN-DO Study.

**KAN-DO study- Kids and Adults Now! Defeat Obesity** - The KAN-DO study refers to the Kids and Adults Now! Defeat Obesity study. This is the main study from which the data set was taken.

**Theoretical Underpinnings**

This dissertation looks at self-efficacy within the context of mothering. The discussion begins with a description of self-efficacy in general, as posited by Bandura, Barbaranelli, Caprara, and Pastorelli (1986) and Bandura (1989). The conversation then turns to self-efficacy as it relates to parenting.

**General self-efficacy.** Bandura’s (1989) theory of social cognition stated that self-efficacy is created by individuals acting in confluence with the influences of the environment. Thus, people are seen as having agency over their own actions via reciprocity with their environment. Other contextual factors in their sphere of being influence the way in which they impact their environment through their behavior. In other words, people impact their environment, and their environment impacts them, in a mutually reinforcing manner.

Bandura (1989) stated that people with a high self-efficacy envision positive outcomes for their own behavior. They feel confident and believe that positive outcomes will result from
their actions and that they are able to influence their environments. Achieving success improves self-efficacy, and self-efficacy improves the likelihood of success, thus the reciprocal nature of the relationship.

Bandura et al. (1986) also addressed the sources of self-efficacy. They stated four contributing factors to the formation of self-efficacy. They were: memories of past success of task completion, the vicarious learning of watching others perform a task, verbal reassurance that one can complete a task, and the physiological response that one experiences during the completion of a task that denote one’s internal state while performing a task.

**Maternal self-efficacy.** Building upon feelings of general self-efficacy, there is also efficacy specific to parenting, often called parental self-efficacy. In this study, it will be referred to as maternal self-efficacy, as this study examines the experiences of mothers only. Feelings of parental self-efficacy can be defined as confidence in one’s own ability to parent well. The term ‘maternal self-efficacy’ refers to feelings of efficacy that is specific to the maternal role.’ Kohlhoff and Barnett (2013) define self-efficacy as “an individual's belief in his or her ability to successfully perform a given task” (p.1).

Montigny and Lacharité (2005) found that four factors contributed to perceived parental self-efficacy. The four factors included positive experience of mastery of parenting tasks, parenting experiences that were vicarious in nature, being verbally persuaded, and having appropriate physiological and affective experiences. The results of their concept analysis resulted in the definition of the perception of parental efficacy as the ‘beliefs or judgments a parent holds of their capabilities to organize and execute a set of tasks related to parenting a child (Montigny & Lacharite, 2005, p. 390).

Coleman and Karraker (2000) also spoke to the variable definitions of parental self-
efficacy, and laid out the general concepts that have emerged in the literature pertaining to definitions of parental self-efficacy. Citing the available literature on parental self-efficacy, Coleman and Karraker (2000) listed: 1) task specific efficacy, which is defined as efficacy related to specific parenting behaviors, such as discipline. (Teti & Gelfand, 1991); 2) domain specific efficacy, which is task specific efficacy combined “into a single measure of self-efficacy within the broader domain of parenting” (Coleman and Karraker, 2000, p. 13) (Bandura et al., 1996), 3) global or domain general efficacy, which is feelings of general efficacy related to parenting tasks (Dumka, Stoerzinger, Jackson, & Roosa, 1996), and 4) general self-efficacy, which conceptualizes parenting self-efficacy as an extension of a larger character or personality trait that is relatively stable across multiple domains of functioning, including parenting (. Tipton & Worthington, 1984).

Maternal self-efficacy will refer to a mother’s belief that she has the ability to mother well and influence her child or children in desired ways. This is a broadly defined concept consistent with current conceptualizations (Jones & Prinz, 2005). This study used the parenting competence scale of the Parenting Stress Index (PSI, Abidin, 1990) to measure maternal self-efficacy. The PSI is considered to be a good measure of general parental self-efficacy (Crncec, Barnett, & Matthey, 2010). As such this study speaks to general feelings of maternal self-efficacy, and does not address domain or task specific perceptions because the measure that is being used is not considered to reliably or validly measure those types of parental self-efficacy.

It is worth noting that there is a limited amount of research that has been done on the parenting self-efficacy experiences of fathers. For example, Osman-Lambrinos (2009) studied the relationship between working mothers and child adjustment in two parent households, and found that fathers’ feelings of self-efficacy mediated this relationship. For the purposes of this
study, parental self-efficacy will refer to maternal self-efficacy unless otherwise specified, both because the majority of the literature covers mostly the experiences of women, and also because this study utilizes a sample of women.

**Women, Obesity, Pregnancy and Depression**

Carpenter et al. (2000) looked at the connections between body weight and clinical depression, as well as suicidal ideation and attempts in a large population (n=40,086) based sample of African American and Caucasian men and women. The researchers found that higher body weight was the most significant predictor of depression and suicidality. Covariates included age, income, education, disease status, and drug and alcohol use. Results differed along gender lines. For women, higher body weight was connected to both depression and suicidal ideation. For men, the opposite was true. Having a lower body weight was associated with higher level of depression and suicidality.

There is empirical evidence that strongly favors a connection between pre-pregnancy obesity and depression after childbirth. However the literature is somewhat limited. I was not able to find any published articles that explored maternal depression in obese women at approximately two years postpartum (Anderrson et al., 2006; Carpenter et al., 2000; Carter et al., 2000; LaCoursiere et al., 2006; Lacourseire et al., 2010; Sundaram et al., 2012).

Anderrson et al. (2006) studied the connections between prenatal and postpartum depression and anxiety in a large sample (n=1,555) of Swedish women. They were assessed for depression and anxiety during pregnancy, and again at three to six months postpartum. Results showed that women in this study had higher rates of antepartum depressive symptoms than postnatal depressive symptoms, although symptoms in the postpartum period were more likely to meet full diagnostic criteria for clinical depression and anxiety. Pre-pregnancy obesity, as well as
being single and having a previous psychiatric condition, were significantly associated with depression and anxiety in the postpartum period.

Carter et al. (2000) recruited 64 pregnant women and assessed them several times until they were 14 months postpartum. They were assessed for pre pregnancy and postpartum BMI, and also for attitudes around eating, symptoms of depression, and symptoms of anxiety. Their results showed that women with a BMI of 25 or above (the overweight category) (National Institutes of Health, National Heart, Lung, and Blood Institute, 1998) in the pre pregnancy period had more depressive symptoms at four and 14 months postpartum, and more anxiety at four months postpartum.

Lacoursiere et al (2006) looked at the relationship between pre pregnancy BMI and postpartum depression in a large population based sample, in one of the few studies that have looked at obesity and postpartum depression specifically. The researchers found that women with a normal BMI had the lowest reported rates of postpartum depression. Conversely, women who were overweight or obese prior to pregnancy were twice as likely to report depressive symptoms. Also, obese women were more likely to report having had significant trauma and other emotional stressors during the antenatal period than women who were of a normal weight.

Lacoursiere et al. (2010) conducted a cohort study among 1,053 pregnant women who delivered babies between 2005 and 2007 in Utah. They recruited women just after giving birth and obtained demographic, psychiatric, and biomedical information, including pre pregnancy height and weight, and how much weight they gained during pregnancy. Researchers calculated their BMI based on the women’s self-reported information, and women were classified as underweight, normal weight, pre-obese, or obese, based on pre pregnancy weight (National
Institutes of Health, National Heart, Lung, and Blood Institute, 1998). At approximately six to eight months after giving birth, the women were screened for depression using the Edinburgh Postnatal Depression Scale (EPDS), the same measure to be used in the present study. Women were considered to meet the criteria for depression if they scored 12 or higher on the EPDS. Results showed that women in the ‘obese’ category pre-pregnancy were significantly more likely to score positive for postpartum depression, when compared to women of ‘normal’ weight.

Sundaram et al. (2012) attempted to delineate the connections between pre pregnancy BMI and symptoms of postpartum depression, and tested the possible moderating effect of prenatal care utilization. The researchers used data from the 2004 and 2005 Pregnancy Risk Assessment Monitoring System (PRAMS) in 15 states. This analysis did not show a moderating effect of prenatal care utilization between pre pregnancy BMI and symptoms of postpartum depression, but results did show that women’s depressive symptoms were significantly affected by many other variables, such as diabetes before and during pregnancy, hypertension, bed rest, and other medical risk factors. It was suggested that future research further explore the connections that may moderate or mediate the associations between pre-pregnancy BMI and symptoms of postpartum depression.

This study was designed to further explore the connections between pre pregnancy BMI and maternal affect in the postpartum period. I could not find any published studies that examined overweight and obese women’s symptoms of depression two years after childbirth, and that also included the other variables of interest in this study. I also was not able to locate any published studies that documented connections between obesity and social support, obesity and maternal self-efficacy, or obesity and maternal perceptions of child social and emotional quality of life.
Maternal Mental Health

Of interest in this study was the impact of a mother’s mental health in the postpartum period and beyond, and also its impact on maternal reports of child social and emotional quality of life. A majority of the research devoted to this topic is focused on maternal depression (Leahy-Warren & McCarthy, 2007). This study focuses on depression, though the researcher acknowledges that psychopathology related to pregnancy and childbirth can and does include other types of disorders.

Types of maternal psychopathology and prevalence. Postpartum depression, or major depression with a peripartum onset specifier, is defined as a major depressive episode that occurs during pregnancy or in the four weeks after childbirth. In the latest version of Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-V), a new ‘with postpartum onset’ specifier is available, and denotes depressive episodes that begin within six months of childbirth (American Psychiatric Association, 2013). Generally, it is accepted in clinical practice and in research studies that postpartum depression can affect a woman anywhere up to one year post-delivery (O’Hara & McCabe, 2013).

There are a wide range of prevalence rates cited for psychopathology related to pregnancy and childbirth. In their review of the literature, Cox, et al. (1987) cited a 10-15% prevalence rate of psychiatric difficulty in the postpartum period, based on their review of the literature from 1968 to 1987. Leahy-Warren & McCarthy (2007) posited that among the available literature at that time, the range went from a low of about 4.4% to a high of about 73.7% of women experiencing some type of psychopathology. Complojer, Schweigkofler, Schwitzer, Scherer, and Schiefenhovel (2009) stated a range between 26% and 85% of women experiencing some type of mood disturbance, but that most of these women experience
symptoms that are generally not severe and often go away within two weeks, a phenomenon usually termed the “baby blues.” Wisner et al. (2013) put the number closer to 22%.

Clearly there is no consensus among researchers regarding prevalence rates. It is unclear as to whether this stems from different populations being sampled who may have factors that increase or decrease prevalence. While there are varying rates, researchers typically agree that many women experience some symptoms of depression to varying degrees within the first year postpartum (Leahy-Warren & McCarthy, 2007; Stewart, Robertson, Dennis, & Grace, 2004).

The women in this study were assessed for depressive symptoms approximately two years after giving birth, which would mean that their depressive symptoms did not technically meet the definition of postpartum depression. This definition has been challenged in the literature by the works of such researchers as Cox, Rooney, Thomas, and Wrate (1984), who found that at three year follow up with women who had met the diagnostic criteria for postpartum depression, many of them had not yet recovered from their symptoms. Goodman (2004) found that many women continue to experience symptoms of postpartum depression for years after childbirth, and the studies she reviewed included assessment up to two and a half years postpartum. Fährer et al. (2009) assessed women for postpartum depression at several time points, the last when the child was eight years old. This is important because the women in this study are being assessed at approximately two years after giving birth, which would not meet the criteria for postpartum depression as traditionally defined. The present study will refer to the women’s depressive symptoms as maternal depression, not postpartum depression.
Symptoms of depression. Symptoms of depression often include feelings of being alone, anxious, hopeless and being out of control (Leahy-Warren & McCarthy, 2007). In their review of the literature, Boath and Henshaw (2001) cited

“depended mood, sleep disturbance; appetite disturbance; fatigue; irritability; anhedonia; loss of concentration, ideas of not coping; self-blame and guilt; thoughts of self-harm; impaired libido; worry; tension and anxiety; and somatic features of depression, such as headache” (p.217).

For the purposes of the present study, depression was defined by scoring at least a 13 on the Edinburgh Postnatal Depression Scale (EPDS), the well validated and widely accepted instrument used to measure depression in the sample (Navarro et al., 2007).

Neurobiological components of depression. Of note are the well-documented neurobiological determinants of depression (Albert & Benkelfat, 2013, Albert, Benkelfat, & Descarries, 2012). Albert and Benkelfat (2013) reviewed a number of studies and confirmed the ‘serotonin hypothesis,’ which is that depression is controlled by a deficit of serotonin. They confirmed many clinical studies that attribute the regulation of mood and emotion to the serotonin system in the brain. This explanation of depression reflects that it is a paucity of serotonin that leads to an increased risk of depression. A lack of serotonin also leads to aggressive, impulsive, and obsessive-compulsive behavior, as well as suicidality.

Albert et al. (2012) also spoke to the serotonin hypothesis. They reflected that the serotonin hypothesis originated in the 1960s, and was originally thought to be the sole cause of depression. This article reflected the generally accepted current belief among researchers and providers that it is a confluence of biological and environmental factors that influence depression, but that serotonin still plays an important role.
Willner, Scheel-Kruger, and Belzung (2012) also spoke to the neurobiology and accompanying factors that influence depression. They posited that depression can be divided into three categories: 1) ‘simple depressions that are dependent on situational stressors, 2) an increased susceptibility to depression that develops over several episodes of depression, and 3) certain factors that make a person particularly vulnerable to a first onset of depression. The researchers describe how different processes converge to reproduce and sustain depressive symptoms.

**Neurobiological components of postpartum depression.** Of note in the present study is that women were being assessed for depression and other constructs of interest two years postpartum. While any depressive symptoms they report at this time frame would not be categorized as postpartum depression, many of them may have met the criteria for postpartum depression at an earlier data collection point. As such, it is important to briefly review the literature regarding the neurobiological aspects of postpartum depression.

Neurobiological changes in the postpartum period have been attributed to particular sensitivity to hormonal withdrawal that accompanies childbirth, which has the effect of destabilizing mood for some women (Bloch, Schmidt, Danaceau, Murphy, Neiman, & Rubinow, 2000; Wisner, Chambers, & Sit, 2006). In their review of the literature, Pearlstein, Howard, Salisbury, and Zlotnick (2009) linked to postpartum depression to particular sensitivity to normal post child birth hormonal fluctuations. They posited that some researchers have linked fluctuations to progesterone and estrogen, others have made connections to other gonadal hormones that interact with serotonin. Other explanations link depression to hormonal changes linked to sleep deprivation that is often normative in the postpartum period, but may be more pronounced in some women due to hormonal variances (Pearlstein et al, 2009).
Risk factors. In the preceding section, neurobiological factors that predispose women to depression were described. In the below section, more social and contextual risk factors will be discussed. While the women assessed in the present study cannot technically meet the criteria for postpartum depression because they are being assessed approximately two years after childbirth, it is important to review the literature on postpartum depression because many of the women being assessed did meet the criteria for postpartum depression at an earlier assessment point and there is literature that shows that symptoms of depression that occur in the postpartum period often last beyond the one year diagnostic definition of postpartum depression.

The research on what may put women at risk for postpartum depression is not consistent. Bener, Gerber, and Sheikh (2012) looked at depression, as well as anxiety and stress, in women in the postpartum period. Among their sample of 1,659 postpartum women, they found that 18.6% experienced depression, with younger and more educated women more at risk. Younger women with more education also suffered from stress and anxiety in higher numbers. In their study, working mothers were more stressed and anxious, and stay at home mothers suffered from more depression. Unplanned pregnancy was a strong predictor of depression.

Benoit, Westfall, Treloar, Phillips, and Janssen (2007) conducted a mixed method longitudinal study to examine the social context of postpartum depression in mothers at three to four weeks and four to six months after giving birth. They found that income and depression were connected and that there was also an association between mothers’ feelings about the birth experience and their depressive symptoms at three to four weeks after the birth. Lower income and a more negative birth experience were associated with more depressive symptoms. In addition, qualitative analysis revealed that the sources of dissatisfaction with the birth experience
emerged from feelings of inadequate care and support from their maternity care providers, and also not being able to carry out birth plans as they had hoped (Benoit et al., 2007).

Barbadoro et al. (2012) aimed to estimate the prevalence of postpartum depression and the risk factors associated with it in their large sample of Italian women who had recently given birth. Approximately 48% of their sample met criteria for depressive symptomology. They found that risk factors associated with depressive symptomology were smoking before pregnancy, problems within the household related to expenses, poor living conditions, having an unplanned caesarian section, a difficult delivery experience that required the use of forceps or suction, excessive weight gain, and interestingly, attendance at childbirth preparation classes (Barbadoro et al., 2012). Darcy et al. (2011) found that age, education, marital status, race, and living in poverty were all considerations that providers should be aware of as factors that may make working mothers more susceptible to postpartum depression. Specifically, they found that women who were younger, of African American descent, not married, and living in poverty were at higher risk for depression.

In summary, many women suffer some type of mood disturbance in the year postpartum and beyond, though the literature reflects varying rates. There are a wide range of risk factors associated with depressive symptomology, such as income, poor living conditions, and having a difficult birth experience, to name just a few. Stress also emerges as a consistent risk factor.

**Psychopathology and mothering and child outcomes.** In addition to the individual effects on the mother, such as poor physical and mental health and having more concerns over the health of their children (see Darcy et al., 2011), it has become widely acknowledged that maternal psychopathology has an impact on mothering and on child outcomes (e.g. Conroy et al., 2012; O’Hara & McCabe, 2013; Wisner et al. 2006). In fact, in their review of the literature, Conroy et
al. (2012) noted that the literature has shown that it is not postpartum depression as traditionally defined that most accurately predicts maladaptive child behavior outcomes. They noted that “findings from longitudinal studies in relation to social and emotional development indicate that both severity and chronicity of maternal depression are associated with higher levels of later childhood behavior problems” (p.51).

The available literature on the effects of maternal psychopathology on child social and emotional quality of life range from indirect effects, such as Chee et al.’s (2008) work describing mothers with depression (measured by the EPDS, as in the present study) being more likely to bring their infants to the doctor for frequent non-routine visits, to more direct effects, such as Kurth et al.’s (2010) work linking maternal depression to crying problems in infants.

The research has shown that mothers who experience depression often do not interact well with their children, and have difficulty responding appropriately to their cues. Children whose mothers are depressed are at greater risk of cognitive, emotional and social difficulties, as well as problems with their language development. In addition, these children often have more problems with their physical and emotional health, and are more at risk for child maltreatment (Canuso, 2008; Kingston et al., 2012). Canuso (2008) referred to maternal depression as a ‘dual diagnosis’ for mother and child.

Chronis et al. (2007) conducted a study with mothers of children aged four to seven who met diagnostic criteria for Attention Deficit Hyperactivity Disorder (ADHD). The researchers assessed maternal psychopathology and mothering, and found that maternal depression was predictive of their children’s behavior problems. In this study positive mothering skills seemed to be protective, and predicted fewer behavior problems.
Bernstein (2006) conducted a study looking at maternal stress and depression and its impact on child social and emotional quality of life among children in a Head Start program. Like many other studies of this kind, results showed that maternal mental health (depression and stress) was the single most salient predictor of children’s social and emotional quality of life (aggression, and ability to regulate emotions, and ability to orient/engage). Specifically, this study found that a combination of risk factors (public assistance, mother’s occupational status, educational level, and adolescent or single motherhood) and maternal health variables (presence of depression and stress) significantly predicted children’s aggressive behaviors at three years old.

Driscoll (2008) examined relationships between maternal emotional availability, mother’s symptoms of depression (as well as cognitive maturity, history of abuse, and attitudes about mothering), and maternal perceptions of the functioning of their children (measured by persistence in tasks). The researchers observed young mothers and their toddlers in different contexts and asked the mothers questions about their attitudes, experiences, and history. Results showed that many mothers were depressed, had poor mothering attitudes, and subsequently had low emotional availability. Results suggested that low emotional availability was related to perceptions of poor child functioning around persistence at tasks.

Fährer et al. (2009) assessed mothers for depression when their infants were four months, 12 months, 15 months, four years old, and then again when the children were between six and eight years old. Mothers, fathers, and the children’s school teachers were asked to report on the children’s internalizing and externalizing behaviors at the various time points. Interestingly, mothers who had depression rated their children as having behavior problems in the first few
years of school, and teacher ratings of externalizing behaviors were consistent with mothers’ ratings.

Also, women’s level of depression when their child was four months old was significantly related to their perceptions of their children’s behavior problems seven years later (Fihrer et al., 2009). Results suggested that mother’s mental health in the months after childbirth were predictive of perceptions of children’s behavior issues years later. These findings are in contrast with Youngstrom (1998), who found that mothers with depressive symptomology were biased in their ratings of their children’s behaviors, as compared to independent raters rating the same behaviors.

Conroy et al. (2012) assessed a large sample of women (n=2262) who had recently given birth. Women were assessed for depression as well as for meeting the DSM IV criteria for a personality disorder. They found that depression and having any personality disorder were both associated with 18 month old infants who had difficulty with behavior regulation. In addition, mothers’ depression scores were specifically associated with children with lower reported cognitive scores and higher levels of anxiety and depression (Conroy et al., 2012).

Tompson et al. (2010) assessed 171 mother-child dyads in which the child was between the ages of eight and 12. The children were assessed for externalizing and internalizing behavior problems, and depressive symptoms. Mothers were assessed for high expressed emotion and depressive symptoms, both past and present. Results showed that a maternal history of depression was associated with current high expressed emotion, and that these in combination were connected with children’s reports of their own depressive symptoms. In addition, mother’s depression and high expressed emotion scores were associated with their reports of their
children’s internalizing and externalizing behaviors, and mothers with a history of depression were more likely to have children with a diagnosis of depression (Tompson et al., 2010).

Bosquet and Egeland (2001) looked at the links between symptoms of maternal depression, maternal state of mind, and subsequent mother and child behaviors in a group of mothers who were deemed to be at high risk for mothering difficulties. In this attachment-based intervention, women completed attachment inventories when their children were approximately 19 months old. Approximately five months from baseline the mothers completed depression inventories and engaged in laboratory tasks with their children. In the intervention group, maternal depressive symptomology was associated with hostility towards their children, and overall results showed that maternal state of mind was extremely important in relation to mothering behaviors.

In their systematic review of the literature, Kingston et al. (2012) found that maternal distress in the postpartum period has a negative effect on the cognitive, social, and emotional development of children. They reviewed four studies (one of which utilized the EPDS) measuring the impact of maternal distress in the postpartum period on infant social emotional development, and found that postpartum psychiatric illness (depression, anxiety, phobias) was associated with poorer child outcomes (social competence and development). However, they did find maternal sensitivity moderated the relationship between depression and infant sociability, in that depression did not predict poor sociability among mothers with high sensitivity. (Kingston et al., 2012)

Apter-Levy, Feldman, Vakart, Ebstein, and Feldman (2013) looked at the role of oxytocin in the connection between maternal depression on children’s social and emotional quality of life. The researchers recruited women who had high and low depression scores two
days postpartum, and then measured their depressive symptoms again at six and nine months postpartum. When the child was six years old, the researchers compared the children (around psychiatric diagnosis, social engagement, and empathy) of the mothers who were depressed versus the mothers who did not report depressive symptoms since giving birth. In addition, mothers, fathers and children underwent biological testing for oxytocin levels. Results showed that children of mothers with chronic depression struggled with significantly more anxiety and defiant behavior, and interestingly, oxytocin levels were lower for all family members (mother, father, and child). In addition, children scored lower on empathic skills and levels of social engagement. Results showed overall that lower oxytocin was associated with mothers with depression, and consequently increased risk of child psychopathology.

In summary, the research has shown that maternal depression puts children at risk for a wide range of emotional, social, and behavioral problems. In addition, it increases the risk of maladaptive mothering, specifically hostility, which also has deleterious effects on children. The present study will add to the literature by examining the ways in which other variables interact with maternal depression in relationship to maternal perceptions of child social and emotional quality of life. Specifically, I have not been able to find any studies that measure how child reports of demandingness interacts with maternal depression to impact maternal perceptions of child social and emotional quality of life.

The literature on maternal depression is relevant to the present study because of its documented relationship to maternal perceptions of child social and emotional quality of life, and also its relationship with maternal self-efficacy. In the present study, I examined what relationship depression has to maternal self-efficacy, and also any relationship it might have to social support, stress, and maternal reports of child demandingness. In the next section, I will
Social Support

It is not possible to look at factors affecting post pregnancy interpersonal and intrapersonal outcomes without considering the impact of social support. Social support has been extensively studied in the literature relative to the postpartum period. It has been found to be extremely influential when examining postpartum outcomes and is interwoven into every topic discussion in this dissertation. Many studies have looked at social support in the postpartum period (Boyce & Hickey, 2005; Chien, Tai, & Yeh, 2012; Coleman, 1998; Cutrona & Troutman, 1986; Da Costa, 2000; Ege, Timur, Zincir,, Geçkil, & Sunar-Reeder, 2008; Leahy-Warren & McCarthy, 2007; Xie, He, Koszycki, Walker, & Wen, 2009). Unmet or inadequate social support is considered to be a major risk factor for postpartum depression (Areias, Kumar, Barros, & Figueirido, 1996; Boothe, Brouwer, Carter-Edwards, & Ostbye, 2011; Boyce & Hickey, 2005; Leung, 2002).

An example of the extant literature on the impact of social support in the postpartum period can be found in Cutrona and Troutman’s (1986) work. These researchers looked at postpartum depression in the context of difficult infant temperament and social support. The researchers were interested in finding out whether social support would impact maternal depression through its impact of maternal self-efficacy. Fifty-five married women were assessed for depression using the Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961) and social support, using the Social Provisions Scale (SPS; Cutrona & Russell, 1987) during their second or third trimester of pregnancy and then again at three months postpartum. Mothers’ perceptions of their infants’ behaviors were assessed using maternal records of infant crying and the Revised Infant Temperament Questionnaire (Carey & McDevitt,
A path analysis revealed that having an infant with what a mother perceived as having a difficult temperament was predictive of postpartum depression, and that self-efficacy mediated this relationship. In other words, perceptions of difficult temperament not only have a direct impact on maternal depression but they also impacted postpartum depression to the extent that they increased or decreased maternal self-efficacy, which predicted postpartum depression. However, social support served a protective role against postpartum depression, as it mediated the relationship between low maternal self-efficacy and maternal depression (Cutrona & Troutman, 1986).

While over 25 years have gone by, the present study is similar in some ways to the Cutrona and Troutman’s (1986) work. This study also sought to delineate connections between social support, maternal depression, maternal self-efficacy, and maternal perceptions of child behavior. This study is different in that it also examined: 1) maternal perceptions of social and emotional quality of life when the child is a toddler (not an infant), 2) maternal depression (not postpartum depression), 3) the specific perception of child demandingness, and 4) stress.

Recent studies have found similar results with regard to the importance of social support. Boothe et al. (2011) examined what the predictors of unmet social support were for women in the postpartum period, though their study was focused around healthy eating behaviors among overweight and obese women. They looked at informational support, emotional support and instrumental support. The researchers found that depression in the postpartum period predicted having unmet emotional and instrumental social support.

Leahy-Warren, McCarthy, and Corcoran (2012) examined the relationships between social support, mothers’ maternal self-efficacy and postpartum depression in the first six weeks
of motherhood. Citing a lack of research looking at the relationships between social support and domain specific parental self-efficacy, the researchers collected data with a researcher developed social support scale, the perceived maternal self-efficacy scale (Barnes & Adamson-Macedo 2007), and the Edinburgh Postpartum Depression Scale (EPDS). Results showed a significant positive relationship between the support of family and friends (informal social support) and maternal self-efficacy at 6 weeks postpartum. Results reflected that all types of social support predicted lower postpartum depression and higher maternal self-efficacy.

Chien et al. (2012) conducted a study in Taiwan with nearly 400 postpartum women (half of the sample were native Taiwanese and half were non-native women) who had recently delivered babies. Using the Edinburgh Postpartum Depression Scale (EPDS), the same instrument used in the present data analysis, logistic regression was used to explore factors associated with postpartum depression. Researchers found that non-native mothers not only had higher levels of postpartum depression, but also had much lower social support and decision-making power in their homes. Lower income was associated with more depressive symptoms, and higher social support and decision-making power was negatively associated with symptoms of depression (Chien et al., 2012).

The data set in this study is from the Kids and Adults Now! Defeat Obesity (KAN-DO) study, and the KAN-DO study is a follow up to the Active Mothers Postpartum (AMP) study, which focused on the unmet social support needs of postpartum women. It was chosen because it included constructs of interest to the researcher. The results of the AMP study suggested that maternal depression predicted unmet social support needs around emotional and instrumental needs (Boothe et al., 2011). Thus there is an established link between depression and not getting one’s social support needs met during the postpartum period, which for many women is a time of
life of unique need and vulnerability.

Relevance to present study. The literature on social support is relevant to the present study because of its documented relationship to maternal depression and its importance in the postpartum period. The role social support plays with regard to maternal self-efficacy, perceptions of child demandingness, maternal depression, stress, and maternal reports of child social and emotional quality of life will be reviewed. In the next section, the extant literature on maternal self-efficacy will be reviewed.

Maternal Self-Efficacy

In addition to maternal depression, this study also examined maternal efficacy in the postpartum period. In the section below, the extant literature around the significance of maternal self-efficacy to mothering and child outcomes will be described. Throughout this section the significance of efficacy in relation to other constructs of interest in this study will be reviewed.

The impact of efficacy on mothering. The majority of the literature on maternal self-efficacy has focused on mother driven effects. That is, the impact that mothers have on children by virtue of the efficacy they feel in the maternal role. This will be discussed, followed by a discussion of the ways in which children’s behaviors and characteristics impact maternal self-efficacy.

Mother driven effects. Maternal self-efficacy has been found to be a strong predictor of mothering outcomes (Ardelt & Eccles, 2001; Conrad, 1990; Meunier, Roskam, & Browne, 2011). It has been shown to have a wide range of effects. The literature reflects results ranging from helping low income mothers of preterm babies successfully breastfeed (Entwistle, Kendall, & Mead, 2010; Swanson et al., 2012) and more effectively soothe their babies (Leerkes &
Crockenberg, 2002), to buffering the effects of depression and stress in both antenatal and postnatal women (Crncec et al., 2010).

A consistent theme in the literature is that of a relationship between child behavior problems and lower maternal self-efficacy (Bloomfield & Kendall, 2012; Gross & Tucker, 1994; Hill & Bush, 2001; Sequerra, 2010; Shaw, Keenan, & Vondra, 1994). Several researchers have found a connection between low maternal self-efficacy and coercive parenting (Bugental & Cortez, 1988; Pierce et al., 2010). Bor and Sanders (2004) examined processes that led to parental coerciveness, which has been found to be a significant predictor of child conduct problems. They found that maternal depression and low maternal self-efficacy emerged as strong predictors of parental coercion. Further, Jones and Prinz (2005) stated that “PSE (parental self-efficacy) has been related, both directly and indirectly, to facets of child socio-emotional functioning such as social interactions, feelings of self-regulation and self-worth, anxiety, and self-efficacy” (p.355). Maternal self-efficacy has been consistently linked to social emotional functioning in children.

Coleman (1998) defined maternal self-efficacy as “an estimation of the degree to which parents perceive themselves as capable of performing the varied tasks associated with this demanding role”(p.ii). She found that maternal feelings of self-efficacy, or the mother’s belief and feelings of competence in the mothering role, actually mediated the relationship between toddler temperament and maternal stress and satisfaction. In other words, maternal perceptions of their own competence were extremely significant to feelings of stress and maternal satisfaction, and influenced the relationship between toddler temperament and maternal stress and satisfaction.
Coleman and Karraker (2000) examined relationships among self-efficacy (both general and maternal), child and mother characteristics (child age, mother age, mother education, child emotionality and sociability), and maternal satisfaction among mothers of school aged children. Mothers of children who were less emotional and more sociable had higher self-efficacy. Mothers with higher educational levels, higher family incomes, and more previous experience caring for children also reported higher self-efficacy. Predictors of maternal satisfaction included higher maternal self-efficacy, lower child emotionality, maternal education, and previous experience caring for children. In addition, maternal self-efficacy mediated the relationships between mothers’ previous child care experience, maternal education, and maternal satisfaction.

Ardelt and Eccles (2001) examined the effects of maternal self-efficacy on positive mothering, children’s confidence, and children’s success in the academic setting in challenging environments. The researchers utilized a racially diverse sample of inner city mothers and their adolescent children. Results showed a racial disparity, in that maternal self-efficacy predicted the positive mothering of African American mothers, but not those of the Caucasian mothers. The researchers posited that this difference was reflective of the environments in which the African Americans lived, which were considered to be higher risk environments, in that the African American participants who were assessed tended to experience more social isolation and live in neighborhoods with greater incidences of crime than did their Caucasian counterparts.

The overall results of this study suggested that self-efficacy was a stronger predictor of child self-efficacy and academic success for African American single mother homes and African American families with marriages that were not strong. However, this effect did not hold for Caucasian families or for two parent African American families who had strong marriages.
Interestingly, it was maternal self-efficacy, and not their mothering strategies, that predicted child self-efficacy and child academic success. (Ardelt & Eccles, 2001)

Hudson, Elek, and Fleck (2001) looked at parental self-efficacy within the context of feelings around caring for infants among first-time mothers and fathers. The researchers also looked at connections among parenting satisfaction and the impact of the gender of the baby. Mothers and fathers were assessed four months postpartum. Results showed that for fathers, self-efficacy around infant care increased during the first four months, but was consistently lower than that of mothers. Results also showed that parenting satisfaction increased over time for both mothers and fathers, and that feelings of efficacy were significantly related to satisfaction. Interestingly, fathers of male infants had significantly higher parenting satisfaction than fathers of female infants, but this finding did not hold true for mothers.

Coleman and Karraker (2003) were interested in delineating the correlations between maternal self-efficacy and maternal competence, and also in seeing if maternal self-efficacy served as a predictor of the behavior and development of toddlers. Sixty-eight mothers and their toddlers were assessed using both questionnaires measuring multiple facets of parental self-efficacy and one measure of infant development (The Self-Efficacy for Parenting Tasks Index—Toddler Scale (SEPTI-TS), The Maternal Efficacy Questionnaire (MEQ; Teti & Gelfand, 1991), Parenting Sense of Competence Scale (PSOC), developed by Gibaud-Wallson and Wandersman (1978, cited in Johnston & Mash, 1989), Self-Efficacy Scale (SES; Sherer & Adams, 1983), and The Mental Scale of the Bayley Scales of Infant Development (BSID-II; Bayley, 1993), and observational techniques (the Crowell Procedure). Results showed that maternal self-efficacy beliefs were not predictive of actual parenting competence. The domain specific maternal self-efficacy beliefs did predict toddlers’ behaviors, such as affection and avoidance related to the
mother child relationship, compliance, enthusiasm, and negativity. More specifically, this study showed that mothers who had high scores of the domain specific measure of self-efficacy (SEPTI-TS) had toddlers who were more affectionate and compliant towards their mothers and exhibited more enthusiasm in general. In addition the mothers with high domain specific self-efficacy had children who were less avoidant and less negative than mothers with low domain-specific self-efficacy.

In a study that examined the connections between beliefs about maternal self-efficacy, actual knowledge of child development, and maternal competence, Hess, Teti, and Hussey-Gardner (2004) assessed maternal competence of mothers whose infants had been classified as high risk (infants who had been in a neonatal intensive care unit due to being born preterm, having low birth weight, or having some other medical condition at birth that required close medical care). Using self-reports as well as observational methods, results reflected that neither maternal self-efficacy nor knowledge of infant development independently predicted maternal competence. However, there was a relationship between maternal self-efficacy and maternal competence, and maternal knowledge of child development moderated that relationship. When maternal knowledge of child development was high, maternal self-efficacy was positively connected to maternal competence. When knowledge of development was low, there was a negative relationship between maternal self-efficacy and maternal competence. Or in other words, women who had a low knowledge of child development, yet high perceptions of maternal self-efficacy, did not score well in actual maternal competence. Parenting competence was measured by nine scales of the Parent-Child Early Relational Assessment (Clark, 1990), an assessment that necessitated videotaping mothers interacting with their infants and being scored by an independent rater on different aspect of parental competence. To the best of my
knowledge, this work has not been replicated, and appears to be the only study that privileges knowledge of child development over parental perceptions of self-efficacy.

Sanders and Woolley (2005) looked at the relationship between maternal self-efficacy, ineffective or inappropriate discipline, and problems with child conduct. They assessed a clinical sample of mothers of children who were aged two to eight who had been labeled as having behavior problems, as well as a control sample of mothers and children from the community who had not been labeled in this way. Global, domain specific, and task specific maternal self-efficacy was assessed.

The researchers found that the clinical sample of mothers scored lower in self-efficacy than the mothers in the control group for almost all of the mothering tasks that were assessed (all but one). Results suggested that in general feelings of maternal self-efficacy were predictive of style of child discipline, and pointed to the importance of being able to apply positive parenting skills to different aspects of mothering. Results reflected that at the “bivariate level that higher child behaviour problems, more maternal distress and lower global, domain and task self-efficacy were all significantly related to higher levels of dysfunctional parenting practices” (Sanders & Wooley, 2005, p. 69).

The researchers found that self-efficacy variables were predictive of harsh discipline and permissiveness, even after controlling for child and other variables, and that task specific self-efficacy was the most predictive of parenting practices. However, this study made a distinction between maternal self-efficacy (measured by the Parental Sense of Competence Scale and defined by knowledge of parenting and problem solving skills) and task self-efficacy, finding that the former was not a significant predictor of parenting practices, while the latter was. Findings suggested that a measure of self-efficacy across different tasks, rather than the specific
Maternal self-efficacy construct measured by the PSOC, is a better predictor of parenting practices. Results suggested that parenting interventions be targeted at task and skill specific training, as those are the levels where parents tend to have low self-efficacy.

Jackson, Choi, and Bentler (2009) looked at maternal self-efficacy and its effects on the school adjustment of economically disadvantaged African American children. This longitudinal study looked at the way in which maternal psychological functioning and efficacy was impacted by mothers’ educational success and employment status and income, and in turn how their children’s behavioral and cognitive functioning was ultimately affected. One hundred economically disadvantaged single African American mothers and their three and four year old children were assessed. Results showed that as education, working status, and income went up, children’s behavior problems decreased. Further, results suggested that maternal self-efficacy may mediate the connection between mothers’ symptoms of depression and their preschoolers’ poor school adjustment.

Yaman, Mesman, van IJzendoorn, and Bakermans-Kranenburg (2010) examined the relationships between stress, efficacy, and externalizing behaviors in children in Dutch and immigrant Turkish families living in the Netherlands. Researchers also examined the impact of acculturation among the Turkish mothers in relation to behavior problems, stress, and efficacy. The immigrant Turkish mothers self-reported stress and marital relationship difficulties at a higher rate than did their Dutch counterparts. However, they perceived their own efficacy and the behavior of their children in similar ways. In both groups, higher stress in the family was associated with the perception of toddlers with more behavior problems. Consistent with the prevailing literature, low maternal efficacy was the stronger predictor of child behavior problems in both groups as well. Less acculturation, via sustaining an emotional connection to Turkish
culture, was connected to lower stress and fewer partner relationship difficulties among the immigrant women.

Grimes (2012) looked at the effects of parental self-efficacy and parental knowledge on actual parent behaviors. They assessed mothers and fathers using both observational (for parenting behaviors) and self-report data (for self-efficacy and parental knowledge). Results suggested that self-efficacy was related to lower levels of hostility for both mothers and fathers. Findings also reflected that parental self-efficacy was related to overprotective behaviors by both mothers and fathers.

In their review of the literature, Jones and Prinz (2005) reviewed studies in parental self-efficacy relative to its relationships with parental competence and parental psychological functioning, as well as child outcomes such as behaviors, social emotional adjustment, experience of maltreatment, and scholastic achievement. They reflected that self-efficacy was strongly associated with parenting competence and reported social emotional child outcomes. They asserted the need for research focused on looking at the processes that influence self-efficacy (Jones & Prinz, 2005). This study aims to expand the body of literature on maternal self-efficacy to include descriptions of these processes.

In summary, there is a great deal of literature available on the effects of maternal self-efficacy on mothering and child outcomes. Lower maternal self-efficacy has consistently been associated with poor parenting, depression, maternal stress, and poor reported child outcomes (Ardelt & Eccles, 2001; Bor & Sanders, 2004; Jones & Prinz, 2005; Yaman et al. 2011), and higher maternal self-efficacy has been associated with higher parental satisfaction and reports of children with more adaptive functioning (Hudson et al, 2001; Jones & Prinz, 2005). The literature has shown a wide range of effects on children’s adjustment, from academic problems
(Jackson et al. 2009) to maternal reports of the behavioral and emotional development of toddlers (Coleman & Karraker, 2003), the latter of which is central to the present study. This study sought to further delineate the connections between maternal self-efficacy and child social and emotional quality of life by also assessing other variables that may impact this relationship, specifically maternal reports of child demandingness. In the next section I will review the available literature on the ways in which child behaviors impact maternal self-efficacy.

**Child driven effects.** In addition to the ways in which maternal self-efficacy impacts children, there has also been a focus in the literature around the ways in which children’s behaviors and characteristics impact maternal behavior, and the role that maternal self-efficacy plays in these relationships. Hastings and Brown (2002) looked at the effect of child behavior problems among children with autism on mothers’ symptoms of anxiety and depression. They found that maternal self-efficacy mediated the effect of child behavior problems on mother’s psychopathology.

Meunier, Roskam, and Browne (2011) looked at parental self-efficacy (for both mothers and fathers) and child outcomes in the context of whether parental self-efficacy mediated the effects of difficult child behavior on later parenting behavior. Citing literature that children who exhibited problematic behavior were more likely to influence their parents’ behavior, they posited that child parent interactions are far more transactional than many studies have acknowledged. The researchers used structural equation modeling to examine the bidirectional and transactional effects between child and parent behavior, positing that many studies before this had failed to recognize children as anything other than passive recipients of parental behavior. This study analyzed the bidirectionality of parent child interactions, the mediational effect of parental self-efficacy, and the interactions between parent behavior and child
 personality (Meunier et al., 2011).

Results reflected that parental self-efficacy was a mediator between the effects of child externalizing behavior and later parenting. They also found that child personality (agreeable and extraversion) partially moderated the effect of maternal supportive parenting behavior on later child externalizing behavior. While this study does look at parental self-efficacy as a moderator, the only effects that were examined were those informed by the child upon parental behavior through examining the effects of child externalizing behavior. The researchers spoke to the need to examine other child factors that may influence parent child interactions. (Meunier et al., 2011).

Gilmore and Cuskelly (2012) were interested to see if maternal self-efficacy was significantly affected by having a child with Downs Syndrome. Twenty five mothers with a child with Downs Syndrome participated in this longitudinal study. Maternal satisfaction and self-efficacy were assessed the first time when the child was between the ages of four and six, and the second time when the child was between 11 and 15 years old. Results showed that satisfaction with mothering increased over time, but self-efficacy not only stayed the same, but was not significantly different from a sample of mothers whose children did not have Downs syndrome. Results suggested that having a child with this diagnosis does not decrease perceptions of efficacy.

Troutman, Moran, Arndt, Johnson, and Chmielewski (2012) looked at maternal self-efficacy in the context of caring for an infant who is difficult to soothe. Twenty-four infants in this study were classified as ‘irritable’ and 29 were assessed to be non-irritable, based on the results of the Neonatal Behavioral Assessment Scale. These infants’ mothers were then assessed
for maternal self-efficacy using the Parenting Sense of Competence Scale (PSOC) for domain general parental self-efficacy and the Maternal Self-efficacy Scale for domain specific maternal self-efficacy. At eight weeks postpartum, mothers of infants who met criteria to be an ‘irritable’ infant had lower domain specific maternal self-efficacy. However, between eight and 16 weeks postpartum, the mothers of ‘irritable’ infants tended to have a significant increase in their feelings of efficacy both domain specific and domain general. The authors suggested that when mothers are able to experience some success in soothing a difficult to soothe infant, it is possible that feelings of maternal self-efficacy could increase.

**Efficacy, stress, and social support.** Suzuki (2010) looked at the relationships between Japanese women’s perceptions of partner and social support, maternal self-efficacy, and maternal stress. Specifically she was interested in the direct and indirect ways that efficacy and maternal stress impact each other. Mothers of children in the second grade completed surveys assessing these constructs. Results showed that feeling supported by partners, mothers in law, and friends was associated with lower levels of stress, and that lower stress was associated with increased maternal self-efficacy. Results also showed that feeling supported by their own mother’s had the direct effect of increasing their self-efficacy but that criticism from their mothers had an indirect effect, in that it increased their stress, which in turn lowered their feelings of self-efficacy.

Young (2011) was interested in discerning connections between maternal self-efficacy and perceptions of social support, with the goal of understanding the ways in which these constructs impact mothering. Using a sample of rural, low income, Caucasian and Hispanic women with young children from an existing data set of a large longitudinal study on rural families, Young sought to determine whether social support and efficacy varied along ethnic
lines, and also whether there was a relationship between maternal self-efficacy and social support. Results showed a strong and significant relationship between self-efficacy and social support and that self-efficacy was higher among Hispanic mothers than Caucasian mothers. No statistically significant differences were found between Caucasian and Hispanic mothers with regard to perceived levels of social support.

In their review of the literature, Jones and Prinz (2005) examined studies that assessed the experiences of both mothers and fathers, and stated there was limited empirical support for a link between depression, stress, and parental self-efficacy. They cited the work of Fox and Gelfand (1994), whose study found that women with higher stress and lower maternal self-efficacy had lower child competency ratings of their children than did mothers who were not depressed.

**Efficacy and depression.** There is a well-documented link between maternal self-efficacy and depression, with the available studies generally showing a relationship in which when depression is higher, self-efficacy is lower, and vice versa (Cutrona & Troutman, 1986; Gross, Conrad, Fogg, and Wothke, 1999; Kohlhoff & Barnett, 2013; Leahy-Warren et al, 2012; Maciejewski, Prigerson, & Mazure, 2000; Reck, Noe, Gerstenlauer, & Stehle, 2012; Teti & Gelfand, 1991). In their review of the literature, Jones and Prinz (2005) posited that “a depressed mood may impact PSE (parental self-efficacy) through cognitions such as other negative self-attributions or general feelings of worthlessness…” and “PSE (parental self-efficacy) influences a parent’s affective state” (p. 351). In general, higher parental self-efficacy has been associated with lower levels of depression (Jones & Prinz, 2005).

The present study is also similar to the work of Haslam, Pakenham, and Smith (2006), They assessed first time mothers during pregnancy and four weeks postpartum for depression,
social support (including partner and parent), and maternal self-efficacy. They found that in their study, increased parental support and maternal self-efficacy was connected to less depression. In addition, parental support increased maternal self-efficacy, which in turn decreased depressive symptoms. The present study is different in that the mothers in this study were not first time mothers, were assessed regarding their perceptions of demandingness, and were assessed at different time points.

Zayas, Jankowski, and McKee (2005) looked at maternal self-efficacy among a group of pregnant socioeconomically disadvantaged women of color. Women were interviewed in their third trimester of pregnancy and again at three months postpartum, and were assessed to examine their reports of maternal self-efficacy within the context of the major life change of having a child within an environment that lacked economic resources. In addition to reported self-efficacy, the African American and Latina mothers were also assessed around depressive symptomology, social support, and significant life events, for the purpose of discerning possible connections between these variables. The results showed that over time, between the third trimester and three months postpartum, feelings of maternal self-efficacy and maternal satisfaction grew while symptoms of depression tended to lessen. Results also showed that negative life events had a significant effect, influencing maternal self-efficacy and feelings of maternal satisfaction both before and after delivery. It appeared that as efficacy increased, the influence of depression lessened.

Weaver, Shaw, Dishion, and Wilson (2008) cited previous literature that linked low maternal self-efficacy to maternal depression and poor child adjustment. Positing the need for research that examines the associations of maternal self-efficacy and child behavior, the researchers assessed 652 low-income mother-child dyads with a child who was two years old.
Respondents were assessed at multiple time points, and maternal reports of self-efficacy when
the child was two and four were used in the analysis. Mothers were assessed for maternal self-efficacy and depression, and children were assessed for behavioral problems. Latent growth curve modeling revealed that maternal self-efficacy increased between the child ages of two and four and that initially higher maternal self-efficacy predicted fewer conduct problems. However, maternal depression mediated the relationship between maternal self-efficacy and conduct problems, seeming to disrupt the relationship between maternal self-efficacy and conduct problems. In other words, mothers who were more depressed had children with more conduct problems, regardless of perceptions of efficacy.

Choi, Kim, Ryu, Chang, and Park (2012) examined the mothering experiences of married Vietnamese immigrant women in Korea and compared them to the mothering experiences of native married Korean mothers. This study compared level of postpartum depression and maternal self-efficacy. Results reflected that immigrant Vietnamese women experienced more depression and lower levels of maternal self-efficacy than the comparison group of Korean women. Findings also showed that for the Korean mothers, as depression levels increased, self-efficacy decreased, but the same was not replicated in the Vietnamese sample. Overall, findings suggested that immigrant status predicted depression but not self-efficacy, with immigrant Vietnamese women experiencing higher levels of depression as well as self-efficacy.

Doudna (2012) looked at the relationship between maternal self-efficacy and depression in rural low-income women. Using a large data sample from a longitudinal study looking at the effects of welfare reform on families, the author looked at the relationships between variables and tested to see if any of them acted as moderators. Variables that were evaluated included food insecurity, depression, maternal self-efficacy and perceived parenting support, knowledge
of community resources, family functioning and financial pressure. Results showed that depression negatively impacted maternal self-efficacy, perceptions of parental support, and family functioning. Findings also reflected that depression and food insecurity were mutual predictors over time, and that financial pressure also acted as a moderator between relationships. The authors made suggestions to address maternal depression with families, especially for families who experience financial difficulties, and to make sure that families are partnered with any necessary resources around problems with sufficient food.

**Buffering/mediating effects.** The literature has consistently reflected that feelings of self-efficacy in the mothering role can buffer the effects of other factors that could be problematic on mothering quality and child outcomes, such as depression and stress, which has been shown to have deleterious effects (Crncec et al., 2010; Coleman & Karraker, 1998). It has also been shown to mediate the impact of child externalizing behavior problems on mothering, suggesting that child externalizing problems only impact mothering to the extent that they undermine maternal confidence in their own abilities (Coleman & Karraker, 1998).

Knoche, Givens, and Sheridan (2007) looked at connections between maternal depression and maternal self-efficacy in a sample of teenage mothers and their babies and toddlers. Researchers assessed the cognitive development of the infants, as well as the level of depression and maternal self-efficacy. They found that while depression and maternal self-efficacy did not independently predict children’s scores on the cognitive measures, the interaction of these variables did. Mothers who reported high maternal self-efficacy had children who scored higher on the cognitive assessments, *despite the presence of a high level of depression*. Mothers with high level of depression and low levels of maternal self-efficacy had children who scored lower
on the cognitive measures. This study pointed to the need for additional research on the possible buffering effects of high maternal self-efficacy (Knoche et al., 2007).

In another study that looked at the relationships between maternal self-efficacy and reported child outcomes, Sequerra (2010) looked as maternal self-efficacy as a possible mediator of child behavior problems and three different maternal constructs: 1) maternal anxiety and avoidance relative to attachment to their own caregivers during childhood, 2) maternal attachments in their adult romantic relationships, and 3) maternal reports of different couple behaviors in their romantic relationships. In addition, these constructs were assessed as predictors of self-efficacy and maternal self-efficacy was examined as a predictor of child behavior problems. Results showed that there were significant relationships between attachment related anxiety in mothers, partner relationship behaviors, maternal self-efficacy and reported behavior problems in children. Low maternal self-efficacy predicted child behavior problems, and hierarchical multiple regression showed that efficacy accounted for 5.2% of the variance in child behavior problems. Maternal self-efficacy also partially mediated the relationships between partner relationships, indicators of attachment, and behavior problems in children.

Holland et al. (2011) cited previous studies that suggested a link between higher maternal depression and more frequent child hospitalizations. Their analysis tested self-efficacy as a possible mediator between maternal depression and child hospitalizations. Data from 432 low-income mother-child dyads were analyzed. Results suggested that increased maternal depressive symptoms and lower maternal self-efficacy scores were related to more child hospitalizations. Further analysis confirmed that when self-efficacy and symptoms of depression were included in the same model, self-efficacy did indeed serve as a mediator between depression and child hospitalizations.
Bloomfield and Kendall (2012) examined the experiences of mothers and fathers after attending a parenting program. The researchers looked at connections between changes in parental self-efficacy, subsequent changes in parental stress, and child behavior. Citing the interactional and systemic way that parenting is influenced not just by parent characteristics but by contextual variables and child characteristics, they cited parenting efficacy as a buffer against many stressors that may negatively impact parenting. Fifty-eight parents (52 of whom were mothers) with a child under the age of ten completed instruments measuring parental self-efficacy, parental stress, and reported child behavior at the beginning of a parenting program. Thirty-seven of these parents completed the same instruments three months after the parenting program. Findings suggested that parents who felt less confident experienced higher parenting stress, and parents who felt more confident tended to report less stress.

**Processes that inform maternal self-efficacy**. Jones and Prinz (2005) spoke to the need for more research on the processes that lead to self-efficacy. Suzuki, Holloway, Yamamoto, and Mindnich (2009) looked at the processes that inform maternal self-efficacy in mothers in the United States as well as Japan. They assessed mothers with a child in the last year of preschool. Results suggested that in both countries, remembering positive memories of parental support and being satisfied with the amount of support they received from their partners and friends was associated with greater efficacy. Mothers from the United States felt more efficacious than their Japanese counterparts. Additional analyses revealed that this difference was explained by Japanese women feeling less supported by their partners.

Goto et al. (2010) endeavored to uncover psychosocial factors that contributed to feelings of or lack of feelings of maternal self-efficacy in a sample of Japanese and Vietnamese mothers. The researchers found that more mothers in Vietnam had low self-efficacy than in Japan, with a
66% and 22% rate of low maternal self-efficacy, respectively. In the Japanese sample, being a first time mother and having an unplanned pregnancy was associated with lower maternal self-efficacy, and in the Vietnamese sample, low maternal self-efficacy was primarily associated with younger age. Among the mothers with low maternal self-efficacy in both the Japanese and Vietnamese sample, poor mothering outcomes, such as feeling unsatisfied with partner support, feeling like they had no one to talk to (in the Japanese sample), and feeling like they were abusing their children (in the Vietnamese sample), were more prevalent than in the group with higher maternal self-efficacy.

In a similar study to the present study, Ngai, Chan and Ip (2010) sought to find what predicted maternal efficacy and satisfaction via their longitudinal study. Specifically, they looked at the antenatal period, and the connections between maternal role competence, learned resourcefulness, social support, stress, and depression to see how they related to maternal role competence and satisfaction six weeks after women gave birth. Using a sample of 184 first time pregnant women who attended one of two public hospitals in Hong Kong, assessments were completed during pregnancy and at six weeks postpartum regarding the aforementioned possible predictors of efficacy. The researchers found that prenatal perceived maternal role competence or feelings of maternal self-efficacy and learned resourcefulness predicted maternal role competence and satisfaction at six weeks post-delivery. Or in other words, pregnant women who felt confident about their ability to parent and were resourceful were more competent and satisfied with their maternal role six weeks after delivering their babies (Ngai et al., 2010).

Whittaker and Cowley (2012) assessed a parenting program (of which mothers were the main users) that endeavored to promote self-efficacy by looking at the factors that either helped or hindered feelings of maternal self-efficacy. The researchers validated two measures of self-
efficacy (both the Parenting Self-Agency Measure and the Self-efficacy for Parenting Tasks Index subscales). They found that the Parenting Self Agency Measure indicated that mothers felt good general levels of self-efficacy. However, the Self-efficacy for Parenting Tasks index measured more domain specific parental self-efficacy and found that mothers felt less confident as disciplinarians, especially around ‘feeling tired,’ ‘receiving negative comments,’ and ‘giving in to child’s demands.’ Results suggested that successful interventions to promote maternal self-efficacy should focus at both the general and specific levels. Targeted interventions should address promoting efficacy through addressing mothers’ feelings of tiredness and their reticence to try new things in environments in which they fear they will face criticism. To this end, special efforts should be made to create positive and nonjudgmental environments in which these mothers can strengthen their parenting skills, learn new things, and not fear criticism.

Citing a lack of literature around the processes that develop maternal self-efficacy, Kohlhoff and Barnett (2013) examined the role of experience of parenting in early childhood and attachment security in adulthood. The researchers cited literature that had definitively made connections between maternal self-efficacy, maternal depression, and infant behavior that could be experienced as ‘difficult.’ They assessed 83 first time mothers of infants for depression, anxiety, psychological distress, adult attachment styles, and early childhood experiences with parents. Infants were also assessed via nurse observation. Results suggested that maternal self-efficacy was negative associated with depression and insecure attachment. Early childhood experience of low levels of abuse, having an avoidant attachment style, having a male baby, and having severe depression were found to be predictive of low maternal efficacy. Depression mediated the connection between insecure attachment and maternal self-efficacy, but contrary to previous studies, no relationships were found between maternal self-efficacy and the observed
behavior of infants.

**Efficacy and perceptions.** Porter and Hsu (2003) assessed primiparous women for antepartum and postpartum connections between depression, anxiety, quality of partner relationships, and how they related to postpartum perceptions of the temperament of their babies and their feelings of maternal self-efficacy. Results showed that prenatal perceptions of efficacy were related to depression, anxiety, partner conflict, and previous experiences caring for children. In addition, mothers’ perceptions of infant temperament was highly predictive of mothers’ perceptions of maternal self-efficacy. Overall results suggested that maternal self-efficacy among primiparous mothers tends to increase over time, and also changes from a global competence to more task specific perceptions of competence.

Murdock (2012) sought to delineate the connections between maternal affect, perceptions of maternal self-efficacy, and actual mothering behavior. Mothers took assessments that measured for negative and positive affect, maternal self-efficacy and more general global feelings of efficacy in their lives, and their mothering behaviors (supportive/engaged vs. harsh/negative). Participants were 49 mothers of children who were aged three to five years old. No mediators emerged from the analysis, and in opposition to previous research, efficacy and mothering behavior were not significantly related. However results did suggest that negative maternal affect and low self-efficacy predicted harsh mothering behavior, and that the opposite was also true, that positive affect and higher self-efficacy predicted more positive mothering.

In a study that examined the relationship between perceptions and self-efficacy, Fulton, Mastergeorge, Steele, and Hansen (2012) assessed a group of socioeconomically disadvantaged ethnically diverse first time mothers in their first six weeks postpartum. The focus of the study was the relationships between mothers’ perceptions of their babies as compared to what they
thought other babies were like, and their feelings of self-efficacy. Results reflected that maternal perceptions of their infants significantly influenced feelings of efficacy. Specifically, mothers who perceived or experienced their babies as less difficult than what they perceived the ‘average’ baby to be had higher reported feelings of efficacy.

Meunier et al. (2012) looked at the connections between parental (mothers and fathers) differential treatment, children’s externalizing behavior problems, sibling relationships, children’s perceptions of favoritism among their parents, child personality, and parent self-efficacy. The focus of this study was 117 families with children who had a clinical diagnosis related to externalizing behavior problems. The researchers found that parental differential treatment of children had a moderate relationship to externalizing behaviors and also sibling relationships. Children who perceived their parents as favoring their sibling exhibited more sibling hostility. The effects of children’s externalizing behavior on parental differential treatment of children was also examined, as well as how and if parental self-efficacy mediated this relationship. Results showed that child externalizing behavior did predict parental differential treatment but that this relationship was mediated by parental self-efficacy.

Verhage, Oosterman, and Schuengel (2013) tested the directionality of the relationship between maternal self-efficacy and reported infant temperament in the first year postpartum. The researchers assessed 616 primiparous women for maternal self-efficacy during the third trimester of pregnancy, and then twice after delivery, the latter two times assessing also for perceptions of infant temperament. Results showed that maternal self-efficacy, even when assessed prior to birthing a child, was predictive of perceived child temperament, in that lower maternal self-efficacy was associated with perceived difficult child temperament. The results suggested that perceptions of child temperament were highly influenced by maternal self-
efficacy, and not the other way around.

**Relevance to present study.** The literature on maternal self-efficacy is relevant to the present study because of its relationships to maternal depression, social support, and maternal perceptions. In the present study, I examined the relationship between maternal self-efficacy and perceptions of child demandingness, as well as depression, stress, and social support. In the next section, the extant literature on maternal perceptions will be reviewed.

**Maternal Perceptions**

Another construct of interest in the current study is perceptions of child behavior. There is a significant body of literature on maternal perceptions and/or attributions and how they impact behavior, both of mothers and of children. Understanding how a primary caregiver views herself and/or her child can provide insight into child and maternal behavior. The research has shown that maternal perceptions impact mothering and child outcomes in significant ways, and it is important to understand this to understand the greater clinical context of this study.

**Maternal perceptions of children and mothering and child outcomes.** Maternal perceptions and attributions are clearly linked to mothering in significant ways (Casanueva, Goldman-Fraser, Ringeisen, Lederman, Katz & Osofsky, 2010; Paris, Bolton, & Spielman, 2011; Youngstrom, 1998). For example, in a study that touched on mothers’ psychopathology and perceptions, two constructs of interest in the present study, Youngstrom (1998) studied how mothers’ emotional functioning affected their perceptions of their children’s behavior and affect. Mothers were assessed for symptoms of depression and anxiety. They were then asked to watch a video of their child and another child performing the same frustrating tasks. Results showed the mothers who met the criteria for Dysphoria were negatively biased in their ratings of their children’s behavior, as compared to independent raters rating the same behavior. In the below
sections I will review the available literature relative to this. I will begin by discussing the documented literature regarding the ways in which maternal perceptions may inform harsh or insensitive mothering.

Paris et al. (2011) used evaluation data from a home based therapy program with infants and their mothers, who had been diagnosed with postpartum depression. The effects of the intervention were studied, with specific attention paid to maternal perceptions of parenting and maternal infant interactions, among other variables. Results reflected that women in the program had decreased depressive symptoms and distress, and more positive perceptions of parenting and maternal infant interactions. Interestingly, among all the variables, it was only improvement in mothers’ perceptions of their own parenting that was associated with more positive mother Infant interactions.

**Harsh mothering.** Perceptions that mothers hold about their children can in some cases be predictive of harsh or abusive parenting (Bugental & Happaney, 2004; Casanueva et al., 2011; Larrance & Twentyman, 1983; Martorell & Bugental, 2006). Larrance and Twentyman (1983) compared two groups of mothers, one group with a substantiated history of child maltreatment and one with no history of child maltreatment. All mothers were shown photographs of their child and another child in a series of pictures, all of which contained some wrongdoing being perpetrated, like toys being broken or walls being colored with crayons. The mothers were also shown pictures of the children performing games of skill and/or chance (Lawrence & Twentyman, 1983).

The mothers were then asked to describe their perceptions of which child as at fault in the pictures that depicted some type of wrongdoing, and which child was successful in the pictures that depicted games. They were also asked why they believed that the children (both their own
and the other child) acted in certain ways. The mothers who had a history of child maltreatment consistently viewed their own children’s behavior in a negative light, and downplayed any success or mastery they showed. They tended to attribute any negative behavior their children showed to internal and stable causes, and any positive behavior to external and unstable causes. The comparison mothers without a history of abuse showed an opposite pattern of attribution. (Lawrence & Twentyman, 1983).

Slep and O’Leary (1998) conducted an experimental study examining the impact of maternal attributions on mothering. Mothers were video-taped interacting with their toddlers in realistic situations in which toddlers may exhibit challenging behaviors. Some mothers were told that their children’s misbehavior was voluntary and others were told that their children could not help their misbehavior. The mothers who were told that their children were misbehaving on purpose reacted to their children much more harshly and reported much more anger than the mothers who were told the behavior was not their children’s fault. In addition, the children whose mothers were told they were misbehaving on purpose showed much more negative affect (Slep & Leary, 1998).

In a more recent study, Bugental and Happaney (2004) examined the relationships between maternal attributions, neonatal status, and infant maltreatment and neglect in low income, low education Latino families. The researchers found that mothers who perceived themselves as having very little power (who assigned more power to the infant than to themselves) and who had an infant who was classified as “at-risk” (low APGAR scores and/or premature status) at birth were more vulnerable to engaging in harsh mothering or neglect. However, symptoms of maternal depression were also found to partially mediate the relationship between low perceived power and infant maltreatment. The authors spoke to the importance of
examining maternal cognitions and perceptions, as in this study they were associated with increased depression and harsh mothering. (Bugental & Happaney, 2004).

Martorell and Bugental (2006) recruited sixty low income predominantly Mexican American mothers of toddlers to examine the linkages between factors that may predict harsh mothering. They found that mothers who perceived themselves as having low power or being powerless were very reactive to their toddlers who had temperaments that could be described as ‘difficult.’ These mothers had high levels of cortisol reactivity denoting their reactivity to stress as well as greater use of harsh control practices, such as spanking. Results suggested the need for early intervention to increase mothers’ perceptions of their own power.

Casanueva et al. (2011) used data from the National Survey of Child and Adolescent Well Being to study 1,001 mothers of children aged birth to 23 months regarding the mothers’ perceptions of their infants’ temperament. All mothers in the sample had been investigated for child maltreatment. The authors examined maternal perception of infants’ temperament, using data from the National Survey of Child and Adolescent Well-Being. Twenty percent of the sample reported that over half the time their babies were difficult to soothe, and often crying and/or upset. Very negative infant behaviors were reported consistently by 13.6% of the mothers. Multivariate analyses revealed that mothers’ negative perceptions of infants were associated to a significant degree with physical violence from an intimate partner, and maternal history of childhood victimization (Casanueva et al., 2011).

Maternal warmth and responsiveness. Degroat (2003) found that mothers in their study who reported greater stress had more negative affect and less positivity and sensitivity with their children. In addition, more stress was associated with negative attributions of children’s behavior, which led to decreased positive affect and maternal sensitivity, and more negative
affective behavior on the part of the mothers. In other words, more stress led to negative feelings and less positive and sensitive mothering. Stress also was associated with negative views of their children’s behavior, which ultimately led to more negative feelings and less sensitive mothering, which generated more negative maternal feelings. This study did not explore any child outcomes around that behavior.

**Perceptions and child outcomes.** There is also a considerable amount of literature linking maternal perceptions of behavior to reported child outcomes, and this is very relevant to the present study. In an early study, Broussard and Harther (1970) examined mothers’ perceptions of their infants and how that related to their infants’ subsequent development. They studied 120 normal full term infants and measured their mothers’ perceptions of them in the early postpartum period via an instrument designed to measure the mother’s comparison of her baby against what she perceived as the ‘average’ baby. The criterion that were rated were spitting, feeding, eliminating, crying, sleeping, and predictability. Of the 318 women assessed, approximately 61% rated their babies as ‘above average,’ 13% as equal to the ‘average’ baby, and 25% as ‘less than average’ (Broussard & Harther, 1970).

The babies were categorized based on the mothers’ ratings as either ‘low risk’ (mother rated as ‘above average’) or ‘high risk’ (mother rated as ‘average’ or ‘less than average’). Then the children were assessed again four and a half years later. There were no virtually no differences in the mothers’ categorizations and the child’s needs for therapeutic intervention almost five years later. In other words, mothers’ early ratings predicted reported child functioning. If a mother rated her child as ‘high risk’ in the days after birth, then the child had poorer functioning at age five. If a mother rated her child has ‘low risk,’ the child had higher reported functioning at age five (Broussard & Hartner, 1970).
The ‘high risk’ children were doing better than the ‘low risk’ children, even after controlling for type of delivery, religious affiliation of family, maternal age at delivery, maternal education level, father’s occupation, pregnancy or birth complications, moves or deaths in family, health problems of the child or family, income, or child gender. Ultimately, the mother’s perceptions of her infant behavior days after the child was born was predictive of reported functioning almost five years later (Broussard & Hartjer, 1970).

A few years later, Bates et al. (1985) studied 120 children and their mothers in an effort to find out what factors best accounted for problem behaviors in children. Participants were evaluated when the child was six, 13, and 24 months old, and the final assessment was done when the child was three years old. Results showed that attachment security was related more to the relationship with the mother than to infant temperament. In this study, it was mother’s perceptions of their infants, not temperament or type of attachment, that were the most salient predictors of problem behaviors in children, specifically hostile and anxious behavior, at age three (Bates et al., 1985).

In findings that create far reaching problems for children and the way they and their behavior are treated in mental health settings and beyond, researchers have found that maternal perceptions can strongly affect the mental health care that children receive. Kroes, Veerman, and De Bruyn (2003) discussed the common mental health clinician practice of basing diagnoses and case formulation on parental reports. They examined the possibility of maternal reports of children’s internalizing and externalizing behavior problems being biased by the mother’s own mental health issues. The researchers found that when they compared maternal reports of children’s behavior to that of reports of teachers and other child care workers, different mental
health issues of the mother significantly predicted maternal reports of children’s internalizing behaviors, but not externalizing behaviors.

Snyder et al. (2005) conducted a longitudinal study with 266 children and their families during kindergarten and first grade. They found that mothers’ ratings of their children’s behavior problems when the child was in kindergarten were predictive of hostile attributions and the use of ineffective disciplinary strategies with their children. Further, hostile attributions and ineffective discipline was predictive of child behavior issues at the kindergarten and first grade level at home. Behavior problems at school (as reported by teachers) were predicted by behavior problems at home, and by the combination of hostile maternal attributions and ineffective maternal discipline. In other words, school behavior problems were predicted by home behavior problems, as well as negative maternal perceptions of the child, as well as ineffective discipline.

Pomerantz and Dong (2006) looked at maternal perceptions of children’s competence and how that impacts children’s academic performance and emotional functioning. They recruited 126 children and their mothers, and had them complete instruments to measure maternal perceptions, depressive symptoms, and theories of competence, as well as measures to ascertain children’s grades, perceptions, attributions, symptoms of depression, self esteem, and mastery orientation. Results showed that mothers who had a view of competence that reflected that competence is fixed and cannot be changed (so called ‘high entity theorists), had children whose performance reflected their mother’s perceptions and expectations for their achievement and emotional functioning. This finding held true whether the mother had a high or low opinion of her child’s competence.

Johnston, Hommersen, and Seiop (2009) looked at the relationship between maternal perceptions of behavior and oppositional behavior in male children. In this study, some of the
children had diagnoses of ADHD and some did not. The researchers found that mothers’ attributions of their sons’ oppositional behaviors as internal, stable, and global predicted more oppositional behaviors, even when controlling for overinvolved or underinvolved mothering. In other words, mothers’ beliefs about oppositional behaviors (whether they were internal or external, stable or unstable, global or situational) were the most salient predictors of future behavior.

**Perceptions and efficacy.** There are a few studies that have linked maternal perceptions to maternal self-efficacy. Gross et al. (1994) assessed two groups of postpartum women and found connections between maternal self-efficacy, maternal depression, and how difficult mothers perceived their infants to be, as compared to how they perceived the difficultness of other infants their child’s age. Leerkes and Burney (2007) were interested in what predicted maternal self-efficacy at six months postpartum in a group of first time mothers. They found that the strongest predictors of postpartum maternal self-efficacy were prenatal self-efficacy and how difficult a mother perceived her infant’s behavior to be.

**Demandingness.** The current study focused on a specific maternal perception of how demanding a mother perceives her child and her mothering role to be. It is clear that perceptions affect mothering. Several studies have linked negative perceptions of child behavior to more negative and less responsive mothering, as well as poor child outcomes. There were very few studies that I could find that linked the demandingness construct specifically to maternal efficacy and to child social and emotional quality of life.

Keller and Honig (2004) looked at parental stress among both mothers and fathers in relation to having a school aged child with a disability. Using the PSI (Parenting Stress Index, Abidin, 1990) (as in the present study), researchers posited that high scores in the child domain
of the survey denoted parental perceptions of the level of difficulty in caring for their children. They found that for fathers, the child’s acceptability to others was the main cause of stress. The researchers found that for mothers, it was the child’s demandingness and high need for care that was the main source of stress for them. This is relevant to the present study in that it looks specifically at maternal reports of demandingness, yet is not specific to the postpartum period, which has been shown to be very significant and predictive of future child outcomes (Keller and Honig, 2004).

Maroto-Navarro, Castano-Lopez, and del Marcia-Calvente (2007) conducted a qualitative study with mothers in Spain, and one theme that emerged was demandingness of the maternal role, but it was looked at in a different way than this study. Maroto-Navarro et al. (2007) found that one of the emerging themes in their qualitative interviews was the demands and/or unmet expectations that women had for support they thought they should be receiving from partners and their social environment. This speaks to the value of social support, which is a factor of interest in the current study. Women were not questioned regarding how demanding they perceived their children to be. They were questioned about how demanding they felt their role to be and how other adults and systems in their environment were helping or hindering their mothering efforts. Findings reflected that their unmet expectations for support from people and institutions in their lives spoke to their belief in their ability to meet their role expectations as mothers without adequate support from others (Maroto-Navarra et al., 2007).

Addressing the Gap

The current study attempted to delineate the connections between maternal reports of child demandingness, maternal self-efficacy, stress, maternal depression, and maternal perceptions of child social and emotional quality of life for children between the ages of four and
seven. Jones and Prinz (2005) spoke to the need to examine the processes that lead to parental self-efficacy, and also “how PSE (parental self-efficacy) is related to other areas of parental cognition such as attributions and sense of control” (p. 360). The construct of demandingness represents such a maternal cognition whose relationship with maternal self-efficacy is not clear and has not been covered in the available literature, especially as it relates to child social and emotional quality of life.

Other variables that were measured in this study were maternal depression, social support, and education level, consistent with previous research that has linked lack of depression, high social support, and high education levels with more positive reported child outcomes (see Jackson et al., 2009). There is a documented link between social support and maternal depression, and between maternal depression and perceptions of child social and emotional quality of life. The link between mothering variables and reported child outcomes has been well delineated in the literature.

The constructs in question have been studied from many different angles, and maternal self-efficacy is a consistent theme that emerges in the literature related to depression and mothering. What has not been explained are the causal and/or transactional influences of variables that impact maternal self-efficacy, specifically around the maternal cognition of perceptions of child demandingness.

An extensive search of the literature revealed a great deal of information available regarding the relationships between maternal variables and reported child emotional and social quality of life (see Conroy et al., 2012). One prevalent theme that emerged in the literature was the importance of maternal self-efficacy when looking at reported child outcomes, which is related to the perceptions of child and role demandingness (Coleman & Karraker, 1998; Crncec
et al., 2010; Jones & Prinz, 2005). Maternal self-efficacy has emerged frequently in the literature as providing a ‘buffer’ against risk factors for poor child outcomes (Crncec et al., 2010).

For example, Jones and Prinz (2005) found that feelings of efficacy in the parental role have been shown to buffer the effects of maternal depression, stress, relationship problems, and problems with child development. They also found that maternal efficacy in the mothering role was actually associated with maternal efficacy and favorable reported child outcomes. Like the current study, the demandingness and competence subscales of the Parenting Stress Index (PSI, Abidin, 1990) were used to measure perceptions of demandingness, and maternal self-efficacy, respectively. Jones and Prinz (2005) spoke to the need to “untangle the issues of causal direction and potential transactional processes” (p. 341) that inform the relationship between parental self-efficacy and parenting and child outcomes. As such, the decision was made to focus this analysis on the interconnections between demandingness, social support, stress, maternal efficacy, maternal depression, and child social and emotional quality of life, with a focus on finding the causal directions of these processes.

This study sought to further examine the direction, causality, and transactional nature of mother-child relationships by examining the relationships between stress, depression, perceptions of child demandingness, maternal self-efficacy, social support, stress, and maternal perceptions of child outcomes. It is believed that this study will help to clarify the relationship between maternal reports of child demandingness, maternal self-efficacy, and maternal perceptions of child social and emotional quality of life. This will be valuable information for clinicians working with mothers who may have depression and/or negative attribution styles toward their children.
Research Questions

Kids and Adults Now! Defeat Obesity (KAN-DO) study provides the data for this study, and will be described in more detail below. This study had a control group and an intervention group, the latter of which was designed to increase maternal self-efficacy among participants, for the purpose of increasing desired positive parenting behaviors (Ostbye et al, 2011). As such, the research questions will provide space to investigate if there are any differences worth investigating between the control group and the intervention group when considering data outcomes.

It was my belief, based on the available literature, that there would be a significant relationship between maternal reports of child demandingness and child social and emotional quality of life. I hypothesized that maternal perceptions of the demandingness of her child would predict her child’s emotional quality of life. I thought that this will be true even after controlling for the effects of maternal depression, maternal self-efficacy, stress, and social support.

Question one. Are the differences between the KAN-DO intervention and control groups on the study variables small enough to warrant the combination of the two groups into a single study group? The analyses performed by the PI of the original study indicated that there were few differences between their intervention and control groups on their study variables. This researcher has verified that there were no differences between our study variables and the two groups.

Question two. What are the characteristics of the study sample with regard to mother’s age, ethnicity, education, and age of toddler?
Question three. What are the connections between depression, stress, social support, maternal self-efficacy, demandingness, and maternal reports of child social and emotional quality of life?

Question four. What are the associations among the measures of depression, stress, social support, maternal self-efficacy, demandingness, and maternal reports of child social and emotional quality of life?

Question five. After controlling for the effects of maternal self-efficacy (step 1), and depression, stress, and social support (step 2), was demandingness still able to predict a significant amount of the variance in maternal perceptions of child social and emotional quality of life?

Chapter III: Methodology

This chapter describes IRB information, study design, the study population, background information on the study, recruitment, and inclusion and exclusion criteria. Then the chapter details data collection, outcome variable, independent variables, and sample size. Next, I describe the data preparation and methods for analysis of the data.

IRB Approval

I submitted an application to the Syracuse University Institutional Review Board (IRB) to obtain permission to conduct this secondary data analysis. The IRB informed me that approval for this study is not necessary because it is secondary data analysis in which I did not interact with participants, only their de-identified data. I was informed by the IRB that these specifications excluded this study from the category of ‘human subjects research.’
Study Design

This dissertation includes the last data collection point of a larger longitudinal study on preventing obesity in children of overweight mothers in a university town in Central North Carolina. The ongoing study was a cohort of 400 mother-child dyads who were interviewed within two to six months (T1) of the mother giving birth to a new baby, again about 10 months later (T2), and once more at about a 22 months post baseline (T3) (Ostbye et al, 2011). The cross-sectional portion of T3 was selected for this dissertation due to my interest in the maternal construct of perceptions of child demandingness, and T3 was the only data collection time point for which a full measure of demandingness was available. Two hundred ninety seven of the original 400 participant dyads completed this data collection point.

Study Population

All study participants for this secondary data analysis were participants from the Kids and Adults Now! Defeat Obesity (KAN-DO) study, a family-based behavioral randomized clinical trial that was aimed at preventing childhood obesity (Ostbye et al., 2011).

The AMP Study

The KAN-DO study was a follow up to the Active Mothers Postpartum (AMP) study, a previous intervention that targeted only mothers, but was focused on the same constructs (Boothe et al., 2011). The AMP study took place approximately two years prior to the KAN-DO study and its focus was assessing variables that predicted inadequate social support for healthy behaviors in the postpartum period for women who were overweight or obese prior to pregnancy (Boothe et al., 2011).
In the AMP study, social support was divided into three dimensions from the Postpartum Support Questionnaire; emotional, instrumental, and informational support. The sample consisted of 190 women who had recently given birth and were willing to take the six month Postpartum Support Questionnaire. Results from the AMP study reflected that depressive symptoms and partner status predicted unmet emotional and instrumental social support (Boothe et al., 2011). Both the AMP and the KAN-DO study were funded by the National Institute of Diabetes and Digestive and Kidney Diseases, and took place at two universities in Central North Carolina.

**The KAN-DO Study**

Building off of the findings of the AMP study, the KAN-DO study was theoretically based in behavioral models that emphasized health related behavior changes in relation to feeding behaviors with overweight mothers and their young children. The rationale of the study was that overweight mothers who have recently given birth to a second child may have an increased awareness of the health needs of both themselves and their children and the postpartum period may be an ideal window in which to have a ‘teachable moment’ to seek increased maternal motivation and ‘buy in’ to behavior changes around health and eating.

The researchers posited that the challenges of motherhood on new mothers may outweigh the abilities of these mothers, who were overweight to begin with, to make healthy eating choices for themselves and their children. The researchers posited the birth of an additional child presented an opportunity to introduce more healthy behaviors, and that in order to achieve this, efforts would have to be made to enhance maternal self-efficacy and thus increase ability to handle stress. The intervention was designed to increase maternal self-efficacy and thus provide
support for healthy eating changes by addressing mother’s emotions, sleep, and parenting, and then addressing eating and exercise behaviors more directly (Ostbye et al., 2011).

The researchers were operating on the premise that by focusing on parenting and emotional needs, and emphasizing adaptive responses to stress, it was more likely that a focused intervention around eating and exercise would be successful (Ostbye et al., 2011). The KAN-DO intervention attempted to give mothers more effective tools to manage emotions and parent in more effective ways, and ultimately have a better understanding of healthy eating and activities not only for themselves, but for their children (Ostbye et al., 2011).

**Recruitment**

Recruitment postcards were mailed and phone calls were made to women who appeared on public birth registry records and who appeared to have the eligible amount of children. Study flyers with a toll free number were posted in doctors’ offices, day care centers, and other community areas. Women who were contacted or who contacted study coordinators were screened for eligibility over the phone, and those who met prescreening requirements were scheduled for an in-person assessment with their children where final eligibility for the study was determined and informed consent was collected (Ostbye et al., 2011). Mothers received cash incentives to complete each assessment, a total of $100 throughout the course of the study.

**Inclusion and Exclusion Criteria**

In order to meet eligibility requirements for the study, participants had to be mothers with a preschooler at home (between the ages of two and five years old), and had to have given birth within the previous six months to another child. Potential candidates for inclusion lived in 14 counties in the Triangle and Triad regions of Central North Carolina. Participants also had to be
over 18, fluent in English, and have no medical conditions that would prevent the safe completion of daily activities. In addition, participants had to have access to a mailing address or phone number. Eligible candidates for the study also had to be overweight, as measured by self-report of pre-pregnancy Body Mass Index (BMI) of over 25 prior to their most recent pregnancy (Ostbye et al., 2011).

**Baseline Data Collection and Randomization**

Once participants were successfully enrolled, they completed a baseline questionnaire, activity monitoring and dietary recall. Participants were randomized into either a control arm or an intervention arm. The control arm received monthly newsletters about pre-reading skills for preschoolers. The KAN-DO Intervention arm received eight interactive family kits that were mailed monthly, 20-30 minute monthly telephone counseling sessions, and also visits with a counselor and nutritionist to reinforce skill acquisition. Intervention materials addressed health weight, parenting, stress reduction and management, and psycho-education regarding healthy behaviors (Ostbye et al., 2011).

Mothers in both arms of the study were assessed at baseline (two-six months postpartum), follow up one (one year postpartum), and follow up two (approximately 2 years postpartum). The sample at baseline was 400 mother child dyads. The majority of the participants were white (75% white, 22% black), mostly between the ages of 30 and 35, and with a high level of education, with many possessing a college degree.

**Outcome Variable**

The outcome variable for this study was maternal perceptions of child social and emotional quality of life. This was measured by the Pediatric Quality of Life Inventory (PedsQL,
Varni, Seid, & Rode, 1999). It has been shown to be a reliable and valid instrument to measure maternal reports of pediatric quality of life with many different populations of children (Beri, 2012; Chan, Mangione-Smith, Burwinkle, Rosen, & Varni, 2005; Franciosi et al., 2013; Varni, Burwinkle, Seid, & Skarr, 2003), and is appropriate for the ages of the children whose mothers are assessing their behavior (Varni, Seid, & Kurtin, 2001). The PedsQl has options for parent report of child behavior as well as child self report for children who are at least five years old (Varni et al., 2003). For the purposes of this study, parent report of child behavior was used, and all children were between the ages of four and seven years old at the data collection point on which I was focusing.

For the present study, the emotional and social functioning subscales of the PedsQl were used. Questions include maternal assessment of children’s feelings of sadness, angry, worry, and social problems with other children within the past month. The PedsQl includes items that are reverse scored as appropriate, and as such, higher scores on the PedsQl denote higher functioning. A scale score of both subscales was also used, which was created by computing the sum of the items divided by the number of items answered by participants on the scales. This is consistent with PedsQl scoring algorithm guidelines. Participant mothers who completed the PedsQl were assessing their perceptions of their older child (aged four to seven), not the child they had given birth to in the prior two years. Please see Table 1 for psychometric characteristics of these variables.

**Independent Variables and Measures**

While the focus of the original study was feeding and eating behaviors among postpartum women and their children, these were not areas of focus of the present study. This analysis focused on the relationships between maternal reports of child outcomes, maternal depression,
stress, maternal efficacy, social support, education and maternal reports of demandingness of their children (the older child aged four to seven) and of the maternal role. The following measures were used to assess these constructs.

**Maternal self-efficacy.** Jones and Prinz (2005) posited the need for clear measurement of parental efficacy, and noted that since parental self-efficacy is an internal cognitive state, self report is an appropriate way to measure this construct. Maternal efficacy was measured in this study via the parent competence subscale of the PSI. This 13 item subscale has well established and widely accepted reliability and validity, and while its theoretical underpinning is not clear, it is generally viewed as a broad and appropriate measure of general parenting self-efficacy (Crncec et al., 2010).

Questions on this scale assess the degree to which parents believe they can handle parenting difficulties, and how they feel about their parenting abilities. Mothers were asked to rate their enjoyment in the parenting role, as well as their beliefs in being able to make decisions without help. Other questions included assessing the degree to which mothers felt they needed help to parent effectively, and also the extent to which they believed they could guide their preschoolers’ behaviors. It is scored by adding up the numerical responses for each question, with higher scores indicating lower perceptions of parental self-efficacy. See Table 1 for psychometric qualities of this variable.

**Maternal perceptions of child demandingness.** Maternal perceptions of child demandingness were assessed using the demandingness subscale of the Parenting Stress Index (PSI, Abidin, 1990). Mothers were asked to rate the number of the things that their older children do that bother them, and how long their children’s periods of crying last in minutes.
Mothers were also asked to rate the extent to which they believe their children are more likely to get hurt or have more health problems than other children, and the degree to which they believe their children ‘hang on them’ or have more demands, compared to other children. Again, the child being assessed was the older child, not the child the mother had recently birthed.

The demandingness scale of the PSI has shown good validity (Bigras, Lafreniere, & Dumas, 1996; Haskett, Ahern, Ward, & Allaire, 2006; Tam, Chan, and Wong, 2006). It has also proven to be reliable (Loyd & Abidin, 1985; Tam et al., 2006). This subscale is scored by summing numerical scores for each question, with higher scores denoting higher parental perceptions of child demandingness. See Table 1 for psychometric qualities of this variable.

**Maternal depression.** Maternal depression was measured using the Edinburgh Postnatal Depression Scale (EPDS) (Cox et al., 1987), a scale that was developed in 1987 and has shown to be a reliable and valid measure of depression (Adouard, Glangeaud-Freudenthal, & Golse, 2005; Navarro et al., 2007). Questions on this instrument ask the respondent to speak to how she has been feeling for the prior seven days. The 10 question scale asks about the ability to laugh at things, blaming oneself when things go wrong, being anxious and scared for no good reason, the ability to look forward to things, feeling scared, overwhelmed, crying, sleep problems, feeling sad, and thoughts of self harm (Cox et al., 1987).

A total possible score of 30 is possible, with a score of 10 usually indicating depression is possible. Different studies have used different cut off measures to determine what number meets the criteria for depression in their study. In order to meet criteria for depression for this study, participants had to score a 13 or above, which is consistent with the most recent literature (Matthey, Henshaw, Elliott, & Barnett, 2006). Some questions are reverse scored, and higher
scores on this scale denote higher levels of depression. The score for the instrument is determined by addition. See Table 1 for psychometric qualities of this variable. Please note that coefficient alpha is not calculated for maternal depression because item data was not available for this measure.

**Social support.** In order to assess mothers’ levels of social support, mothers were asked the following four questions. They were first asked how often in the prior 30 days they had received help managing their responsibilities to their families and their children (instrumental support). The choices were ‘never,’ ‘rarely,’ ‘sometimes,’ ‘often,’ or ‘very often.’ This question is a single item that was developed by the researchers and originally used for the purpose of the AMP study. It was designed to assess Instrumental Social Support. No information on validity or reliability of this item could be located (M. Stroo, personal communication, September 30, 2013).

They were then asked how often in the prior 30 days the following three types of emotional support had been available to them:

1) Someone to let them know they are good person,

2) Someone to make them feel loved and wanted, and

3) Someone to listen to their concerns when they’re feeling down.

The choices for these answers were ‘never,’ ‘rarely,’ ‘sometimes,’ ‘often,’ and ‘very often.’ These questions came from the Emotional Social Support construct (Sarason & Sarason, 1985).
For the purpose of analysis, these questions were scored by summing numerical answers to questions, with higher scores denoting higher level of perceived social support. See Table 1 for psychometric qualities of this variable.

**Stress.** In order to assess mothers’ stress levels, mothers were asked two questions about their ability to handle stress. Answers were coded on a six-point Likert-type scale, with ‘one’ indicating low or no stress and ‘six’ indicating high stress. The two questions were:

1) How would you rate your ability to handle stress, and

2) In the past month, how would you rate the amount of stress in your life (at home and at work)?

For the purpose of analysis, these two questions were combined by multiplication to create a stress index. The logic behind this was that among individuals reporting high levels of stress, there were some who rated their ability to handle stress high, while others rated their ability as low. Rather than creating subgroups based on combinations of the two stress variables, a variable was created that could be used in combination with the other study variables (Streiner & Norman, 2008). Preliminary analyses suggested that the index has stronger relationships with the study variables than the two separate stress questions.

Higher scores will denote higher levels of stress. See Table 1 for psychometric qualities of this variable. Please note that coefficient alpha for maternal stress is not represented in Table 1 because coefficient alpha cannot be computed for indices.
Table 1.

*Psychometric Properties of Major Study Variables*

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>M</th>
<th>SD</th>
<th>Alpha</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Skew</th>
<th>Items</th>
<th>Inter-item Correlation Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maternal Self-Efficacy</td>
<td>290</td>
<td>35.94</td>
<td>5.16</td>
<td>.74</td>
<td>20</td>
<td>45</td>
<td>-.48</td>
<td>8</td>
<td>.27</td>
</tr>
<tr>
<td>Demandingness</td>
<td>290</td>
<td>17.05</td>
<td>5.81</td>
<td>.78</td>
<td>2</td>
<td>36</td>
<td>.11</td>
<td>9</td>
<td>.29</td>
</tr>
<tr>
<td>Maternal reports of child Social and Emotional Quality of Life</td>
<td>290</td>
<td>81.42</td>
<td>13.80</td>
<td>.82</td>
<td>36</td>
<td>100</td>
<td>-.38</td>
<td>6</td>
<td>.39</td>
</tr>
<tr>
<td>Stress</td>
<td>290</td>
<td>14.44</td>
<td>8.12</td>
<td>n/a</td>
<td>1</td>
<td>36</td>
<td>.69</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Social Support</td>
<td>290</td>
<td>12.19</td>
<td>2.62</td>
<td>.89</td>
<td>3</td>
<td>15</td>
<td>-.85</td>
<td>3</td>
<td>.74</td>
</tr>
<tr>
<td>Maternal Depression</td>
<td>290</td>
<td>6.97</td>
<td>4.69</td>
<td>n/a</td>
<td>0</td>
<td>25</td>
<td>.66</td>
<td>n/a</td>
<td>n/a</td>
</tr>
</tbody>
</table>

The reader will notice that the inter-item correlation for maternal self-efficacy and demandingness are .27 and .29, respectively. Many statisticians and measurement experts have recommended a mean inter-item correlation of .15 to .20 for scales that measure broader or more general characteristics and between .40 and .50 for scales that measure narrower constructs (DeVellis, 2011: M. Swanson, personal communication, September 16, 2013). For measures with more items, like maternal self-efficacy (8 items), a lower mean inter-item correlation is
necessary to achieve an alpha of at least .70, which is the generally accepted minimum alpha to establish reliability (DeVellis, 2011; Ponterotto & Ruckdeschel, 2007; M Swanson, personal communication, September 16, 2013). Coefficient alpha is determined by both the number of items in the scale as well as the average inter-item correlations (DeVellis 2011; Ponterotto & Ruckdeschel, 2007; M. Swanson, personal communication, September 16, 2013). As such, the inter-item correlations for maternal self-efficacy are appropriate, as these are broader measures.

**Sample Size**

Completed T3 data is available for 290 of the original 400 participant dyads assessed at baseline. The control group comprised 145 of the 290 respondents. The remaining 145 were in the intervention group.

**The Data**

Staff at the KAN-DO study provided me with a de-identified data set of all data collected from all participant dyads at T3.

**Data Entry**

The data was merged from the KAN-DO de-identified data set into the Statistical Package for the Social Sciences (SPSS) 20.0. These data were merged for analysis and analysis was completed by a PhD level statistician and me. Only the participant number, and whether the participant was control or intervention, appeared on the data that was received for analysis.

**Data Preparation**

The data set we have included complete data for 290 participants. There was no missing data with regard to the major study variables. The data was checked for out-of range data entry errors. Scale scores were created for the measures of stress, social support, maternal self-
efficacy, demandingness, and child social and emotional quality of life.

**Approach to Data Analysis**

The method of data analysis is reported by each research question below:

**Question one.** Independent sample t-test and Pearson correlations were conducted to determine if the differences between the KAN-DO intervention and control groups on the study variables were small enough to warrant the combination of the two groups into a single study group.

**Question two.** Descriptive statistics, including frequencies, means, and standard deviations were explored, in order to identify the characteristics of the study sample with regard to mother’s age, ethnicity, education, and age of toddler.

**Question three.** Multiple regression was conducted to determine the connections between depression, stress, social support, maternal self-efficacy, demandingness, and maternal reports of child social and emotional quality of life.

**Question four.** Pearson correlations were conducted to identify the associations among the measures of depression, stress, social support, maternal self-efficacy, demandingness, and maternal reports of child social and emotional quality of life.

**Question five.** Hierarchical multiple regression were conducted to ascertain if after controlling for the effects of maternal self-efficacy (step 1), and depression, stress, and social support (step 2), demandingness was still able to predict, a significant amount of the variance in maternal reports of child social and emotional quality of life.
Summary

This study aimed to analyze the relationships between stress, social support, maternal depression, maternal reports of child demandingness, maternal self-efficacy, and maternal reports of child social and emotional quality of life, as well as any interactions between these variables. I aimed to do this via hierarchical regression modeling consistent with a similar study by Meunier et al. (2011), who analyzed the bidirectionality of parent child interactions, the meditational effect of parental self-efficacy, and the interactions between parent behavior and child personality.

I expected to find significant relationships between maternal reports of child demandingness and maternal reports of child emotional quality of life. I believed that there would also be relationships between maternal depression, maternal self-efficacy, stress, social support, and maternal reports of child emotional quality of life. My expectation was that after controlling for the effects of depression, maternal self-efficacy, stress, and social support, demandingness would account for most of the variance in maternal reports of child social and emotional quality of life.

Chapter IV: Results

This study investigated the connections between stress, social support, maternal self-efficacy, maternal depression, maternal reports of child demandingness, and maternal reports of child social and emotional quality of life in a sample of overweight and obese women approximately two years after giving birth to a second child. The outcome variable was the mother’s perception of social and emotional quality of life for her older child. For the purpose of being concise, the following terms will be abbreviated.
- Maternal reports of child social and emotional quality of life will be referred to as ‘child QOL.’

- Maternal depression will be referred to as ‘depression’.

- Maternal reports of child demandingness will be referred to as ‘demandingness.’

- Maternal self-efficacy will be referred to as ‘efficacy.’

- Stress and social support will be referred to as ‘stress’ and ‘social support.’

**Data Collection Methods**

Data were collected as part of the KAN-DO study, a longitudinal randomized clinical trial designed to prevent obesity in children of overweight mothers. Four hundred mother-child dyads were interviewed within two to six months of the mother (with a previous child) giving birth to a new baby (Time 1 or T1), again about 10 months later (Time 2 or T2), and once more at about a 22 months post baseline (Time 3 or T3) (Ostbye et al, 2011). A cross-sectional portion of T3 was selected for this dissertation due to my interest in the maternal construct of demandingness, and T3 was the only data collection time point for which a full measure of demandingness was available. Two hundred ninety seven of the original 400 participant dyads completed this data collection point.

Of the 297 women who completed T3, 290 provided complete data. The sample size for my secondary data analysis, then, includes these 290 women. There was no missing data with regard to the major study variables. However, there is a small amount of missing data with regard to demographic variables, which will be explained in more detail in the section below regarding demographic characteristics of the study sample.
Each research question was answered using separate data analysis. Please see Figure 1 below for the final regression model that was tested.

Figure 1. Final Hierarchical Regression Model for Prediction of Maternal Reports of Child Social and Emotional Quality of Life
Data Analysis and Results

**Question one.** Are the differences between the KAN-DO intervention and control groups on the study variables small enough to warrant the combination of the two groups into a single study group?

**Data analysis.** The study from which the data was taken had a control group and an intervention group. Half of the sample (n=145) came from the control group and the other half (n=145) came from the intervention group. The analyses performed by the PI of the original study indicated that there were few differences between their intervention and control groups on their study variables at T3 (Østbye et al., 2012). To address research question number one, to determine whether differences were small enough to consider using one large sample instead of dividing the analysis by study(intervention vs. control) group, I conducted independent sample T-tests and Pearson correlations.

Independent sample T-tests and Pearson correlations were performed in order to determine if there were significant differences between the control group and the intervention group with regard to the study variables. Independent sample T-tests were chosen because I wanted to compare the mean scores of continuous variables with regard to two different groups of study variables to ascertain if their differences reached statistical significance (Gravetter & Wallnau, 2000; Pallant, 2005). Pearson correlations were performed in order to determine the strength and direction of the relationship between the study variables (Gravetter & Wallnau, 2000; Pallant, 2005). It was my intention to decipher whether the differences between the study groups were small enough to warrant the combination into one large study sample, and
independent sample T tests and Pearson correlations allowed me to determine if the mean differences between the groups were statistically significant, and also the nature and strength of the relationship between the study variables (Gravetter & Wallnau, 2000; Pallant, 2005). These statistical analyses allowed me to decipher if there were any real differences between the study variables in the control or intervention groups.

**Results.** Maternal respondents in the control group had slightly lower scores in demandingness ($M$=1.88, $SD$=.576) than respondents in the intervention group ($M$=2.03, $SD$=.598), $t$(288)=-2.12, $p$=.035. However, the magnitude in the effect size was very small (eta squared= .015). There were no significant differences between the control group and intervention group on any of the other study variables, and the correlations between the variables were very similar. Therefore, I made the decision to combine the control and intervention group into one large study sample (N=290). See Table 2 and 3 below.
Table 2

*Differences Between Control and Intervention Groups on Major Study Variables*

<table>
<thead>
<tr>
<th>Arm</th>
<th>Control</th>
<th>Intervention</th>
<th>95% CI</th>
<th>t</th>
<th>f</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>N</td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>Demandingness</td>
<td>1.88</td>
<td>.58</td>
<td>145</td>
<td>2.03</td>
<td>.598</td>
</tr>
<tr>
<td>Depression</td>
<td>6.43</td>
<td>4.68</td>
<td>145</td>
<td>7.50</td>
<td>4.66</td>
</tr>
<tr>
<td>Stress</td>
<td>14.06</td>
<td>8.30</td>
<td>145</td>
<td>14.82</td>
<td>7.94</td>
</tr>
<tr>
<td>Social Support</td>
<td>12.10</td>
<td>2.61</td>
<td>145</td>
<td>12.27</td>
<td>2.65</td>
</tr>
<tr>
<td>Efficacy</td>
<td>4.02</td>
<td>.58</td>
<td>145</td>
<td>3.96</td>
<td>.57</td>
</tr>
<tr>
<td>Child QOL</td>
<td>82.19</td>
<td>13.16</td>
<td>145</td>
<td>80.64</td>
<td>14.4</td>
</tr>
</tbody>
</table>

*p<.05*
Table 3

*Pearson Product-Moment Correlations Between Study Variables For Intervention and Control Groups*

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.Depression</td>
<td>1</td>
<td>.51**</td>
<td>.57**</td>
<td>-.51**</td>
<td>-.41**</td>
<td>-.20*</td>
</tr>
<tr>
<td>2.Demandingness</td>
<td>.35**</td>
<td>1</td>
<td>.37**</td>
<td>-.39**</td>
<td>-.58**</td>
<td>-.46**</td>
</tr>
<tr>
<td>3.Stress</td>
<td>.70**</td>
<td>.29**</td>
<td>1</td>
<td>-.21**</td>
<td>-.39**</td>
<td>-.21*</td>
</tr>
<tr>
<td>4.Social Support</td>
<td>-.32**</td>
<td>.17*</td>
<td>-.12</td>
<td>1</td>
<td>.37**</td>
<td>.19*</td>
</tr>
<tr>
<td>5.Efficacy</td>
<td>-.45**</td>
<td>.66**</td>
<td>-.42**</td>
<td>.23**</td>
<td>1</td>
<td>.41**</td>
</tr>
<tr>
<td>6.Child QOL</td>
<td>-.29**</td>
<td>-.43**</td>
<td>-.24**</td>
<td>.14</td>
<td>.46**</td>
<td>1</td>
</tr>
</tbody>
</table>

** p< 0.01 level

*p<0.05 level

*Note: Correlations above the diagonal are for the intervention group and correlations below the diagonal are for the control group.*

Table 3 shows the correlations among the study variables for the intervention and control group participants. There was complete agreement between positive and negative correlations in the two groups. Of the 15 correlations in each group, there was agreement on 10 of the correlations in terms of strengths of the correlations. For the other five correlations, three medium size correlations (r=.30 to.49) in the intervention group had correspondingly small
correlations (r=.10 to .29) in the control group. Two large correlations (r=.50 to 1.00) in intervention group matched to two medium correlations in the control group. All the correlations were statistically significant (at least p<.05) in each group.

These analyses reflect only small differences between the two groups. The intervention group had a mean for demandingness that was statistically significant and larger than the score in the control group, but the effect size was small. The pattern of correlations among study variables in both groups was very similar. Only 1/3 of the correlations differed in the strength of their associations, and all correlations reached statistical significance.

Thus the study variables did not differ significantly between the intervention and control groups. My findings were consistent with Østbye et al. (2012), who found few major differences between the study variables in the original analysis. Based on this information, the intervention group and control group were combined into one large study sample.

Question two. What are the characteristics of the study sample with regard to mother’s age, ethnicity, education, and age of toddler?

Data analysis. Descriptive statistics were conducted in order to see if there were any significant differences among study variables with regard to mother’s age, child’s age, mother’s ethnicity, and mother’s education. Frequencies were run in order to test the characteristics of the categorical variables (ethnicity and education), and descriptives were run in order to obtain the mean and standard deviation of the continuous variables (mother’s age and child’s age) (Gravetter & Wallnau, 2000; Pallant, 2005). This was completed in order to determine what differences existed among demographic variables with regard to study variables.
**Results.** Once the study sample was combined, descriptive statistics were calculated with regard to the mother’s and child’s age at T3, as well as mother’s educational level and mother’s self-identified ethnicity. Not all mothers identified their ages or the ages of their children at T3, and not all mothers identified racially at T3, so there is some missing demographic data. Of the 290 women included in the study sample, 283(98%) identified their races. Two hundred and sixty two of the 290 (90%) identified their ages and their children’s ages at T3. See Table 4 below.

<table>
<thead>
<tr>
<th>Variable</th>
<th>N (%)</th>
<th>M(SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Race</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caucasian</td>
<td>234(80.7)</td>
<td></td>
</tr>
<tr>
<td>African American</td>
<td>49(16.9)</td>
<td></td>
</tr>
<tr>
<td>Missing</td>
<td>7(2.4)</td>
<td></td>
</tr>
<tr>
<td><strong>Education</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High School Diploma</td>
<td>30(10.3)</td>
<td></td>
</tr>
<tr>
<td>Some College</td>
<td>55(19.0)</td>
<td></td>
</tr>
<tr>
<td>College Graduate</td>
<td>120(41.4)</td>
<td></td>
</tr>
</tbody>
</table>
Table 4 shows that the mean age of the mothers was 35 years old, with a range of 23 to 49 years old. The children ranged in age from almost four to almost eight years old, with a mean age of 5.35 years old. The majority of the sample identified as Caucasian. The participants also had a high level of formal education, with 71% possessing a college degree or higher.

**Question three.** What are the associations among the measures of depression, stress, social support, efficacy, demandingness, and child QOL?

**Data analysis.** Correlational analyses were conducted on the large study sample (combining intervention and control groups) for the purpose of identifying the strength and direction of the relationship between pairs of study variables (Gravetter & Wallnau, 2000; Pallant, 2005). The correlation coefficient reflects the linear relationship between two variables, ranging from -1 (strong negative relationship) to +1 (strong positive relationship) (Pallant, 2005). The correlation analysis was done for the purpose of determining if there were relationships among the study variables. However, no causation can be inferred from correlation.

**Results.** All variables were highly correlated with one another, and all were statistically significant at the p<.01 level. Table 5 presents the Pearson correlations between the study variables. Small correlations were observed between stress and social support (r=.16) and social support and child QOL (r=.17). There was a large positive correlation between depression and
stress (r=.64) and a large negative correlation between efficacy and demandingness (r=-.62). All of the other correlations represented associations of a more medium or moderate strength.

Social support and efficacy were positively related to child QOL. Depression, stress, and demandingness were all negatively correlated to child QOL. Please see Table 5 below.

Table 5

*Pearson Product-Moment Correlations Between Study Variables in the Combined Group*

<table>
<thead>
<tr>
<th>Measure</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Depression</td>
<td>1</td>
<td>.64</td>
<td>-.41</td>
<td>.44</td>
<td>-.43</td>
<td>-.25</td>
</tr>
<tr>
<td>2. Stress</td>
<td>1</td>
<td>-.16</td>
<td>.34</td>
<td>-.41</td>
<td>-.23</td>
<td></td>
</tr>
<tr>
<td>3. Social Support</td>
<td>1</td>
<td>-.28</td>
<td>.30</td>
<td>.166</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Demandingness</td>
<td>1</td>
<td>-.62</td>
<td>-.45</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Efficacy</td>
<td>1</td>
<td>.44</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Child QOL</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note: All correlations p<.001*

These results reflect that variables were correlated to each other in the expected ways, based on the available literature. Depression had a negative relationship with social support, efficacy and child QOL, and a positive relationship with stress and demandingness. Stress had a negative relationship with social support, efficacy, and child QOL, and a positive relationship with demandingness. Social support had a negative relationship with demandingness, and a
positive relationship with efficacy and child QOL. Demandingness had a negative relationship with efficacy and child QOL. Efficacy had a positive relationship with child QOL.

**Question four.** What are the connections between depression, stress, social support, efficacy, demandingness, and child QOL?

**Data analysis.** Once correlational analyses were conducted and it was determined that all variables were highly correlated, it was necessary to determine the direction of these relationships. Multiple regression allows analysis of the relationship between several independent variables and one continuous variable (Pallant, 2005; Tabachnick & Fidell, 2001). Standard multiple regression allows all predictor variables to be entered into a regression equation at one time, to see what cumulative effect they have on the continuous dependent variable (Pallant, 2005). This analysis allowed me to see what effect all of the predictor variables (demandingness, efficacy, depression, social support, and stress) had on the continuous dependent variable (Child QOL), when all predictor variables were added into the equation at the same time.

**Results.** I analyzed the study variables with the purpose of determining which of the constructs were the strongest predictors of child QOL. A standard multiple linear regression was used to investigate how well the predictor values of efficacy, depression, stress, social support, and demandingness predicted child QOL. This was done to see how much of the variance in the model the predictor variables as a whole were responsible for, and also to see which of the predictors emerged as significant and unique in the model.

A check of normality revealed that the residuals (the differences between the predicted and actual child QOL scores) were distributed in the expected way with regard to predicted child
QOL scores on the scatterplot. Homoscedasticity refers to when the variance in the residuals with regard to predicted child QOL scores are about the same for all predicted scores (Tabachnick & Fidell, 2001). Multicollinearity occurs when predictor variables are highly correlated with one another, at a correlation of .9 or above (Pallant, 2005). An evaluation of all assumptions indicated no problems with normality, homoscedasticity, or multicollinearity.

Table 6 displays the variables, unstandardized regression coefficients (B), standard error of the B coefficients, standardized regression coefficients (β), R², and the change in R² at each step of the hierarchical regression. Step 3 in Table 6 shows that the combination of predictor variables (as was done in the standard multiple regression) accounts for 24.4% of the total variance in child QOL scores. R for regression was significantly different from 0, F(5,284)=18.32, p<.001. Efficacy and demandingness had unique and statistically significant relationships with child QOL. When controlling for other variables in the model, depression, stress, and social support were weak predictors of child QOL.

This means that when all the variables (efficacy, depression, social support, stress, and demandingness) were put into the regression model at the same time, cumulatively they accounted for 24.4% of the difference in child QOL scores. However, efficacy and demandingness contributed the most to the model. In the next step of the analysis, I was interested in isolating the effects of individual variables with regard to their influence on child QOL. To do this, a hierarchical regression was conducted, as it allowed me to identify the effects of individual variables as well as groups of variables with regard to child QOL.
**Question five.** After controlling for the effects of efficacy (step 1), and depression, stress, and social support (step 2), is demandingness still able to predict a significant amount of the variance in child QOL?

**Data analysis.** Hierarchical multiple regression allows for a researcher to control for the effect of individual variables or groups of variables on a single continuous variable, and to see what contribution each variable or set of variables makes in the prediction of the variance in the continuous variable (Pallant 2005; Tabachnick & Fidell, 2001). Once standard multiple regression was conducted and it was determined what percentage of the variance in the continuous variable was due to the effects of all of the predictor variables, it became possible to isolate certain variables and enter them into regression analyses to determine what power they had in and of themselves. Since my research question was about the independent effects of demandingness on child QOL, and the research has shown that efficacy has a significant effect on child QOL, I conducted a hierarchical multiple regression, entering efficacy in the first step, social support, stress and depression in the second step, and demandingness in the third step. This allowed me to see the independent contributions of each set of variables entered at each phase of the hierarchical multiple regression.

**Results.** Based on the available literature on the power of maternal perceptions on child QOL (Johnston et al, 2009), I expected that demandingness would predict a significant amount of the variance of child QOL, after controlling for the effects of efficacy, depression, stress, and social support. Hierarchical regression was employed to determine if the addition of the demandingness variable after controlling for the effects of efficacy, depression, stress, and social support still accounted for a significant proportion in the variance of child QOL.
Table 6 displays the results of the hierarchical regression analysis. After entering efficacy at step 1, $R^2=.191$, $F(1,288)=68.19$, $p<.001$. After the addition of social support, stress, and depression to efficacy at step 2, $R^2=.196$, $F(4,285)=17.41$, $p<.001$. The addition of social support, stress, and depression accounted for $R^2=.005$, $F(3,285)=0.59$, $p=.63$, which was a non-significant result. Step 3 added demandingness to the other variables, $R^2=.244$, $F(5,284)=18.33$, $p<.001$. The addition of demandingness accounted for $R^2=.048$, $F(1,284)=17.86$, $p<.001$. After controlling for efficacy, depression, stress, and social support, demandingness explained a further 5% of the variance in QOL.

Table 6

Hierarchical Multiple Regression Summary Predicting Maternal Reports of Child QOL From Demandingness When Controlling for Efficacy, Social Support, Stress, and Depression (n=290)

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SEB</th>
<th>B</th>
<th>$R^2$</th>
<th>$R^2$ change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td></td>
<td></td>
<td>.191**</td>
<td>.191**</td>
<td></td>
</tr>
<tr>
<td>Efficacy</td>
<td>10.54</td>
<td>1.28</td>
<td>.44**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 2</td>
<td></td>
<td></td>
<td>.196**</td>
<td>.005</td>
<td></td>
</tr>
<tr>
<td>Efficacy</td>
<td>9.596</td>
<td>1.470</td>
<td>.40**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stress</td>
<td>-.050</td>
<td>.121</td>
<td>-.03</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Based on the extant literature, I believed that all of the predictors would be related to maternal reports of child QOL, but that demandingness would have unique predictive value. As expected, efficacy and demandingness had unique and statistically significant relationships with maternal reports of QOL. Contrary to my expectations, social support, stress, and depression were very weak predictors of maternal reports of QOL. In fact when controlling for other variables in the model, depression, stress, and social support had very little statistical significance. In the discussion section, I will discuss my thoughts on possible explanations for this.
Summary

In summary, results of my statistical analysis showed that the sample was very similar with regard to study variables, so it made sense to combine the intervention and control into one large study group. Participants in the control and intervention group did not differ significantly at T3 with regard to the depression, efficacy, social support, stress, demandingness and child QOL scores. Respondents were predominantly white and well educated, with a mean age of 35 years old. The children who were being assessed by their mothers had a mean age of 5.35 years old. In addition, all study variables were highly correlated with one another, indicating that the constructs being measured had clear relationships with each other.

Standard multiple regression revealed that both demandingness and efficacy were significant predictors of variance in maternal reports of child QOL scores. This means that when stress, social support, demandingness, depression, efficacy, were entered into the regression equation at the same time, they predicted 24.4% of the variance in maternal reports of child QOL scores. Efficacy and demandingness were the most salient predictors, with demandingness emerging as a slightly stronger predictor. In this model, stress, social support, and maternal depression had little predictive value with regard to variance in maternal reports of child QOL scores.

While standard multiple regression revealed what the variance that the model predicted when all variables were entered at the same time in to the equation, I was interested in controlling for the effects of efficacy, social support, stress, and depression (variables whose relationship to child QOL has been well documented in the literature), in order to determine the
predictive value of demandingness, a construct that’s relationship to maternal reports of child QOL is not clear in the literature. Hierarchical multiple regression analysis was then performed to control for the effects of efficacy, as well as stress, social support, and depression, for the purpose of determining the true predictive value of demandingness. When efficacy was entered alone, it predicted a significant amount of the variance in maternal reports of child QOL. When stress, depression, and social support were added into the model, there was little change in predictive value. However, when demandingness was added into the model in the third and final step, it significantly increased the predictive value of the model. Thus, the two factors that most significantly impacted maternal reports of child QOL were mother’s feelings of efficacy and mother’s feeling of how demanding her child was. Depression, social support, and stress had little predictive value in this model.

Conclusion

Both efficacy and demandingness emerged as significant predictors of maternal reports of child QOL, with the latter showing slightly more predictive value. Social support, stress, and depression had very little predictive value in the model. Based on these findings, it is reasonable to posit that in this population of overweight women with young children, maternal perceptions of child demandingness have the power to predict maternal perceptions of child social and emotional quality of life. It is also reasonable to assert that social support, stress, and depression may have less influence than the positive effects of maternal self-efficacy, and the negative effects of maternal perceptions of child demandingness. Possible explanations for this will be discussed in the next chapter.
In the next section, I will summarize the study and discuss my findings. I will explore possible conclusions to be drawn from my study, as well as limitations of my research. I will discuss implications for practitioners and possible avenues for future research. I will conclude with a summary of the study in its entirety.

CHAPTER V: DISCUSSION

Introduction

In this discussion section, I will first summarize the study in its entirety. Then, I will discuss my findings, and the resulting conclusions. I will then delineate limitations of the study, implications for practitioners, and possible avenues for future research.

Summary of the Study

I entered into this inquiry because many women experience difficulties adjusting emotionally after they have given birth (see Kingston et al., 2012), and I was interested in adding new knowledge to the existing literature on how maternal well-being and maternal perceptions impact child well-being (see Conroy et al, 2012). I was especially interested in the power of maternal perceptions in the way they organize parenting and ultimately perceptions of children’s social and emotional functioning. Previous studies have shown that maternal cognitions have the power to organize parenting and ultimately child outcomes in significant ways (see Broussard and Harther, 1970, Casanueva et al, 2011, Degroat, 2003; Kroes et al., 2003). The construct of child demandingness, especially as it relates to other maternal and child constructs, is one that has not been widely discussed in the literature (Keller & Honig, 2004; Maroto-Navarro et al., 2007).
The literature has also consistently shown that parental self-efficacy has the potential to buffer the effects of constructs that have typically caused problems for mothers in the postpartum period (see Crncec et al., 2010 for review). I was interested in measuring the effects of maternal self-efficacy and maternal reports of child demandingness on maternal reports of child well-being, especially when other factors were considered. One such factor is social support, which has been linked to depression (Chien et al., 2012; Cutrona & Troutman, 1986; Ege et al., 2008; Haslam et al., 2006; Leahy-Warren et al., 2012; Xie et al., 2009) and parenting self-efficacy (Cutrona & Troutman, 1986; Leahy-Warren et al., 2012; Suzuki et al, 2009; Young, 2011).

Other factors are stress and depression, which have been shown to have negative effects on child well-being (Bernstein, 2006; Bloomfield & Kendall, 2012; Martorell & Bugental, 2006; Paris et al., 2011; Tompson et al., 2010). A last construct is maternal perceptions, which has been linked to mothering and child outcomes (Casanueva et al., 2010; Paris et al., 2011; Pomerantz & Dong, 2006; Porter & Hsu, 2003) and parental self-efficacy (Fulton et al., 2012; Verhage et al., 2013). These topics take on added significance with overweight and obese women, as studies have shown that women who are classified as overweight or obese (having a pre-pregnancy Body Mass Index (BMI) of over 25) are more vulnerable to depression and other negative mental health outcomes than women who had a BMI of less than 25 prior to pregnancy (Anderrson, Sundstrom-Poromaa, Wulff, Astron, & Bixo, 2006; Carter et al., 2000; Lacoursiere et al, 2006).

The literature shows that these constructs are linked together in both direct and indirect ways. What this study was designed to do was examine the connections between maternal well-being and maternal perceptions of child demandingness, and their relationships with maternal perceptions of child social and emotional quality of life. While there is evidence in the literature
that maternal perceptions have a significant impact on mother and child outcomes (e.g. Casanueva et al., 2010), I was unable to find the specific perception of demandingness, and its impact on maternal perceptions of child social and emotional outcomes, having been explored in the literature. This study aimed to bridge that gap. To the best of my knowledge, no other study has addressed these issues from this angle, and it is of particular importance with a sample of overweight and obese women, who may be more at risk for stressors such as depression, which is linked in significant ways to adverse mothering and child outcomes (Anderrson, Sundstrom-Poromaa, Wulff, Astron, & Bixo, 2006; Carter et al., 2000; Lacoursiere et al., 2006).

Analysis produced results in both expected and unexpected directions. As hypothesized, the combined influence of depression, social support, efficacy, demandingness, and stress predicted a significant amount of the variance in maternal reports of child QOL. Also as expected, demandingness and efficacy emerged as unique and significant predictors of maternal reports of child QOL, over and above the effects of depression, stress, and social support. A more surprising result was the relative minor influence that depression, stress, and social support had in predicting maternal reports of child QOL, together predicting only about 5% of this variance. In the below sections, these results will be discussed in more depth, followed by limitations, implications, and possible avenues for future research.

Findings and Conclusions

Summary. This study was designed to assess how maternal depression, stress, social support, efficacy, and maternal perceptions of child demandingness affect overweight mothers who have recently given birth and who have an older child at home between the ages of four and seven. The outcome variable was the maternal reports of social and emotional quality of life of the older child. In order to conduct this analysis, I gained access to a data set of women and
children who had participated in a research study for overweight and obese women who had recently given birth and who also had an older child at home. Data informing the present study was collected at the third and final time point of the study (T3). Data was analyzed relative to the mother’s educational attainment, age, race, depression status, level of stress, level of social support, feelings of maternal self-efficacy, perceptions of child demandingness, and perceptions of child QOL.

**Differences between groups.** Analyses reflected only small differences between the control and intervention groups at the T3 data point on all study variables, consistent with Østbye et al. (2012). Based on this, I decided to combine the study sample into one large group for the purpose of analysis. This is consistent with all other published studies that have emerged from the KAN-DO data set. For example, one study focused on changes in physical activity among the mothers in the study (Evenson, Brouwer, & Østbye, 2013). Another study examined toddler responsiveness to satiety, as well as relationships between breastfeeding and toddler weight concerns (data taken from both KAN-DO and AMP) (Hathcock et al, 2013). Other studies include the effect of parenting practices and home environment on child food intake and exercise (Østbye et al., 2013), and more general feeding and eating behaviors (Østbye et al., 2012, Turer et al., 2013; Wiltheiss et al., 2012). No resulting studies focused on the differences among study variables between the control and intervention groups, because there was nothing significant to report.

**Demographics.** The demographic makeup of the sample showed that the women were predominantly white, and well educated, with a mean age of 35 years old. It is also important to again note that all women in the study were classified as overweight or obese, based on a self-
reported BMI of 25 or above prior to their most recent pregnancy. The children who were being assessed ranged in age from four to seven years old.

**Risk and protective factors.** Some studies cite that mothers with a high level of education are more at risk for depression (Bener et al., 2012), and others have found that less education is associated with more depression (Centers for Disease Control and Prevention [CDC], 2008). Miyake, Tanaka, Sasaki, & Hirota (2011) found no connection between education and postpartum depression. The majority of studies have found that women who are older may be at lower risk for depression than younger women (Bener et al., 2012; CDC, 2008; Darcy et al., 2011). With regard to social support, many women in the postpartum period have difficulty receiving the social support that they need (Razurel, Kaiser, Sellenet, & Epiney, 2013), and unmet or inadequate social support has consistently been shown to put women at risk for depression, especially in the postpartum period (Areias, et al., 1996; Boothe et al., 2011; Boyce & Hickey, 2005; Leung, 2002).

Eighty-eight percent of the study participants did not meet the criteria for depression at T3. Further, women in this study reported a relatively low level of stress and, and high levels of social support. It is possible that the women in this study were somewhat protected from the effects of depression by relatively older age, higher levels of education, and higher levels of social support(Boothe et al., 2011; Darcy et al., 2011). It is also possible that these factors were somehow protective against the effects of being overweight or obese, which has been shown to predispose women to problems with depression (see Lacourseire et al., 2010).

In addition to the possibility that education, low stress levels, and high social support were protective against depression, it is also possible that other factors were at work. It is possible that women who volunteer for a research study may have more resources, be less
distressed than their peers, and have higher levels of social support in general. This would be consistent with Lönnqvist et al. (2007), who found that people who volunteer for research studies tend to be lower in neuroticism, higher in extraversion and agreeableness, and higher in conscientiousness. It is reasonable to infer that more extroverted and agreeable people may have more social support and resources.

In their meta-analysis, O’Hara and Swain (1996) found that the past history of psychopathology, psychological disturbance during pregnancy, low social support, and high stress were the most salient predictors of postpartum depression. The women in the present study were not assessed for psychopathology (other than depression) and were not assessed for depression during their most recent pregnancy or during their prior pregnancy, so it is not possible to comment on whether or not that was a factor. However, women in this study did report high social support and low stress.

Another possibility is that by the third time these women were assessed, any depressive symptoms they may have had relative to the birth of their second child may have dissipated or decreased in intensity. This is consistent with the generally accepted clinical definition of ‘postpartum depression,’ which would suggest that any depression they may have had relative to the birth of their child would have dissipated at around the one-year postpartum mark (O’Hara and McCabe, 2013). However, this would be inconsistent with a body of literature that has suggested that symptoms of depression can last several years after childbirth (Cox et al, 1984; Führer et al, 2009; Goodman, 2004), with one study finding symptoms of depression present eight years after the birth of a child (Führer et al., 2009). It is this body of literature that cites symptoms of depression that last beyond the first year postpartum (maternal depression) that the present study reflects.
An extensive search of the literature yielded few studies addressing maternal distress or psychopathology related to the birth of a second child, as compared to primiparous women. Klint Carlander, Andolf, Edman, and Wiklund (2013) conducted a longitudinal study over five years with first time mothers related to factors influencing the decision to have a second child later. One of the factors assessed was whether the mother had depression (measured by the EPDS) after the birth of her first child, and whether this impacted her decision to have another child. Results indicated that postnatal depression after a first pregnancy did not impact the decision to have a second child. The only other published study I could find was Josefsson et al. (2002) who found no associations between postpartum depression and the number of time a woman has given birth.

It is possible that the results of the present study are related to the findings of Klint Carlander et al. (2013) and Josefsson (2002). Perhaps there is a connection between having a second child and being less affected by the impact of depression. It is possible that women who have more than one child are somewhat more protected from the effects of depression and may experience less stress and depression and be more positively connected to others. This is an area worthy of future exploration, especially as it relates to the status of being overweight or obese, which the literature would suggest would put the women more at risk of unfavorable parenting and child outcomes.

**Relationships between major study variables.** Results are consistent with the literature that has shown reliable relationships between depression and stress (Bernstein, 2006; Fox & Gelfand, 1994; Leung, 2002; Maciejewski et al., 2000), and perceptions and efficacy (Fulton et al., 2012; Verhage et al., 2013). The literature also consistently shows positive relationships between social support and efficacy and child QOL, and negative relationships between
depression and social support, stress, negative maternal perceptions and reports of child QOL. It also shows negative relationships between depression and social support, stress, negative maternal perception, and child QOL (Areias et al., 1996; Bagner, Pettit, Lewinsohn, & Seeley, 2010; Boothe, Brouwer, Carter-Edwards, & Østbye, 2011; Boyce & Hickey, 2005; Leung, 2002, Suzuki et al., 2009; Young, 2011). As expected, the perception of demandingness was also negatively correlated with reports of child QOL.

The present study revealed that maternal self-efficacy and maternal reports of child demandingness explained a large portion of the variance in maternal perceptions of child social and emotional quality of life. Maternal reports of child demandingness emerged as a slightly stronger predictor than maternal self-efficacy. Feelings of maternal self-efficacy and perceptions of child demandingness were the most important predictors of how a mother felt about her child’s social and emotional functioning. They were more important than stress, social support, and depression, which in previous studies have shown far greater predictive value with regard to maternal perceptions of child functioning (see Conrad et al., 2012).

The results show that maternal perceptions and maternal self-efficacy have a significant effect on perceptions of child QOL. This is consistent with a body of literature that has shown that maternal self-efficacy is a very powerful construct, and maternal perceptions are extremely salient and have the potential to inform maternal behavior, which at least in part systemically informs child behavior and well-being (Jones & Prinz, 2005). This study provides further evidence for the affirming and protective value of maternal self-efficacy, and for the power of maternal perceptions with regard to child outcomes, which has the potential for affirmation and also for self-fulfilling prophecy.
It is worth noting that in this study, depression, social support, and stress did not significantly contribute to the variance in maternal reports of child QOL, predicting only about 5% of the variance in child QOL. But as discussed earlier in this chapter, women in this study were mostly white, well educated (many had a college degree), and relatively older (mean age of 35 years old), which research has shown can be protective against harmful factors such as depression, which is linked to social support and stress (Bener et al., 2012; CDC, 2008; Darcy et al., 2011). Further, women in this study reported lower levels of stress and depression, and higher levels of perceived social support. In fact, only 12% of the sample met the criteria for depression. This could explain why the relative influence of social support, stress, and depression was not that significant in the variance in maternal reports of child QOL. This particular sample of women did not report suffering from particularly high levels of stress or depression, and reported fairly high levels of social support, so it is reasonable that the effects of depression, stress, and social support would not be significant predictors of maternal reports of child QOL.

In the last step of my analysis, I conducted hierarchical multiple regression in order to determine the true predictive value of maternal reports of child demandingness, while controlling for all other study variables. When controlling for the effects of maternal self-efficacy, stress, social support, and maternal depression, maternal reports of child demandingness still emerged as a significant predictor of maternal reports of child social and emotional quality of life. Both maternal self-efficacy and maternal reports of child demandingness were independent predictors of maternal reports of child social and emotional quality of life, but maternal reports of child demandingness was a slightly stronger predictor.

Based on the findings of my research questions, I think it is reasonable to conclude that consistent with a large body of literature, maternal self-efficacy and maternal perceptions of
child behavior have a significant effect on maternal reports of child social and emotional quality of life (Casanueva, et al., 2010; Meunier et al., 2010, Paris et al., 2011; Youngstrom, 1998; Verhage et al., 2013).

While stress, social support, and maternal depression had some predictive value with regard to maternal reports of child social and emotional quality of life, maternal self-efficacy and maternal reports of child demandingness had far more predictive value. This makes sense, low levels of depression and stress in this sample, and the high levels of reported social support. Quite simply, this sample was just not that distressed. Considering previous literature that suggested that the presence of high maternal self-efficacy can lessen the documented deleterious effects of problems such as depression (Knoche et al., 2007), which is highly associated with low social support (see Chien et al, 2012) and high stress (Coleman, 1998), and maternal self-efficacy, which all have connections to mothering and child outcomes, these relationships make sense (Ardelt & Eccles, 2001; Bor & Sanders, 2004; Coleman & Karraker, 1998; Crnec et al., 2010; Jones & Prinz, 2005; Verhage et al., 2013; Yaman et al, 2010).

The findings with regard to maternal reports of child demandingness are provocative. Previous research has shown that maternal perceptions are associated with maternal behavior and ultimately with child behavior (see Paris et al, 2011). Jones and Prinz (2005) also recommended future research to examine the parental cognitions that lead to parental self-efficacy. In this study, the specific cognition/perception of child demandingness was predictive independent of maternal self-efficacy. Indeed, they seemed to work in conjunction with one another to predict reports of child social and emotional outcomes. To my knowledge, this is the first study of its kind to specifically examine the maternal perception of child demandingness as it relates to maternal reports of child social and emotional quality of life.
Keller and Honig (2004) found that maternal perceptions of child demandingness and need for care were the highest causes of stress in mothers with a school aged child with a disability. However, the present study differed in that it was using a sample of overweight and obese mothers, and was specific to mothers with a toddler and a new baby.

Further search of the literature yielded more recent work with regard to perceptions of child demandingness and its impact on reports of child well-being. Like Keller and Honig (2004), Brown, McIntyre, Crnic, Baker, and Blacher (2011) studied parental reports of child demandingness within the context of caring for a child with a disability. Brown et al. (2011) noted that the construct of child demandingness has not been studied in isolation, which speaks to the need for the present study and for future research to further delineate the processes around perceptions of child demandingness. Brown et al. (2011) found that there were relationships between early risk for developmental delay, negative parenting, and later parental reports of child demandingness. The researchers found that children who were sickly as infants were more likely to be perceived later (they were assessed at five years old) by their parents as demanding. Early risk factors for developmental delays and negative mothering was associated with perceptions of child demandingness when the child was five years old.

The present study is different in that it examines the experiences of children without developmental delay, and in a sample of overweight women in the postpartum period. More research is needed to discern whether the same risk factors that impact children with developmental delay are relevant to the women in the present study. The only other published study I could find that addressed child demandingness was Mäntymaa, Puura, Luoma, Salmelin, and Tamminen (2004), who examined maternal intrusiveness and its impact on child behavior problems. These researchers found that maternal intrusiveness tended to increase undesirable
child behaviors. Using a model informed by systemic thinking, Mäntymaa et al. (2004) posited that a mother’s intrusive behavior may lead a child to try to avoid her mother, and then become easily frustrated or upset when the mother continues to pursue her, thus leading her to act in undesirable ways and be seen as demanding by her mother. This study is relevant to the present study in that it speaks to how maternal constructs impact child behavior, and more specifically, perceptions of child behavior, as in the present study. It is different in that the present study is studying a sample of overweight women in the postpartum period, and also looks at maternal self-efficacy, maternal depression, social support and stress.

The current study also challenges the work of researchers who have found a substantial connection between obesity and depression, specifically pre-pregnancy obesity and depression in the postpartum period (Andersson et al., 2006; Carpenter et al., 2000; Carter et al., 2000; LaCoursiere et al., 2006; Lacourseire et al., 2010; Sundaram et al., 2012). Only a small percentage of women in the present study met the criteria for depression, and all of them met the criteria for overweight or obese status. It is also difficult with the results of the present study to make a solid connection between maternal depression and maternal reports of child social and emotional quality of life. The portion of women who met the criteria for depression was such a small percentage that it is difficult to generalize to a larger population.

It is also possible that the women in the present study met the criteria for depression at an earlier time point (T1 or T2), but no longer met the criteria by the T3 time point. Considering that both T1 and T2 took place roughly within the first year postpartum, it is possible that the neurobiological sources of depression in the postpartum period, the hypothesized hormonal withdrawal and/or sleep deprivation that causes mood destabilization for some women after
childbirth (Bloch et al., 2000; Pearlstein et al., 2009; Wisner et al., 2006), was not a factor at the T3 time point, which was approximately two years after childbirth.

But this makes sense given that any depression that the women may have been experiencing would not have met the criteria for postpartum depression, but rather maternal depression. The generally accepted neurobiological explanation of depression is that a dearth of serotonin is responsible for depression (Albert and Benkelfat, 2013), though some researchers have posited that it is a combination of biological and environmental factors that influence depression, but still acknowledge the important role of serotonin in these processes (Albert et al., 2012).

However, it makes sense that the women in this study may have still been depressed at the T3 time point if they indeed were depressed at the T1 and T2 time point, given the work of Willner et al. (2012), who posited that depression can be broken down into three different types, 1) ‘simple; depressions that are dependent on situational stressors, 2) an increased susceptibility to depression that develops over several episodes of depression, and 3) certain factors that make a person particularly vulnerable to a first onset of depression. It is conceivable that women who were depressed at T1 and T2 may have an increased susceptibility to continuing depression based on the second criteria that Willner et al. (2012) cited. As in, if women were depressed at T1 and T2, this may constitute a pattern of depressive episodes, which may make them more susceptible to depressive symptoms at the T3 time point. It is difficult to know without analyzing the data from T1 and T2 with regard to depression, and it would be interesting for future studies to see which women met the criteria for depression at which time points.

The present research was consistent with the existing literature on social support, in that women in the postpartum period who report adequate social support are less at risk for adverse
outcomes (Areias et al., 1996; Boothe et al., 2011; Boyce & Hickey, 2005; Leung, 2002). Women in this study reported high or at least adequate social support, and also reported low levels of depression, which is congruent with the extant literature. Boothe et al. (2011) found that having depression and living with a partner significantly predicted unmet social support, and that specifically having depression was highly predictive of not getting adequate social support, among their sample of overweight and obese women. If a woman was depressed, she was far less likely to get adequate social support. The results of the present study seem to be congruent with Boothe et al. (2011), as the overweight and obese women in this sample reported less depression and also higher levels of social support.

Maternal efficacy was found to be predictive of mother’s reports of child social and emotional quality of life, which is consistent with the prevailing literature (Bloomfield & Kendall, 2012; Gross & Tucker, 1994; Hill & Bush, 2001; Jones & Prinz, 2005; Sequerra, 2010; Shaw, Keenan, & Vondra, 1994). These findings are also consistent with Coleman and Karraker (2000), who found that mothers of children who were less emotional and more sociable had higher self-efficacy. Coleman and Karraker (2000) also found a relationship between higher levels of educational attainment and maternal self-efficacy, which is consistent with the present study, in which women reported both high educational levels and relatively high maternal self-efficacy.

Direct relationships between maternal self-efficacy, stress, depression, and social support were not measured in the present study, but it is interesting that among all these variables, maternal self-efficacy had more predictive value than stress, social support, or depression with regard to maternal reports of child social and emotional quality of life. This is supportive of Jones and Prinz (2005), who in their review of the literature found that parental self-efficacy
consistently emerged as having very strong relationships with mothering and child outcomes, often regardless of other risk factors that have been shown to produce more maladaptive outcomes. It would be interesting to do mediational or moderational analyses to see if maternal self-efficacy influenced or buffered the influence of stress, inadequate social support, or maternal depression on maternal reports of child social and emotional quality of life, which would be in line with many of the findings of Jones and Prinz (2005).

I also did not measure direct relationships between maternal self-efficacy and maternal reports of child demandingness, even though the present study found that both maternal self-efficacy and maternal reports of child demandingness were independent predictors of maternal reports of child social and emotional quality of life. It would be interesting to see what the relationship was between these two variables, and if it mirrored the findings of Fulton et al. (2012), who found that maternal perceptions of their infants were very influential with regard to their feelings of maternal self-efficacy. A few other studies have suggested links between maternal self-efficacy and perceptions of difficult child temperament (Gross et al., 1994; Leerkes & Burney, 2007)

Verhage et al. (2013) found that maternal self-efficacy predicted perceived child temperament, in that high maternal self-efficacy predicted perceptions of easy child temperament, and lower maternal self-efficacy predicted perceived difficult child temperament. Verhage et al. (2013) suggested that it was maternal self-efficacy that predicted perceived child temperament, which is consistent with the results of the present study. There is much less literature on the specific cognition of maternal perceptions of child demandingness, and the present study posits a strong relationship between perceptions of child demandingness and maternal perceptions of child social and emotional quality of life, as well as strong relationships
between maternal self-efficacy and maternal reports of child social and emotional quality of life. It would be illuminating to assess the relationship between maternal self-efficacy and maternal reports of child demandingness, as to my knowledge there are no published articles on this relationship, and maternal reports of child demandingness and its relationship to other maternal constructs remains mostly unexplored in the extant literature. Like many other studies (Bates et al., 1985; Broussard & Harther, 1970) the present study linked mother’s perceptions of their infants as a strong predictor of perceptions of child behavior problems. Most published studies assessed maternal perceptions of older children (see Johnston et al., 2009 for example), and not of younger children, as in the present study.

Limitations

One possible limitation of this study is that it relies on maternal reports of child social and emotional outcomes, as it is the mothers that complete the PedsQl indicating their perceptions of how well they believe their child to be functioning. It is possible that if a mother has perceptions that her child is very demanding, it may influence her perception of how well her child is doing socially and emotionally. Future researchers investigating this topic may get more rich data by using multiple informants (e.g. other family members, child care providers) and multiple methodologies (e.g. more than one survey, qualitative measures, etc). It might be helpful to have independent raters of child behavior, such as child behaviors that are observed and rated by people familiar with the child and parent (childcare providers, parents, other family members) and people without a relationship with the child or parent (a colleague of the researcher with no relationship with the parent or child).

Further, measuring a child’s emotional and social well being while only looking at the mother-child dyad has the potential to be problematic, especially from a systems perspective. Ideally, a more holistic picture of the relationship could emerge, one that not only includes
multiple informants on the child’s functioning, but also the contextual variables in the life of the family. Future studies could include contextual variables, such as birth order of the child (data on number of children in the family was not collected), the mother’s partner status, the level of family cohesion, and available support systems, to name just a few.

Another limitation is that this study has limited generalizability to a sample of women who are not overweight or obese. Research has shown that being overweight or obese carries its own set of risk factors, particularly in relation to depression and other adverse mental health outcomes in the postpartum period (Carpenter, Hason, Allison, & Faith, 2000; Carter, Wood Baker, & Brownell, 2000; LaCoursiere, Baksh, Bloebaum, & Varner, 2006; LaCoursiere, Barrett-Connor, O’Hara, Hutton, & Vamer, 2010; Sundaram, Harman, Peoples-Sheps, Hall, & Simpson, 2012), and it is provocative that women in this study seemed to be functioning at a higher level than the extant literature would suggest they would be. While the literature suggests that this sample of women who were overweight prior to pregnancy would be at high risk for depression and other adverse outcomes linked to depression (Anderrson et al., 2006; Carter et al., 2000; LaCoursiere et al, 2006; National Institutes of Health, National Heart, Lung, and Blood Institute, 1998), it is possible that this population of women assessed in this study possessed protective characteristics.

Implications from this are in line with the results of Sundaram et al. (2012), who looked at the possible moderating role of prenatal care utilization between pre-pregnancy BMI and depression in the postpartum period. They found no intervening effect of prenatal care utilization between the relationship of pre-pregnancy BMI and depression after birth, but did find other variables that impacted symptoms of depression in the postpartum period, such as diabetes, hypertension, required bedrest, and other medical risk factors (Sundaram et al., 2012). Building
off of Sundaram et al. (2012), the results from the present study suggest the need to further explore the variables that may impact the documented relationship between pre pregnancy overweight and obesity and depressive symptoms, considering the women in this study seemed to be functioning quite well.

Lastly, the results of this study have limited applicability to a more racially and educationally diverse sample, and may also be less applicable to mothers reporting high levels of stress or depression, or women who report low levels of social support. If the women assessed in this study had reported higher levels of distress and fewer resources, the results could have turned out very differently.

Systemic implications

While the data I gathered my research from was dyadic, I am a family therapist with a systemic lens. These findings may seem to be situated within a linear context, with little room for systemic interpretation. It may seem, from a dyadic lens, that the interpretations of the data suggest that mothers who perceive their children as demanding experience these perceptions outside of their contextual world, and that these perceptions bias their perceptions of their children’s well-being in a unidirectional manner.

The data is enriched when it is interpreted within its systemic framework. Other factors that were not studied influence the relationship between the mother and the child. It is possible that an older child may feel in some way displaced by the birth of a new child, and that the behavior the older child is exhibiting may be influenced not only by these feelings, but by suddenly having a mother who has to take care of an infant. The mother may feel overwhelmed. The child may feel displaced. The mother’s relationship with the older child may be stressed because of the additional demands of a child, a more fatigued mother, and a child who may
legitimately be acting out in a manner that could be described as ‘demanding,’ in reaction to the feelings that come with having a younger sibling and a new relationship with a parent.

Also missing in this discussion is the broader relational context of the mother and the child. It would be important to know if the mother has a partner who helps with childcare and sees it as his or her role to support the mother emotionally. It would be essential to know the quality of the couple relationship itself and level of stress and/or cohesion and connectedness. It would be important to know the level of conflict and communication skills between the mother and her partner, as well as whether the partner is the father of her child or children. All of these factors are important when considering the couple relationship. In addition, information on the temperament of the older child and of the younger child would also be important to assess, as these factors would influence the mindset of the mother and relationships between her and her children. In short, it is extremely important to assess what other stressors and/or factors are systemically interacting to influence how the mother perceives her child.

This is important within a systemic context because parents often present to therapy with a child who they perceive as having behavior problems who needs to be ‘fixed’ by a therapist. I think that the more that we can help mothers understand behavior through a nonblaming, systemic lens, the healthier their relationships will be with their children and other family members. The more we as clinicians can treat the whole system, depathologize behavior, and normalize the adjustment problems likely inherent in changing family systems, the more we can help people live in their most preferred ways of being. This will be discussed more in the next session describing clinical implications.
Clinical Implications

One powerful implication of this study is furthering the literature that supports the notion that while mothers who experience depression, low social support, and high stress in the time period after child birth are indeed at risk for poor mothering and child outcomes, feeling efficacious in the mothering role is perhaps more powerful. This is especially salient when considering the findings of Boothe et al. (2011), who found that women who experienced symptoms of depression were more likely not to have adequate social support, which is linked to a host of negative outcomes. It is worth noting that mothers who experience symptoms of depression may only perceive that their social support is inadequate due to the influence of depression. Without having multiple informants, it is difficult to distinguish whether women who experience depression have a true lack of social support or whether the depression limits their ability to recognize and utilize the support that is available to them.

For some reason this sample of obese and overweight women reported low levels of stress, relatively high levels of social support, and relatively low levels of depression. So what does this mean to the clinician working with overweight and obese women in the postpartum period? It likely means that while the extant literature shows a particularly strong likelihood of adverse outcomes in the postpartum period for overweight and obese women, there may be factors that make these risk factors less powerful. Findings from the present study indicate that the influence of maternal perceptions of child behavior, and feelings of efficaciousness on the maternal role may mitigate adversity.

While some would argue that feeling efficacious may be difficult in the face of stress, depression and low social support, clinicians can work with mothers who are facing these
stressors to build up their feelings of efficacy in the mothering role. They may do this by emphasizing strengths and resources already at their disposal, and using a generally strengths-based approach to punctuate and highlight mothering successes and achievements, especially given the context of high stress, depression, and low social support. Clinicians working with an overweight or obese population can note that research shows that for this population, stress, depression, and level of social support has been shown not to be as influential as feelings of efficacy.

And on the other end of the spectrum, perceiving one’s children as ‘demanding’ can have a negative effect comparable to the positive effect accompanying maternal self-efficacy. Just as maternal self-efficacy appears to have some protective value, and perhaps acts as a counter-narrative to the effects of depression, stress, or low social support, perceiving one’s child as demanding appears to increase risk of adverse outcomes. Therapists and other health professionals working with mothers in the postpartum period can work to enhance maternal self-efficacy, and intervene specifically around negative cognitions or perceptions that may be informing maternal behavior, in addition to interventions designed to increase social support, and reduce the impact of stress and depressive symptoms.

This may take the form of targeted interventions that address negative cognitions that mothers hold about their child’s demandingness. Mothers who present with negative perceptions of their children may benefit from being educated on developmentally appropriate child behavior, and it may be useful to reframe children’s behaviors in those terms. For example, a child of this age (four to seven years old) does not have the ability to reason like an adult. As Piaget (1923/1977) stated, a child this age “does not attempt at all to adapt her explanation to the viewpoint of others” (p. 66). Children of this age group do not make sense of the world in ways
that adults would consider linear, logical or sequential. They are by all accounts egocentric, with limited understanding of causes and effects of actions. Children of this age group do not use language in the same way as adults do. Piaget (1923/1977) noted that children of this age group (he was referencing six year olds in this article) sometimes talk purely for the pleasure of speech (egocentric speech) and sometimes speak for the benefit of an audience (socialized speech), but that one cannot assume that children’s words and behaviors reflect and mirror the intentions of adults. Further, Piaget (1923/1977) noted that children of this age (from about four to about seven) are not capable of keeping their thoughts to themselves. They process everything in an external way, and have very little internal life.

So how would this information be applied in a clinical setting? Mothers who see their children as demanding may be attributing adult intentions and ill intent to behavior that cannot accurately be attributed in this way. Mothers who have negative attributional styles may be perceiving developmentally appropriate egocentric behavior to the child intentionally attempting to thwart the mother’s authority. Therapists can work with mothers to restructure unhelpful cognitions to those which may be supportive of more adaptive functioning. This may mean identifying negative attributions that may limit mothers’ capacities to see their children’s behaviors as modifiable and not indicative of ill intent, if not normative.

For example, a clinician may be meeting with a mother who mentions that her five year old daughter is very ‘demanding’ or ‘bratty.’ The mother may give examples that include her daughter’s demands for her mother’s time, which she may perceive as ‘draining’, ‘tiring,’ or ‘unreasonable.’ The mother may complain that her daughter’s behavior when the daughter’s desires are not immediately met (e.g. not being able to eat candy before dinner) is angry and
defiant, and may attribute this behavior to her perception that her child is more demanding or has a worse temperament than other children her daughter’s age.

The mother may describe how she feels herself becoming very impatient with her daughter, feeling like her daughter is intentionally misbehaving in order to annoy her (the mother), and finding herself responding harshly by raising her voice and using corporal punishment as a frequent discipline tool. This mother may present to therapy asking the clinician to help her modify her daughter’s behavior to be more compliant and acceptable to the mother.

The clinician working with this mother could take this opportunity to educate the mother on age-appropriate behavior for five year olds, and may explain that what the mother views as demanding behaviors are likely attempts by the child to connect with her mother and also to find more successful ways to fulfill her own needs. The clinician may explain that a child’s attempts to fulfill her needs will mirror the maturity of the child, and that it is normal for a five year old to act in immature ways due to her normative limited emotional maturity. As Piaget (1923/1977) delineated, language, thought and behavior with this age group of children is egocentric in a normative way. Furthermore, the clinician can frame the “demandingness” as a trust in her mother’s wisdom in finding a way for the daughter to grow and develop into a more mature individual.

The clinician may try to restructure a mother’s cognition of ‘my child is demanding’ by reframing it as ‘my child is trying to get her needs met and she is expecting me to help her fulfill her needs in a way that is more mature.’ The clinician can help the mother see that thinking of the behavior in a different way will help her respond in a more helpful way, and will likely have the results of changing the mother’s behavior and attitudes towards her daughter from that of feeling manipulated by the child to that of recognizing and honoring her mothering role and
having compassion for her daughter. The clinician can also help the mother try to learn more about her child’s motivations- which will ultimately help her guide and shape her child’s behavior to more desirable outcomes. If the mother can lead with compassion and try to understand what need her daughter is trying to meet, she can approach her daughter’s behavior with understanding instead of feeling threatened by it, and try to help her daughter learn how to get her needs met in more appropriate ways.

It might also be useful for the clinician to engage the mother in a genogram (McGoldrick, Gerson, & Petry, 2008) exercise in which the mother identifies parenting and child patterns over the last few generations, specifically difficult relationships between mothers and children, the circumstances that framed these relationships, as well as any children who may have been labeled ‘demanding.’ For example, a pattern may emerge in which there was a child in every sibling subsystem for the past three generations that was seen as ‘demanding,’ and this child happened to be an older child, whose ‘demanding’ behavior emerged just after the birth of a younger sibling. It may be revealed that there were other concerns in the family during these times that the child’s behavior was very taxing to the mother, such as right after the birth of the younger child (because of added stress, sleep deprivation, and/or normative postpartum hormonal changes), or behavior that may have seemed more intense or problematic when the mother perceived less social support from important others in her network, such as partners. It may emerge that children were seen as more ‘demanding’ when the mother had fewer resources, higher stress, and less sleep. It could be illuminating to the mother to see that there were mother-child relationships in generations before her that mirrored the relationship she has with her own child. It may help her put the relationship within an intergenerational context that may demystify the behavior and make connection and reframing of behavior easier.
To this end, the clinician would need information not just about the mother-child dyad and how the mother perceives her child’s level of demandingness and social and emotional well-being, but other contextual factors that may be impacting the mother and child individually, as well as systemically and relationally. The systems based clinician would need information on the family’s living situation, the relationship status of the parents, the cognitive abilities of the children and parents, etc. For example, it would be helpful to know if the older child had a developmental disability, and/or if the pregnancy was difficult or stressful for the mother, or if there is violence in the home. It is not possible to list all the factors that could impact the relationship between mother and child and maternal perceptions, and it would certainly be important for the clinician to know any and all contextual factors that may be impacting the family, in order to deliver the most sensitive and direct interventions.

Future Research

This study provided many avenues for future research. Future studies could do more analysis around maternal behaviors, cognitions, and characteristics that serve as protective and risk factors that help and hinder positive child quality of life. Researchers could also use multiple measures with multiple informants in order to assess child quality of life, rather than relying on parental report. Future research could also flesh out how having more than one child could impact the associations between maternal self-efficacy, maternal depression, social support, stress, maternal reports of child demandingness, and maternal reports of child social and emotional quality of life.

Jones and Prinz (2005) spoke to the need to investigate the processes that lead to parental self-efficacy. Future studies could examine the relationship between demandingness and parenting self-efficacy, especially since in this study they both had significant relationships with
maternal reports of child QOL. It would also be useful to examine the predictive value of maternal reports of child demandingness on maternal depression, or vice versa. As in, do perceptions of child demandingness lead to depression or does depression lead to perceptions of child demandingness? Deciphering the directionality of this relationship would add to the literature regarding the reciprocal relationship of mother-child relationships and the processes that lead to maternal and child outcomes.

Finally, this study included a predominantly white, well-educated, relatively older group of overweight and obese women. Future research could include more racially, ethnically, and educationally diverse samples, and women who are relatively younger, to see if the results are applicable to a larger population of people. With regard to investigating processes more specific to the overweight and obese women represented in this sample, it may be useful to analyze the possible moderating effects of education, age, social support, or stress between overweight or obese status and depression and other adverse mental health outcomes, especially as they relate to child outcomes.
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Grimes, L. (2012). *The role of parental self-efficacy and parental knowledge in parent-infant interactions during the transition to parenthood*. (Doctoral dissertation) Bowling Green State University, Ohio


doi:10.1016/j.genhosppsych.2006.10.004


doi:10.1097/NNR.0b013e3181dbb9ee


(Original work published 1923)


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