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Dysfunctional cognitive appraisal and psychophysiological reactivity in acute stress disorder

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ABSTRACT

The present study investigated the extent of dysfunctional appraisal as measured with the Posttraumatic Cognitions Inventory (PTCI) and physiological responses to trauma-related material in patients with acute stress disorder (ASD; $N = 44$) in comparison to participants without trauma exposure ($N = 27$). Heart-rate (HR), skin conductance responses (SCR), and viewing time were recorded in response to – for trauma victims – idiosyncratically trauma-relevant and control pictures. ASD patients evidenced greater dysfunctional appraisal than control participants with regard to the PTCI scales Self and World and also an accelerative HR reaction and greater SCRs to trauma-relevant pictures. Among patients, PTCI was highly correlated with ASD severity while PTCI World was positively correlated with resting HR and depression. Amplitude of the HR reaction to trauma-related pictures was negatively correlated with viewing time. Results suggest that dysfunctional appraisal and autonomic reactivity are only loosely related in ASD.

1. Introduction

Acute stress disorder (ASD) is an acute trauma response characterized by dissociative, reexperiencing, avoidance, and hyperarousal symptoms (American Psychiatric Association, 2000) that are predictive of posttraumatic stress disorder (PTSD; Bryant, Harvey, Guthrie, & Moulds, 2003; Elsesser, Sartory, & Tackenberg, 2005). Presence of some of the ASD symptoms has been well supported by empirical evidence, such as hyperarousal reactions to cues that are reminders of the trauma (e.g., Elsesser, Sartory, & Tackenberg, 2004). Others have been more controversial or fail to be listed at all such as dysfunctional cognitive appraisal of the trauma and its sequelae, although they too have been found to be predictive of PTSD (Ehring, Ehlers, & Glucksman, 2008; Kleim, Ehlers, & Glucksman, 2007). One reason for the controversy might be due to the methodology of the studies of cognitive appraisal in ASD. In most cases, recent trauma victims with ASD were compared with those without ASD. Comparing groups differing – in some cases – only slightly in symptom severity could have obscured the presence of dysfunctional cognitions in ASD. In the present study, recent trauma victims with ASD were compared to participants without trauma exposure to confirm the presence of dysfunctional appraisal in ASD.

The Posttraumatic Cognitions Inventory (PTCI; Foa, Ehlers, Clark, Tolin, & Orsillo, 1999) is a frequently employed measure of dysfunctional cognitions. It consists of three subscales: namely, negative cognitions about Self, about the World, and Self-blame. Negative cognitions about Self assesses the sense of negative change in the self, of alienation, hopelessness, general mistrust and the negative interpretation of symptoms (e.g., "There is something wrong with me as a person"). Negative cognitions about the World assesses mistrust of other people and a sense that the world is a dangerous place (e.g., "You can never know who or what will harm you") while the Self-blame subscale assesses blame for the traumatic incident itself (e.g., "The event happened because of the way I acted"). The PTCI discriminated well between traumatized individuals with and without PTSD (Foa et al., 1999) and its three-factor structure has been supported in a confirmatory analysis (Beck et al., 2004). Elsesser and Sartory (2007) found significantly increased negative appraisal with regard to the subscale World in recent trauma victims compared to controls not exposed to a traumatic event. A comparison group of chronic PTSD patients gave higher ratings than controls and recent trauma victims with regard to the subscales World and Self. In recent trauma victims, negative appraisal increased with days since the traumatic event suggesting a progressive development of dysfunctional appraisal together with other symptoms of PTSD. However, only half of the trauma victims met ASD criteria in the previous study (Elsesser & Sartory, 2007), which may have

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accounted for their similarity with non-exposed controls regarding the appraisal of Self and Self-blame. In the present study, all of the recent trauma victims were affected by ASD (excepting criterion B). They were compared with non-exposed controls to assess the presence of early dysfunctional cognitions following a traumatic event. Another inquiry concerned the relationship between cognitive factors and other criterion variables in the ASD group.

Enhanced physiological reactivity to trauma cues has been shown to be a robust correlate of PTSD. A recent meta-analysis revealed mean weighted effect sizes that were significant with even the most conservative tests (Pole, 2007). There are fewer studies in recent trauma victims. In the first, motor vehicle accident (MVA) victims with or without symptoms of PTSD were presented with idiosyncratic accounts of their accident 1–4 months after the incident (Blanchard, Hickling, Taylor, Loos, & Geradi, 1994). In this study, as in a replication (Blanchard et al., 1996), an increase in HR to the idiosyncratic account was the best discriminator between symptomatic and non-symptomatic groups. Nixon, Bryant, Moulds, Felmingham, and Mastrodomenico (2005) also reported an increased HR response during trauma narratives in acute trauma victims. Employing idiosyncratic pictures of the reported traumatic incident, Elsesser et al. (2004) found an increased evoked HR reaction in acute trauma victims with ASD. In this study HR amplitude was positively correlated with ASD severity notably, reexperiencing. A further assessment 3 months later (Elsesser et al., 2005) revealed a significant correlation between the initial increase in HR to trauma-related pictures and subsequent PTSD severity. As both dysfunctional appraisal and physiological reaction were shown to be predictive of the development of PTSD, it was of interest to find out whether or not the two were related.

Finally, individuals with ASD report a higher degree of avoidance than trauma victims without ASD (Elsesser et al., 2004). There are hardly any studies using behavioral avoidance measures in ASD. Elsesser et al. (2004) presented trauma-related and control pictures to recent trauma victims, PTSD patients and healthy controls. Subjects could terminate the display themselves and viewing time was recorded. Unexpectedly, PTSD patients and recent trauma victims viewed the idiosyncratically trauma-related pictures for a longer time than controls or other pictures. Repeated exposure could have accounted for the failure to find evidence of avoidance in this previous study as participants were seeing the pictures for the forth time and may have habituated to their fear-arousing properties. The picture stimuli were presented only twice in the present study.

In the present study, recent trauma victims with ASD and unexposed controls were compared to dysfunctional cognitive appraisal, as measured with the PTCI, evoked HR, and SCR to idiosyncratically trauma-related and control pictures, as well as viewing time of pictures as a measure of avoidance. In keeping with some of the previous results, ASD patients were expected to exhibit a higher level of dysfunctional appraisal, enhanced psychophysiological reactivity and greater avoidance than unexposed controls. Finally, dysfunctional cognitive appraisal and physiological reactivity were expected to be related in ASD participants.

2. Methods

2.1. Participants

Seventy-one subjects took part in the study; 44 of them suffered a traumatic incident within the last 6 weeks (recent trauma victims) and 27 were healthy control subjects. Twenty-five of the trauma victims met criteria of an acute stress disorder (ASD) and another 19 met all criteria apart from those of three dissociative symptoms. The traumatic event had occurred an average of 20.1 days ($SD = 9.7$; range: 3–39 days) before the assessment. Participants were recruited via advertisements in the local media and contacts at, among others, the local police department and accident and emergency departments of hospitals. Patients who took medication affecting heart-rate were excluded from the study. None of the ASD participants were involved in litigation procedures.

The following traumatic incidences were reported: accident ($N = 11$), victim of break-in/robbery ($N = 16$), witness of accident/suicide ($N = 5$), sudden death or accident of a family member ($N = 7$), rape and stalking ($N = 5$). Comorbid disorders in N controls/ASD patients victims were: specific phobia (3/6), panic disorder/agoraphobia (0/2), depression (0/3) and eating disorder (0/1). The study was approved by the ethics committee of the University of Wuppertal. All participants gave their written informed consent before being admitted to the study and received a small remuneration to cover travel expenses.

2.2. Procedure

At the first telephone contact, participants were asked to give an account of their traumatic event and also chose among various categories of pleasant stimuli. Based on this information, idiosyncratic trauma-related and pleasant picture material was chosen for the laboratory procedures. Clinical psychologists assessed all participants using two structured interviews: (a) *DIPS* (Diagnostisches Interview für psychische Störungen; Schneider & Margraf, 2006, the German version of the ADIS-IV, Brown, Di Nardo, & Barlow, 1994), which confirms DSM-IV criteria. The DIPS has a good test–retest ($\kappa = .64$–$.89$) and interrater reliability ($\kappa = .80$–1.00; Schneider & Margraf, 2006), and (b) the German version of the Acute Stress Disorder Interview (*ASDI*; Bryant, Harvey, Dang, & Sackville, 1998). It is based on DSM-IV criteria and has a score range of 0–19 with subscores for the scales dissociation (0–5), reexperiencing (0–4), avoidance (0–4) and hyperarousal (0–6). The original version has a test–retest reliability of $r = .95$, a sensitivity of 91% and a specificity of 93%. So far no reliability or validity study has been carried out on the German version of this structured interview.

The structured interviews took about an hour. Several questionnaires were then to be completed, which lasted about 30 min after which participants were given some 10 min rest. The following laboratory procedures comprised recording of physiological reactions during (a) viewing of pictures and (b) a viewing task after which participants were asked (c) to rate the pictures. The tasks were given in the same order to all participants. The laboratory procedure lasted some 40 min.

2.3. Questionnaires

Impact of Event Scale-Revised (IES-R; German version by Maercker & Schützwohl, 1998). This questionnaire consists of three subscales of posttraumatic stress reactions – Intrusion (seven items), Avoidance (eight items) and Hyperarousal (seven items). Patients are asked to indicate the frequency of each symptom during the last week on a 4-point scale. Subscales 'Intrusion' and 'Hyperarousal' range between 0 and 35 and 'Avoidance' between 0 and 40. This scale was only used with ASD patients.

Posttraumatic Cognitions Inventory (PTCI; Foa et al., 1999; German version by Ehlers, 1999). This 33-item inventory assesses appraisal of the trauma and its sequelae. Items are rated on a 7-point scale. The PTCI consists of the three subscales: (1) negative cognitions about the Self (21 items), (2) negative cognitions about the World (7 items), and (3) Self-blame for the trauma (5 items). Ratings are averaged within each scale and subscale totals are