



## Sex differences in recovery from PTSD in male and female interpersonal assault survivors



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### ABSTRACT

Men and women differ in exposure to trauma and the development of posttraumatic stress disorder (PTSD); however, research regarding sex differences in recovery from PTSD has been sparse. This study evaluated the treatment response trajectory for 69 male and female interpersonal assault survivors, using a modified Cognitive Processing Therapy (CPT) protocol that allowed survivors to receive up to 18 sessions of CPT, with treatment end determined by therapy progress. Few sex differences were observed in trauma history, baseline PTSD and depressive severity, Axis I comorbidity, anger, guilt and dissociation. Women did report more sexual assault in adulthood and elevated baseline guilt cognitions, whereas men reported more baseline anger directed inward. Attrition and total number of sessions did not differ by sex. Over the course of treatment and follow-up, men and women demonstrated similar rates of change in PTSD and depressive symptoms. However, medium effect sizes on both of these primary outcomes at the 3-month follow-up assessment favored women. Several differences in the slope of change emerged on secondary outcomes such that women evidenced more rapid gains on global guilt, guilt cognitions, anger/irritability, and dissociation. Results suggest that male survivors may warrant additional attention to address these important clinical correlates.

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Epidemiologic study suggests that there are multiple sex differences in exposure to trauma as well as in the subsequent development of posttraumatic stress disorder (PTSD). In the general population, 60% of men experience a traumatic event during their lifetime compared to 50% of women (Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995). With the exception of rape and sexual assault, men are more likely than women to experience every type of trauma (Kessler et al., 1995). The development of psychopathology subsequent to traumatic exposure differs by sex as well (Tolin & Foa, 2006). For example, PTSD (the most common psychopathology developed in response to a traumatic event; Resick, 2001, p. 205) occurs disproportionately across the sexes such that women are twice as likely as men to develop the disorder (Breslau, Peterson, Poisson, Schultz, & Lucia, 2004; Kessler et al., 1995), and may be more likely to suffer a more chronic course of the disorder (Norris, Foster, & Weissnass, 2002). Meta-analytic study contributes to our understanding of sex differences in

exposure to trauma and the development of PTSD in concluding that although males report an overall higher frequency of exposure to traumatic events, females are exposed more frequently to sexual assault across their lifespan (Tolin & Foa, 2006). As sexual assault is the trauma associated with the highest rates of PTSD, the elevated exposure to this specific type of assault may, in part, explain the disproportionate prevalence rates of PTSD in women. However, meta-analytic study has also demonstrated that the increased risk for PTSD in women cannot solely be attributed to differences in exposure to sexual assault as these sex differences remain when the type of trauma is controlled. Tolin and Foa (2006) suggest additional variables of interest to help explain the sex differences in the development of PTSD, including specific aspects of the traumatic event itself and differences in important clinical correlates of PTSD.

We can conclude that women are at a higher risk than men for exposure to interpersonal violence and the development of PTSD. Far less is understood regarding potential sex differences in the recovery process once PTSD has developed. Interpersonal violence results in the highest rates of PTSD when compared to other types of trauma (Kessler, 2000); however, most of the interpersonal violence research specifically focuses on rape, including female samples almost exclusively (Blain, Galovski, & Robinson, 2010). As a result, there is very little information at all on the recovery of male survivors of sexual assault suffering from PTSD. So, although

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approximately 3%–12% of men experience a sexual assault in their lifetime (Fiebert & Osburn, 2001; National Institute of Justice, 1996; Porche, 2005), there is little empirical research assessing the generalizability of interventions for PTSD developed with female samples to their male counterparts. In fact, the extant treatment outcomes literature has been largely dichotomized by sex with the majority of all trauma studies focusing on either combat-related trauma (including primarily male samples or lacking statistical control for amount of combat exposure), or interpersonal physical assault and rape consisting primarily of female samples. Relatively fewer randomized clinical trials have included survivors of both sexes, even fewer have chosen to examine sex differences in either primary or secondary outcomes, and, to date, no study has been designed to specifically examine sex differences in recovery from PTSD (Blain et al., 2010).

Of those studies that have examined sex differences, the results have been mixed. While most studies show similar treatment outcomes with regards to PTSD symptomatology (e.g., Basoglu, Salcioglu, & Livanou, 2007; Basoglu, Salcioglu, Livanou, Kalender, & Acar, 2005; Blanchard et al., 2003), some mixed trauma type studies indicate that women may realize greater treatment gains (e.g., Karatzias et al., 2007; Tarrier, Sommerfield, Pilgrim, & Faragher, 2000). Similarly, when attrition was compared in these studies, drop-out rates were generally comparable across men and women (Basoglu et al., 2005; Blanchard et al., 2003; Konuk et al., 2006; Litz, Engel, Bryant, & Papa, 2007; Taylor et al., 2001) with some exceptions suggesting that males may be at higher risk to drop out of treatment prematurely (Lange, Rietdijk, et al., 2003; Sijbrandt et al., 2007). Further confounding this comparison, most studies that have found significant sex differences in improvement of PTSD symptomatology have used mixed trauma samples in which men and women may have experienced very different traumas. Therefore, it is difficult to determine whether the study results are due to true sex differences, or to the potential confounding effect of trauma type.

Several important sex differences have been documented in the clinical presentation of PTSD-positive individuals. Sex differences across a variety of comorbid disorders and clinical correlates of PTSD including depression, guilt, anger, and dissociation (Olf, Langeland, Draijer, & Gersons, 2007) have been identified. Upwards of 30–50% of individuals suffering with PTSD also exhibit clinically significant symptoms of depression (Blanchard, Buckley, Hickling, & Taylor, 1998; Kessler et al., 1995; Nixon, Resick, & Nishith, 2004), with women more likely to endorse depressive symptoms (Tolin & Foa, 2006). Elevated guilt is also associated with PTSD severity (Beck et al., 2011; Kletter, Weems, & Carrion, 2009) in trauma survivors. Galovski, Mott, Young-Xu, and Resick (2011) reported that male and female interpersonal assault survivors with PTSD experience guilt similarly, but self-blame cognitions which typically lead to feelings of guilt are elevated in women as compared to men (Tolin & Foa, 2006). Anger has also been identified as an important clinical correlate in PTSD-positive individuals (Olatunji, Ciesielski, & Tolin, 2010) and predicts both initial PTSD development (Meffert et al., 2008), and less successful treatment outcomes (Forbes et al., 2008). Sex differences in anger have emerged with men endorsing higher levels of anger compared to women (Castillo, Fallon, C'de Baca, Conforti, & Qualls, 2002). It is unclear, however, how the type of trauma experienced may affect this outcome as the Castillo study compared men who survived combat and suffered from PTSD to female survivors with sexual trauma-related PTSD. Anger has been shown to be higher in survivors of combat-related trauma, compared to other trauma types (Orth & Wieland, 2006). Thus, anger elevations observed in male combat samples may be better attributed to the type of trauma experienced as opposed to a true sex difference.

Finally, dissociation has also been identified as an associated feature of PTSD. Peritraumatic dissociation (dissociation that occurs during or immediately after the traumatic event) may be a risk factor for both the development of PTSD as well as for increased severity of PTSD symptomatology (e.g., Bremner & Brett, 1997; Dancu, Riggs, Hearst-Ikeda, Shoyer, & Foa, 1996). Women may be more likely than men to experience peritraumatic dissociation (Bryant & Harvey, 2003; Grieger, Fullerton, & Ursano, 2003) which may translate into increased risk for PTSD development and symptom severity (Bryant & Harvey, 2003; Fullerton et al., 2001). There is less information on sex differences in decreases in dissociation over the course of trauma-focused therapy.

## Current study

Men and women are clearly exposed to trauma differentially, develop psychopathology such as PTSD and depression at different rates, and present clinically with a host of PTSD concomitants such as guilt, anger and dissociation differentially. Far less is known about potential sex differences in treatment outcome, particularly in homogenous trauma samples of PTSD survivors. The current study was specifically designed to evaluate sex differences and, to our knowledge, represents the first study to implement an a priori design to test these differences in PTSD recovery. In an effort to reduce the possibility that sex differences may be attributable to multiple types of trauma found in mixed samples, the current study utilized a sample of treatment-seeking survivors of interpersonal violence (sexual and physical assault) only. First, the trauma histories of men and women were compared to assess similarities and differences across types of trauma (physical assault and sexual assault), onset of trauma (childhood and adulthood), and time since the traumatic event. It was hypothesized that men and women would describe similar overall trauma histories in this treatment-seeking sample. Next, in an effort to detect differences in initial clinical presentation, baseline PTSD severity, depressive severity, and the presence of comorbid Axis I disorders was compared across sexes. Finally, baseline differences across important clinical correlates such as guilt, anger, and dissociation were also compared. In accordance with the previous literature, we hypothesized that women would report elevated levels of depression and dissociation, while men would endorse more anger. We hypothesized that men and women would not differ significantly on overall PTSD severity and guilt.

This study then sought to assess differences in treatment retention, length of treatment necessary to reach study end state criteria, and rates of change across primary and secondary outcomes. Although findings regarding attrition rates have been mixed, we hypothesized that rates within our sample with a similar trauma history would be comparable. Considering the success of CPT in remediating PTSD and depressive symptoms in previous trials (Resick, Nishith, Weaver, Astin, & Feuer, 2002; Resick et al., 2008), it was hypothesized that CPT would be equally effective for male and female survivors of interpersonal trauma on these primary outcomes and that men and women would utilize a similar number of sessions to attain these outcomes. Finally, considering the scant literature suggesting that there may be sex differences in the experience of anger, guilt, and dissociation for men and women suffering from PTSD, we hypothesized that differences would emerge in the rate of change across these secondary outcomes.

## Method

### Participants and procedure

Sixty-nine participants (22 men and 47 women) sought outpatient trauma-focused therapy following an interpersonal assault.

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