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## Psychiatry Research

journal homepage: [www.elsevier.com/locate/psychres](http://www.elsevier.com/locate/psychres)

# Investigation of automatic avoidance in displaced individuals with chronic Posttraumatic Stress Disorder (PTSD)



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## ARTICLE INFO

## Article history:

Received 23 December 2014

Received in revised form

31 March 2015

Accepted 2 May 2015

Available online 12 May 2015

## Keywords:

Posttraumatic Stress Disorder

Displacement

Behavioral tendencies

Approach-Avoidance Task

## ABSTRACT

Avoidance of trauma-related stimuli is a key feature of Posttraumatic Stress Disorder (PTSD). However, avoidance has almost exclusively been investigated with explicit measures targeting more strategic aspects of behavior. The aim of the present study was to examine *automatic* avoidance in older individuals displaced as children at the end of World War II with ( $n=22$ ) and without PTSD ( $n=26$ ) and in non-traumatized control participants ( $n=23$ ) with an Approach-Avoidance Task (AAT). Participants were instructed to respond to the color (gray, brown) of trauma-related, neutral, and control pictures by pushing or pulling a joystick. Groups did not differ significantly as to their behavioral tendencies towards trauma-related pictures. Thus, there was no evidence for automatic avoidance in individuals with PTSD. However, high vigilance was associated with stronger implicit avoidance towards trauma-related pictures in the PTSD group. Several explanations for the non-significant results as well as implications and limitations of the present findings are discussed.

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## 1. Introduction

Experience of a traumatic event may result in Posttraumatic Stress Disorder (PTSD), which is characterized by symptoms of re-experiencing, negative cognitions and mood, hyperarousal as well as the avoidance of material related to the trauma (American Psychiatric Association, 2013). In particular, avoidance of stimuli associated with the traumatic event is ascribed a crucial role in the development and maintenance of PTSD (Ehlers and Clark, 2000; Foa et al., 2006). Cognitive processes such as negative appraisals of the traumatic event and its related stimuli contribute to dysfunctional coping strategies like behavioral avoidance (e.g., Ehlers and Clark, 2000). Therapeutic interventions that focus on cognitive restructuring and the reduction of avoidance behavior, like cognitive behavioral therapy (CBT; Ehlers and Clark, 2008) or prolonged exposure (PE; Foa et al., 2007), are currently considered the gold standard in the treatment of PTSD (e.g., National Institute for Clinical Excellence [NICE], 2005; Bisson et al., 2007; Ehlers and Clark, 2008). However, many patients do not experience full recovery of PTSD symptoms underlining the need to seek for

complementary strategies (Schottenbauer et al., 2008; Cukor et al., 2010).

In PTSD, avoidance behavior has mainly been assessed using *explicit* measures such as clinical interviews or questionnaires. Although the importance of these measures is beyond question, explicit measures can only capture information that individuals have introspective access to (i.e., strategic aspects of information processing) and are willing to tell about. Thus, they have been criticized for several disadvantages, for example, social desirability bias or lack of verbal skills (Nisbett and Wilson, 1977; Schwarz, 1999). Furthermore, behavior is often driven by automatic affective reactions that cannot be adequately captured using explicit measures (De Houwer, 2003). According to the emotional processing theory put forward by Foa and colleagues (Foa et al., 2006), in case of PTSD, automatic avoidance could be explained by characteristics of the fear structure. More specifically, the strong associations between trauma-related stimuli and danger might automatically co-activate behavioral schemata of avoidance. Furthermore, not all elements of the fear structure are consciously accessible. Thus, to complement information from explicit measures, *implicit* measures have gained importance in order to capture the more automatic cognitive processes (De Houwer et al., 2009; Roefs et al., 2011). According to De Houwer (2006), a measure or the measurement outcome, respectively, must fulfill certain properties to be called “implicit”. For example, participants must be

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unaware that a certain attitude is measured or have no control over the measurement outcome (for a discussion of the different properties see, for example, De Houwer, 2006; De Houwer and Moors, 2010). Importantly, not all of the properties need to be met to call a measure implicit. To specifically assess behavioral tendencies in an implicit way, Rinck and Becker (2007) developed the Approach-Avoidance Task (AAT). The AAT capitalizes on the link between stimulus valence and immediate behavioral tendencies (Cacioppo et al., 1993; Chen and Bargh, 1999; Neumann et al., 2003): stimuli evaluated as negative automatically activate behavioral avoidance tendencies, whereas positive stimuli activate behavioral approach tendencies. The AAT assesses behavioral tendencies by means of arm movements, whereby avoidance is characterized by faster arm extension (“push”) than flexion (“pull”) and approach by faster arm flexion than extension (Chen and Bargh, 1999; Marsh et al., 2005). These behavioral tendencies are assessed in an objective fashion via a joystick connected to a computer on which pictures of differential emotional valence are presented. Like the Implicit Association Test (IAT, Greenwald et al., 1998), the AAT asks participants to respond to a non-affective dimension, for example, the format of the pictures, by pushing or pulling the joystick, respectively, while the variable of interest (content) is seemingly irrelevant for the requested behavioral response. Although participants are asked to respond to a non-affective dimension, it remains subject of debate whether the affective content is indeed processed entirely non-consciously (e.g., Rotteveel and Phaf, 2004). Notwithstanding this argument, the AAT can be considered implicit “...in the weaker sense that participants are not fully aware of the link between affect and arm flexion and extension...” (Rotteveel and Phaf, 2004, p. 170).

To assess (automatic) behavioral tendencies in anxiety, for the first time, the AAT was administered to spider fearful individuals (Rinck and Becker, 2007). Since then, the AAT has been used in a number of studies to elucidate behavioral tendencies in other anxiety disorders in adults (social phobia see, for example, Heuer et al., 2007; Lange et al., 2008; Roelofs et al., 2010; obsessive compulsive disorder see Najmi et al., 2010) as well as children (e.g., Klein et al., 2011). Furthermore, in one study, more rumination was associated with stronger implicit avoidance of loss-related stimuli in bereaved individuals (Eisma et al., 2015). Importantly, this result was not affected by symptoms of posttraumatic stress. The AAT has been used in only one study on PTSD (Fleurkens et al., 2014). Sexually traumatized women with PTSD were compared to non-traumatized women as to their behavioral tendencies towards pictures of varying emotional valence (i.e., high-threat trauma-related, non-threat trauma-related, high-threat accident-related, non-threat vehicle-related, positive). Participants with PTSD exhibited stronger automatic avoidance of high-threat trauma-related pictures than controls. At trend level, they also avoided high-threat but trauma-unrelated pictures. The authors interpreted their finding as evidence that rather than trauma-relatedness, threat-level seems to be crucial for automatic avoidance in PTSD. Furthermore, implicit and explicit avoidance of trauma-related stimuli were not associated which could indicate that different processes are involved. However, the study did not include a trauma control group. Thus, it remains unresolved whether automatic avoidance tendencies were specific to PTSD. Furthermore, the literature on implicit avoidance in PTSD is limited and it has not been investigated whether chronic PTSD is associated with automatic avoidance.

### 1.1. The present study

To replicate and extend previous findings by specifically assessing long-term changes in avoidance behavior, we applied the AAT to individuals displaced as children from former parts of Germany (e.g., Pomerania, Prussia, or Silesia) during/after World War II (WWII) and suffering from chronic PTSD. These

individuals experienced multiple traumatic events during the flight such as rape, combat exposure, loss of relatives, property, and home (Teegen and Meister, 2000; Muhtz et al., 2011; Kuwert et al., 2012). Only few studies investigated this specific population and reported a high prevalence of depression, anxiety, and PTSD (e.g., Kuwert et al., 2009; Freitag et al., 2013). In view of the fact that more than 50 million people suffered from forced displacement at the end of 2013 (United Nations High Commissioner for Refugees [UNHCR], 2014), our results are not confined to individuals displaced during WWII but might be transferred to other individuals suffering from PTSD due to forced displacement.

Based on rather consistent findings in other anxiety disorders, it seems logical to hypothesize that displaced individuals with PTSD would show stronger automatic avoidance tendencies towards trauma-related compared to neutral pictures as compared to traumatized participants without PTSD and to a non-traumatized control group. However, against the background of the so far only study on PTSD indicating a relationship of automatic avoidance with threat rather than trauma, this hypothesis is speculative at this point.

## 2. Method

### 2.1. Participants and measures

A total sample of 50 individuals displaced as children during WWII were recruited (birth cohorts 1932–1941) via an existing database built up during a former investigation of this specific population (for a detailed description see Muhtz et al., 2011; Wittekind et al., 2010) as well as through advertisement in local media, notices on black boards, and personal contacts of our staff. All displaced participant experienced at least one traumatic event during the flight according to DSM-IV criteria (APA, 2000). Participants experienced a wide range of traumatic events, for example, bombardments, combat exposure, attacks, witnessing people dying, rape, or hunger (also see Muhtz et al., 2011; Kuwert et al., 2012). In a forerunner study within the same population, it was found that participants experienced five traumatic events on average during the flight (Muhtz et al., 2011). To verify PTSD diagnosis, displaced participants were interviewed with the Structured Clinical Interview for DSM-IV (SCID, First et al., 1997), whereby 22 participants were allocated to the PTSD and 26 to the non-PTSD group. Two traumatized participants were excluded (manic disorder, traumatic event did not fulfill trauma criteria). In the PTSD group, 10 participants fulfilled criteria for subsyndromal PTSD (DSM-IV criteria A, B, E, and F were met and either criterion C or D; see Blanchard et al., 1996). Participants with subsyndromal PTSD were assigned to the PTSD group as subsyndromal PTSD is associated with clinical meaningful impairment (e.g., Pietrzak et al., 2009; Glück et al., 2012). Importantly, participants with full and subsyndromal PTSD did not differ as to PTSD symptom severity,  $t(20) < 1, p = 0.680$  (full PTSD:  $M = 15.08, S.D. = 5.52$  vs. subsyndromal PTSD:  $M = 16.00, S.D. = 4.57$ ), which was quantified with the Posttraumatic Diagnostic Scale (PDS, Foa et al., 1997). The PDS is a self-report questionnaire and shows high reliability (internal consistency  $\alpha = 0.92$ ) and validity (Foa et al., 1997). For the German version, internal consistency (Cronbach's Alpha) ranged from  $\alpha = 0.88$  to  $\alpha = 0.90$  for the subscales and was excellent for the total score  $\alpha = 0.94$  (Griesel et al., 2006). Twenty-three non-traumatized, non-displaced individuals, not married to a displaced individual and not meeting criteria for any current psychiatric disorder (as assessed by the structured Mini International Neuropsychiatric Interview [MINI] based on DSM-IV criteria, Sheehan et al., 1998) served as the non-traumatized control group. General exclusion criteria were: psychotic, bipolar, or manic symptoms, substance or alcohol dependence within the last year, suicidal tendencies. Mental health status was verified by the usage of the MINI (Sheehan et al., 1998). Depression severity was quantified using the 17-item version of the Hamilton Depression Rating Scale (HDRS, Hamilton, 1960). For the German translation, internal consistency is considered good ( $\alpha = 0.73$ – $0.88$ ; Baumann, 1976). Verbal intelligence was assessed using a vocabulary test (Mehrfachwahl-Wortschatz-Intelligenztest B [MWT-B], Lehl, 2005).

Prior to participation, all participants were informed about the purpose (investigation of long-term consequences of forced displacement regarding information processing of emotional cues) as well as the procedure (assessment of demographic and psychopathological information, administration of different experimental paradigms) of the study, protection of data privacy, and withdrawal of consent in written and verbal form. Only if participants signed the informed consent, the procedure was started, including the assessment of psychological background variables listed earlier and followed by the AAT. The study was approved by the Ethics Commission of the Medical Board Hamburg (Germany).

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