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Development of the Posttraumatic Stress Symptoms -- Childhood Obesity Model

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DEVELOPMENT OF THE PARENTAL POSTTRAUMATIC STRESS SYMPTOMS –
CHILDHOOD OBESITY MODEL

A Specialist Project
Presented to
The Faculty of the Department of Psychology
Western Kentucky University
Bowling Green, Kentucky

In Partial Fulfillment
Of the Requirements of the Degree
Specialist in Education

By
Kristi Wilsman

August 2012

DEVELOPMENT OF THE PARENTAL POSTTRAUMATIC STRESS SYMPTOMS –
CHILDHOOD OBESITY MODEL

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DEVELOPMENT OF THE PARENTAL POSTTRAUMATIC STRESS SYMPTOMS –
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Kristi Wilsman

August 2012

43 Pages

Directed by: Dr. Elizabeth Jones, Dr. Carl Myers, Dr. Frederick Grieve

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This project developed a model to account for an obesity outcome in children who have posttraumatic stress disorder (PTSD) and whose parents have posttraumatic stress symptoms (PTSS) or PTSD. A literature review provided the basis for the model and covered the areas of childhood obesity, parental PTSS, childhood PTSD, adverse childhood experiences, relational PTSD, ineffective parent support, and the stress response. A model to explain the outcome of obesity in children with PTSD as mediated by parental support provided after a traumatic event was developed: The Parental PTSS-Childhood Obesity Model. The literature review supports a relational perspective for viewing child outcomes from trauma. When the relational perspective is applied to parents who themselves are experiencing PTSS, several parent response patterns were supported. These response patterns are considered to detrimentally impact the parent's ability to provide an environment that is safe, predictable and responsive. Therefore the parent experiencing PTSS will evidence less effective parenting. Thus the child's environment will be more stressful, increase the child's symptomology and promote ineffective coping skills resulting in obesity. The strengths, limitations, and contributions of the model are discussed, as well as recommendations made for further research.

Introduction

Two contemporary public health issues for childhood are trauma and childhood obesity. According to recent statistics from the Centers for Disease Control and Prevention, 33.8% of adults in the United States are considered to be obese and approximately 17% of children and adolescents aged 2 to 19 are considered obese (Flegal, Carroll, Ogden, & Curtin, 2010; Ogden & Carroll, 2010). Furthermore, the obesity rates in children and adults in the United States have tripled since 1980 (Ogden & Carroll, 2010). In regards to post traumatic stress disorder, the National Institute of Mental Health (2005) reported that 4.0% of 13-18 year olds have a lifetime prevalence of the disorder. Thus, both obesity and posttraumatic stress disorder are concerns evident in youth.

Outcomes noted in individuals with a history of trauma and a PTSD diagnosis include obesity and eating disorders (Dedert et al., 2010; Grilo & Masheb, 2001; Neumark-Sztainer, Story, Hannan, Beuhring, & Resnick, 2000). Researchers have noted that individuals who have experienced sexual abuse have a greater likelihood of becoming obese in adulthood (Gustafson & Sarwer, 2004; Noll, Zeller, Trickett, & Putman, 2007) or developing disordered eating patterns (Neumark-Sztainer et al., 2000). One explanation for the obesity outcome in individuals diagnosed with PTSD is the body's underlying stress response that is evident in both obesity and PTSD. The body's response to the stress of trauma involves a neuro-endocrine response also noted in individuals with obesity that affects metabolism, activity levels, and appetite (Whitaker, Wright, Pepe, Seidel, & Dietz, 1997).

A newer area of investigation is the impact of a child's experience of trauma and development of PTSD on the family. Parents have been noted to develop post traumatic

stress symptoms (PTSS) in response to their children developing PTSD (Best, Streisand, Catani, & Kazak, 2001; Scheeringa & Zeanah, 2001). Parents experiencing PTSS exhibit distinctive symptom patterns that result in insensitive or ineffective parenting for the child experiencing PTSD (Lewin & Bergin, 2001; Ostrowski, Christopher, van Dulmen, & Delahanty, 2007).

The current project will provide a review of the research to support the development of a model that accounts for an obesity outcome in children who have PTSD and whose parents evidence PTSS.

Review of the Literature

Posttraumatic Stress Disorder

According to the National Institute of Mental Health (2005), over 7.7 million American adults are affected annually by Posttraumatic Stress Disorder (PTSD). Specifically, 3.5% of the adult population has a 12-month prevalence of PTSD, while 4.0% of 13 to 18 year olds have a lifetime prevalence of the disorder. Currently, the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition-Text Revision* (DSM-IV-TR; American Psychiatric Association [APA], 2000) criteria stipulate that a person must experience or witness an event involving actual or perceived life threat, and must respond with intense fear, helplessness, or horror (Criterion A). In addition, the victim must endorse symptoms belonging to three symptom clusters. The first symptom cluster (Criterion B) involves re-experiencing symptoms such as intrusive memories, nightmares, and psychological and/or physiological distress when reminded of the trauma. The second cluster (Criterion C) includes avoidance symptoms such as persistent avoidance of thoughts, feelings, and reminders of the trauma, inability to recall aspects of the traumatic event, withdrawal from others and normal activities, and symptoms of emotional numbing. The final symptom cluster (Criterion D) involves the experience of hyperarousal symptoms such as insomnia, irritability, difficulty concentrating, hypervigilance, or heightened startle response. In order to meet full diagnostic criteria, trauma victims must endorse at least one re-experiencing symptom, three avoidance symptoms, and two hyperarousal symptoms. These symptoms must be present for at least one month (Criterion E) and cause clinically significant distress or impairment in one's social, occupational, and/or other important areas of functioning (Criterion F). While the

diagnostic criteria for adult and child trauma victims are the same, symptoms of PTSD may differ between adults and children (Carrion, Weems, Ray, & Reiss, 2002; Scheeringa, Zeanah, Drell, & Larrieu, 1995). For instance, children are less likely to experience flashbacks (Terr et al., 1999) and may relieve the trauma through behavioral reenactments of the traumatic event (e.g., play; Terr, 1983). Events that mimic the traumatic occurrences may cause a fear of reoccurrence in the future for children as well (Armsworth & Holaday, 1993).

Copeland, Keeler, Angold, and Costello (2007) found that functional impairments related to traumatic events for children included disruption of relationships, a decrease in school performance, physical problems, and exacerbation of emotional problems. Children's responses to crisis or tragedy generally fall into one of the following four categories: a) fear of failure, b) academic regression, c) behavioral regression, and d) nightmares, night terrors, and sleep disturbances (Poland & McCormick, 1999). Because children's cognitive and developmental systems have not fully matured, devastating effects including long term impairments can occur in the central nervous system and cognitive functions. These impairments can have long lasting effects that can impact neurobiological changes and coping strategies, which can continue to be seen in adulthood (Armsworth & Holaday, 1993; Irish et al., 2008). Springer, Sheridan, Kuo, and Carnes (2007) found childhood maltreatment to be associated with psychological and somatic symptoms in adulthood. Such symptoms include depression, anxiety disorders, PTSD, and eating disorders. Psychosocial risks such as depression, poor body image, low self-esteem, and the development of eating disorders due to childhood abuse may intensify the development and maintenance of adulthood obesity (Noll et al., 2007).

Gustafson and Sarwer (2004) hypothesized that some adult women who had experienced childhood sexual abuse may use their obesity as a form of protection against sexual advances.

Traumatic stress experienced by children has the potential to also impact other family members negatively. Parents can experience extreme distress from watching a child who has a physical illness, has been in a car accident, or has suffered from neglect or abuse. This distress can negatively impact parents and their ability to take care of not only themselves, but their children as well (Best et al., 2001; Lewin & Bergin, 2001; Rizzone, Stoddard, Murphy, & Kruger, 1994). Consequently, family systems or relational perspectives are advocated for conceptualizing the impact of childhood PTSD.

A variety of risk factors for the development of PTSD have been identified in children. Examples include the experience of additional stressful events after the initial trauma, insufficient social support post-trauma, and lack of effective coping strategies to deal with the traumatic event (Poland & McCormick, 1999). Other factors include experiencing prior traumatic events and peritraumatic dissociation (Brewin, Andrews, & Valentine, 2000; Irish et al., 2008; Mazza & Reynolds, 1999; Ozer, Best, Lipsey, & Weiss, 2003). The possible process through which PTSD occurs is an interference of processing and encoding traumatic events or sensitization of the traumatized individual. When faced with subsequent traumatic events, the individual may develop a more intense posttraumatic stress response (Briere, Scott, & Weathers, 2005; Irish et al., 2008). Several studies support this conceptualization in that they have noted that children who experience community violence and chronic exposure to violence have been associated with symptoms of depression, suicidal ideations, aggressive tendencies, and PTSD

symptomology (Guerra, Huesmann, & Spindler, 2003; Kiser, Medoff & Black, 2010; Mazza & Reynolds, 1999).

Parental support, such as addressing the child's psychological needs post-trauma, can also be a variable that influences the development of PTSD in children. Scheeringa and Zeanah (2001) conducted a review and concluded that lower parental/child adjustment to the trauma produced outcomes of higher rates of PTSD, an increased number of PTSD symptoms, elevated aggression and antisocial behavior in children. Furthermore, they found that, because children are so dependent on their parents for social support, symptomology must be viewed within the context of the parent-child relationship. Scheeringa and Zeanah also developed the construct of relational PTSD to describe the co-occurrence of PTSD symptomology in the parent and the child where the parent's symptomology exacerbates the child's symptomology.

In summary, PTSD is considered to be a stress related disorder that is known to have a variety of associated features in children. One important factor includes the influence of family support as a risk factor for the development of PTSD. Furthermore, the child's PTSD can have an impact on the family system and will be discussed further in a subsequent section. The next section will examine obesity and associated family factors.

Childhood Obesity

Ogden, Carroll, Curtin, Lamb, and Flegal (2010) noted an overall increase of childhood obesity from 1976 to 1980. Among preschool aged children (ages two to five), the obesity rates increased from 5% to 10.4%. Obesity in children ages 6 to 11 increased from 6.5% to 19.6% with the likelihood of obesity increasing from 5.0% to 18.1% in

adolescents ages 12 to 19. Being an obese child increases the risk of obesity as an adult. More specifically, Whitaker et al. (1997) found that after six years of age, a child who is obese has a 50% chance of becoming an obese adult as compared to a 10% risk for children who are not obese. A potential risk factor for obesity is a history of childhood abuse and PTSD (Alvarez, Pavao, Baumrind, & Kimerling, 2007; Dedert et al., 2010; Fuemmeler, Dedert, McClernon & Beckham, 2009).

Children who are obese or overweight also have increased health risks as adults. Neumark-Sztainer, Hannan, Story, Croll, and Perry (2003) found that fat intake during childhood greatly increases the risk for coronary heart disease in adulthood. Other health risks from childhood obesity include high cholesterol, high blood pressure, an increased risk of Type II diabetes, breathing problems, joint problems, fatty liver tissue, and heartburn (Ogden & Carroll, 2010).

Childhood obesity has also been associated with other features that have the potential to increase stress. With regards to academic performance, Datar, Sturm, and Magnabosco (2004) found significantly lower standardized test scores in math and reading for obese children compared to their non-overweight peers. Other associated features of obesity such as depression and anxiety can have a large effect on school performance and in turn produce a lack of academic achievement (Taras & Potts-Datema, 2005). Goodman and Whitaker (2002) found that boys who were obese from a young age had significantly higher rates of depression. In addition, obese children and adolescents also have a greater risk of social and psychological problems, such as experiencing discrimination, poor self-esteem and low academic performance, which can influence the child through adulthood (Ogden & Carroll, 2010; Taras & Potts-Datema, 2005). Children

who are overweight or obese are also more likely to experience both relational (e.g., name calling, spreading rumors) and overt (e.g., physical aggression) bullying (Janssen, Craig, Boyce, & Pickett, 2004), causing an increase of stress in their everyday lives.

Children who are obese or overweight are also more likely to feel stress and worry more about things in their lives, feel more tired, and become more aggressive than children who are of normal weight (APA, 2010). Children who are overweight tend to use coping strategies to deal with stress that are maladaptive in that they serve to maintain or increase weight, such as taking a nap or eating to make themselves feel better (APA, 2010). Alvarez et al. (2007) noted that a child's inability to cope with stress and negative emotions is significantly associated with poor nutrition and sedentary lifestyle, thus increasing the likelihood of obesity in childhood and adulthood.

The home environment is noted to play a significant role in the etiology and maintenance of childhood obesity (Moreno et al., 2004; Neumark-Sztainer et al., 2000; Strauss & Knight, 1999). Socioeconomic status (SES) factors, parental influence, health risk behaviors, and emotional support can be very influential on how children develop both cognitively, emotionally, and physically. Strauss and Knight (1999) found that children in families with low or average incomes are significantly more likely to develop obesity, as well as children who live with single mothers. Similarly, Wang (2001) found that the prevalence of obesity in American youth was higher in low-income groups in comparison to high-income groups.

Home environment also includes the parent's lifestyle patterns. One predictor for childhood obesity is the parents' obesity status. Whitaker et al. (1997) found that, before the age of six, the parents' obesity status greatly influenced the chances of the child

becoming an obese adult. Reilly et al. (2005) found that, when both parents are obese, the risk for obesity for their children increases (adjusted odds ratio 10.44, 511 to 21.32). Strauss and Knight (1999) found an increased risk of obesity in children whose mothers were either overweight (1.5-fold increased risk) or obese (threefold increased risk). Although genetics is a popular hypothesis for this obesity, the routine of the home environment has also been questioned as well. Children in higher SES families have reported more family meals, thus increasing the likelihood of more positive family cohesion (Eisenberg, Olson, Neumark-Sztainer, Story, & Bearinger, 2004). Even after controlling for family conflict and cohesion, research has found that more family meals contributes to the increased likelihood of the development of regular eating patterns, a decreased likelihood of bulimic symptoms, lower depressive symptoms, lower odds of cigarette and alcohol use, higher grade point average, and higher self-esteem (Eisenberg et al., 2004; Neumark-Sztainer et al., 2003). Sedentary behaviors and irregular sleep patterns at home are additional risk factors for childhood obesity (Reilly et al., 2005). Reilly et al. (2005) found that children aged 30 months who received less than 10.5 hours of sleep were more likely to be obese at the age of seven years.

Family stressors such as single-parent homes and low income affect the parent-child interaction and this, in turn, is associated with a greater likelihood of childhood obesity. Parents are a major influence over the child, molding and shaping the child's stress response and overall well-being. According to Whitaker, Phillips, Orzol, and Burdette (2007), developing positive stress responses at an early age can affect the balance of the brain's energy regulation. This energy regulation is directly related to eating and physical activity. By developing a more positive stress response, it is more

likely that there will be a decreased chance for childhood obesity to occur due to a more balanced energy regulation, better coping styles, and lower stress levels.

The increase in childhood obesity is of concern because of the potential negative impact on the individual's physical and psychological health, social adjustment, and academic achievement. In addition, there are long-term community and societal costs due to the increased need for health care and social programs. Factors noted within the context of the family to be associated with obesity include family lifestyle, SES, and the ability of the family to assist a child in developing adaptive coping skills and emotional regulation (APA, 2010; Alvarez et al., 2007; Moreno et al., 2004; Neumark-Sztainer et al., 2000; Strauss & Knight, 1999). These are variables that ultimately impact the nature of the experience of stress for a child. Stress is noted as a risk factor for obesity as well as an outcome noted in children who are obese.

Stress Response

Stress is noted in high levels in individuals who are obese and in individuals who have PTSD. Physiologically, certain hormones, such as cortisol, are produced by our bodies when stress is present. Cortisol is commonly known as the "fight or flight" hormone. Benefits include bursts of energy, immunity and enhanced memory. Cortisol aids the body in returning to a state of relaxation after the stressful event is withdrawn (Ebrecht et al., 2004). Studies have reported high levels of cortisol in those diagnosed with PTSD (Yehuda, Boisoneau, Lowy, & Giller, 1995), especially when exposed to stimuli associated to the trauma (Elzinga, Schmahl, Vermetten, van Dyck, & Bremner, 2003). Those with PTSD and obesity are susceptible to chronic stress, thus creating a continuing release of cortisol. A continuing release of cortisol can result in decreased

immunity, impaired cognitive and memory function, higher blood pressure, and increased abdominal fat. Physiologically, decreased immunity, higher blood pressure, and increased abdominal fat can all have negative effects on a person's health, frequently resulting in cardiovascular problems and obesity (Ebrecht et al., 2004).

A consistent finding in the literature is that the stress response induced from a traumatic experience can produce severe, long-term consequences. The traumatic experience can be a single event or a chronic exposure to high stress situations such as community violence (Guerra et al., 2003; Kiser et al., 2010; Mazza & Reynolds, 1999). A traumatic stress response interferes with the processing and encoding of traumatic events and/or sensitizes the traumatized individual to future reminders of the trauma. When faced with subsequent traumatic events, the individual may develop a more intense posttraumatic stress response (Brierre et al., 2005; Irish et al., 2008). Exposure to multiple traumas in childhood increases the likelihood of symptomatic responses, including negative affect (sadness and rage), physiological dysregulation and attachment disturbances. Children sensitized by the trauma tend to have a lower tolerance for stress and generally feel overwhelmed throughout their everyday lives after experiencing a trauma (Armsworth & Holaday, 1993). Stressors that are perceived as threatening and are associated with the trauma can produce a maladaptive stress response, with high negative emotion, poorer coping strategies, and higher levels of cortisol (Tomaka, Blascovich, Kelsey, & Leitten, 1993). In this situation, the poorer coping strategies, including avoidance, defensiveness, self destructive behaviors, and denial, are considered maladaptive (Ollf, Langeland, Draijer, & Gersons, 2005). Such maladaptive coping

strategies are significant predictors for ongoing distress and an increase of PTSD symptoms (Olf et al., 2005; Silver, Holman, McIntosh, Poulin, & Gil-Rivas, 2002).

When maladaptive coping strategies are developed, there is an increased chance that the stress response may be overused, thus producing more cortisol and increasing the chance of becoming overweight or obese. Furthermore, a child's stress response can be greatly influenced by a family's stress response, especially when the stress is experienced within the parent-child relationship or in the home environment.

Adverse Childhood Experiences and Obesity

Due to the health risks and psychological disorders associated with obesity such as depression and anxiety, researchers have started examining the history and family contexts of individuals who are obese. A finding in some research is an association between experiencing a traumatic event and disordered eating in children and adults (Fuemmeler et al., 2010; Grilo & Masheb, 2001; Gustafson & Sarwer, 2004; Neumark-Sztainer et al., 2000). Specifically, researchers have looked at whether trauma stemming from familial and psychosocial factors is associated with obesity. Christoffel and Forsyth (1989) proposed that environmental neglect may prompt a pattern of overeating in children. They explained that environmental deprivation causes self-stimulatory behaviors, which in turn can cause overeating. Lissau and Sørensen (1994) reported that children who experienced neglect were at a nine-fold increase of becoming obese. Neglectful behaviors by the parent have been found to be more strongly associated with early onset of obesity, body dissatisfaction, low self-esteem, and an earlier onset of the participant's first diet (Grilo & Masheb, 2001; Whitaker et al., 2007). The Adverse Childhood Experiences (ACE; Felitti et al., 1998) study found that adults who

experienced four or more adverse experiences (such as psychological, sexual, or physical abuse) as a child had an increased chance of developing alcoholism, drug abuse, depression, physical inactivity, and severe obesity in early adulthood (Felitti et al., 1998). Felitti et al. (1998) interpret these negative outcomes to be the result of poor coping skills rather than a lifestyle choice and note that, as the number of adverse experiences increases, the likelihood of negative outcomes increases dramatically.

Childhood traumatic stress, including childhood sexual abuse, has been identified as a risk factor for obesity and dysfunctional eating patterns in adulthood. Fuemmeler et al. (2009) found that, compared to normal weight men, obese men had a higher likelihood of childhood sexual abuse. This finding was not noted for women reporting a history of childhood sexual abuse, although problematic eating patterns and possible eating disorder history were noted. However, Alvarez et al. (2007) found an increased risk of obesity in adulthood for women reporting a history of child physical and sexual abused. This relationship remained when controlling for other risk factors, including age, ethnicity, education and food insecurity. The authors estimated that nearly 5% of the obese U. S. population is attributable to childhood abuse. Obesity risk has also been noted in male and some female veterans diagnosed with PTSD (Vieweg et al., 2007). A positive relationship was noted among childhood traumatic stress, symptoms of PTSD and depression, and adulthood body mass index (BMI) and obesity prevalence (Dedert et al., 2010). Dedert et al. (2010) used PTSD and depression as intervening variables and found only PTSD to be a significant predictor of BMI and hip-waist ratio. These findings support the association between a childhood trauma and adult obesity. Further, PTSD has

specifically been noted as having a significant indirect effect in models of weight outcomes.

An association has been noted between the experience of parental neglect by children and childhood obesity along with an association between the childhood experience of trauma and adulthood obesity. As discussed previously, the history of adverse childhood experiences, which is inclusive of trauma, has also been associated with an increased risk for obesity. Common associated features of the experience of trauma and subsequent childhood obesity are the high frequency of depression, PTSD, anxiety, and the experience of negative family support, all of which are stressful experiences.

Stress can be caused by neglectful and abusing behaviors by the parents, the child experiencing trauma, and the result of a chronic condition such as PTSD or obesity. However, recognition that a child's experience of trauma can create a situation whereby the parent develops stress symptoms of clinical significance is a newer area of concern.

Parental Post Traumatic Stress Symptoms

When looking at the symptoms of children who have experienced a trauma, it is also important to look at the well-being of the parents. In some instances, the parent experiences the same or similar trauma to that experienced by the child and may develop PTSD. However, when the child is the victim of a traumatic event that was not experienced by the parent, parents can experience extreme distress and struggle to cope with their own anxiety, otherwise known as posttraumatic stress symptoms (PTSS). The term PTSS is often used in research that investigates the reactions of family members

after a child's accident or medical treatment in a hospital setting. For the purposes of this study, these symptoms are also inclusive of those parents or caregivers diagnosed with PTSD. Parents with PTSS experience one or more of the three core symptom categories of PTSD (i.e., avoidance, re-experiencing, hyperarousal), but do not qualify for a PTSD diagnosis. This PTSS is severe and adversely impacts functioning. While not all parents experience PTSS after their child's trauma, rates of PTSS, especially from mothers, can range from 24% to 71% (Landolt, Vollrath, Ribi, Gnehm, & Sennhauser, 2003). PTSS in the parent is felt to impact a child through negative parental modeling, poor coping mechanisms and reactions to subsequent reminders of the trauma and stress (Schwartz & Drotar, 1994).

Scheeringa and Zeanah (2001) conducted a review of the literature on the parent-child context of PTSD and noted that less adaptive parent functioning is consistently associated with less adaptive child functioning or higher symptomology following trauma. They proposed that the association between parent and child posttraumatic symptomology could be best understood as resulting from a moderating, vicarious traumatization or compound effect. A moderating effect explanation assumes that the trauma produces child symptoms, which can be intensified or minimized by the parent response to the child. Avoidance is one moderating response known to intensify or worsen child outcomes. A vicarious traumatization effect occurs when the parent's symptomology creates a situation where the child may hear of experiences and internalize them as his or her own memory. In addition, the symptoms of the parent may decrease the parent's responsiveness to the child or compromise the care they provide. Although Scheeringa and Zeanah did not include parent vicarious traumatization, the current

understanding of parental PTSS could be explained through this type of effect. A compound effect is when there is a combination of moderating and vicarious traumatization effects. Both the child and the parent are traumatized and both develop symptoms which have a bidirectional impact. The children's symptoms serve to exacerbate the parent's symptoms and the parent's symptoms exacerbate those of the children. The child experiences the direct effect of the trauma and their symptomology is exacerbated by the indirect effect of the parents' compromised responsiveness (e.g., decreased routines, increased aggressiveness, or corporal punishment).

The construct of relational PTSD (Scheeringa & Zeanah, 2001) describes the situation where there is a co-occurrence of posttraumatic symptomology in the parent and a child where the symptomology of the parent exacerbates that of the child. The concept of relational PTSD serves to emphasize the importance of considering the parent symptomology and create the understanding that the children's posttraumatic symptomology is best understood within a relational context and that the parents' response can complicate, exacerbate or impede the children's recovery. Parental PTSS serves to create a relational PTSD situation.

The parent response to the child's trauma has subsequently been explored in the broader context of the family system and family functions. The parent's experience of PTSD has been noted to impact the parent's relationship with their children. Lauterbach et al. (2007) noted that persons with a lifetime history of PTSD report more aggression and poorer quality parent-child relationships than those who have no history of PTSD. Further, parent PTSD symptoms of re-experiencing and numbing were predictive of greater parent-child aggression, but did not impact the quality of the relationship. Several

studies have examined the relationship between trauma exposure, child traumatic stress and family functions. Kiser et al. (2010) noted that, when families place less value on routines, the symptoms of re-experiencing and avoidance increase for the child with PTSD. Family structure predicted child behavior problems in that higher family structure promotes fewer internalizing and externalizing problems. Kelly et al. (2010) studied child and parent stress symptoms following Hurricane Katrina and found that parents who experienced the highest losses evidenced more maladaptive coping, increasing the likelihood of corporal punishment and the children's risk for PTSD symptoms. Contrary to prior findings, the parents reporting greater post trauma psychological symptoms reported employing more child routines. Child routines or familiar routines are important for reducing trauma related symptoms in children and are frequently noted to be reduced following trauma (Kiser et al., 2010).

Winston et al. (2002) reported that parental functioning (which includes their own PTSS) strongly affects their children's posttraumatic stress. One parental response results from the parents' development of depression and anxiety. Following a child's traumatic event, parents may be forced to deal with uncertainties and anxiety which may, in turn, affect their own well-being and parenting behaviors. Parents may feel helpless, inadequate, have low self-efficacy, or feel unable to control the situation, thus leading to an increased likelihood of depression and anxiety during and following a traumatic event (Best et al., 2001; Lewin & Bergin, 2001). Lewin and Bergin (2001) found that mothers with high levels of anxiety may have impaired communication due to the overwhelming nature of the situation, which, therefore, may lead to errors in protection of the child. This impairment and lack of emotional stability can cause the child to have an inability to

express emotions and overcome future reminders of the traumatic experience. Scheeringa and Zeanah (2001) also proposed that disorders such as depression impair the adult caregiver's ability to attend to the child's emotional needs, thus exacerbating the child's memories, emotions, and symptoms stemming from the trauma.

Findings from studies of parents who are experiencing PTSS as a result of their child's trauma have shown that parental avoidance is another form of ineffective support. Best et al. (2001) found that some parents avoid any reminders of the event, and thus avoid any follow-up therapeutic recommendations or avoid noticing possible symptoms the child might be having. Scheeringa and Zeanah (2001) also reported that variables such as lack of support for the child, denial of awareness of the child's symptoms, and the child's perception of parent rejection are all associated with higher rates of PTSD. Some researchers have found that parents who have PTSS may not seek help for their children, and are even less likely to find help for themselves (de Vries et al., 1999). Because of this parental avoidance, children may not be able to confront their own anxiety, which therefore contributes to the maintenance of their symptoms, and has an impact on the children's adjustment (Ostrowski et al., 2007).

A final response pattern that creates ineffective parental support is when a parent becomes overly protective. Several researchers have found that children who meet criteria for lifetime PTSD describe their families, particularly their parents, as more chaotic, as well as displaying overly protective behaviors that serve to heighten stress, increase parental and family conflict, and promote family break-up (McFarlane, 1987; Pelcovitz et al., 1998; Rizzone et al., 1994). Scheeringa and Zeanah (2001) proposed that parents often feel guilty for not being able to protect their children and become

preoccupied that their children may be traumatized again. Because of the heightened stress and stressful behaviors displayed by the parents, the children are exposed to increased stress in the family context, which may exacerbate the parent's own stress and their children's PTSD symptomology.

This review supports three parent response patterns to their child's trauma and resulting PTSD: the avoidant, the overprotective and the anxious/depressed. For the purposes of this study, parental PTSS is noted to result in ineffective parental support due to these response patterns. The parent impairment or response pattern as noted previously impacts family routines, structure and use of corporal punishment. These areas are generally considered as parenting practices.

It is widely accepted that stressful events, such as trauma, can cause a disruption in parenting practices, which can then affect child adjustment (Gewirtz, Forgatch, & Wieling, 2008). What is not as clear or studied are the areas of parenting that are affected. Patterson's Social Interaction Learning (SIL) model serves to point out the areas of parenting that would be of concern (Patterson, 2005). According to Patterson's (2005) conceptualization, parenting practices should be considered on a continuum ranging from coercive to effective across the dimensions of skill encouragement, limit setting, monitoring, problem solving, and positive involvement. This model has been used as an intervention with parents to address the effects of a mass trauma (Gewirtz et al., 2008). According to Gewirtz et al. (2008), coercive parenting leads to negative child behaviors, while effective parenting leads to healthy adjustment for the child who has experienced trauma. It is reasonable to assume that the dimensions of parenting reported by Patterson (2005) are what are impacted by the parent's PTSS and the adjustment of the child.

The ineffective parental response patterns of avoidance, withdrawal and parental depression and anxiety are noted to exacerbate the child's experience of PTSD and as a result increase the stress levels of the child. These patterns are not noted in all parents of children diagnosed with PTSD. However, when one of these ineffective response patterns is evident, the impact creates a situation where the child experiences additional stress which may then promote the development of maladaptive coping skills.

Rationale for Model Development

Findings from research have shown that obesity is noted more frequently in populations that have experienced a traumatic event during childhood. According to Felitti et al. (1998), those who have experienced multiple exposures to trauma tend to feel depressed, angry, and stressed, which unconsciously and consciously leads to the development of negative coping skills such as overeating and disordered eating. These negative coping skills provide immediate, but harmful, benefits for those dealing with the stress of their trauma. Researchers are now attempting to investigate the mechanisms and conditions that promote obesity after the experience of a childhood trauma. PTSD has been found in one study to have a significant indirect effect on weight (Kelley et al., 2010). In addition, multiple findings support that a large percentage of parents are traumatized by their child's trauma and that this may negatively impact their parenting (Best et al., 2001; deVries et al., 1999; Lewin & Bergin, 2001; Rizzone et al., 1994; Winston et al., 2002). Further, longitudinal data indicate that positive parenting practices after a traumatic event can influence the subsequent trajectory of child distress (Gewirtz, et al., 2008). Therefore, we can hypothesize that parental support is an important variable that can greatly influence the development or nondevelopment of negative coping

mechanisms and outcomes, such as obesity, for a child who has PTSD. Parental support is considered to encompass factors in the child's environment that are controlled by the parent such as parenting practices including family routines, limit setting, interactional patterns, child protection or monitoring, skills encouragement, and positive involvement. Parent support in this situation is considered as a mediator variable that determines the relationship between parent PTSS and child's development of obesity.

Parental PTSS – Child Obesity Model

The model developed serves to address the connection between a child's experience of a traumatic event resulting in PTSD during childhood, parental PTSS in response to the child's traumatic experience or from experiencing the trauma, and the subsequent development of obesity in the child. More specifically, children with PTSD experience a decrease in the caregiver's use of effective parenting skills that increases the child's experience of stress, promoting the development of poor coping skills and an increase of the child's BMI. According to Stein and Heikkinen (2009), a model attempts to characterize or account for a specific psychological trait. The proposed model is explanatory in nature, as it proposes mechanisms or processes to account for the occurrence of the specific trait of childhood obesity (Stein and Heikkinen, 2009). This model conceptualizes only one possible variable that explains the connection between childhood PTSD and childhood obesity. Figure 1 provides a visual depiction of the Parental PTSS - Child Obesity model.

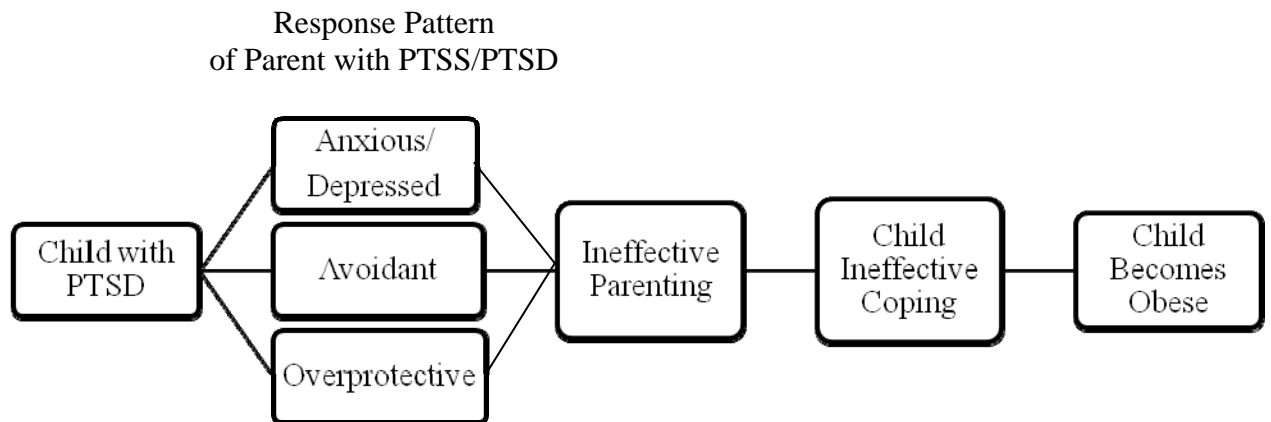


Figure 1. The Parent PTSS-Child Obesity Model for explaining the obesity outcomes in children diagnosed with posttraumatic stress disorder.

Child with PTSD. The model starts with the child who develops symptoms following a trauma which results in a diagnosis of PTSD.

Parent response pattern. The parent response patterns are not conceptualized to create differential types of ineffective parenting. Research in this area is limited. While the patterns are supported the impact on the parenting has not been determined in relation to all three patterns. The Avoidant parental response pattern is supported by four studies (Best, et al., 2001; de Vries et al., 1999; Ostrowski et al., 2007; Scheeringa & Zeanah, 2001). Parents may respond by avoiding any reminders of the event (such as people, places, or things), and thus avoid any follow-up therapeutic recommendations or ignore symptoms the child might be having. The Anxious/Depressed parental response pattern is supported by three studies (Best et al., 2001; Lewin & Bergin, 2001; Scheeringa & Zeanah, 2001). A parent who becomes depressed or has increased anxiety due to the

traumatic event may have decreased energy, ineffective communication with other family members, become less available (both physically and emotionally) to the child, and provide an unstable environment by decreasing routines and structure. The Overprotective parental response pattern is supported by four studies (McFarlane, 1987; Pelcovitz et al., 1998; Rizzone et al., 1994; Sheeringa & Zeanah, 2001). A parent who is overly protective often has increased stress, often from feelings of guilt for not being able to protect the children from the traumatic event. Parents may stay awake at night worrying about their children, insist on knowing where their children are at all times, provide an overly structured and chaotic environment, or consciously or unconsciously limit the amount of independence the children have for fear the trauma may happen again.

Ineffective parenting. Although the three parent response patterns are distinct in their symptoms, the responses that result are not exclusive to a particular pattern. Taking the categories provided by Patterson's Social Interaction Model, the key areas where the support may be ineffective would be in skill encouragement, limit setting, monitoring, problem solving, and positive involvement. For example, a parent who is avoidant and/or depressed may become withdrawn with ineffective monitoring, limit setting and decreases in positive involvement. An anxious/depressed or avoidant response pattern may result in a household having a lack of rules, structure, or limits for children and evidencing decreased positive involvement and/or ineffective monitoring, producing a more chaotic and unsafe environment. When a child reenacts or plays out a trauma that has occurred, a parent may avoid the situation or change the child's focus to another activity, which are evidence of failure to promote problem solving and a lack of positive

involvement. Parents may also avoid taking their child to a therapist or going to a therapist themselves because they do not want remember the trauma that occurred. In extreme cases, a parent may avoid interaction with the child because it causes flashbacks. When flashbacks or situations related to the trauma cannot be avoided, a parent can experience increased stress and anxiety, possibly displaying negative emotions or aggression around the child.

A parent with PTSS or PTSD who exhibits any of these response patterns may also develop maladaptive coping skills that provide short-term relief, but may also increase the severity of the PTSD symptoms for the child. These maladaptive coping skills would, in effect, be modeling poor problem solving skills to their child.

Maladaptive coping may include drinking alcohol, smoking, becoming sedentary, overeating, or eating unhealthy “comfort foods.” Parents may not want to play outside with their children, but instead may tell them to play a video game or watch a movie on their own. Food may be used by parents to cope with their PTSS/PTSD and can result in disordered eating patterns including binge eating and using food to assist in the regulation of their emotions. Parents may also not want to cook meals, and will instead buy fast food for dinner. These maladaptive coping strategies influence the child’s choice of coping strategies and lifestyle choices.

Child ineffective coping. Based on the aforementioned articles that support this project’s three patterns of parental response, children will also experience negative outcomes and develop maladaptive coping skills in combination with their parents’ reactions. Maladaptive coping skills, such as playing video games incessantly, living a sedentary lifestyle, and/or overeating may develop in the place of more positive skills

when faced with a traumatic reminder. Parent behaviors such as avoidance, a depressed affect, and increased stress may be passed down to the child. For example, because the parent may avoid any associations with the trauma, the child may avoid them as well. When given the opportunity to talk about the trauma in a healthy environment, the child may not know how or may not want to talk at all. The act of talking about the trauma is an important aspect of learning to handle the trauma. Living in an unstructured, chaotic household may decrease the likelihood of the child receiving adequate nutrition or being given clear boundaries when it comes to safety or eating behaviors. A child with an overprotective parent experiences constant monitoring and rigid limits and may experience increased stress. They may also develop the maladaptive coping skills that are modeled by the parent. When the child sees the parents' maladaptive coping skills on a daily basis, the child may then exhibit the same coping skills, such as becoming sedentary or overeating.

Child becomes obese. Based on this project's review of the literature, it is plausible to assume that children and adolescents can develop ineffective coping strategies due to the increased stress created by ineffective parenting or ineffective parent support. The ineffective parenting can serve to exacerbate, complicate and/or impede the child's adjustment and/or recovery. Ineffective coping includes developing negative eating habits from parent modeling and/or heightened stress, overeating, binge eating, disordered eating patterns or utilizing sedentary activities to deal with symptoms (depression, low self-esteem, loss of energy, etc.). These effects increase the risk of the child or adolescent in becoming overweight or obese.

Discussion

The purpose of this project was to develop a model to explain the outcome of obesity in children with PTSD as mediated by the parental support provided after a traumatic event. The literature reviewed supports a relational perspective for viewing child outcomes from trauma. When the relational perspective is applied to parents who themselves are experiencing PTSS, three parent response patterns were supported. These response patterns detrimentally impact the parent's ability to provide an environment that is safe, predictable and responsive. Therefore, the parent experiencing PTSS/PTSD will evidence less effective parenting. Thus, the child's environment will be more stressful, which serves to increase the child's symptomology and promotes ineffective coping skills resulting in obesity. It is the secondary trauma attributed to the ineffective parenting that is thought to increase the development of maladaptive coping skills and likelihood of obesity in the child. The intent of this model is to explain this one possible variable (parent PTSD/PTSS) as the link between childhood PTSD and obesity.

Stein and Heikkinen's (2009) overview of models and their evaluation in developmental psychology provides a framework to evaluate the Parental PTSS-Child Obesity model. Criteria proposed by Stein and Heikkinen's (2009) included *theoretical* (value of speculation or hypothesis) and *practical* (value to research) aspects, *utility* (functional fit), *security* (coherence and type of evidence supported), and *uberty* (suggestiveness). Regarding *theoretical* aspects, the proposed model is driven and supported by established research. However, the model is limited due to the fact that parenting support as a mediating variable between PTSD and childhood obesity has never been proposed or researched. Further, this model is based on correlational studies which

do not provide strong evidence because of relatively weak research design. If one considers research design to exist on a continuum from observations and anecdotes to studies using random assignment to treatment and control groups, the correlational studies are on the weaker end of the continuum. Therefore, the model does not have a great deal of *security*. However, evidence in the area of developmental psychopathology is limited due to the obvious ethical constraints. Correlational studies are reasonable given the nature of this area of research. The model's *uberty* is minimal as well, as the model serves to explain only one situation where childhood obesity is a likely outcome. As parental PTSS is a newer line of investigation, there may be other variables associated with obesity outcomes for children with a history of trauma (i.e., multiple traumas). However, the *utility* of this model is valuable due to the fact that it provides a possible fit for existing studies and accounts for the development of obesity in children who experience PTSD, therefore stimulating research in new areas in a *practical* aspect. The model also serves to highlight relational PTSD and reminds researchers that this is an important area to consider.

Stein and Heikkinen (2009) note that one index of a good model is to stimulate research in new areas. This model provides the basis for stimulating research. In that there are existing instruments to assess each component of the model, further study is not inhibited by lack of adequate measurement. For example, the National Center for PTSD has recommended the Clinician-Administered PTSD Scale (CAPS; Blake et al., 1995), the Clinician-Administered PTSD Scale for Children and Adolescents (CAPS-CA; Nader et al., 1996), and Impact of Events Scale-Revised (IES-R; Weiss & Marmar, 1997) for parent and child. Each of these measures has been used in prior studies of PTSD, which

may aid in making comparisons between studies. To enable normative symptomology comparisons, the Millon Clinical Multiaxial Inventory-III (MCMI-III; Millon, Millon, Davis, & Grossman, 2009) or the Millon Adolescent Clinical Inventory (MACI; Millon, Millon, & Davis, 1993) would be appropriate. These may also be used to differentiate between the parental response patterns.

This model proposes that the parental response pattern alters parenting. There is very limited research in areas of child PTSD impact on ineffective parenting practices (Gewirtz et al., 2008). However, increased corporal punishment and decreased routines have been noted in families post trauma (Kiser et al., 2010; Lauterbach et al., 2007). This model suggests the use of Patterson's SIL model (2005) as providing important areas of parenting to study. One important parenting practice is routines, which might be assessed with the Child Routines Inventory (CRI; Sytsma, Kelley, & Wymer, 2001) and the Family Time and Routines Index (FTRI; McCubbin, McCubbin, & Thompson, 1996). An assessment of the child's perception of parenting would also contribute to the understanding the impact of the parenting practices (Perceptions of Parenting Scale [POPS]; Grolnick, Ryan, & Deci, 1991) and coping styles (Coping Responses Inventory for Stress [CRIS]; Matheny, Aycock, Curlette & Junker, 1993). All these measures are psychometrically reliable and valid, and represent readily available tools to investigate the Parent PTSS – Child Obesity model.

Another important byproduct of theories is the development of interventions. Currently, an intervention is being implemented and is designed to focus on a relational approach by intervening with parents in the area of effective parenting strategies after an environmental trauma. This intervention is evidencing preliminary data showing

decreases in child symptomology (Gewirtz et al., 2008). The Parent PTSS-Childhood Obesity model promotes the importance of intervening at the parenting practices level in the aftermath of a trauma. Gewirtz et al. (2008) noted that improving parenting practices post trauma has a positive impact on the biological and psychosocial aspects of the child's life. The Parental PTSS-Child Obesity model utilizes parenting practices as the operational definition of parenting support. Consequently, this model suggests that parenting practices are an important area of possible intervention.

The Parental PTSS-Child Obesity model assumes that each of the patterns of parent response is equally detrimental. However, further research is needed to determine if this assumption is correct. Different response patterns may produce differential impact on level or type of ineffective parent support or parenting practices.

Although this model looks at one possible variable (maladaptive parental response) producing secondary trauma to explain obesity in children diagnosed with PTSD, there are other variables that contribute to the onset of obesity. For example, socioeconomic status (Strauss & Knight, 1999), genetics (Reilly et al., 2005; Strauss & Knight, 1999; Whitaker et al., 1997) and sedentary lifestyle (Alvarez et al., 2007; Horton, 2008) have been found to have an association with obesity. These areas should be considered as variables when testing the model in future research. The child's response to the ineffective parenting is another area for future investigation.

Future research employing a longitudinal approach which follows children who have experienced ongoing PTSD symptoms and their parents would be desirable. A longitudinal study would provide opportunities for investigating differences between parenting practices of parents with and without PTSS and eliminate problems with

retrospective supports. In doing this, researchers can provide positive interventions and support to parents whose children experience a trauma.

A limitation of this project is the limited populations studied in the area of parental PTSS which impacts the security evaluation of this model. A security evaluation is based on the adequacy of the research supporting the model. Studies focusing on parental PTSS/PTSD in traumas associated with natural disasters, physical abuse, and living in war zones are limited. Most of the studies conducted on PTSS were within context of hospital settings (Best et al., 2001; Ostrowski et al., 2007; Rizzone et al., 1994; Winston et al., 2002) and involved children who were cancer patients and children involved in vehicle accidents. Only one study looked at the PTSS of mothers whose children were sexually abused (Lewin & Bergin, 2001). Another limitation derives from the lack control groups in the reviewed studies. Controls groups increase the quality of the research design and confidence in any findings and would be beneficial to determine differential determinants of parental PTSS/PTSD. For example, would the stress levels and PTSS be any different for parents whose children were in a motor vehicle accident versus parents whose child had a sudden asthma attack? Based on current evidence, it is hard to know whether the negative effects of PTSS are more common in specific types of trauma or in specific individuals. This lack of knowledge impacts the generalizability of the model to other areas of trauma (e.g., physical abuse, natural disasters, living in war zones, etc.). However, there are, unfortunately, many traumatic events that may provide the opportunity to explore further the impact of parental PTSS in other settings and types of trauma.

Other areas needing investigation include moderating variables such as the gender and age of the child, gender and age of the parent, the age at which the trauma was experienced, the severity of the trauma, and/or the type of trauma. For example, this model does not look at the number of traumatic events or the severity of the trauma experienced by the child. According to Felitti et al. (2008) adults who experienced four or more adverse experiences (such as psychological, sexual, or physical abuse) as a child had an increased chance of developing severe obesity. Furthermore, it would be interesting to see whether a specific type of abuse or trauma elicited more or less negative effects in both childhood and adulthood. Obesity outcomes in sexual abuse have not been noted consistently in both genders.

In conclusion, this review provides support for the need to extend research in the area of childhood PTSD and obesity. Little research was noted in the area of relational PTSD and its impact on parenting practices as a mediator of the child's symptomology. In addition, little research has focused on relational PTSD and parental response patterns. However, the literature consistently indicates that the poorer the parent adjustment, the poorer the child adjustment after trauma. The strength of this model is that it will hopefully promote research. It is a reasonable model in that it creates a conceptual fit of the existing empirical evidence. However, this is not a global model, but a model that looks at only one possible outcome for relational PTSD and conceptualizes only one risk factor for childhood obesity. However, the Parental PTSS-Child Obesity model focuses attention on the areas of parent PTSS/PTSD and the importance of examining parenting practices in the aftermath of a trauma.

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