

Mom Power Intervention: Effectiveness at Increasing Maternal Sensitivity among High Risk  
Mother-Child Dyads

by

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## Abstract

Previous research has demonstrated a relationship between mother-child interactions and child outcomes. In particular, interactions characterized by maternal sensitivity have been identified as crucial in the formation of a secure attachment bond and healthy child development. A number of variables have been linked to lower levels of maternal sensitivity, including parenting with depression, posttraumatic stress disorder, and low socioeconomic status. The current study examined the effectiveness of the Mom Power intervention, a program designed specifically to increase maternal sensitivity among a group of high-risk, low-income, and trauma-exposed mother-child dyads ( $n=56$ ). We hypothesized that levels of maternal sensitivity would increase from pre- to post-intervention, as measured through videotaped observations. Furthermore, we hypothesized that a risk status on demographic measures would relate to lower levels of sensitivity at pre-intervention, and that a higher cumulative demographic risk score would relate to less pronounced changes in maternal sensitivity from pre- to post-intervention. Results indicated that Mom Power did not significantly increase levels of maternal sensitivity from pre- to post-intervention. Independent samples t-tests revealed that only a risk status in age, indicative of mothering when younger than 22 years of age, was related to significantly lower levels of maternal sensitivity at pre-intervention, and that cumulative demographic risk did not lead to differences in treatment response from pre- to post-intervention. Data from the present study suggests that while Mom Power may not increase maternal sensitivity among high-risk mother-child dyads, its usefulness in addressing parenting difficulties among trauma-exposed populations may be determined through alternate measures or variables.

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The quality of mother-child interactions is an important consideration for child development. While there are many factors which influence child development, such as genetics and in-utero exposures, mother-child interactions may serve as a modifier of these preexisting risks (Bergman, Sarkar, Glover, & O'Connor, 2008). Research has identified a number of factors which may impact mother-child interactions, including those proximal to the mother, such as mental health, and those distal to the mother, such as low-income status. Therefore, in order to improve trajectories for child development in high-risk populations, there is a need for the creation of intervention programs which specifically target maladaptive mother-child interactions.

### **Mother-Child Interactions**

Research has shown that maternal parenting style and mother-child interactions may contribute to either poor or superior developmental outcomes among children. Many researchers have studied this link in relation to parenting practices, as observed behaviors can be specifically defined, reliably measured, and directly linked to child behavior (Lee, Daniels, & Kissinger, 2006). This large body of literature has shown a relationship between maternal interactions and child outcomes from infancy to adolescence.

Maternal interactive behavior in infancy is thought to contribute to the infant's developing attachment style. The importance of a secure caregiver attachment in child development has been reported extensively in psychology literature. In one study, researchers found that preschoolers who were securely attached as infants grew to be happier, more socially skilled, more competent, and more empathetic compared to their insecurely attached peers.

These effects continued throughout adolescence and adulthood, leading to fewer psychological and emotional problems, greater social skills, higher self-esteem, and healthier romantic relationships (Sroufe, Egeland, Carlson, & Collins, 2005). For these reasons, researchers have sought to identify the specific behavioral and interactive patterns which contribute to a healthy attachment relationship.

According to attachment theorists, the infant-mother attachment relationship develops from the infant's experience interacting with the mother across the first year of life. Research has shown that mothers who are more involved with their infants, more responsive to their signals, more appropriate in their responses and timing, and more positive and less negative in their emotional expressions are more likely to have securely attached infants. In contrast, infants classified as having insecure-avoidant attachments are more likely to have mothers whose interactions are characterized by anger and resentment, opposition to the baby's wishes, frequent scolding, and physical interference with the baby's activities. These mothers may also be overly stimulating or inconsistent in their interactions, contributing to avoidant or disorganized attachments (Isabella, 1993).

Extending beyond infancy, research has suggested that mother-child interactions may contribute to outcomes in the toddler and preschool years. One wave of research has linked maladaptive mother-child interaction patterns to the presence of externalizing and internalizing problems in preschoolers. One longitudinal study of children at risk for the development of a disruptive disorder found that an improvement in behavioral problems was predicted by parenting behaviors which provided positive support, structure, and a lack of anger or hostility. In contrast, parental anger and hostility were related to increased externalizing problems, such as aggressive and antisocial behavior, at the later time points (Denham et al., 2002). Another study

investigated the family environments of teacher-identified problem boys, classroom-identified problem boys, and control boys. Teacher-identified problem boys were shown to differ from classroom boys in terms of family factors; these boys lived in more poorly functioning families, with higher rates of parental psychiatric disorder and with more negative, impatient, and controlling mothers (Campbell, March, Pierce, Ewing, & Szumowski, 1991). Mother-child interactions have also been linked to the development of positive traits among preschoolers, such as social-emotional competence. Research evidence suggests that children who are less socially skilled may have mothers who have difficulty setting limits, fail to support the child's autonomy, or become angry during interaction. Consistent with these findings, one study by Denham et al. (1991), using videotaped interactions, found that a balance between maternal support and allowance of autonomy predicted age-appropriate social skills, whereas a lack of maternal support and allowance of autonomy predicted sadness and rejection in the peer setting. Another study by Zhou et al. (2002) related parental warmth and positivity to the development of empathy in preschool-aged children, a characteristic linked consistently to high social functioning. The researchers suggest that the child's modeling of parental emotional expressions and balance between independence and control may contribute to these disparities.

Other waves of research have shown the importance of positive and supportive mother-child interactions on a child's cognitive development. In these studies, the emergence of symbolic play during a child's second year of life, marking a switch from a focus on object properties to the formation of complex mental representations, has been used to signify a child's growing cognitive ability. One study by Fiese (1990) observed 57 mother-toddler dyads in four different play conditions. Results supported previous findings that, compared to solitary play, more complex forms of symbolic play are observed as toddlers play with their mothers.

Furthermore, a more reciprocal nature of interactions helped to scaffold symbolic forms of play, whereas maternal attempts to redirect or be overly involved in the toddler's play encouraged more simple sensorimotor forms of play. As suggested, toddlers with more supportive and interactive mothers may make substantial cognitive gains during formative periods compared to toddlers with more negative or controlling mothers.

Even in adolescence, a time when independence and autonomy from parents increases, the importance of maternal interaction quality has been shown to persevere. More authoritative parenting styles, characterized behaviorally by warmth, support, and flexible limit setting, have been shown empirically to relate to positive outcomes among adolescents, including improved school performance, less substance use, greater social competence, and increased psychological well-being. In contrast, children of authoritarian parents, characterized by coldness, restriction of autonomy, and harsh discipline, have been found to be less content, less socially skilled, more insecure, and more hostile (Lee et al., 2006). One study by Lee et al. (2006) examined the relationship between observed parenting practices and adolescent outcomes. Consistent with earlier findings, results indicated that the children of parents with high expectation, rule, discussion, and involvement scores had more positive self-concepts and higher math and reading scores compared to their peers.

Overall, research conducted on maternal interactions suggests the importance of positive, interactive, and supportive parenting in predicting positive child outcomes. The influence of mother-child interaction extends from infancy to adolescence, affecting a wide range of outcomes, from cognitive development to behavioral problems.

### **Maternal Sensitivity**

Attachment theory and research has singled out maternal sensitivity as a particularly important aspect of mother-child interaction. Maternal sensitivity is defined as the ability to detect and respond to the child's cues in a warm, responsive, developmentally-appropriate, and accurate manner (Conradt & Ablow, 2010; Meins, Fernyhough, Fradley, & Tuckey, 2001; Bigelow et al., 2010). There has been a wide consensus that maternal sensitivity may be a crucial factor in early attachment security (Meins et al., 2001; Bigelow et al., 2010; De Wolff & van ITzendoorn, 1997), with findings replicated among a range of populations. Regarding this relationship, Bowlby hypothesizes that when infants experience that their social cues are successful in establishing positive interactions with their mother, it is likely that an active and happy interaction between the dyad will follow, and that a secure attachment relationship will consequently develop (De Wolff & van ITzendoorn, 1997).

In addition to attachment security, maternal sensitivity to infant behavior is associated with a range of positive child outcomes, including self-efficacy, language acquisition, and maturity of object play (Bigelow et al., 2010). Maternal sensitivity has also been shown to relate to emotional regulation through infant physiological responses to stress. It has been suggested that adaptive emotional regulation capacities develop during the first year of life in the context of the caregiving relationship; this idea is based on Tronick's mutual regulation model, whereby sensitive caregivers have infants who develop a sense that they can regulate the dyadic exchange and, over time, themselves (Conradt & Ablow, 2010). This model is supported in a study by Conradt and Ablow (2010), where levels of maternal sensitivity were compared to individual differences in five-month-old infants' physiological and behavioral regulation during the Still Face Paradigm (SFP). While the infants of more or less sensitive mothers showed similar physiological responses to maternal unresponsiveness in the SFP, the infants of less sensitive

mothers continued to show increased heart rates, decreased parasympathetic regulation, and greater behavioral resistance during reunion, while the infants of more sensitive mothers showed higher levels of physiological and behavioral regulation during reunion. The researchers suggest that this pattern indicates that the infant is able to look towards a sensitive mother for soothing, a behavior which may be an early indicator of competent self-regulation following Tronick's theory (Conradt & Ablow, 2010).

A study by Bigelow et al. (2010) outlines the ways in which maternal sensitivity can be observed as a child develops. When infants are younger than six months, maternal sensitivity is measured through face-to-face interactions, as infants are most interested in this type of communication. During this time, mothers typically respond using facial imitations and vocalizations, particularly to infant behaviors or sounds which they perceive as containing emotional content. In turn, the mother's responsiveness to infant behavior helps the child develop a sense of self-efficacy, confidence, and predictability regarding the outcomes of their behavior. During the second year of life, as the infant becomes increasingly interested in objects as well as people, maternal sensitivity can be measured by how well a mother engages her child in joint attention, involving a three-way exchange between the infant, the mother, and an object. In the early preschool years, maternal sensitivity is evidenced by the formation of goal-directed partnerships, where joint attention episodes involve more complex patterns of turn-taking, flexibility, and symbolic play. Maternal respect and support of the child's play interests, in addition to furthering the development of self-efficacy and self-esteem, is associated with great levels of language acquisition and vocabulary levels.



Due to strong research support and links to differential child outcomes, it is important to consider both the existence of maternal sensitivity in mother-child interactions, as well as factors which may inhibit its expression.

### **Factors Which Shape Maternal Sensitivity**

**Mental Health.** Existing research has documented an association between mental illness and impaired child outcomes. Maternal mental health has been suggested to account for child outcomes through both direct and indirect pathways (Huang, Wang, & Warrener, 2010; Cohen, Hien, & Batchelder, 2008). Directly, simply growing up with a mother who is experiencing mental health disturbances seems to lead to poor child outcomes. Evidence for a direct link is provided by studies showing that maternal mental health is related to higher levels of child behavioral and mental health problems, including an increased risk for anxious/depressed, attention deficit, and oppositional defiant disorders for children three years of age (Huang et al., 2010). Indirect pathways posit that maternal mental health positively predicts parenting quality, and that a higher quality of parenting is associated with fewer child problems; thus, parenting may mediate the relationship between maternal mental health and child problem behaviors (Huang et al., 2010).

***Parenting with Posttraumatic Stress Disorder.*** The development of posttraumatic stress disorder (PTSD) among mothers has been related, in part, to the experience of violence or abuse in either childhood or the adult years. Studies have estimated that levels of violence exposure, in both the community and the family environment, are fairly high, especially among high-risk populations. In a community survey, it was estimated that about 30% of women had experienced at least one form of childhood maltreatment, with 13.7% experiencing more than one type (Lang, Gartstein, Rodgers, & Lebeck, 2010). One study estimated that, of a sample of 160 low-income,

mother-child dyads, about 65.2% of the children had been exposed to at least one incident of community violence, and 46.7% were exposed to at least one incident of family violence (Graham-Bermann & Seng, 2005). Given the high rates of violence exposure, domestic violence, childhood abuse, and environmental trauma have been identified as significant public health problems, associated with a range of negative outcomes across development (Levendosky, Leahy, Bogat, Davidson, & von Eye, 2006; Lang et al., 2010; Huang et al., 2010).

Traumatic experiences have been linked to a number of poor outcomes among both mothers and children. Estimates of PTSD among battered woman are high, ranging from 45-84% (Levendosky & Graham-Bermann, 2001); moreover, the experience of domestic violence has been associated with depression, low self-esteem, and anxiety (Levendosky, Leahy, Bogat, Davidson, & von Eye, 2006). Individuals with a history of childhood maltreatment are at a higher risk for PTSD and depression (Lang et al., 2010). Childhood abuse and rape has also been associated with increased substance abuse, perhaps as a means of psychic numbing (Marcenko, Kemp, & Larson, 2000). Interparental violence has been linked retrospectively to poor adult health, chronic pain conditions, cancer, cardiovascular disease, and diabetes (Graham-Bermann & Seng, 2005). Outcomes among children are equally well-documented. Children who witness acts of domestic violence show impaired social-emotional adjustment, higher levels of internalizing and externalizing problems, decreased social competence, lower self-esteem, increased psychopathology, increased fear and worry, and higher levels of aggression (Levendosky & Graham-Bermann, 2001). Young children exposed to interpersonal violence have also been found to have a higher risk for perpetrating violence themselves (Graham-Bermann & Seng, 2005).

Studies have suggested that the PTSD symptoms which often emerge following traumatic experiences may interfere with the fulfillment of a parental role. Consistent, responsive parenting may be disrupted through the combination of flashbacks, detachment from others, restricted affect, and irritability (Lang et al., 2010). Indirect pathways to child outcomes have been supported through studies examining the effects of a range of traumatic experiences on parenting practices and interactions. One such context involves the relationship between childhood abuse history and maternal parenting. Childhood abuse survivors may experience a documented number of difficulties as parents; previous research has shown links between childhood sexual abuse and decreased maternal involvement, lower affective responding to infants, more use of physical discipline, a reliance on children for emotional support, more permissive parenting styles, and more negative views of the self as a parent (Kim, Trickett, & Putnam, 2010; Lang et al., 2010). PTSD symptoms have been linked to decreased parenting satisfaction, reports of child neglect, use of physical punishment, and a history of protective service reports (Cohen et al., 2008). Moreover, there is an intergenerational association between a mother's childhood sexual abuse history and a daughter's sexual abuse experiences, attributed in part to the presence of dissociative symptoms and maladaptive coping strategies among mothers (Kim et al., 2010).

Maladaptive parenting practices in the context of domestic violence have been studied using ecological and trauma theories. In these frameworks, the parenting environment, such as the presence of violence, impacts parenting behaviors, such as warmth or control, through its damaging effects on the mother's psychological functioning; child outcomes are affected through the combination of all three variables (Levendosky & Graham-Bermann, 2001). These models are supported by a longitudinal study conducted by Huang et al. (2010), examining mother-child dyads in the context of domestic violence from birth to five years post-partum. Findings

indicated that domestic violence at year one had a direct impact on maternal mental health at year three, and in turn, maternal mental health at year three had a direct effect on children's externalizing behavior problems at year five. Results also indicated that domestic violence was related to increased use of physical punishment among mothers; domestic violence at year one had a direct effect on maternal use of spanking at year three, which then had a direct effect on child externalizing and internalizing problems at year five. As illustrated, domestic violence contributed to maternal mental health, which then led to maternal parenting behaviors and child outcomes. Another study by Levendosky et al. (2006) provides support for the spill-over hypothesis, whereby hostility and conflict in one family system, such as the marital relationship, negatively impacts another family system, such as the mother-child relationship. Results indicated that current domestic violence was related to a lack of warmth and sensitivity and increased hostility and disengagement in mother-infant interactions; these maladaptive maternal parenting behaviors were then associated with infant externalizing problems.

Trauma related to community violence exposure provides a further context for understanding maternal parenting behaviors. Violence exposure may involve being either a witness or a victim of violence. In either case, community violence has been linked to maladaptive parenting practices and poor child social and emotional development (Zhang & Anderson, 2010). The parenting outcomes are illustrated in a study by Zhang and Anderson (2010), investigating the links between community violence exposure and parenting practices among a sample of low-income, single mothers. Results indicated that maternal exposure to community violence was positively associated with psychologically and physically aggressive parenting behaviors, potentially explained by higher levels of stress and alcohol use.

As illustrated, research outlines the links between maternal or child trauma exposure, through childhood maltreatment, domestic violence, or community violence, and poor parenting or developmental outcomes. Such factors may directly or indirectly impact children through maternal parenting behaviors or psychopathology.

***Parenting with Depression.*** Clinical depression, or major depressive disorder (MDD), is a common disorder among women during the childbearing years, affecting an estimated 8-10% of women ages 25 through 44 (Carter, Garrity-Rokous, Chazan-Cohen, Little, & Briggs-Gowan, 2001). Depression is also a prevalent psychological disorder among women with young children, with estimates ranging from 9-12% (Lovejoy, Graczyk, O'Hare, & Neuman, 2000). Given its prevalence, maternal depression has been studied extensively in relation to parenting practices and child outcomes.

It has been suggested that mothers with depression may transmit vulnerabilities to children either through genetics or environmental components, including observational learning and impaired parenting practices (Lovejoy et al., 2000; Kelley & Jennings, 2003). The parenting deficits related to MDD have been associated with poor child outcomes, including an increased risk of psychopathology and higher levels of internalizing and externalizing problems (Kelley & Jennings, 2003; Feng et al., 2008). Given this association, parenting among mothers with MDD has been studied as a means of understanding risks and differential child outcomes.

Previous research has sought to identify maladaptive parenting interactions and behaviors associated with MDD. Symptoms of MDD, including rumination, anxiety, irritability, and low energy, are thought to contribute to such parenting problems (Lovejoy et al., 2000). In the first year of the infant's life, maternal depression has been linked to more maternal negative affect, delayed responsiveness, less consistency, and decreased gaze towards the infant's face (Carter et

al., 2001). Observational studies have shown higher levels of hostility, negative interactions, and impatience, coupled with lower levels of responsivity, synchrony, and communication, in mothers with MDD. Depressed mothers also may have difficulty attending and responding effectively to a child's needs (Lovejoy et al., 2000).

With these findings, a wide range of studies link the parenting difficulties associated with MDD to child outcomes. One body of research examines the effects of maternal MDD on infant and child attachment style. Associations have been found between maternal depression status and early attachment security, with greater proportions of insecure attachments among children of depressed mothers (Teti, Geffland, Messigner, & Isabella, 1995). One study looked at attachment classifications using the Strange Situation Task (SST), a seven-part procedure designed to assess the quality of the child's attachment to the mother using separations and reunions (Ainsworth, Blehar, Walters, & Wall, 1978). Findings indicated that, based on SST results, 70% of infants and 44% of preschoolers in the group of nondepressed mothers were securely attached, whereas only 20% of infants and 13% of preschoolers in the group of depressed mothers were securely attached (Teti et al., 1995). Another study by Carter et al. found similar results, with maternal diagnostic status at four months postpartum associated with infant attachment at 14 months postpartum (2001).

The parenting interactions and behaviors of mothers with MDD have also been linked to specific child outcomes in preschool. A number of studies have revealed associations between maternal depression and child psychopathology, particularly depressive symptoms. One study conceptualizes the emergence of depressive symptomatology among toddlers by differentiating between mastery-oriented and helpless patterns of achievement behavior, with helpless patterns resembling depressive symptoms in adults (Kelley & Jennings, 2003). Results showed that

maternal depressive symptoms were related to helplessness in their 32-month-old toddlers, with the mother's quality and level of emotional expression moderating this association. Another study linked maternal depression to the development of a child's self-esteem, finding that children of depressed mothers are at a higher risk for low self-esteem and mental disorders, at least partly due to exposure to maternal criticism and negativity (Goodman, Adamson, Riniti, & Cole, 1994). Although much research is needed to tease apart genetic and environmental influences, research suggests an association between maternal depression, its parenting correlates, and child psychopathology.

Maternal depression has also been related to the development of emotional regulation and cognitive abilities in preschool-aged children. Emotional regulation has been linked to a wide range of positive outcomes among preschool-aged children, including social competence, peer acceptance, and academic readiness; a lack of emotional regulation, in contrast, has been associated with externalizing and internalizing problems. One study by Feng et al. (2008) compared the emotional regulation strategies of children of depressed and non-depressed mothers in response to a disappointment experience. Results indicated that the children of mothers with a childhood onset of depression (COD) used less active emotional regulation strategies and displayed less positive affect compared to children with mothers in the non-childhood onset of depression (NCOD) group. Maternal depression status has also been linked to cognitive outcomes among children, such as language achievement. According to self-efficacy theory, parenting quality is related to knowledge and expectations of child development and confidence in utilizing age-appropriate parenting strategies (Zajicek-Farber, 2010). Previous research has shown that mothers with depression have lower levels of this knowledge and may consequently provide their children with a poorer quality of stimulation. Potentially related to

these parenting deficits, the children of mothers with depression have, on average, lower age-related language competency compared to children of mothers with fewer symptoms, illustrating the impact of an unstimulating home environment (Zajicek-Farber, 2010).

Overall, research on the parenting practices of many mothers with MDD points to both the widespread occurrence of the disorder among women of child-bearing age and the detrimental effects of such parenting deficits on child development. Through a variety of pathways, including cognitive and socioemotional development and impaired attachment security, maternal parenting in the context of MDD is believed to confer a significant risk for children across the lifespan.

**Low Socio-Economic Status.** In addition to psychopathology, research has extensively documented the maladaptive parenting behaviors and child outcomes associated with lower socioeconomic status. Research has shown that poverty and the variety of associated risk factors may exceed a mother's coping resources. Women living in lower-income communities have been shown to have higher levels of stressful life events and daily hassles, increased family and marital conflict, and lower levels of social support. Poverty also increases the likelihood for the presence of additional risk factors, including single parent households, lower parental education levels, minority status, younger ages of mothering, and psychopathology (Rafferty & Griffin, 2010; Lovejoy et al., 2000). The combination of depleted coping resources and the stress of parenting may lead to difficulty addressing the developmentally-appropriate needs and behaviors of younger children (Anthony et al., 2005). Indeed, maladaptive parenting behaviors among low-income women have been widely documented through research. Single mothers are more likely to exhibit inconsistent, harsh, and unsupportive parenting behaviors, and less likely to exhibit stimulating and nurturing interactions (Rafferty & Griffin, 2010). Adolescent mothers show less



sensitivity and positive emotion toward their children, and are more likely to utilize negative control tactics or physically abuse their children (Rafferty & Griffin, 2010).

The economic stress model posits that parenting practices shaped by economic status may adversely impact child development. This idea has been studied in relation to a range of age groups and outcomes, particularly in the context of mother-child interactions. Research has suggested that mother-infant interactions may be compromised among low-income populations, increasing the risk for negative exchanges and conflict (Schiffman, Omar, & McKelvey, 2003). One study by Schiffman et al. (2003) studied a sample of 156 low-income mother-infant dyads in order to document the interaction patterns among the pairs. Results indicated that mothers in the study sample had lower levels of sensitivity to infant cues, social-emotional growth fostering, and cognitive-growth fostering compared to means established by the Nursing Child Assessment Satellite Training (NCAST) Teaching Scale. These lower means suggest that disadvantaged mothers may lack sufficient knowledge regarding the need for infant stimulation and overall child development, leading to more inappropriate and unsupportive responses. Due to the previously established relationship between maternal parenting behaviors and infant outcomes, these parenting deficits may place the child at risk for developmental delays or attachment insecurity.

Maladaptive parenting practices among low-income populations have also been linked to preschool behavior problems and poor social skills. One study reported a significant association between teacher ratings of a child's classroom adjustment, including prosocial, internalizing, and externalizing behaviors, and levels of parenting stress (Anthony et al., 2005). Another study found that parent-child interaction quality among low-income dyads was positively associated

with child social skills, communication skills, and receptive communication skills (Connell & Prinz, 2002).

Taken together, the body of research points to potentially maladaptive parenting interactions and behaviors among low-income populations. Parenting deficits may be due to the overwhelming stress and demands which poverty and its related variables place on the mother. The frequently-resulting negative, controlling, and insensitive parenting strategies may then translate to significant hindrances in child development.

### **Existing Parenting Interventions**

Following research findings suggesting a link between parental characteristics, mother-child interactions, and child outcomes, a number of parenting interventions have been developed to improve harmful parenting practices and poor developmental trajectories. Early intervention, in particular, has been identified as an important aspect of treatment. Earlier stages of life are seen as a crucial time to target high-risk mother-child dyads because, by altering maladaptive interaction patterns, children may be buffered from the long-term effects of maternal psychopathology or poor parenting practices (Leckman-Westin, Cohen, & Stueve, 2009). Moreover, research has shown continuity in problem behaviors beginning in childhood, with negative outcomes becoming stable in later years (Denham et al., 1991; Campbell et al., 1991; Leckman-Westin et al., 2009). By intervening early to foster a more supportive and warm atmosphere, the child may experience a healthier developmental course.

A number of interventions have been designed to target parenting difficulties among low-income mothers, as well as mothers with depression and substance abuse problems. Overall, treatment outcome studies suggest that these interventions are fairly successful at improving the quality of mother-child interactions. The Early Head Start (EHS) program was initiated as a

means of addressing the risks to child development in low-income families (Rafferty & Griffin, 2010), designed to help impoverished children become ready for kindergarten. Because the EHS program emphasizes the importance of and encourages the use of responsive and sensitive parenting, studies have shown that participation in EHS programs leads to more supportive and stimulating, and less negative and punitive, parenting behaviors, and simultaneous increases in child cognitive ability. A family group cognitive-behavioral preventive intervention has been used with families of depressed parents (Compas et al., 2010). The twelve-session group has a two-fold approach: first, to enhance the positive parenting skills of parents with a history of depression, and second, to teach coping skills to the children of such parents. Studies have shown that this program is effective in achieving its aims, with parents showing more positive parenting behaviors and adolescents reporting fewer internalizing and externalizing problems. Postpartum interventions which enhance parenting and support a secure attachment formation between the mother and child have also been shown to improve outcomes among infants of depressed mothers (Forman et al., 2007). The Mothers and Toddlers Program, an individual therapy program, has been developed to target parenting difficulties among substance abusing mothers (Suchman, Legow, DeCoste, & Castiglioni, 2008). The therapist works to build healthier maternal representations of their child(ren) and a higher capacity for sensitive and responsive parenting over a period of twenty weeks. Results indicate that substance abusing mothers who have participated in this program show greater sensitivity, responsiveness, and growth fostering in response to their children's cues.

Despite the many strengths of existing parenting interventions, a substantial gap in the literature has been identified among mothers with posttraumatic stress symptoms (Cohen et al., 2008). Although there is a wide range of interventions targeting various forms of

psychopathology or adverse environmental circumstances, there has been little systematic development of interventions specifically targeting parental trauma and the resulting symptoms; consequently, empirically-based parenting skills programs targeting trauma-surviving mothers are currently not available. This represents a serious concern, given the widespread experience of childhood or lifetime trauma among women of childbearing age, and the correlates of posttraumatic stress symptoms to parenting difficulties and poor child outcomes.

### **Why Mom Power?**

An intervention entitled Mom Power was recently developed by Muzik et al. (2010) as a means of addressing the lack of parenting programs for trauma-exposed mothers of young children. The group is a psychoeducational program designed to target trauma-survivor, Medicaid mothers with mental health problems, including depression, posttraumatic stress, and substance use; the mothers are also encouraged to participate with their infants or young children, typically ranging in age from 0-6 years. Given the empirically-established influence of early caregiver attachment and parent-child interactions on long-term child development, Mom Power targets both maternal coping skills in the face of trauma and adaptive parenting behaviors as a means of promoting healthy mother and child functioning.

The group aims to provide parenting and attachment skills training over a period of 10 weekly sessions, led by two trained group facilitators. While mothers receive the psychoeducational component, their children are cared for, on-site, by a child team staff, trained to engage children in developmentally-appropriate activities. Each maternal group session is focused around coping with past or current trauma and emotional distress, improving self-care skills, and providing education regarding child development, parenting abilities, and child attachment needs. The parenting skills training specifically targets maternal sensitivity, as

mothers are taught to understand, support, and meet their child(ren)'s needs in times of both exploration and emotional distress. The mothers watch videos to practice identifying and understanding the needs of young children, and are provided with opportunities to apply what they learn in group through guided reunions and separations with their own child(ren).

Individualized feedback and discussion is incorporated to address the strengths and challenges of each mother's parenting behaviors. As participants progress throughout the program, the goal for the mother is to develop emotional regulation and coping skills in the face of stress or trauma, and to allow for recovery as well as adaptive parenting.

### **Hypotheses**

Through my senior honors research, I aim to investigate the effectiveness of the Mom Power intervention by testing improvements in mother-child interaction quality from pre- to post- intervention. I will focus specifically on levels of maternal sensitivity, as quantified through coded videotaped interactions at both time points. I have chosen to study maternal sensitivity, in particular, given the depth of research showing a strong link between sensitivity to child cues, attachment security, and child outcomes, and the focus of Mom Power on this characteristic of parenting. I hypothesize (Hypothesis #1) that mothers will exhibit a statistically-significant increase in levels of maternal sensitivity from pre- to post-group intervention, based on videotaped interaction coding outcomes (i.e., higher maternal interactive sensitivity scores from pre to post). Although I will not relate this increase specifically to child outcomes in this study, based on prior research, it can be speculated that an increase in maternal sensitivity will lead to a more secure attachment and, consequently, more positive child outcomes.

I will also explore the relationship between demographic variables and maternal sensitivity. Specifically, I will explore how age, race, marital status, income, education, and a

diagnosis of MDD or PTSD relate to levels of maternal sensitivity measured at pre-intervention. I hypothesize that a high-risk status in any of these variables, such as low age, minority race, non-married, low-income, little education, MDD diagnosis, or PTSD diagnosis, will contribute to lower levels of maternal sensitivity pre-intervention (Hypothesis #2). Finally, I hypothesize that the cumulative high-risk status of participating mothers, involving varying combinations of teen mothering, minority status, an unpartnered relationship status, a low annual income, low educational attainment, and/or an MDD or PTSD diagnosis will contribute to a reduction in treatment response; I hypothesize that this association will be dose-dependent, whereby the more risk factors a mother experiences at treatment initiation, the lower her treatment response at post-intervention (Hypothesis #3).

## **Method**

### **Current Study**

The Mom Power intervention is a psychoeducational program designed to provide parenting and attachment skills training for trauma-survivor, Medicaid-receiving mothers of young children. Several domains of maternal functioning are investigated in relation to program participation, including mental health symptoms, demographic information, perceived parenting competence, and quality of the attachment bond. The children are assessed on measures of developmental delays and behavioral problems.

Participants in the program are existing patients at the Corner Health Center, Ypsilanti Health Center, or the Guidance Center, located in Ypsilanti or Southgate, Michigan. Women self-selected to be involved in the group by responding to fliers posted in the clinic waiting rooms, handed to them during medical or mental health visits, or obtained through the mail. All women that go to the clinics have access to these fliers, and the medical and social work staff

encourages all eligible women to participate. Women who are pregnant and/or postpartum with child(ren) ages 0-6 years old are eligible to participate. The curriculum permits children to attend with their mothers, so as not to limit those who do not have access to childcare during group times.

### **Procedures**

The intervention is conducted over 10 weeks, in which mothers receive parenting and attachment skills training from two facilitators. The skills training is provided in a weekly group format, with an average of six mothers and their children per group cycle. Facilitators use structured sequence skill sets to help mothers from a variety of backgrounds to safely cope with trauma and emotional distress, improve self-care, and learn about child development, parenting skills, and child attachment needs. The groups are sequentially built upon one another, and participating mothers are considered to “graduate” from the program if they attend seven or more of the ten groups; mothers are asked to leave the program if they miss more than three of the groups, but are encouraged to attend future rounds. As mothers progress through the curriculum, they develop techniques of emotional regulation and feelings of parenting competence. Group sessions are composed of two parts: one part, at the beginning and end of group time, involves the mother interacting with her child(ren) in group activities; the other part, during the middle of group time, includes the mothers only. During the middle segment of the group, the children are cared for on-site in an adjacent room by child team staff, comprised of psychology graduate and undergraduate research assistants. Mothers have access to their child(ren) at all times and remain primarily responsible for their child(ren)’s welfare, such as if a child needs to use the restroom or becomes distressed. At the end of each session, mothers will receive an educational and age-appropriate toy to take home and are encouraged to play with their children. Mothers also receive

\$20 in compensation for every third session attended, as well as a \$15 bonus for perfect attendance, travel compensation, and a healthy lunch at the beginning of each group.

Each dyad participates in two home visit assessments, one about two weeks prior to the start of group and the other about two weeks after completion of the group. Each visit takes about three hours of staff time, including driving time, set up, home visit procedures, and clean-up. Each home visit is conducted by two research staff members, one responsible for videotaping and engaging the child during maternal interviews, and the other for interviewing and administering demographic questionnaires and consent forms. During the home visits, researchers review study protocol, address questions or concerns, and obtain videotaped interactions between the mother and child involving three low-challenge, interactive tasks. After completing a structured interview, researchers then ask mothers to fill out self-report demographic and mental health questionnaires. Mothers are reimbursed \$20 for participation in each home visit.

### **Measures**

In the current study, I will be analyzing four maternal measures gathered through pre- and post- home visits.

**Demographics.** At the pre- home visit, mothers responded on a 24-item questionnaire which assesses current living situation, race/ethnicity, work and relationship status, education level of mother and father (if known), and income. From these measures, we created demographic risk variables based on the cumulative risk model developed by Sameroff et al. (1993). In order to determine the degree to which an individual is exposed to indicators of risk, the cumulative risk model divides variables into either an “at risk” or “not at risk” category. Each of the examined demographic variables, including the mother’s marital status, age, education



level, household income, and racial or ethnic identification, were split into these two categories based upon established cutoffs. For marital status, we considered mothers to be “at risk” if they were not partnered. For age, we considered mothers to be “at risk” if they were less than 22 years old. For income, mothers were considered to be “at risk” if their annual household income was less than \$15,000, and for racial identification, mothers were considered to be “at risk” if they were of a minority race. Finally, in terms of educational attainment, mothers were considered to be “at risk” if they received less than a high school education. A cumulative demographic risk index was then computed based upon these five risk scores, with one point added for each risk status and a higher score indicating more risk.

**Postpartum Depression Scale (PDSS)** (Beck & Gable, 2002). At the pre-home visit, mothers responded on this self-report, 35-item scale, used to assess the levels of mothers’ depressive symptoms before the group. The measure yields a total score ranging from 35-175. A cutoff >80 corresponds to a major depressive disorder diagnosis.

**Modified National Women's Study PTSD Module** (Resnick et al., 1993). This instrument is a version of the Diagnostic Interview Schedule (DIS), modified for use in the epidemiological study of PTSD specific to women. At the pre-home visit, mothers self-reported answers on this instrument, measuring the 17 symptoms of PTSD with follow-up questions regarding the origin of distress (e.g., birth experience, childhood trauma) and its impact on current functioning. It yields a dichotomous diagnosis and continuous symptom count.

**Video Observations.** At the pre- and post- home visits, mother-child interactions were videotaped to assess changes in parenting quality. Videotaped interactions included three low-challenge, interactive tasks: a 5-minute free-play episode, during which the mother is instructed to spend time as she normally would with her child using a provided bin of toys, a two-minute

teaching task, during which the mother is instructed to engage with her child in a structured task involving a developmentally-appropriate object, and a 3-minute clean-up task, where the mother and child are instructed to put the toys away in the bin.

Video observations were coded blindly to intervention status or maternal characteristics using the CARE-Index (Crittenden, 2007; Crittenden, 2005) by Dr. Crittenden herself. A separate CARE-Index coding manual exists for infants and toddlers. The CARE-Index is organized around the concept of maternal sensitivity, with sensitivity seen as a dyadic construct, and was developed specifically to assess high-risk relationships (Crittenden, 1988; Crittenden & DiLalla, 1988). The Index is a well-validated method for evaluating caregiver-infant interaction, with high levels of research validity (Crittenden & Bonvillian, 1984). The CARE-Indexes for infants and toddlers evaluate mothers and children separately on seven aspects of interactional behavior: facial expressions, verbal expressions, position and body contact, affection, turn-taking contingencies, control, and choice of activity. Each of these seven aspects of behavior is allocated up to two points out of a total of 14. The points for each scale are then added to yield seven scale scores, three for adults and four for infants and toddlers. The three maternal scales are sensitivity, control behavior, and unresponsiveness. The sensitivity scale relates to a mother's responses to her infant's signals, including timing and vocal tone. The control scale identifies behaviors which are either outwardly hostile, including glaring at the infant or using profanities, or behaviors which are covertly hostile, such as inappropriate laughter or teasing. The unresponsive scale measures facial, vocal, or physical withdrawal, such as vocal silence or physical distancing from the infant. Combined, scores on maternal sensitivity, control, and unresponsiveness add up to 14. The four infant scales are cooperative, difficult, compulsive, and passive, and the three toddler scales are cooperative, compulsive, and coercive; each of the scales

for infants and toddlers adds to a total of 14 points (Crittenden, 2007; Crittenden, 2005). For the purpose of the current study, only CARE-Index scores for maternal sensitivity will be used in analysis. Based on these scores, mothers can then be divided into four categories outlined in the CARE-Index coding manual (Crittenden, 2007; Crittenden, 2005). Mothers are considered to be “sensitive” if they score 11-14 points on the sensitivity scale, “adequate” if they score 7-10 points on the sensitivity scale, “inept” if they score 5-6 points on the sensitivity scale, and “at risk” if they score 0-4 on the sensitivity scale.

### **Participants**

Participants in this study were a sample of mothers considered to “graduate” from the Mom Power program by attending seven or more groups ( $n = 56$ ).

Demographic characteristics of graduate mothers are shown in Table 1. The average age of the mothers in the sample was 23.8 ( $SD = 5.78$ ). The target children of graduate mothers had an average age of 20.93 months ( $SD = 21.33$ ), and were mostly male (59.2%). The racial and ethnic composition of mothers was 52.4% Caucasian, 38.1% African American, 2.4% Asian or Pacific Islander, and 7.1% Biracial. A majority of the mothers were unmarried (83.7%), with 14% living with the birth father, 4.7% living with a different partner, 7% divorced, 46.5% never married, and 11.6% in other relationship categories. In terms of education levels, a majority of mothers had a high school degree or less; 27.5% of the mothers had less than a high school degree, 25% had a high school degree or GED, 35% had some college, 2.5% received an AA degree, 5% received a vocational or technical degree, and 5% had a bachelor’s degree. Due to the nature of inclusion in the program, a majority of mothers had annual household incomes of less than \$10,000; 31% had annual incomes of less than \$5,000, 33.3% had incomes of \$5,000 to \$10,000, and 11.9% had incomes of \$10,000 to \$14,000, with decreasing percentages as income

brackets increase. Mental health diagnoses are presented in Table 2. According to scores on the PDSS and DIS, 61.7% of the mothers qualified for diagnosis of MDD, 51.1% qualified for a diagnosis of PTSD, 44.7% qualified for comorbid diagnoses, and 31.9% did not qualify for a diagnosis. In sum, this study population represents a high-risk group of mothers with a range of mental health symptoms.

To allow for comparison, a chi-square test was conducted to examine the demographic risk scores of both “graduate” mothers and “dropout” mothers ( $n = 33$ ). Of the mothers who graduated, 65.1% qualified for an “at risk” relationship status, 42.9% qualified for an “at risk” age, 76.2% qualified for an “at risk” annual household income, 47.6% qualified for an “at risk” racial identification, and 27.5% qualified for an “at risk” educational level. Of the mothers who dropped out, 62.1% qualified for an “at risk” relationship status, 60.6% qualified for an “at risk” age, 64% qualified for an “at risk” annual household income, 53.6% qualified for an “at risk” racial identification, and 27.8% qualified for an “at risk” educational level. According to analyses, none of the “at risk” variables, including cumulative demographic risk score, emerged as significantly different between the graduate and dropout mothers, illustrating that both groups experienced comparable levels of demographic risk. A chi-square test was also used to compare mental health among graduate and dropout mothers. As previously reported, according to scores on the PDSS and DIS, 51.1% of those who graduated from the program qualified for a diagnosis of PTSD, 61.7% for a diagnosis of MDD, 44.7% as comorbid for PTSD and MDD, and 31.9% as having neither. For dropout mothers, 46.9% qualified for a diagnosis of PTSD, 53.1% qualified for a diagnosis of MDD, 40.6% qualified for comorbid diagnoses, and 40.6% did not qualify for a diagnosis. Results of the chi-square test revealed that there were no significant differences in terms of mental health diagnoses between mothers who completed and who dropped out of the

intervention. With this information, it appears that there were no significant differences in terms of demographic or mental health factors between graduate and dropout mothers.

## **Results**

### **Summary of Analyses**

In order to test my hypotheses, I will perform a series of statistical analyses using PASW Statistics Software. First, a paired sample t-test will be used in order to measure changes in maternal sensitivity from pre- to post-. An independent samples t-test will then be used to determine whether demographic risk variables relate to pre-intervention levels of maternal sensitivity. Finally, a one-way repeated measures ANOVA test will be used to examine whether a higher or lower cumulative demographic risk score related to differential treatment outcomes in terms of maternal sensitivity category from pre- to post-intervention, and a paired samples t-test will measure whether a higher or lower demographic risk score related to differential treatment outcomes in terms of scores on the maternal sensitivity scale from pre- to post-intervention.

### **Mom Power and Maternal Sensitivity**

To determine whether there were significant changes in levels of maternal sensitivity following participation in the Mom Power intervention, mothers were first divided into the four sensitivity categories based on the CARE-Index coding manual (Crittenden, 2005; Crittenden, 2007). Pre- and post-intervention participant classifications based on this rating system are presented in Table 3. At the pre- observation, 44% of the mothers were classified as “at risk,” 16% as “inept,” 36% as “adequate,” and 4% as “sensitive.” At the post- observation, 34.8% of the mothers were classified as “at risk,” 21.7% as “inept,” 39.1% as “adequate,” and 4.3% as “sensitive.”

A paired samples t-test was used to evaluate whether mothers experienced a significant change in sensitivity classification from pre- to post-intervention. Results are displayed in Table

4. Findings indicated that there was not a statistically significant change in maternal sensitivity classification from pre- to post- ( $t(21) = -.85, p > .05$ ). I then used a paired samples t-test to explore whether there were changes in overall scores on the maternal sensitivity scale from pre- to post-, regardless of CARE-Index classification. Results are displayed in Table 5. Findings indicated that there was also not a statistically significant change in scores on the maternal sensitivity scale from pre- to post- ( $t(21) = -.24, p > .05$ ). Overall, results suggest that the sample of mothers did not experience an increase in maternal sensitivity rating or score following the Mom Power intervention based on coded observations.

### **Demographic Variables and Pre- Maternal Sensitivity**

To determine whether demographic and mental health factors related to pre-intervention levels of maternal sensitivity, mothers were first divided into the “at risk” or “not at risk” categories previously described. Results are shown in Table 2. In the current sample, 65.1% of mothers were “at risk” in terms of marital status, 42.9% of mothers were “at risk” in terms of age, 76.2% of mothers were “at risk” in terms of annual household income, 47.6% of mothers were “at risk” in terms of minority racial identification, and 27.5% of mothers were “at risk” in terms of education level. Mothers had an average cumulative risk index of 2.28 ( $SD=1.45$ ), with a score distribution as follows: 12.2% of mothers scored 0, 24.5% scored 1, 14.3% scored 2, 24.5% scored 3, 20.4% scored a 4, and 4.1% scored a 5.

I then conducted an independent samples t-test to evaluate the relationship between the demographic risk variables and scores on the pre- maternal sensitivity scale. Results are shown in Table 6. After analyses, an “at risk” status in maternal age was the only risk category which was significantly related to pre- scores on the maternal sensitivity scale ( $t(17) = 2.67, p < .05$ ). The mean maternal sensitivity score for an “at risk” status in age was 3.0 ( $SD = 1.41$ ), compared

to a mean maternal sensitivity score of 6.07 ( $SD = 2.40$ ) for a “not at risk” status. Thus, mothers who were younger than 22 years of age showed significantly lower levels of maternal sensitivity during pre-intervention videotaped observations compared to mothers older than 22. An “at risk” status in marital status, race, education level, and household income did not emerge as statistically significant in relation to pre- maternal sensitivity levels. To measure the effect of cumulative demographic risk score on pre- maternal sensitivity, mothers were split into two groups based on the total number of demographic risk variables they experienced. Mothers were considered to be “low risk” if they experienced two or less and “high risk” if they experienced three or more cumulative demographic risk variables. Based on these classifications, 51% of graduate mothers qualified as “low risk,” and 49% of graduate mothers qualified as “high risk.” Cumulative demographic risk score approached, but did not reach, significance ( $t(17) = 1.97, p = .065$ ), indicating that mothers who had higher overall levels of demographic risk had almost significantly lower maternal sensitivity scores at pre- compared to mothers of lower demographic risk.

I next examined the relationship between mental health diagnoses and pre- maternal sensitivity scores. Results on the independent samples t-test indicated that a diagnosis of MDD ( $t(17) = .42, p > .05$ ), PTSD ( $t(17) = .58, p > .05$ ), or both ( $t(17) = .58, p > .05$ ) did not significantly influence pre- maternal sensitivity scores. Thus, my hypothesis received partial support; only an “at risk” status in maternal age, and to a lesser extent cumulative demographic risk status, was significantly related to lower pre- maternal sensitivity levels, while other “at risk” statuses or diagnoses did not emerge as statistically significant.

### **Demographic Variables and Pre-Post Maternal Sensitivity Changes**

Finally, I examined whether a higher cumulative risk score contributed to a reduction in treatment response, as measured through patterns of change in maternal sensitivity classification and changes in scores on the maternal sensitivity scale from pre- to post-intervention. Mothers were again split into the two “low risk” and “high risk” groups based on the total number of demographic risk variables they reported. I then conducted a one-way repeated measures ANOVA test to determine if there were differences in patterns of change in maternal sensitivity rating from pre- to post- based on high or low risk status. Results are shown in Table 7. Results were not statistically significant ( $F(1,17) = .48, p > .05$ ), indicating that high and low risk mothers did not show different patterns of change in maternal sensitivity categorization from pre- to post-intervention. I then filtered out the “low risk” and “high risk” cases separately, and conducted two paired samples t-tests to determine whether participants of a “low risk” or “high risk” demographic status experienced differential score changes on the maternal sensitivity scale from pre- to post-. Results are shown in Table 8. Results indicated that both “low risk” mothers ( $t(11) = .11, p > .05$ ) and “high risk” mothers ( $t(6) = -.44, p > .05$ ) did not experience a statistically significant change in scores on the maternal sensitivity scale from pre- to post-. Thus, it appears that a higher level of demographic risk does not lead to differential treatment outcomes, with mothers of both high and low risk showing a similar lack of change in sensitivity rating and score from pre- to post-intervention.

### **Discussion**

The purpose of the current study was to evaluate the effectiveness of the Mom Power intervention at increasing levels of maternal sensitivity among high-risk mothers from pre- to post-, as well as how pre- levels and treatment responses relate to demographic risk variables. Previous research has identified maternal sensitivity, in particular, as crucial in the formation of



secure mother-child attachments and, consequently, healthy child developmental trajectories (Meins et al., 2001; Bigelow et al., 2010; De Wolff & van IJzendoorn, 1997). Results from the current study indicate that the Mom Power intervention did not significantly increase maternal sensitivity from pre- to post-, either categorically or on a numerical scale. In terms of demographic factors, using independent samples t-tests, only a risk status in maternal age was significantly related to pre-intervention levels of maternal sensitivity, such that mothering when younger than 22 years of age contributed to significantly lower scores on the sensitivity scale. Moreover, a higher cumulative demographic risk score was not significantly related to treatment response, with both “low risk” and “high risk” participants failing to show a statistically significant change in maternal sensitivity categorization and score from pre- to post-. Overall, results indicate that the Mom Power intervention may not effectively increase maternal sensitivity among high-risk mother child dyads, regardless of risk status.

### **Interpretation of Results**

Analyses failed to support the first hypothesis regarding the effectiveness of the intervention at increasing maternal sensitivity from pre- to post-. The results suggest that, while Mom Power is designed specifically to increase this variable, it either may not be targeting sensitivity as well as it aims to or it may work through an alternate pathway. For example, other variables on the maternal scales of the CARE-Index include controlling behaviors and unresponsiveness, factors which characterize maladaptive mother-child interactions and poor attachment security (Isabella, 1993; Campbell et al., 1991; Denham et al., 1991, Fiese et al., 1990). Although the current study did not assess changes in these variables from pre- to post-, it is possible that mothers may have experienced statistically significant decreases in either variable, indicating less dysfunctional interaction patterns. In this way, mothers may have shown

a decrease in negative parenting behaviors, rather than an increase in positive parenting behaviors, following intervention.

Only partial support was received for the second hypothesis regarding the relationship between demographic risk variables and pre- maternal sensitivity scores. After analyzing marital status, age, yearly income, race, education level, and mental health diagnoses, only maternal age was found to significantly relate to maternal sensitivity score, such that mothers who were younger than 22 years of age had lower scores at pre-. This finding is consistent with previous research, suggesting that a younger age of mothering poses a risk to parenting (Rafferty & Griffin, 2010). A higher cumulative demographic risk score approached, but did not reach, significance in relation to pre- maternal sensitivity score. Results suggest that a risk status in maternal age may be one of the more important variables influencing maternal sensitivity, with other demographic risks and mental health statuses having less of an effect. Interestingly, this idea contradicts existing research findings, many of which point to the equally detrimental effects of mental illness, lower educational attainment, minority race, a lower annual household income, and an unpartnered relationship status on maternal parenting style. It is possible that these demographic variables may significantly impact other aspects of observed parenting as measured by the CARE-Index, including controlling behavior and unresponsiveness, although this data is not reported in the current study.

Finally, support was not received for the third hypothesis regarding the influence of a higher cumulative demographic risk status on intervention response. Cumulative demographic risk status was not found to contribute to differential changes in maternal sensitivity categorization or scale score from pre- to post-. Thus, both “high risk” and “low risk” mothers failed to show a statistically significant change in maternal sensitivity following the intervention,

regardless of number of demographic risks. This finding seems to suggest that the program operates independently of demographic factors, contributing to similar outcomes despite a range of participant backgrounds.

### **Limitations**

There were several limitations in the current study which may influence interpretation of the results. First, due to the nature of inclusion in the group, the sample is overrepresentative of high-risk mother-child dyads. For this reason, treatment response outcomes may not be generalizable to lower-risk populations. The group also had a high rate of dropouts; 33 of 89, or about 37%, of the mothers who began Mom Power dropped out for various reasons. This high rate is indicative of the high-risk nature of inclusion in the group, with many mothers experiencing a range of mental health complaints and daily hassles or obstacles. The high dropout rate does, however, lead to the possibility that the mothers who graduated from the group were qualitatively different from the mothers who dropped out. Demographic analyses indicated that drop out mothers did not significantly differ in risk from graduate mothers, yet they may have differed in some unmeasured variable. With this in mind, results among the current sample may not be generalizable to all high-risk populations. The lack of videotaped interactions with a majority of dropout mothers also prevents a control group comparison of levels of maternal sensitivity at both pre- and post-.

Another limitation lies in the short period of post- follow-up. Because mothers completed their post- home visit and videotaped observations only two weeks after groups ended, mothers may not have had adequate time to practice and integrate the concepts taught into their daily parenting tactics. It is possible that, after a longer period of follow-up, mothers may show greater increases in observed maternal sensitivity due to more real-life practice of lesson components.

**Future Areas of Study**

A number of questions and study limitations can be addressed through future research. First, a longer period of follow-up, using the same measures and videotaped interactions, can be introduced into the study protocol. By including a second or third home visit, perhaps over a year following participation, it may be possible that mothers will show a statistically significant increase in maternal sensitivity after more hands-on practice and time to integrate Mom Power teachings into their everyday parenting strategies. It would also be useful to establish a control group to allow for a comparison of treatment outcomes. One way to do this would be to conduct follow-up home visits with dropout mothers to see whether high-risk mothers who did not participate in the group differed from the high-risk mothers who did participate. It might be found, for example, that the control group would show a statistically significant decrease in maternal sensitivity throughout the duration of the group, while the treatment group would show neither an increase nor decrease in maternal sensitivity.

In terms of analysis, it would be useful to examine changes in other maternal scores on the CARE-Index from pre- to post-, such as controlling behaviors and unresponsiveness. It is possible that while Mom Power did not increase the maternal sensitivity variable among graduate mothers, it may have significantly decreased negative parenting behaviors. It would also be useful to examine self-report measures of parenting, as collected during pre- and post-home visits. Adding a self-report component, as well as videotaped observations, to the examination of maternal sensitivity may offer a more complete picture of parenting. Mothers may have shown an improvement in their views towards the parental role and the use of beneficial parenting practices, despite a potential lack of visual evidence in post-home visits.

**Conclusion**

Previous research on parenting has illustrated the importance of responsive, warm, and nurturing mother-child interactions in forming healthy child developmental trajectories (Sroufe et al., 2005; Isabella, 1993; Denham et al., 2002; Zhou et al., 2002; Fiese, 1990; Lee et al., 2006). Maternal sensitivity, in particular, has been identified as one of the more important factors in this exchange, promoting a secure attachment and improved child outcomes (Meins et al., 2001; Bigelow et al., 2010; De Wolff & van IJzendoorn, 1997). Given the association between poor mental health, low socioeconomic status, and impaired mother-child interactions, a range of parenting interventions have been developed to address early difficulties among low-income mothers and mothers with depression (Rafferty & Griffin, 2010; Compas et al., 2010; Forman et al., 2007; Schiffman et al., 2003). There is, however, a lack of programs designed to address the documented parenting troubles among trauma-exposed mothers (Cohen et al., 2008). The Mom Power intervention developed out of this need, aiming to address parenting difficulties among high-risk, trauma-exposed mothers by teaching concepts related to understanding and meeting their child's needs. The present study originated as a means of evaluating the effectiveness of the Mom Power intervention at increasing maternal sensitivity in mother-child interactions.

Although the program was not shown to significantly increase maternal sensitivity rating or score among participants, further analysis and program refinement are needed before allowing for conclusions regarding the value of Mom Power as a clinical intervention. Despite findings from the current study, Mom Power offers a unique opportunity for trauma-surviving and underserved mothers to seek help and support for their parenting difficulties, an endeavor which will help to improve both maternal and child health.

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Table 1

*Graduate Demographics*

Characteristics	Category	Value
Mother Age		$M = 23.84$ ( $SD = 5.777$ )
Target Child Age		$M = 20.93^a$ ( $SD = 21.332$ )
Target Child Gender	Female	40.8%
	Male	59.2%
Marital Status	Married	16.3%
	Living with birth father	14%
	Living with partner	4.7%
	Divorced	7%
	Never married	46.5%
	Other	11.6%
Education	Less than HS degree	27.5%
	HS degree or GED	25%
	Some college	35%
	AA degree	2.5%
	Vocational or technical degree	5%
	Bachelor's degree	5%
Annual Household Income	Less than \$5,000	31%
	\$5,000-9,999	33.3%
	\$10,000-14,999	11.9%
	\$15,000-19,999	2.4%

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	\$20,000-24,999	9.5%
	\$25,000-29,999	4.8%
	\$30,000-34,999	4.8%
	\$40,000-44,999	2.4%
Race	Caucasian	52.4%
	African American	38.1%
	Asian or Pacific Islander	2.4%
	Bi-Racial	7.1%

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*Note:* n = 40; 16 demographic questionnaires missing or incomplete. <sup>a</sup> Child age is calculated in months.

Table 2

*Crosstabulation of Demographics and Graduate Status*

Variables	Group		$\chi^2/t$
	Graduates	Dropouts	
Partnered Risk	65.1% (n = 28)	62.1% (n = 18)	.07
Age Risk	42.9% (n = 21)	60.6% (n = 20)	2.49
Income Risk	76.2% (n = 32)	64.0% (n = 16)	1.15
Minority Risk	47.6% (n = 20)	53.6% (n = 15)	.24
Education Risk	27.5% (n = 11)	27.8% (n = 5)	.00
Cumulative Risk	2.28 (1.45)	2.24 (1.39)	.13
MDD Diagnosis	61.7% (n = 29)	53.1% (n = 17)	.58
PTSD Diagnosis	51.1% (n = 24)	46.9% (n = 15)	.13
Comorbid Diagnosis	44.7% (n = 21)	40.6% (n = 13)	.13
No Diagnosis	31.9% (n = 15)	40.6% (n = 13)	.63

*Note:* \*\*= $p \leq .05$ . Standard deviations for cumulative risk appear in parenthesis next to means.



Table 3

*Pre- and Post- Intervention Maternal Sensitivity Classification based on CARE-Index*

Classification	Group	
	Pre	Post
At risk	44% (n = 11)	34.8% (n = 8)
Inept	16% (n = 6)	21.7% (n = 5)
Adequate	36% (n = 9)	39.1% (n = 9)
Sensitive	4% (n = 1)	4.3% (n = 1)

*Note:* For pre, n = 25; 31 cases missing. For post, n = 23; 33 cases missing.

Table 4

*Paired Samples T-test for Comparing Changes in Maternal Sensitivity Classification from Pre- to Post-Intervention*

		Mean	SD	t	Sig. (2-tailed)
		Difference			
Pair 1	PreMsensG-	-.18	1.00	-.85	.41
	PostMsensG				

*Note:* n = 22; \*\*= p ≤ .05

Table 5

*Paired Samples T-test for Comparing Changes in Maternal Sensitivity Score from Pre- to Post- Intervention*

		Mean	SD	t	Sig. (2-tailed)
		Difference			
Pair 1	PreMsens-	-.14	2.64	-.24	.81
	PostMsens				

*Note: n = 22; \*\*= p ≤ .05*

Table 6

*Independent Samples T-Test for Comparing Pre-Sensitivity Score based on Demographic Risk*

Variables	Sensitivity Score		<i>t</i>	<i>df</i>
	At Risk	Not At Risk		
Partnered Risk	4.89 (2.57)	5.60 (2.63)	.59	17
Age Risk	3.0 (1.41)	6.07 (2.40)	2.67**	17
Income Risk	5.0 (2.66)	6.0 (2.35)	.74	17
Minority Risk	4.17 (2.64)	5.77 (2.46)	1.29	17
Education Risk	5.75 (3.5)	5.13 (2.39)	-.42	17
Cumulative Risk	3.86 (2.55)	6.08 (2.28)	1.97	17
MDD Diagnosis	5.13 (2.26)	5.75 (3.86)	.42	17
PTSD Diagnosis	5.0 (2.13)	5.71 (3.30)	.576	17
Comorbid Diagnosis	5.0 (2.13)	5.71 (3.30)	.576	17
No Diagnosis	5.13 (2.26)	5.75 (3.86)	-.419	17

*Note:* n = 19; \*\*=  $p \leq .05$ . Standard deviations appear in parenthesis next to means.

Table 7

*Repeated Measures ANOVA for Comparing Pattern of Change in Maternal Sensitivity Category from Pre- to Post- based on Risk Status*

Effect	<i>MS</i>	<i>df</i>	<i>F</i>
Time x Demographic	.26	1	.48
Risk Group			
Error (Time)	.55	17	

*Note: n = 19; \*\*= p ≤ .05*

Table 8

*Paired Samples T-test for Comparing Changes in Maternal Sensitivity Score from Pre- to Post-based on Risk Status*

		Mean	SD	t	Sig. (2-tailed)
		Difference			
High Risk	PreMsens-	-.43	2.57	-.44	.68
	PostMsens				
Low Risk	PreMsens-	.08	2.64	.11	.92
	PostMsens				

*Note:* n = 19; \*\*=  $p \leq .05$