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Maternal Posttraumatic Stress Disorder, Parenting, Family Functioning, and Child Outcome

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MATERNAL POSTTRAUMATIC STRESS DISORDER, PARENTING, FAMILY FUNCTIONING, AND CHILD OUTCOME

by

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Abstract

Although a good deal of research has been conducted examining the effects of parental psychopathology of various types (i.e. maternal and paternal depression and schizophrenia, paternal PTSD), very few studies have investigated the influence of maternal PTSD on mothers' parenting and their children's behavioral and psychological functioning. This paucity of research is in spite of the fact that women exhibit higher lifetime PTSD prevalence rates than men. The current study examined the influence of maternal PTSD and trauma on mothers' parenting, family functioning, and children's psychological well-being in a sample of 125 mothers and 34 mother-child dyads. Mothers provided self-report information regarding their lifetime history of traumatic events, current PTSD symptoms, current parenting beliefs, and beliefs about the current functioning of their family. Mothers also reported on the current psychological functioning of their oldest child. Analyses revealed that mothers in the PTSD group reported significantly worse parenting satisfaction and efficacy, and family problem-solving, communication, and general functioning than did mothers in the Non-trauma group. Mothers in the PTSD group also reported that their children suffer from significantly more internalizing and total psychological problems than children of mothers in the Non-trauma group. Mothers who had experienced a trauma but did not suffer from PTSD reported significantly worse family problem-solving and child total problems than mothers in the Non-trauma group. These results suggest that although a lifetime history of traumatic experiences may negatively impact mothers' parenting,

family functioning, and the psychological well-being of their children to a slight degree, the presence of PTSD following these experiences is even more detrimental.

Maternal Posttraumatic Stress Disorder, Parenting, Family Functioning, and Child Outcome

Past research has linked parental psychopathology in general to a number of negative child outcomes, including increased incidence of psychopathology, behavioral problems, and academic and social difficulties (Ancharoff, Munroe, & Fisher, 1998; Dickstein et al., 1998; Downey & Coyne, 1990; Kuperman, Schlosser, Lidral, & Reich, 1999). Although broad, the parental psychopathology literature has been historically biased in certain respects. Research abounds on the effects of paternal Posttraumatic Stress Disorder (PTSD) on parenting style and child outcome, while research examining similar effects of maternal PTSD is relatively rare. This dichotomy is counterintuitive in that studies of the prevalence of PTSD in the general population have shown that women develop PTSD following a trauma at significantly higher rates than do men (Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995; Breslau et al., 1998). Further, it has been noted that women generally tend to play an integral role in the raising of their children and are more often relied upon for emotional support (Bornstein, 1995; Collins & Russell, 1991; Russell & Russell, 1987).

Findings of previous studies suggest that children of fathers with PTSD are at increased risk for a variety of psychological and behavioral difficulties (Caselli & Motta, 1995; Davidson, Smith & Kudler, 1989; Harkness, 1991; Jacobsen, Sweeney, & Racusin, 1993; Matsakis, 1988; Parsons, Kehle, & Owen, 1990). In addition, maternal depression and the experience of maternal trauma have been linked to adverse child outcome (Downey & Coyne, 1990; Holden & Ritchie, 1991; Levondosky & Graham-Bermann,

2000; Rossman & Rea, 2005). Taken together, these findings, coupled with information regarding PTSD prevalence and the importance of the mother in child rearing would seem to suggest that the topic of maternal PTSD is a pertinent area of research that has been largely overlooked. This study proposes to investigate the influence of maternal PTSD diagnosis on mothers' reports of child behavior and psychopathology, mothers' parenting satisfaction and competence, as well as family communication, problem-solving, and general functioning.

Posttraumatic Stress Disorder Prevalence

PTSD is a psychological disorder that may be developed following the experience of a traumatic event that engenders feelings of fear, helplessness, and horror in its victim. The diagnosis of PTSD necessitates the experience of symptoms falling into three clusters: reexperiencing, avoidance, and hyperarousal. Results from the National Comorbidity Survey indicate that PTSD is highly prevalent in the general population (Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995). Indeed, of the 5877 respondents who were interviewed for this study 7.8% (5% of men and 10.4% of women) were estimated to have a lifetime history of PTSD. As is evident in the findings noted by Kessler, et al. (1995), women have been shown to experience PTSD at much higher rates than men (Breslau, Davis, Andreski, Peterson, & Schultz, 1997; Breslau et al., 1998; Norris, 1992). This trend appears to be consistent across cultures and has been observed in spite of the findings that men report experiencing higher numbers of traumatic events, and women and men differ in the types of traumatic events they experience (Amir & Sol, 1999; Breslau et al., 1998; Flett, Kazantzis, Long, MacDonald, & Millar, 2004;

Gavranidou & Rosner, 2003; Kessler et al., 1995; Norris, Foster, & Weisshaar, 2002; Norris, Murphy, Baker, Perilla, Rodriguez, & Rodriguez, 2003; Stein, Walker, Hazen & Forde, 1997).

With regard to gender differences in type of traumatic experience, Gavranidou and Rosner (2003) noted that their review of the extant literature reveals that women more often experience sexual abuse and rape whereas men more often report having been victimized through physical attacks or serious accidents. They further reported that both men and women are more likely to develop PTSD following a sexual trauma such as abuse or rape, whereas women develop PTSD at higher rates than men for traumas that involve interpersonal assault that is not sexual in nature, as well as events such as life-threatening accidents and natural disasters. Indeed, data from both the National Comorbidity Survey and the Detroit Area Survey of Trauma indicate that gender differences in the PTSD prevalence rate are significant even when trauma type is controlled for (Norris, Foster, & Weisshaar, 2002).

These gender differences have also been noted in studies examining the prevalence of PTSD cross-culturally. For example, Norris, Perilla, Ibanez, and Murphy (2001) found that after experiencing a hurricane, Mexican women were much more likely to develop PTSD than were Mexican men. While a similar gender difference was found when comparing Anglo-American and African-American women and men, this difference was not nearly as large for either of these populations as that noted within the Mexican sample. The authors hypothesized that gender differences in PTSD were increased in the Mexican sample due to the much more traditional views of masculinity

and femininity fostered by the Mexican community as compared to that of both the Anglo- and African-American communities. Further, Norris et al. (2001) reported that the gender gap in PTSD rates was smaller within the African-American sample than in the Anglo-American sample. This difference was also attributed to differences in gender roles within the communities (i.e. Anglo-Americans are thought to typically adhere more strictly to traditional gender roles than do African-Americans). Additional studies cited by Norris et al. (2002) have also shown that Mexican women and Chinese American women are more likely to develop PTSD following a trauma (Norris, Murphy, Baker, & Perilla, 2000; data from the Chinese American Psychiatric Epidemiology Study made available to the authors by the principal investigator, David Takeuchi).

Theoretical Conceptualizations of PTSD

Researchers have proposed a number of theories to account for the development of PTSD in some survivors of traumatic events. Most relevant to the following discussion are the Diathesis-Stress Model of PTSD (McKeever & Huff, 2003), a cognitive vulnerability model (Feeny & Foa, 2006) and the Learning/Conditioning Model (Keane & Barlow, 2004).

McKeever and Huff (2003) posit that the residual stress an individual experiences as a result of a traumatic event interacts critically with existing individual factors (diatheses) to determine that individual's likelihood of developing PTSD. Specifically, the residual stress described by McKeever and Huff (2003) constitutes the "immediate and lingering effects of experiencing a traumatic event" (p. 239). The authors also

propose that the severity of the traumatic event experienced is directly related to the psychological outcome. That is, the experience of more low-grade traumatic events that do not precipitate the development of PTSD can be incorporated into that person's diathesis constellation.

With regard to diatheses, this particular model posits the existence of two types of diatheses: ecological and biological. Ecological diatheses include those risk factors that are linked to the individual's psychological self and surrounding environment. These diatheses are thought to be important insomuch as they may predispose individuals to development of maladaptive cognitive patterns hypothetically associated with a greater likelihood of developing PTSD following a trauma.

Biological diatheses on the other hand are described as risk factors of a structural and neurochemical nature (McKeever & Huff, 2003). Biological diatheses may potentially alter an individual's physiological and neurological response to the trauma, thereby increasing the likelihood that they may develop PTSD. Heritable genetic markers constitute one form of biological diathesis and a number of studies have been conducted examining genetic vulnerability for the development of PTSD following a trauma. Researchers have generally found that some specific allelic markers are associated with increased risk of PTSD, lending some weight to the hypothesis that biological diatheses play an important role in the development of PTSD (Freeman, Roca, Guggenheim, Kimbrell, & Griffin, 2005; Lawford et al., 2003; Lee et al., 2005; Segman et al., 2002; Young et al., 2002).

These three individual variables (residual stress, ecological diatheses, and biological diatheses) interact to increase or decrease an individual's chances of developing PTSD following a trauma. Individuals with higher degrees of both ecological and biological diatheses need not experience as severe a traumatic stressor in order to result in the development of PTSD. In contrast, those individuals who possess few ecological and biological diatheses may be more resilient in the face of more severe residual stress resulting from a trauma.

In relation to the discussion of parental psychopathology and child outcome, one might conceptualize the experience of being raised by a parent with a severe mental illness as an ecological stressor. Specifically, children may learn belief systems and develop certain worldviews in response to the beliefs and opinions espoused by a parent with PTSD. Indeed, an information-processing theory of the effects of parental PTSD on children suggests that because children's schemata are directly influenced by early interactions with their caregivers, parents' distorted and maladaptive beliefs about self, others, and the world may be transmitted to their children (Janoff-Bulman, 1992; McCann & Pearlman, 1990). If children of parents suffering from PTSD hold distorted and maladaptive beliefs prior to experiencing a traumatic event themselves this may increase the likelihood that they will develop PTSD subsequent to that event. It also seems likely that the ecological diathesis of growing up with a parent diagnosed with PTSD may also increase the child's vulnerability to other mental disorders (i.e. major depressive disorder, generalized anxiety disorder) when less traumatic stressors occur. That is, given that the experience of being raised by a PTSD positive parent constitutes an

ecological diathesis, children of these parents who experience a less severe residual stressor may be at greater risk for developing other non-trauma related disorders than peers raised by healthy parents.

The conceptualization of a parent's maladaptive or distorted beliefs surrounding a traumatic experience constituting an ecological stressor for a child is further supported when one considers a cognitive conceptualization of the development and maintenance of PTSD. From this standpoint, an individual's beliefs about self, others, and the world are exceptionally important in whether or not an individual develops PTSD following a traumatic event. Foa and her colleagues have argued that the holding of overly rigid beliefs may predispose individuals to the development of PTSD (Foa & Riggs, 1993; Foa & Jaycox, 1999). That is, if an individual holds very rigid beliefs about self, others, and the world (whether positive or negative) prior to the trauma, then that individual must find a way to either fit their traumatic experience into their pre-existing belief structure or alter that structure to accommodate the traumatic experience. The beliefs resulting from this assimilation or accommodation of the trauma may make it particularly difficult for that individual to successfully recover.

If the influence of maladaptive cognitions is indeed a major factor in the development and maintenance of PTSD (as has been indicated by past research; Foa, Ehlers, Clark, Tolin, & Orsillo, 1999; Warda & Bryant, 1998) then this would seem to support the notion that parental beliefs play an important role in the relationship between parental PTSD and child psychological functioning. If one conceptualizes posttraumatic cognitions as a particularly important part of PTSD and also entertains the idea that

children's developing schemas are influenced by those of their parents this would seem to suggest that at least some of a parent's posttraumatic beliefs will have an effect on his or her children.

A more behaviorally oriented theory of PTSD that may have a bearing on this discussion is Keane and Barlow's (2004) Learning/Conditioning Model. This model emphasizes the idea that upon exposure to a traumatic stressor, individuals experience intense basic emotions and/or physiological reactions (i.e. "true alarms") in response to a threat situation, rage or distress resulting from the overwhelming effects of a traumatic event. These experiences then lead to the person developing "learned alarms" that occur when the individual is exposed to situations (be they external or internal) that symbolize or resemble aspects of the traumatic event. This conditioning hypothesis presumably explains both the reexperiencing and hyperarousal symptoms of PTSD. Keane and Barlow (2004) also theorize that the numbing of general responsiveness in individuals suffering from PTSD may be due to a desire to avoid aversive emotional reactions of any kind. While individuals exposed to a traumatic event may learn that a particular emotional or physiological reaction is appropriate in response to a particular stressor, these responses may cease to be appropriate or functional for the individual later in life. These "learned alarms" as well as maladaptive coping strategies utilized by the trauma survivor may also be transmitted to children of PTSD sufferers via modeling.

Similar to the information-processing theory mentioned previously (Janoff-Bulman, 1992; McCann & Pearlman, 1990), Ancharoff, Munroe, & Fisher (1998) have cited four mechanisms of secondary trauma transmission from parents to children. The

first of these is silence on the part of the PTSD sufferer. When the parent remains silent about the experience and aftereffects of the trauma, rules, myths, and metamessages are thought to be communicated to the child without the benefit of an explanation regarding the origins of these systems of belief. On the opposite end of the disclosure spectrum from silence is the second mechanism, overdisclosure. Ancharoff and her colleagues (1998) suggest that direct disclosure of traumatic experiences (particularly without concomitant affect) may traumatize children and other family members. Identification is the third mechanism of trauma transmission posited by Ancharoff et al. (1998). Children may feel responsible for their trauma survivor parent's distress leading to the child attempting to behave in such a way as to lessen the parent's symptoms. Alternately, if the child over-identifies with the parent in an attempt to gain acceptance and recognition, the parent's symptoms may be transferred through observation and modeling. Finally, Ancharoff et al. (1998) describe the process of reenactment as a possible mechanism of secondary trauma transmission. The parent may engage the child in activities or interactions that serve to transmit lessons that s/he learned as a result of his/her traumatic experience. This is theoretically accomplished when the child is made to feel similar to the way the parent felt at the time of his/her initial traumatic experience. Although Ancharoff et al. (1998) provide qualitative evidence for their theory of trauma transmission no empirical studies have demonstrated that children of trauma survivors are affected via these specific pathways.

In spite of the lack of empirical evidence to support Ancharoff et al.'s (1998) four mechanisms of trauma transmission, this theory does compliment the cognitive

conceptualization of PTSD development mentioned previously. In the event that a parent wishes to incorporate posttraumatic beliefs into the messages and lessons conveyed to a child it seems plausible that that parent might utilize one or more of the aforementioned mechanisms (i.e. overdisclosure, reenactment) in an attempt to do so.

Effects of Paternal Posttraumatic Stress Disorder on Children

A number of problematic outcomes have been demonstrated for children of fathers suffering from PTSD. These include increased risk for development of PTSD following their own experience of a traumatic stressor, higher levels of behavioral disturbance including diagnostically significant pathological behavior, and endorsement of unhealthy or biased worldviews. In addition, fathers with PTSD have been shown to have disrupted or pathologized relationships with their children, a variable that may act as a mediator in the relationship between paternal PTSD and child psychopathology and behavior.

With regard to increased risk of developing PTSD following the experience of an unrelated traumatic stressor Solomon, Kotler, & Mikulincer (1988) found that Lebanon War veterans who had at least one parent who had survived the Holocaust were more likely to develop PTSD following combat than were veterans whose parents were not Holocaust survivors. In addition, of those soldiers who did develop PTSD, second-generation trauma survivors attained less lasting and complete recovery than did non-second generation soldiers. A number of other studies have also shown that adult children of trauma survivors are less well-adapted following stressful and traumatic experiences

and are at greater risk for developing PTSD (Rosenheck & Fontana, 1998; van IJzendoorn, Bakermans-Kranenburg, & Sagi-Schwartz, 2003).

At this point the etiology of these intergenerational effects of trauma and PTSD is unclear. Given the heritability of many mental illnesses, some researchers have hypothesized that certain genetic markers and structural differences may be inherited by children of PTSD sufferers, constituting a biological risk factor for the development of PTSD following the experience of a traumatic stressor (that is, a biological diathesis). A number of studies have been conducted in an attempt to test these hypotheses and have yielded results indicating that PTSD may indeed be a heritable disorder. Family and twin studies have supported the notion that some biological risk factor predisposes individuals to the development of PTSD following a trauma (Davidson et al., 1985; Davidson, Tupler, Wilson & Connor, 1998; True et al., 1993). In the interest of isolating the specific genes associated with this observed vulnerability, researchers have endeavored to conduct association studies. Some of these studies have implicated variations in the dopaminergic system generally and the presence of the DRD2A1 allele specifically (Lawford et al., 2003; Segman et al., 2002; Young et al., 2002) while some have failed to find a connection between the development of PTSD and the presence of the DRD2A1 allele (Gelernter et al., 1999). Further research has also indicated that the presence of the serotonin transporter promoter gene polymorphism and the apolipoprotein E may constitute risk factors for the development of PTSD and the experiencing of more severe reexperiencing symptoms and impaired memory function (Freeman, Roca, Guggenheim, Kimbrell, & Griffin, 2005; Lee et al., 2005).

In addition to the aforementioned studies suggesting a relationship between paternal PTSD and PTSD development in children, a number of studies have examined the link between paternal PTSD and child behavior. Ancharoff, Munroe, and Fisher (1998) conducted a qualitative review of past research on the intergenerational transmission of trauma. These authors reported that children of Vietnam veterans displayed difficulties in one or more areas of functioning. Results of these and other studies suggest that children of veterans with PTSD receive more psychiatric treatment, display problems with a diverse array of psychological and behavioral disorders, and exhibit impaired social and academic functioning (Davidson, Smith & Kudler, 1989; Rosenheck & Nathan, 1985). Research examining therapists' perceptions of children whose fathers are suffering from PTSD also indicates that these children experience a significant amount of psychological difficulties, behavioral disruption, social and academic problems, and impaired relationships with their fathers (Jacobsen, Sweeney, & Racusin, 1993; Matsakis, 1988). Further, veterans themselves have been shown to view their children as more disturbed than do fathers without PTSD (Harkness, 1993; Klaric et al., 2008; Parsons, Kehle, & Owen, 1990). In a study conducted by Caselli and Motta (1995), the presence of paternal PTSD and combat level was found to account for 33.6% of the variance in child behavior problems. When combat level was held constant, PTSD was found to be the primary predictor of child behavior problems (Caselli & Motta, 1995).

Consistent with the aforementioned findings regarding children of veterans with PTSD, similar psychological difficulties have been noted in studies conducted with adult

children of Holocaust survivors. Specifically, these children have been found to exhibit heightened levels of self-criticism, foreboding, and guilt, as well as anger management difficulties and delinquent behavior (De Graaf, 1975; Felsen & Erlich, 1990; Nadler, Kav-Venaki, & Gleitman, 1985). Further, these adult children reported difficult and pathologized relationships with their trauma survivor parents (Felsen & Erlich, 1990).

In addition to an increased vulnerability to PTSD as well as heightened emotional, behavioral, social and academic difficulties, children of fathers with PTSD have also been shown to hold somewhat distorted beliefs about the world that match their parents' beliefs following their traumatic experiences. Ancharoff et al. (1998) reported that past anecdotal studies have shown children of Holocaust survivors to hold beliefs seemingly transmitted from their parents. These include the belief that the world is not a secure place, a belief that the future is uncertain, a certainty that evil exists in the world, and the belief that their parents were fragile, despite outward appearances (Epstein, 1979). Further anecdotal evidence has been noted by Doreleijers and Donovan (1990) who investigated the belief systems of children of parents interred in Japanese Civil Internment Camps. These authors theorized that parents who have experienced a trauma may feel the need to educate their children about the true nature of the world in order to equip them with the strategies that ultimately helped them to survive the trauma. These kinds of messages about self, others, and the world may be transmitted to the child through a variety of mechanisms within the family as noted by Ancharoff et al. (1998) and detailed previously in this paper.

An additional effect of paternal PTSD concerns the presence of disrupted and/or pathologized father-child relationships. In her survey of counselors from 189 Vietnam Veteran Outreach Centers, Matsakis (1988) reported that emotional distancing and detachment on the part of fathers often lead to feelings of alienation and rejection in their children. On the other hand, children who become enmeshed with their veteran fathers may develop secondary traumatization (as indicated through distortions in worldview) leading them to assume a "rescuer" role with relation to their fathers. Children who display these relational patterns are typically exposed to more details of their fathers' traumas than are those children whose fathers are more distant and detached (Ancharoff et al., 1998; Matsakis, 1988; Rosenheck & Nathan, 1985). Jurich (1983) also observed high incidences of enmeshed parent-child relationships in families of Vietnam veterans, leading to difficulties with identity development for the child, particularly during adolescence. Indeed, veterans' relationships with their children have been noted to be controlling, overprotective, and demanding (Harkness, 1993) and still other studies have also cited the presence of enmeshed relationships between veterans and their children (Haley, 1984; Harkness, 1991; Rosenheck, 1986).

Parenting satisfaction has also been shown to be adversely affected by the presence of paternal PTSD. Ruscio, Weathers, King, and King (2002) found that Vietnam theater veterans reporting severe emotional numbing as one component of their PTSD diagnosis experienced less positive sharing and contact with their children. In addition, these veterans reported greater levels of disagreement from their children and diminished overall parent-child relationship quality (Ruscio, et al., 2002). These findings were

echoed by Samper, Taft, King, and King (2004) in their examination of the survey responses of 250 male Vietnam veterans from the National Vietnam Veterans Readjustment Survey. These authors found that avoidance and emotional numbing symptoms were most strongly associated with decreased parenting satisfaction independent of veteran partner violence, major depression, and alcohol abuse/dependence. In addition, higher levels of PTSD symptom severity were significantly associated with decreased parenting satisfaction (Samper, et al., 2004). Similarly, a study examining the effects of PTSD symptoms among National Guard soldiers deployed to Iraq revealed that more severe PTSD symptomatology was associated with greater perceived parenting challenges independent of the effect of PTSD on couple adjustment (Gewirtz, Polusny, DeGarmo, Khaylis, & Erbes, 2010).

Several studies have also found higher degrees of familial dysfunction in families of PTSD veterans. Davidson and Mellor (2001) found that children of PTSD veterans rated their families as significantly more dysfunctional in the areas of affective responsiveness and problem-solving as well as the overall measure of global functioning. Rosenheck (1986) noted that the veteran father's symptoms reportedly contributed to a tumultuous family life through his anger and irritability as well as his desire to keep his traumatic experiences secret.

It seems likely that disruptions in familial functioning such as those detailed above may contribute greatly to child outcomes, particularly if one conceptualizes a volatile home environment as an ecological stressor as per the diathesis-stress model of PTSD discussed previously. This begs the question: if such negative effects have been

consistently observed for families in which the father suffers from PTSD, might these effects be similar for families with mothers who bear the same diagnosis? Given the importance of both parents in the family system, it seems likely that the presence of maternal PTSD would impact the family in a similar way. In order to better inform hypotheses about the possible effects of maternal PTSD, I turn now to a discussion of the differential roles of the mother versus the father within the family system.

Importance of the Mother in the Family System

Past research has indicated that mothers spend the highest percentage of time with children of all ages (Collins, Harris, & Susman, 1995; Fagot, 1995; Holmbeck, Paikoff, & Brooks-Gunn, 1995). Emotional expression seems to be more common in mother-child interactions than in father-child interactions during middle childhood. Both positive and negative emotional expressions as well as conflictual interactions were found to be more likely in mother-child than in father-child interactions during middle childhood (Bornstein, 1995; Russell & Russell, 1987). Further research examining parent-adolescent relationships has shown that there is generally more closeness in mother-adolescent relationships than father-adolescent relationships (Collins & Russell, 1991).

It appears that mother-child relationships are generally closer and more expressive than are father-child relationships no matter what the age of the child. However, the quality and content of these parent-child relationships varies depending upon the interaction of parent sex and child sex. Holmbeck, Paikoff, & Brooks-Gunn (1995) reported a higher degree of conflict in mother-adolescent dyads, but also noted that the mother tends to serve as a greater source of support for the child during this time.

Mother-daughter pairs have been found to rely on one another for help (both practical and emotional). Sons are also more open with mothers than with fathers but tend to disagree with their mothers with regard to obedience and rules (Holmbeck et al., 1995). Holmbeck et al. (1995) also noted that sons often view their mothers as intrusive.

Considering the essential nature of the mother's role in the family and, in particular, the important part that she has been observed to play in providing emotional support for her children, it seems likely that maternal psychopathology could affect the family unit and the psychological health of the children as much as, if not more so, than paternal psychopathology. The mother's importance in the family unit has been demonstrated across numerous studies and maternal psychopathology would likely affect the mother's ability to parent effectively and lead to higher levels of maladjustment in her children.

Past research has shown that mothers with depression are indeed more impaired in their ability to parent (Bettes, 1988; Campbell, Cohn, & Meyers, 1995; Field, et al., 1988; Field, Healy, Goldstein, & Guthertz, 1990; Teti, Gelfand, Messinger, & Isabella, 1995). Further, more impaired generalized family functioning has been observed in families with depressed mothers (Keitner, Miller, Epstein, & Bishop, 1986; Miller, Kabacoff, Keitner, Epstein, & Bishop, 1986). Maternal depression has also been associated with less adaptability and cohesion in the family, disorganization in planning family activities, and less clear allocation of individual responsibilities (Billings & Moos, 1983; Kaslow, Warner, John, & Brown, 1992).

Researchers have also found that children of depressed mothers are profoundly affected and that their maladjustment is often dependent on their age and sex (Cohn, Campbell, Matias, & Hopkins, 1990; Crawford, Cohen, Mildarsky, & Brook, 2001; Cummings & Davies, 1994; Davies & Windle, 1997; Fergusson, Horwood, & Lynskey, 1995; Ge, Conger, Lorenz, Shanahan, & Elder, 1995; Gelfand & Teti, 1990; LaRoche, 1989; Gore, Asletine, & Colten, 1993; Hops, 1992, 1995; McGee & Stanton, 1992; Petersen, 1988; Windle, 1992). There is some evidence to suggest that psychological problems in the same sex parent are more closely associated with psychopathology in the offspring than is psychopathology in the opposite sex parent (Crawford, Cohen, Mildarsky, & Brook, 2001; Davies & Windle, 1997; Fergusson, Horwood, & Lynskey, 1995). In particular, girls' depressive symptoms during middle adolescence appear to be more closely linked to parental depressive symptoms than are boys' (Fergusson et al., 1995; Ge et al., 1995; Hops, 1992). Girls have also been shown to exhibit greater vulnerability to intrafamilial stress especially as manifested in heightened depressive symptoms and other emotional difficulties (McGee & Stanton, 1992).

Observed Effects of Maternal Trauma and PTSD on Children and the Family

Maternal psychopathology and maternal depression in particular have been shown to have a profound effect upon the family and home environment as well as the individual outcomes of children. While a good deal of literature examining the effects of maternal depression (a selection of which have been mentioned here) exists, research on the effects of maternal posttraumatic stress disorder is more scarce. A few studies have been conducted examining the ways in which maternal trauma affects parenting style and

child outcome; however, studies including measures of maternal PTSD are rare. Those studies that have examined maternal PTSD seem to suggest that the presence of maternal PTSD has a similar effect on children to that observed for paternal PTSD.

Ostrowski, Christopher, and Delahanty (2007) found that child traumatic injury victims whose mothers were suffering from PTSD were much more likely to suffer from PTSD themselves and to display more severe symptoms of PTSD. Specifically, maternal avoidance had the greatest impact on daughters' adjustment. This is interesting in light of research suggesting that children rely heavily on their mothers for emotional support. This emotional support may be limited or entirely absent in a mother who is highly avoidant and emotionally numb because she is suffering from PTSD. With regard to biological diatheses that may be passed on from mothers suffering from PTSD, results from a 2007 study showed that children of mothers with PTSD had lower mean cortisol levels than did either children of Holocaust survivors without PTSD or children of control parents (Yehuda, Teicher, Seckl, Grossman, Morris, & Bierer, 2007). The authors suggest that these alterations in cortisol levels may be due to glucocorticoid programming via either in utero exposures or in response to maternal behavior early in life. A third study, while not including a measure of maternal PTSD, found that children of mothers who had experienced a betrayal trauma ("a trauma that has been perpetrated by someone on whom the victim is dependent") were more likely to experience a betrayal trauma themselves and to experience dissociative symptoms following that trauma (p. 76; Chu & DePrince, 2006). Finally, Gold, Taft, Keehn, King, King, and Samper (2007) examined the responses of 89 female Vietnam veteran respondents and their

spouses/cohabiting partners who participated in the National Vietnam Veterans Readjustment Survey. Results of this study indicate that PTSD symptom severity in this sample was associated with poor parenting satisfaction, family adaptability, and family cohesion (as perceived by the female veterans) (Gold et al., 2007).

Still others studies have demonstrated that the experience of trauma affects the parenting style of exposed mothers. Jaffe, Wolfe, and Wilson (1990) noted that women who had experienced domestic violence engaged in harsh and aggressive parenting. A number of more recent studies have also shown that women with abusive spouses exhibit more behavioral inconsistency in their parenting practices (Holden & Ritchie, 1991; Holden, Stein, Ritchie, Harris, & Jouriles, 1998). Holden and Ritchie (1991) found that battered women engaged in more inconsistent parenting and reported that their children had more internalizing problems, more difficult temperaments, and engaged in more aggressive behavior than did children of control mothers. As the authors did not analyze differences between the group of children that had not witnessed or suffered abuse and those who did, it is impossible to know whether the children from violent homes displayed more emotional and behavioral problems as a result of being parented by a traumatized mother, as a result of their own direct trauma, or a combination of the two.

Mothers who have experienced a trauma have been found to exhibit less parenting warmth while their children display more antisocial behavior (Levondosky & Graham-Bermann, 2000). Rossman and Rea (2005) also noted that those women who had experienced the highest levels of physical and psychological abuse and who endorsed the most PTSD and anxiety symptoms exhibited the most inconsistent parenting styles.

Mothers with a history of childhood sexual abuse (CSA) also have been shown to display disruptions in parenting. Burkett (1991) found that mothers who had experienced CSA were less child-focused in their interactions with their children and tended to show derogation, blaming, and less acceptance and understanding while talking with their children. Further, these women were more inclined to rely on their children for emotional support (Burkett, 1991), a finding echoed by the results of a more recent study (Alexander, Teti, & Anderson, 2000).

Cohen (1995) also observed that sexually abused mothers exhibited more unreasonable and rigid expectations of their children, perceived themselves more negatively as parents, felt more discomfort in the parental role, and had a lessened ability to communicate emotions or problem-solve. This negative self-perception within the parenting role of mothers who have experienced CSA has been verified by other studies as well (Banyard, 1997; Banyard, Williams, & Siegel, 2003; Zuravin & Fontanella, 1999). In addition, these mothers were also observed to be more likely to use physical punishment strategies, engage in neglectful behavior, and have protective services reports filed against them. Further supporting the notion that the experience of trauma has a negative impact on a mother's parenting, a study examining adult children of Holocaust survivors reported on the children's identification with and perception of their mothers (Felsen & Erlich, 1990). Results of this study indicate that these adult children perceived their mothers as more critical of themselves and less giving in the areas of emotional support and acceptance.

In a literature review of studies examining the impact of CSA on maternal functioning, DiLillo and Damashek (2003) noted that existing research indicates that CSA survivors "may have difficulties establishing clear generational boundaries with their children, may be more permissive as parents, and may be more likely to use harsh physical discipline" (p.319). Indeed, Cross (2001) conducted a qualitative study investigating parenting in five mothers who reported a history of CSA. Her results indicate that CSA survivors are often uncertain of normative child development and may have unrealistic expectations of their children. These unrealistic expectations represent a risk factor for physical abuse.

Parental responsiveness also seems to be limited in mothers who have experienced CSA. In a qualitative analysis of parent-infant attachment styles Lyons-Ruth and Spielman (2004) reported that sexually abused mothers may have trouble responding to their children's bids for comfort, protection, and closeness because these are likely to evoke painful memories related to their own traumatic experiences (most often characterized as a betrayal of trust by an attachment figure). These mothers' responses to their infants' need for closeness are often typified by feelings of terror, helplessness and rage (Lyons-Ruth & Spielman, 2004). Results of a study conducted by Douglas (2000) indicated that sexually abused mothers were less comfortable with and more anxious about the intimate aspects of parenting. These mothers also reported experiencing significantly more overall stress as parents than did control mothers.

A few studies have also investigated the role of mediating factors in the relationship between maternal trauma and parenting. Banyard et al. (2003) reported that

maternal depression mediated the relationship between the experience of trauma in general and parenting satisfaction. These authors failed to find a mediating effect for maternal depression in the relationship between maternal trauma and mothers' self-reported use of harsh physical punishment and neglecting behaviors. Conversely, results reported by Mapp (2006) suggest that maternal depression may serve to mediate the connection between maternal CSA and a mother's risk of physical abuse. Further investigation of this relationship has revealed that maternal CSA significantly predicted mothers' risk of physically abusing their children even after controlling for mothers' experience of childhood physical abuse (DiLillio, Tremblay, & Peterson, 2000). Further, the relationship between maternal CSA and risk of physical abuse was mediated by maternal anger. This finding is made more interesting given that increased irritability qualifies as an arousal symptom within the PTSD symptom constellation.

Summary and Study Objectives

In summary, while it has been demonstrated that men experience more traumatic events than do women across the lifespan, women are diagnosed with PTSD nearly twice as often as men. Given this gender disparity in PTSD prevalence, it is unclear why the majority of prior research on parental PTSD has focused on fathers with PTSD. While paternal PTSD has been shown to contribute to negative child outcomes and disrupted father-child relationships, similar results have been demonstrated for maternal depression, suggesting that the presence of maternal psychopathology is equally serious. Further, the literature on common parenting patterns and practices suggests that mothers spend more time with their children, and provide more emotional support. Thus, it seems

likely being raised by a mother suffering from a disorder that is characterized by emotional numbing and avoidance of painful cues that serve as reminders of the traumatic event may have a profound effect on a child. Preliminary research examining the effects of maternal PTSD suggests that intergenerational transmission of PTSD is possible. Further research regarding maternal trauma indicates that women who have suffered a trauma are subject to a wide range of parenting difficulties, often leading to negative outcomes for their children. Although several studies have been conducted examining the impact of various maternal traumas on parenting style, parenting satisfaction, and child outcome, few include a discussion of the significant role maternal PTSD may play. Further examination of the effects of maternal PTSD on children is clearly warranted given the well-established effects of paternal PTSD as well as the growing body of research suggesting that the mere experience of a trauma history is detrimental to mothers' functioning as parents.

The present study will examine the link between maternal PTSD, child outcome (i.e. internalizing, externalizing, total psychological problems), and parenting satisfaction and competence. In addition, this study proposes to examine the influence of maternal PTSD on family communication, problem-solving, and general functioning. Data will be collected from mothers with a trauma history who meet current criteria for PTSD, mothers who have experienced a trauma but do not meet criteria for PTSD, and mothers who deny ever having experienced a trauma.

Hypotheses

As very little research has been conducted in this area, it is difficult to predict what outcomes may be observed in the current study. As a result, the following hypotheses are accordingly broad.

1. Severity of child behavioral and psychological difficulties is expected to be positively correlated with mothers' PTSD symptom severity. Further, children of women meeting criteria for PTSD are expected to exhibit more behavioral and psychological difficulties than children of mothers who have experienced a trauma but do not have PTSD. Likewise, children of mothers who have experienced a trauma but do not have PTSD are expected to exhibit more behavioral and psychological difficulties than do children of women who have not experienced a traumatic event.
2. The presence and severity of maternal PTSD is hypothesized to negatively impact mothers' parenting satisfaction and competence, as well as general family functioning, family problem-solving, and family communication.

Methods

Participants

Participants were 125 mothers and 34 mother-child dyads recruited through both an undergraduate subject pool, and large metropolitan areas across the United States. Of these participants, 123 mothers participated via an online questionnaire, while 34 mother-child dyads and two mothers completed the study measures in person at a university-affiliated outpatient

trauma clinic. The online and in-person samples differed slightly with regard to race and ethnicity. Fifty percent (N=18) of in-person participants were white, while 47.2% (N=17) were African American, and 2.8% (N=1) multiracial. Only one in-person participant identified ethnically as Hispanic. The online sample was somewhat more diverse; 62.6% (N=77) were white, 22.8% (N=28) African American, 3.3% (N=4) multiracial, 0.8% (N=1) Asian American, and 8.9% (N=11) identified as another unspecified race. Further, 18.7% (N=23) of the online sample were Hispanic. A chi-square test revealed that the race distributions of the in-person and online samples differed significantly, $\chi^2(4) = 10.06$, $p = .039$. The in-person and online samples were similar with regard to level of education $\chi^2(5) = 4.13$, $p = .531$, but it was noted that the majority of the online sample reported household income levels above $65,000. In contrast, the most common household income bracket for in-person participants was less than $20,000. The variance in household income levels in the in-person versus online samples was also significantly different, $\chi^2(5) = 40.21$, $p < .001$. For a detailed breakdown of mothers' demographics refer to Table 1.

The oldest child (who was between the ages of 11 and 17) of each of the 36 in-person participant mothers was given the opportunity to participate in the study. Of these 36 children, 34 opted to complete the child measures. The 11 to 17 year age bracket was chosen as it is the age range for the child behavior self-report form filled out by child participants. Only one of each mother's children was asked to participate due to recruitment and funding constraints, and to reduce participant burden. Of those 34 children who completed self-report measures approximately 50% (N=17) were male, and

50% (N=17) were female with a mean age of 13.94 (SD=2.5). Children of mothers who completed the study measures online were similar; approximately 49% (N=60) were male, and 50% (N=62) were female, with a mean age of 13.59 (SD=3.8). For a detailed breakdown of children's demographics (including race) refer to Table 2.

Measures

Adult measures. All adult participants completed the following measures.

Posttraumatic Diagnostic Scale (PDS; Foa, Cashman, Jaycox, & Perry, 1997) The PDS is a 49 item self-report scale used to screen for the presence of PTSD symptoms. For the purposes of this study it was used to determine the presence of a PTSD diagnosis based upon the criteria of the Diagnostic and Statistical Manual of Mental Disorders, 4th edition. Participants were asked to indicate how often each reexperiencing, avoidance, and hyperarousal symptom had bothered them in the past week. Responses were given on a 4-point Likert scale (0 = not at all or only one time, 3 = 5 or more times a week/almost always). The PDS has been shown to have good internal consistency (Cronbach's alpha = 0.92 for total symptom severity, 0.78 for reexperiencing, 0.84 for avoidance, and 0.84 for arousal) as well as good test-retest reliability (Pearson's r = 0.83 for total symptom severity, and 0.77 to 0.85 for the three clusters) Analyses have also revealed an 82% agreement between PTSD diagnosis using the PDS and PTSD diagnosis using the Clinician-Administered PTSD Scale (Foa, et.al., 1997).

Lifetime Trauma Survey. The Lifetime Trauma Survey asks participants to note their age at the time they experienced each traumatic event that they endorse, the amount

of distress they experienced at the time of the trauma, and the degree to which they feared for their life at the time of the trauma.

Child Behavior Checklist for Ages 6-18 (CBCL; Achenbach,1991). The CBCL is a 118 item behavioral rating scale designed to assess parental reports of children's competencies (i.e. academic, social) and behavioral/emotional problems. Parents are asked to rate each item with regard to how true it currently is of their child. Each item uses a 3 point Likert scale (0 = not true [as far as you know], 2 = very true or often true). The CBCL provides scores for three competence scales: Activities, Social, and School, as well as a Total Competence score. In addition, it provides measures of the following eight constructs: social withdrawal, somatic complaints, anxiety/depression, social problems, thought problems, attention problems, delinquent behavior, and aggressive behavior. The CBCL also allows for the grouping of these constructs into the broader categories of Internalizing Problems (a combination of the social withdrawal, somatic complaints, and anxiety/depression scales) and Externalizing Problems (a combination of the delinquent behavior and aggressive behavior scales) as well as a Total Problems score. Further, the CBCL also provides scores for six DSM-oriented scales: affective problems, anxiety problems, somatic problems, attention-deficit/hyperactivity problems, oppositional defiant problems, and conduct problems. Both the empirically based construct scales and the DSM-oriented scales have been shown to have very good test-retest reliability (Pearson 's *r*s ranging from 0.82 to 0.94 and 0.80 to 0.93, respectively) and internal consistency (Cronbach's alphas ranging from 0.78 to 0.97 and 0.72 to 0.94, respectively) (Achenbach & Rescorla, 2001).

The Parenting Competence Scale (PSOC; Gibaud-Wallston & Wandersman, 1978; Johnson & Mash, 1989). The Parenting Competence Scale is a 17-item self-report scale that measures parenting satisfaction (an affective construct encompassing parenting frustration, anxiety, and motivation) and parenting competence/efficacy. Participants were asked to indicate their degree of agreement to each of the 17 items on a 6 point Likert scale. The PSOC has been shown to have good internal consistency (Cronbach's alpha = 0.79 for the total scale score, 0.75 for the satisfaction factor, and 0.76 for the competency factor) as well as good test-retest reliability over a six week period (Pearson's *r*s ranging from 0.46 to 0.82 for the factors and total score) (Johnson & Mash, 1989; Gibaud-Wallston & Wandersman, 1978).

McMaster Family Assessment Device (FAD; Epstein, Baldwin, & Bishop, 1983). The problem-solving, communication, and general functioning subscales of the FAD were administered to adult participants. These subscales consist of 23 items that gauge a family member's perception of their family's ability to resolve problems, ability to communicate clearly and directly, and the overall health of their family. Each of the subscales have been shown to have good internal reliability in nonclinical samples (Cronbach's alpha = 0.83 for general functioning, 0.74 for problem-solving, and 0.70 for communication) (Kabacoff, Miller, Bishop, Epstein, & Keitner, 1990). The decision was made to utilize only these three subscales in order to decrease participant burden as the entire FAD consists of a total of 60 items.

Child measures. All child participants completed the following measures.

Youth Self-Report for Ages 11-18 (YSR; Achenbach, 1991). The YSR is a 118 item self-report scale designed to assess a child's competencies (i.e. academic, social) and behavioral/emotional difficulties. It is designed to mirror the CBCL in item content and completion instructions, and is co-normed with the CBCL. As such, the YSR generates scores for the same scales as the CBCL. These scores are based upon the child's self-report and may be compared to parent report.

Self-Report Delinquency Scale (SRD; Elliot, Huizinga, & Ageton, 1985). The SRD is a 42-item self-report scale that measures delinquent behavior in adolescents between the ages of 11 and 21. Respondents are asked to indicate how many times in the last year they have engaged in delinquent acts ranging from property crime to assault and drug and alcohol use.

Procedure

In-person participants. Data was collected from mother-child dyads in order to determine concurrent validity between maternal report of child behavior and child behavior self-report. In-person participants were recruited via a university subject pool and through advertisements posted in the St. Louis community. Flyers were posted in the waiting areas of clinics serving women who had experienced a trauma, domestic violence resource centers, and various businesses. Ads were also posted on a local classifieds website. All flyers and ads stated that women who had a child between the ages of 11 and 17 would be eligible to participate in a study about motherhood. In-person participants were compensated with either course credit or cash depending upon their status as students. In-person child participants were also compensated with cash.

Prior to participation mothers provided informed consent, and their children provided assent to complete the study. Mothers were given the opportunity to review the child measures prior to participation and all measures were explained and reviewed briefly with participants prior to completion. Mothers completed the demographic questionnaire, PDS, Lifetime Trauma Survey, PSOC, CBCL, and FAD, while their oldest child between the ages of 11 and 17 completed the YSR and SRD. Adult participants who had experienced a trauma were instructed to complete the PDS with reference to the traumatic event that each participant found to be the most impactful.

Online participants. Because recruitment for in-person participants did not yield the sample size needed for sufficient predictive power, adult participants were recruited to complete an online version of the in-person questionnaire. Online participants were recruited via postings on two national classifieds websites that advertise in cities across the country. Information about the study was also posted on various psychological research websites and parenting message boards. As with the in-person ads, all online advertisements stated that women who had a child between the ages of 11 and 17 would be eligible to participate in a study about motherhood. Online participants were provided with the opportunity to enter a drawing for a $100 Amazon.com gift card upon completion of the questionnaires. A winner was selected at the conclusion of data collection.

In order to complete the online questionnaire, participants had to first provide informed consent. After doing so, participants completed the demographic questionnaire, PDS, Lifetime Trauma Survey, PSOC, CBCL, and FAD. On the PDS, single responses

were considered a symptom if they were experienced 2 to 3 times a week/half the time (Likert scale response of 2) or more. Mothers were classified as meeting diagnostic criteria for PTSD if they reported at least one reexperiencing symptom at or above a 2, at least three avoidance symptoms at or above a 2, and at least two hyperarousal symptoms at or above a 2. These diagnostic criteria are consistent with the DSM-IV-TR criteria for PTSD.

For the purposes of the statistical analyses, all mothers who met current criteria for PTSD based upon their responses on the PDS were classified as the PTSD group, while mothers who reported having experienced a trauma but did not endorse diagnostically significant PTSD symptoms were classified as the Trauma non-PTSD group. Mothers suffering from subthreshold PTSD symptoms (positive for two of the three PTSD symptom clusters) were also ultimately classified as Trauma non-PTSD. Finally, mothers who denied ever having experienced a trauma were grouped into the Non-trauma group.

Results

Descriptive Statistics

Of the 36 in-person participants, 8.3% (N=3) denied ever having experienced a traumatic event. Among those who reported having experienced a significant traumatic event at some time in their lives (91.7%, N=33), 27.3% (N=9) met current criteria for PTSD, 21.2% (N=7) reported subthreshold symptoms of PTSD (positive for two of the three PTSD symptom clusters), and 51.5% (N=17) did not currently meet criteria for PTSD. Approximately 25.2% (N=31) of online participants denied ever having

experienced a traumatic event, while 74.8% (N=92) reported experiencing a traumatic event at some time in their lives. Within this online sample of trauma survivors, 26.1% (N=24) met current criteria for PTSD, 15.2% (N=14) reported subthreshold PTSD symptoms, and 57.6% (N=53) did not currently meet criteria for PTSD. Refer to Table 1 for information regarding incidences of interpersonal versus non-interpersonal trauma for both the in-person and online samples.

Time since mothers' index trauma was also examined for both the PTSD and Trauma non-PTSD groups. Within the PTSD group the amount of time since the index trauma ranged from two months to 36 years with a median of 9 years. Only three mothers (13.6%) in the PTSD group reported that their trauma occurred within the last year. For mothers in the Trauma non-PTSD group time since trauma ranged from one month to 40 years and the median time since trauma was 13 years. Within the Trauma non-PTSD group, six mothers (8.4%) reported that their trauma occurred during the last year. Because time since mothers' trauma could serve as a confounding variable, an independent samples T-test was conducted in order to determine if statistically significant differences were present in time since trauma between the PTSD group and Trauma non-PTSD group. No significant difference was found between the two groups, $t(91) = -.995$, $p = .323$.

Child self-report data was collected from the eldest children of 34 of the 36 in-person participants. This data was collected in an attempt to determine whether the presence of maternal PTSD had an effect on children's self-reported psychological and behavioral difficulties. Unfortunately, the in-person sample was not large enough to

obtain sufficient statistical power to conduct analyses utilizing the child self-report data. In spite of the small in-person sample size, child self-report scores were analyzed in order to determine if any differences could be detected between the PTSD, Trauma non-PTSD, and Non-trauma groups. When the means of the three groups were compared utilizing univariate ANOVAs, no significant differences were found for self-reported child internalizing, $F(2, 31) = 2.12$, $p = .138$, $\omega^2 = .06$, self-reported child externalizing, $F(2, 31) = 0.71$, $p = .50$, $\omega^2 = -.02$, or self-reported child total problems, $F(2,31) = 1.98$, $p = .156$, $\omega^2 = .05$. As noted previously, the small size of the in-person sample may be responsible for the failure to obtain significant results with these analyses, particularly given that omega squared values indicate small to medium effect sizes for these analyses. Interestingly, mean self-reported child psychological problems were uniformly highest for the children of mothers in the Trauma non-PTSD group. The percentage of children reporting *clinically relevant* (T score ≥65) psychological problems, however, was always highest for children of mothers in the PTSD group. The number of children endorsing 5 or more separate types of delinquent activities over the last year was similar for children of mothers in the PTSD and Trauma non-PTSD groups. Table 3 displays the frequencies of clinical elevations on the child self-report forms, frequencies of delinquent activities, and means of the child self-report forms.

Because the small in-person sample size made it impossible to draw conclusions based upon analyses utilizing child self-report data an effort was made to determine the reliability of mother's reports of children's psychological functioning. A paired samples *t*-test was conducted comparing children's self-reported T scores on the YSR to mothers'

ratings of their children's psychological functioning on the CBCL. Results showed that mothers' perceptions of their children's internalizing, $t(32) = .018$, $p = .985$, externalizing, $t(32) = -1.433$, $p = .161$, and total problems, $t(32) = -.965$, $p = .342$ were not significantly different from their children's self-reports of these same difficulties. This finding suggests that mothers' ratings may be a valid proxy of their children's self-perceived psychological functioning.

An independent samples *t*-test revealed that in-person participants scored significantly lower on the subscales of the FAD than did online participants (family problem solving: $t(156) = -3.774$, $p < .001$; family communication: $t(156) = -2.412$, $p = .017$; family general functioning: $t(156) = -1.99$, $p = .048$). Further, in-person participants reported significantly more child internalizing symptoms and total problems on the CBCL than did online participants (CBCL internalizing symptoms: $t(146) = 1.977$, $p = .05$; CBCL total problems: $t(146) = 2.346$, $p = .020$). This variability may have been due to significant differences in household income, $\chi^2(5) = 40.21$, $p < .001$, and race, $\chi^2(4) = 10.06$, $p = .039$, between the two samples. Most notably, 46.3% (N=57) of online participants reported a household income level greater than $65,000 per year, while only 16.3% (N=20) of this sample had a reported household income level at or below $35,000 a year. In contrast, only 13.9% (N=5) of in-person participants reported household income levels greater than $65,000 per year. Approximately 64% (N=23) of the in-person sample reported a household income level at or below $35,000 a year. While the online sample included a more robust representation of some minorities (i.e. Hispanic, multiracial), the majority of online participants (62.6%) were white. The in-person

sample was split more equally between African American (47.2%) and white (50%) participants. Due to these differences between the in-person and online samples regarding various dependent and demographic variables, the following analyses were conducted utilizing both the entire sample as a whole and the online sample alone.

Analyses Utilizing the Entire Sample

Hypothesis 1. In order to examine the hypothesis that child behavioral and psychological difficulties would be positively correlated with mothers' PTSD symptom severity correlational analyses were conducted. Results revealed significant relationships between mothers' PTSD severity and all dependent variables of interest, including child internalizing, child externalizing, and child total problems. These significant relationships were present when the sample was analyzed as a whole and when the online sample was analyzed alone. A detailed breakdown of correlation coefficients and alpha levels for the entire sample may be found in tables 5, 6, and 7.

A MANOVA was conducted to test the hypothesis that the presence of a dichotomous diagnosis of maternal PTSD would negatively impact child psychological functioning (internalizing, externalizing, and total problems). Using Pillai's trace, there was a significant effect of PTSD diagnosis on child psychological functioning, $F(6, 288) = 2.34$, $p = .032$. Separate univariate ANOVAs were also conducted for each of the child functioning outcome variables, revealing a significant effect of maternal PTSD diagnosis on child internalizing symptoms, $F(2, 145) = 3.80$, $p = .025$, $\omega^2 = .04$, child externalizing symptoms, $F(2, 145) = 3.22$, $p = .043$, $\omega^2 = .03$, and child total problems, $F(2, 145) = 5.75$, $p = .004$, $\omega^2 = .06$.

In order to further explore the results of these univariate ANOVAs, Hochberg's GT2 *post hoc* procedure was utilized (Hochberg, 1974). This particular *post hoc* procedure is calculated in a way similar to the Tukey test, but has been designed to detect differences between groups when the assumption of equal group sizes is violated. Thus, Hochberg's GT2 is best used in cases when the sample sizes differ greatly between the groups in question as did the sizes of the PTSD, Trauma non-PTSD, and Non-trauma groups. Hochberg's GT2 revealed significant differences between the PTSD group and Non-trauma group for child internalizing symptoms (p = .026, Cohen's d = .72) and child total problems (p = .004. Cohen's d = .90). The scores of the Trauma non-PTSD group differed significantly from those of the Non-trauma group for only child total problems (p = .018, Cohen's d = .61). In an attempt to remove the influence of sub-threshold PTSD symptoms from the Trauma non-PTSD group, individuals suffering from sub-threshold PTSD were removed from the Trauma non-PTSD group, and the analysis was run again. It is thought that removing individuals suffering from sub-threshold PTSD served to make the Trauma non-PTSD group an even purer sample of trauma survivors very nearly free of any PTSD symptomatology. The effect of trauma alone on child total problems was no longer significant when those mothers endorsing sub-threshold PTSD were removed from the Trauma Non-PTSD group. Child total problem scores of the newly created sub-threshold PTSD group significantly differed from those of the Non-trauma group (p = .007, Cohen's d = .89).

To further explore the aforementioned results, a multiple regression was conducted in order to examine the amount of variance maternal PTSD severity had in

child psychological difficulties. The regression models utilizing PTSD severity as a predictor variable for all those who had experienced a trauma showed that PTSD severity accounted for significant amounts of the variance in child internalizing symptoms, R^2 = .053, F(1,112) = 6.23, p = .014, Cohen's f^2 = .056, child externalizing symptoms, R^2 = .054, F(1,112) = 6.45, p = .012, Cohen's f^2 = .057, and child total problems, R^2 = .075, F(1,112) = 9.11, p = .003, Cohen's f^2 = .081. Refer to Table 8 for detailed regression results. A series of multiple regressions were also conducted in order to examine the influence of trauma alone (in the absence of PTSD) on the dependent variables. These analyses showed that the presence of trauma alone accounted for a significant amount of the variance in child internalizing symptoms, R^2 = .042, F(1, 117) = 5.17, p = .025, Cohen's f^2 = .044, child externalizing symptoms, R^2 = .042, F(1, 117) = 5.07, p = .026, Cohen's f^2 = .044, and child total problems, R^2 = .062, F(1, 117) = 7.71, p = .006, Cohen's f^2 = .057. Table 9 displays further information regarding these analyses. When individuals reporting sub-threshold symptoms of PTSD were removed from the sample, the amount of variance accounted for by trauma alone in child internalizing and externalizing symptoms became non-significant.

Hypothesis 2. The same analytic strategy was applied in order to test the hypothesis that the presence and severity of maternal PTSD would negatively impact mothers' parenting satisfaction and competence, general family functioning, family problem-solving, and family communication. A correlational analysis revealed that PTSD severity was significantly correlated with parenting satisfaction, parenting efficacy, family problem-solving, family communication, and general family functioning for both

the entire sample and the online sample alone. Pearson's r values and alpha levels are displayed in tables 5, 6, and 7. A MANOVA was first conducted to examine the relationship between mothers' PTSD diagnostic status and the parenting and family functioning outcome variables. Using Pillai's trace, there was a significant effect of PTSD diagnosis on parenting and family functioning, $F(10, 304) = 3.09$, $p = .001$. Separate univariate ANOVAs were also conducted for each of the aforementioned outcome variables, revealing a significant effect of maternal PTSD diagnosis on parenting satisfaction, $F(2, 156) = 5.64$, $p = .004$, $\omega^2 = .06$, parenting efficacy, $F(2, 156) = 5.68$, $p = .004$, $\omega^2 = .06$, family problem-solving, $F(2, 155) = 7.22$, $p = .001$, $\omega^2 = .07$, family communication, $F(2, 155) = 9.69$, $p = .000$, $\omega^2 = .09$, and family general functioning, $F(2, 155) = 6.68$, $p = .002$, $\omega^2 = .09$.

Hochberg's GT2 *post hoc* procedure revealed significant differences between the PTSD group and Non-trauma group for the following variables: parenting satisfaction ($p = .004$, Cohen's $d = .83$), parenting efficacy ($p = .003$., Cohen's $d = .83$), family problem-solving ($p = .001$, Cohen's $d = .99$), family communication ($p < .001$, Cohen's $d = 1.04$), and family general functioning ($p = .001$, Cohen's $d = 1.03$). The PTSD group also exhibited significantly more impaired scores than the Trauma non-PTSD group for parenting satisfaction ($p = .032$, Cohen's $d = .54$), family communication, ($p = .003$, Cohen's $d = .68$), and family general functioning ($p = .046$, Cohen's $d = .48$). The scores of the Trauma non-PTSD group differed significantly from those of the Non-trauma group for only family problem-solving ($p = .007$, Cohen's $d = .64$). The effects of trauma alone on family problem-solving were maintained even when sub-threshold PTSD was

accounted for, although the scores of the sub-threshold PTSD group also differed significantly from those of the Non-trauma group (p = .035, Cohen's d = .89).

In order to determine the influence of PTSD severity on parenting and family functioning a multiple regression was conducted. As with Hypothesis 1, this regression utilized PTSD severity as a predictor variable for all those mothers who had experienced a trauma. PTSD severity accounted for significant amounts of the variance in parenting satisfaction, R^2 = .166, F(1, 117) = 23.36, p < .001, Cohen's f^2 = .19, parenting efficacy, R^2 = .052, F(1, 117) = 6.39, p = .013, Cohen's f^2 = .05, family communication, R^2 = .113, F(1, 117) = 14.89, p < .001, Cohen's f^2 = .13, and family general functioning, R^2 = .103, F(1, 117) = 13.39, p < .001, Cohen's f^2 = .11. Table 8 contains detailed regression results. Multiple regression analyses were also conducted in order to examine the influence of trauma alone (in the absence of PTSD) on the dependent variables. These analyses showed that the presence of trauma alone accounted for a significant amount of the variance in family problem-solving, R^2 = .074, F(1, 123) = 9.79, p = .002, Cohen's $f2$ = .07. Table 9 displays further information regarding these analyses.

Analyses Utilizing the Online Sample

Hypothesis 1. The same analyses that were conducted utilizing the entire sample were also run with the online sample alone. A MANOVA was conducted following the correlational analysis in order to determine whether maternal PTSD diagnosis would negatively impact child psychological functioning (internalizing, externalizing, and total problems). Using Pillai's trace, the effect of PTSD diagnosis on all of the aforementioned variables was statistically significant, F(6, 218) = 2.16, p = .048.

Individual univariate ANOVAs conducted using the online sample alone produced differing results from those noted for the entire sample. The significant effect of PTSD diagnosis was maintained for child total problems alone, $F(2, 110) = 4.72$, $p = .011$, $\omega^2 = .06$. Hochberg's GT2 *post hoc* test revealed a significant difference between the PTSD and Non-trauma groups for child total problems ($p = .008$, Cohen's $d = .92$). The Trauma non-PTSD group did not differ significantly from the Non-trauma group with regard to any of the child functioning variables.

A number of multiple regressions were conducted utilizing the online sample in order to determine the amount of variance in child functioning accounted for by PTSD severity. The significant effects of PTSD severity that were noted in the entire sample were maintained for child internalizing symptoms, $R^2 = .097$, $F(1, 81) = 8.75$, $p = .004$, Cohen's $f^2 = .10$, child externalizing symptoms, $R^2 = .053$, $F(1, 81) = 4.49$, $p = .037$, Cohen's $f^2 = .05$, and child total problems, $R^2 = .108$, $F(1, 81) = 9.82$, $p = .002$, Cohen's $f^2 = .12$. Refer to Table 10 for more detailed information regarding these analyses. Multiple regression analyses were also conducted using the online sample in order to examine the amount of variance accounted for by trauma alone. Trauma in the absence of PTSD accounted for a significant amount of the variance in child total problems, $R^2 = .043$, $F(1,90) = 4.09$, $p = .046$, Cohen's $f^2 = .04$. Table 11 contains further information regarding these regression analyses. When participants endorsing sub-threshold symptoms of PTSD were removed from the sample, the amount of variance in child total problems accounted for by trauma alone became non-significant.

Hypothesis 2. The hypothesis regarding the negative impact of the presence and severity of mothers' PTSD diagnosis on parenting and family variables were also tested using the online sample alone. As before, A MANOVA was conducted, and Pillai's trace indicated that the presence of a PTSD diagnosis had a significant impact on parenting and family functioning, $F(10, 232) = 2.72$, $p = .004$.

As with hypothesis one, results of the individual univariate ANOVAs conducted using the online sample differed from those noted for the entire sample. The significant effect of PTSD diagnosis was maintained for parenting efficacy, $F(2, 120) = 3.14$, $p = .047$, $\omega^2 = .03$, family problem-solving, $F(2, 119) = 4.10$, $p = .019$, $\omega^2 = .05$, family communication, $F(2, 119) = 8.80$, $p < .001$, $\omega^2 = .11$, and family general functioning, $F(2, 119) = 5.83$, $p = .004$, $\omega^2 = .07$. Hochberg's GT2 *post hoc* test revealed a significant difference between the PTSD and Non-trauma groups for parenting satisfaction ($p = .047$, Cohen's $d = .69$), parenting efficacy ($p = .041$, Cohen's $d = .69$), family problem-solving ($p = .031$, Cohen's $d = .76$), family communication ($p < .001$, Cohen's $d = 1.0$), and family general functioning ($p = .004$, Cohen's $d = .98$). The PTSD group also achieved significantly poorer scores than the Trauma non-PTSD group for family communication ($p = .001$, Cohen's $d = .86$) and family general functioning ($p = .021$, Cohen's $d = .64$).

The Trauma non-PTSD group differed significantly from the Non-trauma group with regard only to family problem-solving ($p = .048$, Cohen's $d = .55$). When individuals endorsing symptoms consistent with sub-threshold PTSD were removed from the Trauma non-PTSD group, the effect of trauma alone on family problem-solving became non-significant. The family problem-solving mean scores of the sub-threshold

PTSD group were significantly different from those of the Non-trauma group (p = .024, Cohen's d = .96).

Multiple regression analyses utilizing the online revealed that the significant effects of PTSD severity noted in the entire sample were maintained for parenting satisfaction, R^2 = .109, F(1, 85) = 10.40, p = .002, Cohen's f^2 = .12, family communication, R^2 = .184, F(1, 85) = 19.19, p < .001, Cohen's f^2 = .22, and family general functioning, R^2 = .155, F(1, 85) = 15.65, p <.001, Cohen's f^2 = .18. Refer to Table 10 for more information. Finally, multiple regression analyses were conducted using the online sample in order to examine the amount of variance accounted for by trauma alone. Trauma in the absence of PTSD accounted for a significant amount of the variance in family problem-solving, R^2 = .061, F(1,96) = 6.24, p = .041, Cohen's f^2 = .06. Table 11 contains further information regarding these regression analyses. The amount of variance in family problem-solving accounted for by trauma alone became non-significant when participants endorsing sub-threshold symptoms of PTSD were removed from the sample.

Discussion

The current study investigated the impact of maternal PTSD on parenting satisfaction and efficacy, family communication, problem-solving, and general functioning, and child psychological difficulties. Maternal PTSD symptom severity was significantly positively correlated with severity of child psychological difficulties; however, results did not support the hypothesis that children of mothers in the PTSD group would exhibit significantly more severe psychological difficulties than did children

of mothers in the Trauma non-PTSD group. When compared directly to children of mothers in the Trauma non-PTSD group, children of mothers in the PTSD group were not significantly more psychologically distressed. This held true even when mothers reporting symptoms of sub-threshold PTSD were removed from the Trauma non-PTSD group. In spite of this, mothers in the PTSD group reported that their children were experiencing significantly more internalizing symptoms and total psychological problems than did mothers in the Non-trauma group. Once the presence of maternal sub-threshold PTSD had been accounted for, no difference in child functioning was noted between the children of mothers in the Trauma non-PTSD group and children of mothers in the Non-trauma group. Further, significant amounts of the variance in child internalizing, externalizing, and total problems were accounted for by maternal PTSD severity within the sample of those mothers who had experienced a trauma.

These findings suggest that both maternal PTSD and a maternal trauma history in the absence of PTSD are associated with increased child psychological difficulties. Results of the current study also indicate that the presence of maternal PTSD is uniquely responsible for elevating child psychological problems significantly above those observed in the children of women with no trauma history. The variance accounted for by maternal PTSD severity indicates that even within a sample of exclusively trauma survivor mothers, PTSD symptom severity plays a significant role in determining whether the children of these mothers will suffer from psychological difficulties. These results build upon the findings of past researchers, suggesting that the presence of

maternal PTSD and associated symptoms serve to predict psychological dysfunction in the children of these mothers (Chu & DePrince, 2006; Ostrowski et al., 2007).

In addition to the results regarding child psychological problems, the current study supports the hypothesis that the presence of maternal PTSD negatively impacts mothers' parenting satisfaction and perceived parenting efficacy. Self-reported parenting efficacy was significantly worse for mothers in the PTSD group than for mothers in the Non-trauma group. Even more significantly impacted by the presence of maternal PTSD was parenting satisfaction. Mothers in the PTSD group reported significantly worse parenting satisfaction than mothers in both the Trauma non-PTSD and Non-Trauma groups. Indeed, within the sample of trauma survivor mothers, PTSD symptom severity explained 16.6% of the variance in parenting satisfaction, and 5.2% of the variance in parenting efficacy. These results are consistent with the findings of Gold et al. (2007), who noted that PTSD symptom severity was significantly associated with poor parenting satisfaction in a sample of female Vietnam veterans. Taken together, these results suggest that the presence of PTSD over and above the experience of trauma interferes with women's ability to feel confident in their parenting skills, and makes it markedly difficult for these women to take pleasure in their roles as parents.

Contrary to past research indicating that the presence of trauma alone negatively impacts mothers' perceptions of themselves as parents (Banyard, 1997; Banyard et al., 2003; Cohen, 1995; Suravin & Fontanella, 1999), results of this study suggest that it may not be the experience of trauma that explains these disruptions in parenting self-perception, but the presence of PTSD. While these studies explored the link between

maternal trauma and parenting self-perception, measures of mothers' current endorsement of PTSD symptoms were not included. In their 2005 study, Rossman and Rea found that women who had experienced high levels of physical and psychological abuse and reported more severe PTSD and general anxiety symptoms were more inconsistent in their parenting styles. The findings of the current study, paired with the results reported by Rossman and Rea (2005), may indicate that the link between maternal trauma and parenting is attributable to the unobserved presence of PTSD within these various samples.

Finally, women in the PTSD group reported significantly worse communication and general functioning within their families than did women in the Trauma non-PTSD group and the Non-trauma group. For those women who reported having suffered a trauma at some time in their lives, PTSD symptom severity accounted for 11.3% of the variance in their perceptions of family communication and 10.3% of the variance in their perceptions of family general functioning. These findings indicate that PTSD symptom severity contributes largely to pathological family functioning.

Further, mothers in the PTSD group and mothers in the Trauma non-PTSD group reported significantly worse family problem-solving than Non-trauma mothers. Approximately seven percent of the variance in family problem-solving was accounted for by the presence of trauma alone when mothers with PTSD were removed from the sample. It appears that mothers who have experienced a trauma have difficulty confronting and solving problems within their families whether they suffer from symptoms of PTSD or not. Indeed, PTSD severity had very little influence on family

problem-solving within the group of women who had experienced a trauma. It may be that women who have suffered a trauma have difficulty negotiating the sometimes stressful process of problem-solving. These women may have grown up in chaotic childhood environments and/or had few positive romantic relationships, making it difficult for them to learn adaptive ways of confronting problems within their own families.

The current findings regarding family functioning are consistent with the observations of Gold et al. (2007), who noted that family adaptability and cohesion were significantly associated with maternal PTSD severity. It is noteworthy, however, that these authors failed to find a significant link between female veterans' PTSD severity and partners' reports of family adaptability and cohesion (Gold et al., 2007). This suggests that mothers suffering from PTSD may simply perceive their families as being less adaptable and cohesive than they truly are. Because the present study did not include partner reports it is unclear if this was the case. Future research examining various parenting, family, and child variables in the families of mothers suffering from PTSD would benefit from inclusion of both child self-report measures and partner's reports of relevant family functioning variables.

In addition to the aforementioned lack of data from both children and partners, some limitations of the current study should be noted. Most importantly, no information was gathered regarding the presence of child trauma. This makes it difficult to determine whether the observed differences in child psychological and behavioral difficulties across groups are truly attributable to the presence of maternal PTSD and trauma. It is possible

based on past research that the children of women who have experienced a trauma are also more likely to have experienced a trauma themselves (Chu & DePrince, 2006). In this case, the differences in functioning between children of mothers in the Non-trauma group and children of mothers in the PTSD and Trauma non-PTSD groups may be attributable to unmeasured traumas directly experienced by the children themselves.

Additionally, mothers participating in this study were prompted to respond to the child functioning items with regard to their eldest child only. This served to reduce participant burden for individuals who may have had multiple children and would have needed to answer a lengthy child functioning questionnaire for each of these children. Unfortunately, the focus on the oldest child alone may have served to mask the effects of maternal trauma or maternal PTSD in the event that these mothers' oldest children are not exhibiting difficulties that their younger siblings are struggling with. That is, there is no way of knowing whether the younger children of mothers suffering from PTSD or mothers who have experienced a trauma are more or less pathologized than their eldest sibling within the confines of this study.

The current findings may also be limited by the absence of measures of comorbid maternal psychopathology. Women in this sample may have been suffering from mental illnesses other than PTSD. It is possible that the failure to note significant differences between the PTSD group and Trauma non-PTSD group for some dependent variables was due to the confounding influence of other unmeasured psychological conditions experienced by women in the Trauma non-PTSD group. Future studies should endeavor

to collect information about mothers' current symptoms of other mental illnesses that are commonly comorbid with PTSD, such as depression and substance abuse.

Finally, due to the limited sample size, it was not feasible to investigate differences in child functioning across various maternal trauma types. In future studies it would be beneficial to collect a larger sample so as to investigate whether maternal trauma type influences the incidence and severity of child psychopathology.

In spite of the limitations noted above, a number of conclusions may be drawn from the results of this study. The current findings indicate that the presence of maternal PTSD uniquely contributes to a number of difficulties within the family system. Suffering from PTSD creates a disruption in a woman's ability to enjoy being a parent, and in her ability to feel efficacious in that role. Further, mothers with PTSD see their families as more pathologized, reporting that family members struggle to solve problems and communicate openly and clearly with one another. These family difficulties also extend to more generalized family functioning, including emotional openness and family decision-making. Further, the children of mothers with PTSD exhibit more psychological dysfunction than do children of mothers who have never experienced a trauma.

While the results of this study have contributed greatly to the understanding of the psychosocial sequelae of maternal PTSD within the family system, further research is needed in this area. Specifically, future studies might incorporate an exploration of children's perceptions of their own difficulties as well as partners' views of family functioning. An expanded sample size would also allow an examination of the differential effects of various types of maternal trauma. Finally, it would be interesting to

incorporate a qualitative component into future studies of this topic. Mothers who had experienced a trauma could be asked what impact they feel their traumatic experience has had on their ability to parent and their enjoyment of parenting. More specific open-ended questions about communication, problem-solving, and emotional expression with the family system might also be posed to all family members.

Results of the current study also speak to the need for interventions that target not only the parenting techniques of women suffering from PTSD, but their perceptions of themselves as parents. An ideal intervention might include review and discussion of basic parenting techniques as well as an exploration of mothers' thoughts and beliefs about themselves as parents. Psychoeducation could also be provided regarding the effects trauma and PTSD may have on mothers' ability to connect and engage with their children and partners. An intervention such as this would be appropriate for both mothers and fathers suffering from PTSD. In addition, family interventions aimed toward providing education and improving intrafamilial communication and openness would potentially result in significant benefits for families in which one or both parents are suffering from PTSD. Structured family therapy interventions specifically tailored for individuals suffering from PTSD and their families have not been developed, but more generalized family support and education groups do exist. For example, the Support and Family Education Program is a multi-family monthly group offering psychoeducation and support to families of veterans suffering from mental illness (Sherman, 2003). Local branches of the National Alliance on Mental Illness also offer groups where families of mentally ill individuals may gather to share resources and obtain support.

Finally, the children of parents suffering from PTSD may benefit from therapy surrounding the experience of living with and relating to a parent with mental illness. Past research investigating the impact of paternal PTSD on father-child relationships has consistently shown that providing children with either too much or too little information about a parent's experience of trauma is detrimental. As such, it seems that age appropriate interventions for children of PTSD sufferers could provide much-needed information about the parent's mental illness, and create a safe space for the child to seek validation and encouragement regarding their own everyday struggles.

The results reported here contribute to a growing body of research illustrating the detrimental effects of maternal PTSD on children, family, and trauma survivors alike. This study endeavored to examine the impact of mothers' PTSD symptoms over and above the experience of trauma alone, and findings suggest that while the experience of trauma negatively impacts parenting, family functioning, and child functioning, it is the presence of PTSD symptoms in mothers that results in the greatest detriment. Given these results, further research should be undertaken in order to more fully explore factors that impact the relationship between maternal PTSD and family, parenting, and child variables. By developing a greater understanding of this relationship, we move closer to knowing where and how best to intervene in order to alleviate some of the strain felt by PTSD sufferers and their families.

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Table 1. Mothers' demographic and diagnostic variables by sample.

	In-person sample		Online sample	
Characteristic	n	%	n	%
PTSD group	9	25	24	19.5
Trauma non-PTSD group	24	66.7	68	55.3
Non-trauma group	3	8.3	31	25.2
Trauma Type*				
Interpersonal (i.e. childhood physical or sexual abuse, domestic violence, rape)	19	57.6	45	48.9
Non-interpersonal (i.e. motor vehicle accident, robbery, violent death of a loved one)	11	33.3	45	48.9
Unemployed	17	47.2	25	20.3
Married/cohabitating	20	55.5	86	69.9
Race/ethnicity				
White	18	50	77	62.6
African American	17	47.2	28	22.8
Asian American	0	0	1	0.8
Multiracial	1	2.8	4	3.3
Other race	0	0	11	8.9
Hispanic	1	2.8	23	18.7
Income Level				
Less than 20,000	14	38.9	6	4.9
20,001 – 65,000	16	44.4	59	48
More than 65,000	5	13.9	57	46.3
Education Level				
Partial or complete graduate/professional training	8	22.2	28	22.7
Partial or complete college training	21	58.3	78	63.4
High school graduate	4	11.1	14	11.4
Partial high school	3	8.3	3	2.4
	Mean	SD	Mean	SD
Age	38.83	8.77	40.13	7.22

Note. N=159

*percentages indicate those having experienced each trauma type across the PTSD and Trauma non-PTSD groups only (N=33 for the in person sample, and N=92 for the online sample)

Table 2. Children's demographics by sample.

	In-person sample (completed self-report measures)		Online sample (did not complete self-report measures)	
Characteristic	n	%	n	%
Race/ethnicity				
White	14	38.9	67	54.5
African American	17	47.2	28	22.8
Asian American	0	0	1	0.8
Multiracial	2	5.6	18	14.6
Other race	1	2.8	9	7.3
Hispanic	1	2.8	23	18.7
Male	17	47.2	60	48.8
Female	17	47.2	62	50.4
	Mean	SD	Mean	SD
Age	13.91	2.5	14.06	2.15

Note. N=157 (Race/ethnicity data was missing for two children and gender data was missing for four children).

Table 3. Frequencies of clinical child self-report scores for both psychological problems and delinquency rates by group; means of child self-report psychological problems by group

	PTSD group (n=8) % (n)	Trauma non-PTSD group (n=23) % (n)	Non-trauma group (n=3) % (n)
Child self-report Internalizing at or above clinical levels (T score ≥ 65)	25 (2)	13 (3)	0 (0)
Child self-report Externalizing at or above clinical levels (T score ≥ 65)	37.5 (3)	30.4 (7)	0 (0)
Child self-report Total Problems at or above clinical levels (T score ≥ 65)	25 (2)	21.7 (5)	0 (0)
Endorsed ≥ 1 separate delinquency items*	50 (4)	85 (17)	33.3 (1)
Endorsed ≥ 5 separate delinquency items*	25 (2)	30 (6)	0 (0)
	PTSD group Mean (SD)	Trauma non-PTSD group Mean (SD)	Non-trauma group Mean (SD)
Child self-report Internalizing	48.38 (13.28)	56.13 (10.93)	45.33 (12.34)
Child self-report Externalizing	53.38 (13.02)	56.74 (13.07)	48.00 (10.58)
Child self-report Total Problems	52.53 (12.87)	57.65 (10.89)	44.66 (13.01)

Note. n=34

*child reported engaging in each separate activity at least one time over the past year.

Table 4. Means and standard deviations for dependent variables across the entire sample.

	Mean (SD)		
	PTSD group (n=33)	Trauma non-PTSD group (n=92)	Non-trauma group (n=34)
Parenting satisfaction	32.33 (7.70)**^	27.69 (9.02)	25.23 (9.48)
Parenting efficacy	19.85 (5.86)**	17.17 (5.76)	15.12 (5.69)
Family problem-solving	14.36 (3.17)**	15.17 (3.21)**	17.10 (2.40)
Family communication	14.85 (3.10)**^^	16.76 (2.71)	17.79 (2.65)
Family general functioning	33.00 (6.66)**^	36.58 (7.72)	39.45 (6.08)
Child internalizing symptoms	53.69 (13.11)*	50.98 (12.43)	44.96 (11.56)
Child externalizing symptoms	52.07 (12.16)	50.53 (12.70)	44.57 (10.55)
Child total problems	53.45 (13.21)**	49.98 (13.59)*	41.89 (13.08)

Note. N=159

*significantly different than the Non-trauma group at the $p < .05$ level

** $p < .01$

^significantly different than the Trauma non-PTSD group at the $p < .05$ level

^^ $p < .01$

Table 5. Correlations showing the relationship between parenting variables, family functioning variables, and PTSD severity scores as measured by the Posttraumatic Diagnostic Scale

	1	2	3	4	5	6
1. Parenting satisfaction	1					
2. Parenting efficacy	.345***	1				
3. Family problem-solving	-.271**	-.541***	1			
4. Family communication	-.317***	-.407***	.584***	1		
5. Family general functioning	-.488***	-.424***	.595***	.554***	1	
6. PTSD Severity	.410***	.241**	-.244**	-.364***	-.350***	1

Note. N=159
*p < .05, **p < .01, ***p < .001

Table 6. Correlations showing the relationship between mean child psychological problem variables as measured by the Child Behavior Checklist and PTSD severity scores as measured by the Posttraumatic Diagnostic Scale

	1	2	3	4
1. PTSD Severity	1			
2. Child internalizing symptoms	.273**	1		
3. Child externalizing symptoms	.272**	.764***	1	
4. Child total problems	.323***	.899***	.906***	1

Note. N=159
*p < .05, **p < .01, ***p < .001

Table 7. Correlations showing the relationship between child psychological problem variables as measured by the Child Behavior Checklist and PTSD severity scores as measured by the Posttraumatic Diagnostic Scale

	1	2	3	4	5	6	7
1. PTSD Severity	1						
2. Child affective problems	.263**	1					
3. Child anxiety problems	.231**	.753***	1				
4. Child somatic problems	.186*	.542***	.510***	1			
5. Child attentional problems	.225**	.616***	.594***	.446***	1		
6. Child oppositional defiant problems	.273**	.667***	.594***	.456***	.698***	1	
7. Child conduct problems	.244**	.709***	.607***	.581***	.675***	.821***	1

Note. N=159
*p < .05, **p < .01, ***p < .001

Table 8. Multiple regression analyzing amount of variance accounted for by PTSD severity in trauma survivors within the entire sample

	Beta	Standard Error Beta	R^2
Parenting satisfaction			
Constant	24.25	1.19	
PTSD Severity	0.26	0.05	.166***
Parenting efficacy			
Constant	16.19	0.85	
PTSD Severity	0.09	0.04	.052*
Family problem-solving			
Constant	15.54	0.47	
PTSD Severity	-0.04	0.02	.027
Family communication			
Constant	17.48	0.42	
PTSD Severity	-0.07	0.02	.113***
Family general functioning			
Constant	38.66	1.08	
PTSD Severity	-0.18	0.05	.103***
Child internalizing symptoms			
Constant	48.13	1.85	
PTSD Severity	0.21	0.08	.053*
Child externalizing symptoms			
Constant	47.24	1.86	
PTSD Severity	0.22	0.09	.054*
Child total problems			
Constant	46.28	1.97	
PTSD Severity	0.27	0.09	.075**

Note. n=125

*p < .05, **p < .01, ***p < .001

Table 9. Multiple regression analyzing amount of variance accounted for by trauma alone within the entire sample

	Beta	Standard Error Beta	R^2
Parenting satisfaction			
Constant	25.24	1.57	
Trauma	2.45	1.84	.014
Parenting efficacy			
Constant	15.12	0.99	
Trauma	2.06	1.15	.025
Family problem-solving			
Constant	17.09	0.53	
Trauma	-1.92	0.61	.074**
Family communication			
Constant	17.79	0.47	
Trauma	-1.02	0.55	.028
Family general functioning			
Constant	39.46	1.28	
Trauma	-2.88	1.49	.030
Child internalizing symptoms	44.96	2.31	
Constant	6.01	2.65	.042***
Trauma			
Child externalizing symptoms	44.57	2.31	
Constant	5.96	2.65	.042***
Trauma			
Child total problems			
Constant	41.89	2.55	
Trauma	-8.09	2.91	.062***

Note. n=126
*p < .05, **p < .01, ***p < .001

Table 10. Multiple regression analyzing amount of variance accounted for by PTSD severity in trauma survivors within the online sample

	Beta	Standard Error Beta	R^2
Parenting satisfaction			
Constant	25.51	1.46	
PTSD Severity	0.21	0.07	.109**
Parenting efficacy			
Constant	15.81	1.04	
PTSD Severity	0.09	0.05	.043
Family problem-solving			
Constant	15.99	0.51	
PTSD Severity	-0.03	0.02	.025
Family communication			
Constant	18.23	0.48	
PTSD Severity	-0.09	0.02	.184***
Family general functioning			
Constant	40.08	1.22	
PTSD Severity	-0.22	.06	.155***
Child internalizing symptoms			
Constant	45.27	2.22	
PTSD Severity	0.29	0.10	.097**
Child externalizing symptoms			
Constant	46.26	2.21	
PTSD Severity	0.21	0.10	.053*
Child total problems			
Constant	43.49	2.41	
PTSD Severity	0.34	.11	.108***

Note. n=92

*p < .05, **p < .01, ***p < .001

Table 11. Multiple regression analyzing amount of variance accounted for by trauma alone within the online sample

	Beta	Standard Error Beta	R^2
Parenting satisfaction			
Constant	25.94	1.68	
Trauma	2.52	2.03	.016
Parenting efficacy			
Constant	15.16	1.06	.015
Trauma	1.57	1.28	
Family problem-solving			
Constant	17.13	0.50	
Trauma	-1.50	0.60	.061*
Family communication			
Constant	17.77	0.46	
Trauma	-0.56	0.55	.011
Family general functioning			
Constant	39.33	1.28	
Trauma	-1.82	1.54	.014
Child internalizing symptoms			
Constant	45.08	2.49	
Trauma	4.17	2.91	.022
Child externalizing symptoms			
Constant	44.00	2.42	
Trauma	5.33	2.83	.038
Child total problems			
Constant	41.44	2.76	
Trauma	6.55	3.24	.043*

Note. n=99

*p < .05, **p < .01, ***p < .001