

## Startle reactivity and PTSD symptoms in a community sample of women

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Received 22 December 1999; received in revised form 14 December 2000; accepted 14 January 2001

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### Abstract

Exaggerated startle and PTSD symptoms have been investigated primarily in relation to acute or Type I stressors. The present study examined PTSD symptoms and startle eyeblink response in relation to chronic or Type II stressors. Type II stressors were operationally defined as high levels of childhood corporal punishment and high levels of current partner aggression. This study recruited a sample of 52 women from a metropolitan community and administered several questionnaires assessing experience of corporal punishment in childhood, current intimate partner aggression and level of PTSD symptoms. Following questionnaires, women were presented with eight auditory startle probes (white noise). Results showed that both childhood corporal punishment and intimate partner aggression were associated with women's PTSD symptom scores. However, only PTSD symptom scores were associated with reduced startle. Results are discussed in light of Type I and Type II stressors, and recent suggestions in the PTSD literature that a subgroup of individuals may experience physiological suppression rather than heightened physiological reactivity. © 2001 Elsevier Science Ireland Ltd. All rights reserved.

*Keywords:* PTSD symptoms; Startle; Chronic stressor

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### 1. Introduction

An important focus of psychophysiological investigations into post-traumatic stress disorder

(PTSD) has been the study of increased arousal and physiological reactivity in persons suffering from this condition (see van Ellen and van Kammen, 1990; Shalev and Rogel, 1993, for reviews). Increased reactivity to both trauma-related cues and unconditioned stimuli (e.g. sudden or loud noises) has been the subject of numerous investigations over the last decade and a half. Elevated

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physiological arousal elicited by audiovisual and imaginal reminders of the original trauma have been found in studies of combat veterans (Blanchard et al., 1986; Pitman et al., 1987, 1990) and traumatized civilians, both male and female (Shalev et al., 1992, 1993). In addition, studies with PTSD-afflicted individuals have demonstrated that they also exhibit increased sympathetic responses, such as increased heart rate and skin conductance responses, to simple, strong stimuli such as loud tones (Paige et al., 1990; Shalev et al., 1992, 1997; Orr et al., 1995, 1997).

Recently, psychophysiological studies of PTSD have begun to focus more closely on the physiological hyperreactivity of patients to unconditioned stimuli, such as the exaggerated startle response to sudden or loud noises. Exaggerated startle responsivity is a criterion for diagnosis of PTSD as listed in the Diagnostic and Statistical Manual of Mental Disorders, 4th ed. (American Psychiatric Association, 1994). The startle eyeblink response, a robust and reliable component of the startle reflex (see reviews by Fillion et al., 1998; Dawson et al., 1999), is a particularly useful instrument in the investigation of increased physiological reactivity in PTSD. Some studies employing electromyographic (EMG) measurement of the startle eyeblink response have shown that persons suffering from PTSD symptoms exhibit physiological hyperreactivity to such unconditioned stimuli as novel loud tones or loud bursts of white noise (Butler et al., 1990).

However, other investigations of startle responsivity in PTSD-afflicted samples have produced equivocal results, with some studies finding evidence of hyperreactivity and others failing to detect differences in startle between PTSD and control samples. Morgan and colleagues (1995, 1996) found greater startle responsivity in both Gulf War and Vietnam veterans with PTSD when compared to, in the first study, civilians and veterans without PTSD, and in the second study, 'healthy controls'. The Gulf War veteran study presented the startle stimuli in a neutral setting, whereas the study with Vietnam veterans included the threat of aversive shock stimuli. Notably, though, a subsequent study using the same Vietnam veteran cohort without threat of

shock in the paradigm (Grillon et al., 1996) failed to obtain results supporting the hypothesis of exaggerated baseline startle in PTSD patients. In addition, other investigations of the startle response in men and women afflicted with PTSD that have presented startle stimuli in neutral settings without the threat of shock have failed to find differences between PTSD and normal groups in startle habituation (Ross et al., 1989) and startle amplitude (Shalev et al., 1992; Morgan et al., 1997). Indeed, one study actually reported smaller baseline startle responses (although less pre-pulse inhibition of startle) in children with PTSD (Ornitz and Pynoos, 1989).

In the discussion of trauma, it may be important to distinguish between aversive situations which occur only once or are clearly delimited in time and where the individual perceives or experiences some level of control and can adopt active coping responses, and aversive situations of long or apparently unlimited duration in which the individual feels helpless and lacking adequate coping responses. In writing of childhood traumas, Terr (1991) distinguished between sudden, acute stressors (Type I trauma) and chronic stressors (Type II trauma). According to Terr (1991), an acute stressor is a single external blow characterized by intense surprise, whereas chronic stressors are marked by 'prolonged and sickening anticipation' (p. 11). Unlike an acute stressor such as combat, Type II or chronic stressors are characterized by repeated victimization over a long period of time (months or even years), where the situation is frequently perceived to be utterly aversive and inescapable, and where the individual can do little or nothing to effect an outcome other than victimization. Given the distinction between types of stressors, we suggest that traumatic stress during combat is usually an acute experience, rendering this a Type I stressor. Moreover, the scripted coping responses and agency possessed by soldiers (in the form of orders and weapons) are less characteristic of a Type II stressor.

In the discussion of trauma, psychophysiological studies of startle in individuals suffering from PTSD have, heretofore, focused largely on individuals exposed to an acute or Type I stressor

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