A Cognitive Model to Explain Gender Differences in Rate of PTSD Diagnosis

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Posttraumatic stress disorder (PTSD) is an anxiety disorder that has been estimated to affect between 15% and 24% of individuals who are exposed to traumatic events (e.g., Breslau, Kessler, Chilcoat, Schultz, Davis, & Andreski, 1998). It is significant that (a) not all individuals exposed to traumatic events develop PTSD symptoms and (b) women are twice as likely as men to develop PTSD. Other factors play a role in the development of this disorder. In this conceptual article, we outline the problem of PTSD and, using a cognitive model, explain PTSD causal factors with a particular emphasis on the greater risk of women for developing PTSD. [Brief Treatment and Crisis Intervention 5:290–299 (2005)]

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Posttraumatic stress disorder (PTSD) is an anxiety disorder that has been estimated to affect between 15% and 24% of individuals who are exposed to traumatic events (Breslau et al., 1998). In studies of this debilitating condition, findings have consistently demonstrated that women were twice as likely as men to develop PTSD, regardless of the type of traumatic event experienced. What is interesting about both PTSD and women’s greater risk for developing it is that not everyone who experiences a traumatic event develops PTSD symptoms (Ozer, Best, Lipsey, & Weiss, 2003). Therefore, something other than simply exposure to traumatic events must be happening. In this article, we first outline the problem of PTSD and then use a cognitive model to explain the causes of this disorder with a particular emphasis on the greater risk of PTSD among women.

Posttraumatic Stress Disorder

PTSD Diagnosis and Symptoms

PTSD is “a psychological reaction to experiencing an event that is outside the range of usual human experiences” (Barker, 1999, p. 369). Referred to as traumatic events, these experiences may include accidents, natural
disasters, man-made disasters, military combat, war, motor vehicle accidents, violent crime, rape, sexual assault, and/or any other unusually violent event that humans may experience. For PTSD to occur, an individual must have experienced the traumatic event in a way that involves “intense fear, helplessness or horror” (American Psychiatric Association, *Diagnostic and Statistical Manual of Mental Disorders*, 2000, p. 467). Symptoms include (a) reexperiencing the trauma (e.g., nightmares or intrusive thoughts), (b) avoidance and numbing (e.g., memory loss or feeling unable to love), and (c) increased arousal (e.g., difficulty sleeping or hypervigilance) (*DSM-IV-TR*, 2000).

Fundamental features of PTSD include the following: (a) the symptoms are linked to the traumatic event and are not random, (b) the symptoms were not present prior to the traumatic event, and (c) the symptoms are present 1 month or later than completion of the traumatic event (*DSM-IV-TR*, 2000). PTSD is the diagnosis when these features characterize an individual.

**PTSD Prevalence in the General Population**

The prevalence of PTSD observed in western countries is astonishing. As noted earlier, it has been estimated that between 15% and 24% of individuals who are exposed to traumatic events will develop PTSD. The percentage of individuals who develop PTSD symptoms becomes most striking in light of the statistic that the lifetime prevalence of exposure to traumatic events is greater than 50% (60.7% for men and 51.2% for women, Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995). Disparities between the rate of exposure to traumatic events and the rate of PTSD development indicate that factors other than mere exposure to traumatic events are active in the development of PTSD. What factors influence the likelihood that trauma exposure will result in PTSD? As noted above, the results of empirical research indicate that women are more likely than men to develop PTSD symptoms and consequently become diagnosed. A second set of factors that appear to be operative is the way that people cognitively process traumatic events.

**PTSD Prevalence in the Female Population**

Even though men are more likely to be exposed to traumatic events, women are consistently shown to develop PTSD at a rate twice that of men, regardless of population studied or traumatic incident experienced. Studies that described total lifetime prevalence (e.g., Kessler et al., 1995: 10% vs. 5%), conditional lifetime prevalence (e.g., Breslau et al., 1998: 13% vs. 6%), total current prevalence (e.g., Stein, Walker, Hazen, & Forde, 1997: 3% vs. 1%), or conditional current prevalence (e.g., Norris, 1992: 12% vs. 6%) consistently demonstrated significant gender differences. Comparatively, the greater likelihood of PTSD among women has been found in studies that explored (a) the type of traumatic event experienced (e.g., North et al., 1999, 45% vs. 23%), (b) the cultural background of the subjects (e.g., Norris, Perilla, Ibanez, & Murphy, 2001, 44% vs. 14%), and/or (c) the age of the subjects (e.g., Kessler et al., 1995, 10.3% vs. 2.8% for cohort age 15–24, 11.2% vs. 5.6% for cohort age 25–34, 10.6% vs. 5.0% for cohort age 35–44, and 8.9% vs. 7.6% for cohort age 45–54).

**A Cognitive Model**

PTSD risk factor research indicates that the individual’s subjective experience during traumatic events plays a significant role in differentiating between those who develop PTSD and those who do not (e.g., Brewin, Andrews, & Valentine, 2000). The way individuals cognitively process these experiences is a part of this subjective experience. A cognitive model may
be employed to help explain differences in these subjective experiences.

**Cognitive Functioning**

To lay the foundation for a theoretical explanation of PTSD development, cognitive functioning must first be addressed. During any given traumatic event, cognitive functions are activated where the content of cognition (i.e., what the person thinks, believes, values, and has recorded in memory), the process of cognition (i.e., attention, interpretation, encoding, cognitive elaboration, and retrieval), and the structure of cognition (i.e., cognitive networks, associative linkages, and stored memory into which the event is internalized) work together to transform the event into the person’s subjective meaning (Granvold, 1995).

Schematic factors have a significant impact on the meaning-making process. Schemas “are relatively enduring internal structures of stored generic or prototypical features of stimuli, ideas, or experiences that are used to organize new information in a meaningful way thereby determining how phenomena are perceived and conceptualized” (Clark & Beck, 1999, p. 79). Beck and his colleagues have identified schemas in the etiology and treatment of a variety of disorders, including depression, anxiety disorders, and personality disorders (Beck, 1976; Beck, Rush, Shaw, & Emery, 1979; Beck, Freeman, & Associates, 1990). Young developed a schema model in which he described and categorized early maladaptive schemas, unconditional beliefs about self that form early in life, and delineated the ways they function in human disturbance (Young, 1990; Young, Klosko, & Weishaar, 2003). Guidano and Liotti (1983) conceptualized schematic functioning as deep structure “tacit self-knowledge that has been progressively elaborated during the course of development” (p. 66). These deep meaning structures define self in relation to others and the environment. Guidano (1991) elucidated the meaning of self-referent ordering as underlying “the ontological process of psychological and existential individuation” (pp. 16–17). Although schemas are triggered under various stimulus conditions, trauma is powerful in activating schematic functioning.

Information processing, another cognitive function, may result in meaning distortion. Processing involves functions such as perception, selection, concentration, recall, coding, reasoning, decision making, and impulse control. It is highly relevant that these processing functions become disrupted when the individual is under extreme stress (Beck, 1993).

The consequences are that the individual is highly vulnerable to cognitive distortions, the activation thresholds of dysfunctional schemata become lowered significantly, voluntary control processes become impaired, and the individual becomes hypervigilant and hypersensitive to “threatening” stimuli. This erosion in cognitive functioning leaves the individual vulnerable to extreme emotional responses and the activation of uncharacteristic or dysfunctional behavior (Granvold, 2000, p. 374).

In their work with individuals exposed to trauma, Tolin and Foa (2002) have identified that adaptive cognitive processing acts to buffer trauma victims from extreme negative consequences, whereas maladaptive cognitive processing increases the individual’s vulnerability to develop PTSD symptoms. The process of cognition therefore plays a significant role in differentiating between individuals who develop PTSD following exposure to a traumatic event and those who do not.

**Pretrauma Schemas**

As noted above, pretrauma schemas contribute to individuals’ meaning making during traumatic...
events. When processing events, humans draw on schemas to make sense of what is going on and then incorporate the new information into their existing network of schemas (Nurius & Berlin, 1995). The concept of schemas is helpful in conceptualizing what happens to people when they experience trauma. People who experience traumatic events draw on their pretrauma schemas to process through their experience. When confronted with trauma, self-schemas reflecting strong coping abilities, resiliency, trust in others and the environment, and self-efficacy are likely to have a significant positive influence on the individual’s meaning making, peritrauma responses, posttrauma emotional activation and bodily sensations, and posttrauma recovery. Maladaptive self-schemas that comprise qualities such as intense fear, incompetence, unworthiness, vulnerability, and weakness are far more likely to negatively impact the trauma victim or survivor. Schematic functioning, then, can function as an asset protecting the individual from developing PTSD or as a liability contributing to the development of PTSD.

Peritraumatic Experiences

Many researchers have found that peritraumatic experiences (what happens during the trauma) have a significant effect on the development of PTSD (e.g., Brewin et al., 2000; Ozer et al., 2003). These experiences include the severity of the traumatic event (e.g., Ozer et al., 2003) and peritraumatic dissociation (Brewin et al., 2000). Many trauma victims report experiencing dissociation. Dissociation is a defense mechanism where the individual has “psychophysiological reactions to stress by voluntarily or involuntarily changing one’s functions and focus of consciousness, memory, identity, or perception of the environment” (Barker, 1999, p. 135). Symptoms of dissociation may include numbing, detachment, depersonalization, de-realization, the absence of emotional responsiveness, and a decreased awareness of one’s surroundings (Barker, 1999). Risk factor research indicates that dissociation is the largest predictor of PTSD symptoms (e.g., Brewin et al., 2000; Ozer et al., 2003). Those who dissociate have a significantly greater likelihood of PTSD development than those who do not.

Peritraumatic experiences affect the individual’s memory record. “Trauma memory records consist of the memory of the trauma itself and the person’s beliefs about the trauma” (Tolin & Foa, 2002, p. 81). All these factors may influence recovery from the trauma. In general, the more stressful the individual perceives the event to be, the greater its effects on emotions and behavior (Baum, 1970). Additionally, Foa and Rothenbaum (1998) suggested that trauma memories may differ from other fear structures in two ways. First, the perception that the world is dangerous causes both physiological (e.g., increased heart rate) and behavioral (e.g., flight response) reactions. Second, trauma memory often includes the individual’s response to the trauma (e.g., freezing and screaming). “Trauma victims who develop PTSD seem to interpret their responses during the trauma in a negative manner; this subsequently interferes with recovery from the trauma” (Foa & Rothenbaum, 1998, p. 82). It appears that the perception of limited self-efficacy (Bandura, 1977, 1997) during the trauma exposure may contribute to a lack of self-efficacy and corresponding reduction in the activation of posttrauma coping strategies. Higher rates of psychopathology are found in trauma survivors who demonstrate self-blame (e.g., Frazier & Schauben, 1994), and other internal attributions for the traumatic event (e.g., Joseph, Brewin, Yule, & Williams, 1991, 1993). Empirical findings indicate that the cognitive factors of mental defeat, mental confusion, negative appraisal of emotions, and
negative appraisal of symptoms affect the nature of the traumatic memory (e.g., Dunmore, Clark, & Ehlers, 1999). Additionally, feelings of empowerment over one’s situation (Delahanty et al., 1997) and feeling that one gained something positive from experiencing the event are often associated with positive recovery (Basoglu et al., 1997; Sledge, Boydstun, & Rabe, 1980). For example, 61.1% of Air Force aviators captured and tortured by the North Vietnamese said that they benefited from their ordeals (Sledge et al., 1980), with the level of brutality experienced being positively correlated with subjective reports of personal growth. Delahanty et al. (1997) found that survivors of motor vehicle accidents who consider themselves responsible for the accident have lower PTSD rates than survivors who blame others for the accident. Trauma research findings have concluded that the trauma memory record is a subjective factor that plays a substantial role in the posttrauma recovery process.

**Posttrauma Reactions**

Much of the research into PTSD risk factors shows that social support and life stress following exposure to traumatic events explain some of the variance in PTSD diagnosis (e.g., Brewin et al., 2000; Ozer et al., 2003). Both social support and life stress play a role in the individual’s ability to (a) process through the experience (i.e., go through expected non-pathologic reactions to traumatic events) and (b) resume daily functions. Interestingly, negative social interactions have been found to have strong negative effects on victim adjustment, whereas positive reactions from others have little impact on the survivor (Davis, Brickman, & Backer, 1991; Ullman, 1995). The process of integrating the traumatic event into the schematic structure can be impeded by events following the traumatic experience, therefore causing the schematic structure of the event to be negative. Life stress may, in effect, consume the individual’s coping and adaptation resources leaving him or her vulnerable to PTSD.

**Emotional Processing Theory**

To explain why some people develop PTSD following exposure to traumatic events and others do not, Foa and her colleagues advanced a cognitive model they refer to as an Emotional Processing Theory (e.g., Foa & Kozak, 1986; Foa & Riggs, 1993; Foa & Rothenbaum, 1998; Tolin & Foa, 2002). Emotional Processing Theory is built on four core propositions:

1. “PTSD is a form of pathological fear” (Tolin & Foa, 2002, p. 77).
2. “All fear is a memory-based ‘program’ for escaping danger” (Tolin & Foa, 2002, p. 77).
3. “The fear program can be construed as a cognitive ‘structure’ consisting of interconnecting cognitive representations” (Tolin & Foa, 2002, p. 77), which include information about (a) the fear stimulus, (b) verbal, physiological, and overt behavioral responses, and (c) interpretive information about the meaning.
4. The fear structures of those who develop PTSD are different from those who do not develop PTSD (Tolin & Foa, 2002).

These four propositions provide a better understanding about PTSD development.

**Pathological Fear**

One of the basic assertions of the Emotional Processing Theory is that PTSD is a form of pathological fear. According to this model, PTSD is structurally similar to other phobias.
Pathological fear implies structures that contain (a) unrealistic stimulus associations or associations that do not accurately represent the world, (b) erroneous stimulus meaning associations, (c) erroneous associations between harmless stimuli and escape or avoidance responses, and (d) fear structures that are disruptively intense (Tolin & Foa, 2002). This conceptualization provides an understanding of the variability in the development of PTSD among those similarly exposed to traumatic stimuli.

Differences Between Men and Women

To determine why women develop PTSD at a rate greater than men, two basic questions must be addressed. First, do women experience more frequent and/or more severe types of trauma than do men? Second, do women and men demonstrate cognitive differences when confronted with traumatic events and in posttrauma functioning?

Differences in Frequency and Types of Trauma

The results of several surveys of lifetime exposure to traumatic events indicate that men (a) are more likely to be exposed to traumatic events than women (e.g., Kessler et al., 1995, 60.7% for men and 51.2% for women; Stein et al., 1997, 81% of men and 74% of women) and (b) more likely to report exposure to multiple traumatic events than women (e.g., Stein et al., 1997, 55% of men and 46% of women). Breslau et al. (1998) found that men reported an average of 5.5 distinct traumatic events and women reported an average of 4.3. Additionally, in populations where there was no difference in the amount of trauma experienced by men and women, women both (a) indicated PTSD-type symptoms more frequently than did men and (b) were diagnosed with PTSD more often than men (Breslau & Davis, 1992).

Although research findings indicate that males and females experience different types of trauma (e.g., Tolin & Foa, 2002), this factor does not account for the differential rates of PTSD development between genders. It has been shown repeatedly that victims of intimately intrusive violence develop PTSD at higher rates than those who are exposed to less intrusive violence (e.g., Breslau et al., 1998; Kilpatrick et al., 2003; Nishith, Mechnaic, & Resick, 2000). Also, women are more likely to experience sexual forms of assault such as rape or childhood sexual abuse, and men are more likely to experience traumas such as combat, motor vehicle accidents, and nonsexual assaults (e.g., Breslau et al., 1998; Tolin & Foa, 2002). From these two findings, it is logical to make the argument that women are at greater risk for PTSD as a result of the type of trauma they experience. However, if women’s greater risk for sexual violence is the primary reason for the fact that women are more likely to develop PTSD, then gender differences should be minimal in studies where men and women experience the same type of trauma, like disaster studies. Empirical findings, however, indicate that this is simply not the case (e.g., North et al., 1999). Research of differential rates of PTSD diagnosis and PTSD symptoms indicates that women continue to develop symptoms at a rate twice that of men in studies of natural disasters (e.g., Shore, Tatum, & Vollmer, 1986, 21% of high-exposure females and 6% of low-exposure females developed PTSD, whereas 11% of high-exposure males and 3% of low-exposure males developed PTSD). Likewise, differences by gender were sustained when type of trauma experienced was controlled through the grouping of respondents into risk sets based on specific trauma types (Breslau et al., 1998). Therefore, the likelihood that women develop PTSD because of differences in the amount and
type of trauma experienced is not supported. Other explanations must be explored to account for the differences.

**Gender Differences in the Cognitive Process**

Having resolved that the increased rates of PTSD development for women are not simply a function of differences in the amount or type of trauma exposure, the causal explanations for PTSD symptom development and diagnosis may be the consequence of differences in cognitive functioning. The following exploration will address two distinct aspects of cognitive functioning: (a) trauma memory records and (b) self-schemas and world schemas. Analysis of the differences in these two types of memory patterns may account for differences in rates of PTSD development between women and men.

**Trauma Memory Record.** The trauma memory record contains the individual’s thoughts, beliefs, and appraisals about the traumatic event. Studying differences in the trauma memory records between women and men may begin to explain the increased prevalence of PTSD in women following traumatic events. Although research in this area is preliminary, findings from numerous studies indicate that males report lower feelings of fear than women in similar traumatic events (e.g., motor vehicle accidents: Ehlers, Maayou, & Bryant, 1998; child sexual assault: Rind, Tromovitch, & Bauserman, 1998). Additionally, preliminary research findings indicate that women are more likely than men to blame themselves for the traumatic event (e.g., Foa, Ehlers, Clark, Tolin, & Orsillo, 1999). These preliminary findings indicate that women and men may differ in their memory of the traumatic experience. However, more research is needed to support these ideas. Hence, women’s subjective emotive experience and their attributions of responsibility for the trauma may significantly influence both the evidence of PTSD symptoms and their posttrauma recovery.

**Schemas.** In addition to differing trauma memory records, some early evidence indicates that women and men have different self-schemas and world schemas following exposure to similar traumatic events. Tolin and Foa (2002) studied self-schemas and world schemas of male and female trauma survivors. Their research findings indicated that female trauma survivors are more likely than male trauma survivors to view the world as dangerous, are more likely to blame themselves for the trauma, and are more likely to hold more negative views of themselves than men (Tolin & Foa, 2002). For example, women are more likely to indicate that they are “weak” and “can’t be trusted” than men (Foa et al., 1999). Findings that women have more negative self-schemas and world schemas are consistent with the increased diagnosis of PTSD in women and the prognosis of a longer length of pathology in women (Breslau et al., 1998). These findings offer only explanation of what is going on and not why the two genders differ in their cognitive interpretations. Furthermore, the findings do not address differences in specific PTSD symptoms.

**Gender Socialization.** Although individual differences are significant, it is well established that men and women are exposed to profoundly different socialization experiences (Saxe & Wolfe, 1999). Gender Schema Theory proposes that, “children develop (and adults retain) a gender schema that predisposes them to view the world from a gender perspective, even in situations where gender has no relevance” (Harrison, 1995, p. 1422). To date, this is untested in the area of gender links to PTSD development. However, it is likely that the differences in gender socialization play a significant role in the development of
pretrauma schemas, which, in turn, play a role in how people process and recover from trauma (Krause, DeRosa, & Roth, 2002). For example, studies of female rape victims illuminate the impact of gender identity on women’s attempts to make sense of the traumatic experience during the recovery process (Lebowitz & Roth, 1994). An understanding of the differences in individual response to trauma can be ascertained from pretrauma gender socialization.

**Conclusion**

More research is needed to address questions related to why women develop PTSD at a significantly greater rate than men. Current literature does not support the idea that these differences are a result of women and men experiencing different levels or types of trauma. Therefore, other factors appear to be accountable for the differences. Preliminary research indicates that differences in trauma memory records and both self-schemas and world schemas may be accountable factors. However, the research to date has only begun to address the level of complexity posed by this problem. Further research into specific differences in cognitive functioning between those who develop PTSD and posttrauma survivors may generate significant insights into PTSD treatment and prevention.

**References**


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