

Self-referential Processing in Women with PTSD Related to Childhood Abuse: An fMRI Study

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Abstract

- Negative self-referential processing (SRP) and identity disturbance are not uncommon clinical outcomes in adults who were significantly maltreated as children. In this study a novel cognitive paradigm, akin to mirror viewing while experiencing negative versus positive thoughts, was developed to investigate verbal and visual self-referential processing disturbances in women with maltreatment-related Posttraumatic Stress Disorder (PTSD). Relative to women without PTSD, women with PTSD endorsed more negative and less positive trait-adjectives as self-descriptive, and experienced more negative and less positive affect in response to viewing pictures of themselves while listening to both negative and positive trait adjectives. In an fMRI study, women without PTSD demonstrated increased BOLD response within the perigenual region of the anterior cingulate cortex during self-referential processing while listening to positive trait adjectives relative to neutral words. Positively-valenced self-descriptiveness and affective response ratings predicted BOLD response within the right amygdala during self-referential processing within women with PTSD. The results of this study are currently *in press* in the journal *Psychological Trauma: Theory, Research, Practice & Policy*.

Background

- The nature of the ‘self’ and self-referential thought has been a central question in psychology since at least the time of William James (1890) and remains a subject of burgeoning interest within cognitive-affective neuroscience (e.g., Gillihan & Farrah, 2005; Legrand & Ruby, 2009; Northoff, Heinzl, de Greck, Bermpohl, Dobrowolny, & Panksepp, 2006; Schmitz & Johnson, 2007; van der Meer, Costafreda, Aleman, & David, 2010).
- Disturbances in self-referential processing (SRP) are associated with multiple forms of psychopathology including PTSD (e.g., Bryant & Guthrie, 2007; Foa, Ehlers, Clark, Tolin, & Orsillo, 1999). Research documents the effectiveness of directly addressing problems in negative SRP & associated difficulties within psychotherapy for PTSD (e.g. Bryant, Felmingham, Kemp, Das, Huges, Peduto, Williams, 2008; Cloitre, Koenen, Cohen, & Han, 2002).
- Investigation of the affective and neural correlates of SRP of verbal (trait words) and visual (photographs) stimuli may provide for a better understanding of trauma-related psychiatric disorders.
- The present study is the first to simultaneously investigate the phenomenology and functional neurobiology of abnormal verbal-and-visual SRP in individuals with PTSD.

Method

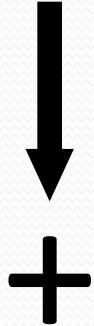
- Fifteen (15) women without PTSD completed the SRP-task while undergoing fMRI. Nine (9) women with PTSD also completed the task. Current chronic PTSD was diagnosed via the CAPS. To assess for history of childhood maltreatment, all participants also completed the CTQ.
- Prior to the SRP-task, participants rated how much each of a list of positive and negative words described how they thought about themselves. They then viewed a photograph of themselves in neutral expression (like a passport photo) while listening to the words. They rated afterward their positive/negative affective response to the SRP-task.
- In brief, the negative words related to concerns about being abandoned, rejected, disliked, damaged, degraded, disgusting, worthless, and inadequate. The positive adjectives included descriptions about being desirable, likeable/loveable, supported, having a sense of wholeness of identity, innocence, and inner beauty and value.

Visual & Verbal Self-Referential Processing Paradigm

Implicit Baseline

Words

No Words



Neutral / Positive / Negative

10 words were recited to participants through headphones

Emotion Rating Questions...

15 sec

15 sec

15 sec

57 sec

5 vol

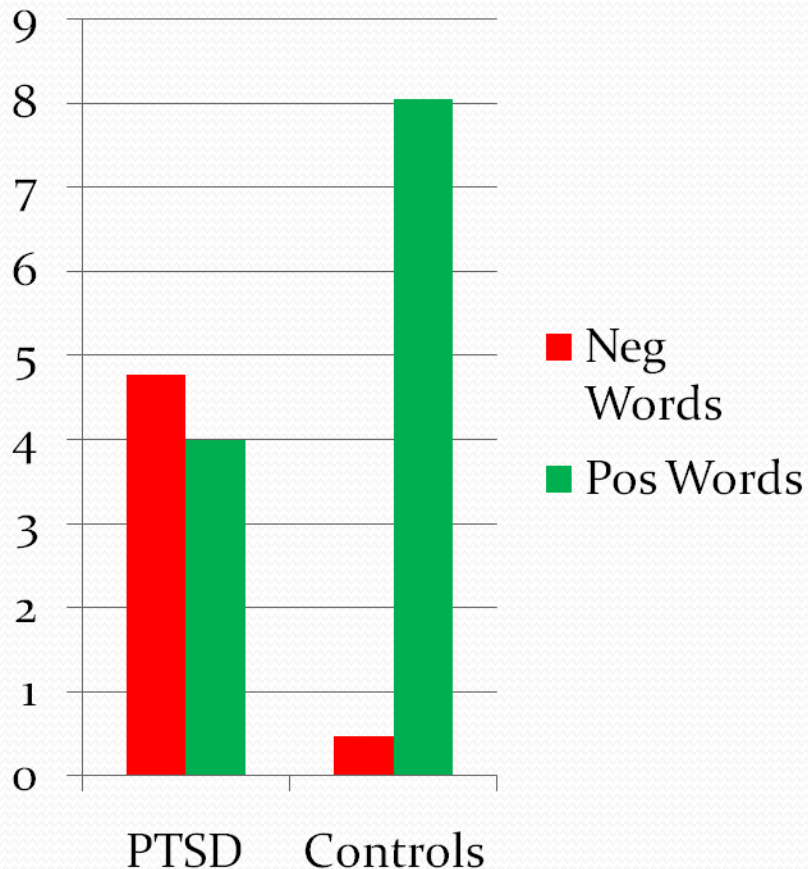
5 vol

5 vol

19 vol

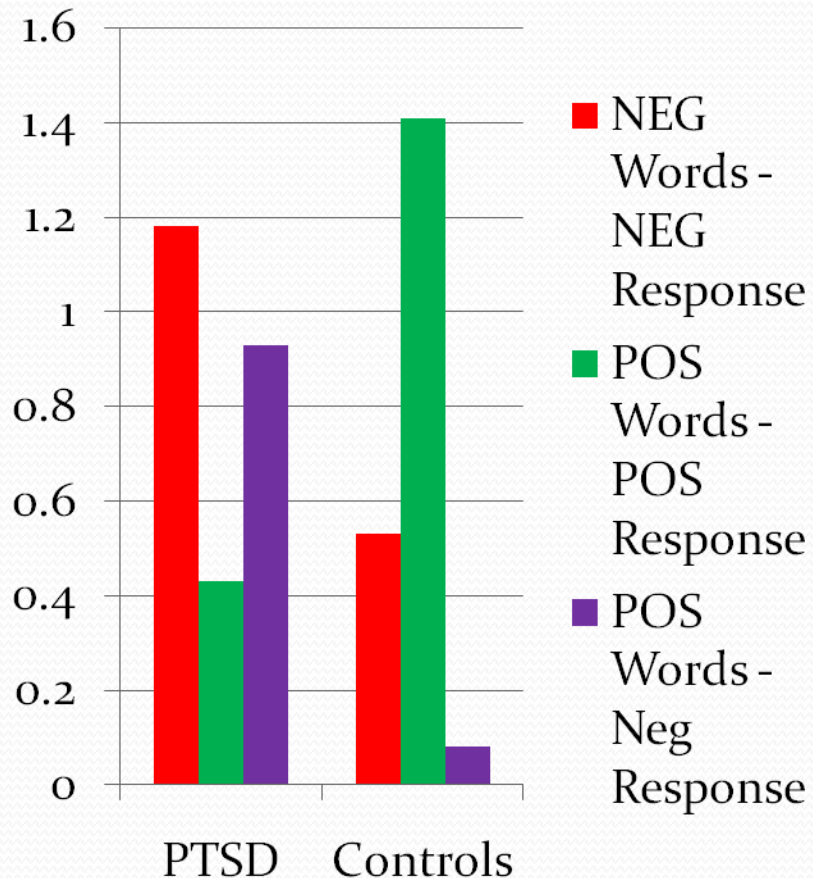
Participants viewed a picture of themselves (e.g., first author shown), while listening to blocked positive (e.g., Loved, Safe, Special) or negative (e.g., Rejected, Damaged, Disgrace) words. They then reported on their emotional response.

Self-Descriptiveness of Words



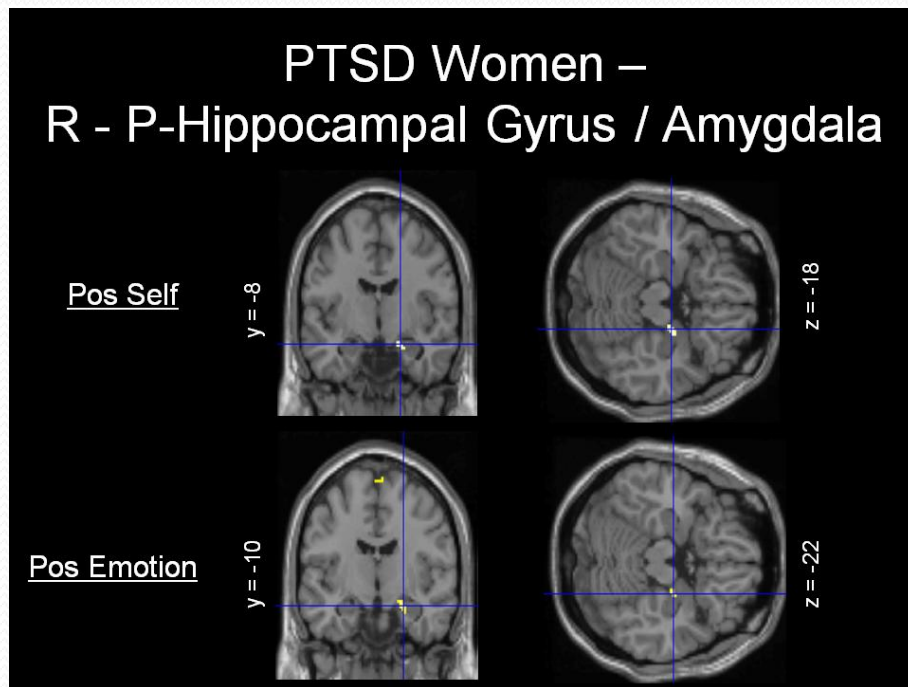
- Women with PTSD endorsed the Negative Words (Red) as more descriptive of the way they thought about themselves than did controls.
- The opposite was found for Positive Words (Green).

Affective Response during SRP-Task



- Women with PTSD experienced greater Negative Affect during Negative SRP (Red);
- Less Positive Affect during Positive SRP (Green);
- and greater Negative Affect during Positive SRP (Purple)

fMRI BOLD Response during SRP-Task



$p < .05$, SVC-corrected

- No between-group results were statistically-significant
- During Positive SRP, the more positive women with PTSD rated their thoughts about self, and the more positive affect women with PTSD experienced, the greater was the response in their right amygdala (at blue cross-hairs).

Discussion

- We conclude that women with PTSD related to childhood trauma are often characterized by negative SRP, consistent with the current proposal for recognizing negative SRP as a diagnostic symptom of PTSD in DSM-V.
- Response within right amygdala, in addition to medial PFC and posterior cingulate-precuneus, may partly mediate valenced SRP
- Many traumatized women and men live their lives through the purview of a lens of self-depreciation in its gravest form, often expressed in dysfunctional cognitive-affective states, including marked shame and guilt, senses of loss, inner disgust and aversion, self-loathing, identity and existential confusion. Behavioural manifestations of negative SRP may include destructive behaviour and self-harming (e.g., van der Kolk, Roth, Pelcovitz, Sunday, & Spinnazzola, 2005)
- Future research directions include comparing self- versus other-referential processing in the visual and verbal modalities (Kaplan et al., 2008; Kircher et al., 2000; van der Meer et al., 2010) as it relates to trauma and psychopathology, given that maltreatment-related PTSD has been conceptualized as an '*interpersonal psychiatric disorder*' (Chauvastra & Cloitre, 2008)

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