# Reduction of depersonalization during social stress through cognitive therapy for social anxiety disorder: A randomized controlled trial

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### ABSTRACT

Symptoms of depersonalization during feared social situations are commonly experienced by individuals with social anxiety disorder (SAD). Despite its clinical relevance, it is not addressed in standard treatment manuals and it remains unclear if depersonalization is reduced by well-established treatments. This study investigated whether cognitive therapy (CT) for SAD effectively reduces depersonalization and whether pre-treatment severity of depersonalization predicts or mediates treatment outcome.

In a randomized controlled trial, patients underwent the standardized Trier Social Stress Test before and after CT ($n = 20$) or a waitlist period ($n = 20$) and were compared to healthy controls ($n = 21$). Self-reported depersonalization was measured immediately after each stress test.

Depersonalization significantly decreased following CT, especially in treatment responders ($\eta_p^2 = 0.32$). Pre-treatment depersonalization did neither predict nor mediate post-treatment severity of social anxiety.

Further prospective studies are needed for a better scientific understanding of this effect. It should be scrutinized whether SAD-patients suffering from depersonalization would benefit from a more specific therapy.

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## 1. Introduction

Patients with social anxiety disorder (SAD) suffer from persistent anxiety of one or more social or performance situations in which they fear negative evaluation or rejection by others. Within these social situations, patients with SAD typically experience a range of emotional symptoms such as feeling anxious and embarrassed or bodily symptoms such as sweating or blushing (American Psychiatric Association [APA], 2013). Past research provided consistent evidence that cognitive therapy (CT) is generally effective in the treatment of SAD (e.g., Clark et al., 2003, 2006; Hofmann, Asnaai, Vonk, Sawyer, & Fang, 2012; Mörtberg, Clark, & Bejerot, 2011). It also reduces specifically targeted symptoms such as fear of blushing (Härtling, Klotsche, Heinrich, & Hoyer, 2015). However, other SAD symptoms such as depersonalization and derealization (see Hoyer, Braeuer, Crawcour, Klumbies, & Kirschbaum, 2013) are not directly addressed by contemporary psychological models of SAD

(e.g., Wong, Gordon, & Heimberg, 2014). Even the comprehensive model of Hofmann (2007) which focuses on the cognitive factors (e.g., overestimation of negative consequences of social situations) that maintain SAD does not emphasize or directly target depersonalization. Thus, it remains unclear to which extent these symptoms are reduced by contemporary treatments for SAD.

Depersonalization belongs to the class of dissociative symptoms and describes an experience of unreality, detachment, or being an outside observer with respect to one self's feelings, thoughts and sensations (APA, 2013). Derealization characterizes the subjective sensation of being disconnected to the outside world (APA, 2013). Due to their overlap with regards to content and to their intertwined occurrence (Michal, Sann, Grabhorn, Overbeck, & Rödler, 2005; Sierra & Berrios, 2001), depersonalization and derealization are summarized as "depersonalization" in the following. Depersonalization may occur in healthy individuals under mental distress (Michal et al., 2014) or the influence of drugs (Mathew, Wilson, Humphreys, Lowe, & Weithe, 1993). It is also associated with different mental disorders such as panic disorder (Mendoza et al., 2011; Segui et al., 2000) or borderline personality disorder (Zanarini, Frankenburg, Jager-Hyman, Reich, & Fitzmaurice, 2008), and is

the predominant syndrome in Depersonalization-Derealization-Disorder (Hunter, Philipps, Chalder, Sierra, & David, 2003).

Moreover, intense experiences of depersonalization are frequently experienced by patients with SAD, especially under acute social stress (Gül, Simsek, Inanir, & Karaaslan, 2014; Hoyer et al., 2013; Kamaradova, Prasko, Sandolva, & Latalova, 2014). In particular, patients who predominantly experience severe cardiac sensations and a high level of paresthesia in social situations suffer from depersonalization which has been linked to higher performance anxiety and a co-occurring chronic worry (Potter, Drabick, & Heimberg, 2014). Importantly, the occurrence of depersonalization under social stress seems to be associated with an elevated use of safety behaviors and more pronounced post-event processing in patients with SAD (Hoyer et al., 2013). This link between depersonalization and these dysfunctional strategies may in turn contribute to the maintenance of SAD (McManus, Sacadura, & Clark, 2008) and may even worsen response to treatment (Price & Anderson, 2011).

Furthermore, depersonalization may even directly impair corrective learning during treatment. For example, emotional learning processes are reduced during dissociative experiences (Ebner-Priemer et al., 2009), which may explain why the presence of dissociation is associated with poor response to psychotherapy in various mental disorders (Kleindienst et al., 2011; Michelson, June, Vives, Testa, & Marchione, 1998; contradictive results in patients with posttraumatic stress disorder: Halvorsen, Stenmark, Neuner, & Nordahl, 2014). As depersonalization is pronounced under acute social stress, it is likely to occur during social exposure tasks used in CT for SAD. Thus, the unnoticed occurrence of depersonalization may prevent relevant learning experiences and thereby impair successful treatment. However, no study so far has investigated the change of depersonalization in SAD following CT or the mediational and predictive value of pre-treatment depersonalization for treatment outcome. As patients with SAD experience depersonalization mostly in intense anxiety-provoking situations, measuring these symptoms and their change after therapy is a complex methodological challenge. Retrospective self-reports may misjudge the true severity and be biased due to retrospective recall (Leising, 2011; Sadler & Woody, 2003). To this end, all participants of the present study indicated their depersonalization symptoms immediately after completing the Trier Social Stress Test (TSST; Kirschbaum, Pirke, & Hellhammer, 1993), which is a standardized paradigm to provoke social stress. The present study tested the following hypotheses: 1) CT reduces depersonalization symptoms during acute social stress in patients with SAD. 2) Depersonalization a) mediates treatment outcome and b) predicts worse treatment outcome.

## 2. Material and methods

### 2.1. Participants

Inclusion criteria for patients were a principal diagnosis of SAD (assessed with Munich-Composite International Diagnostic Interview; DIA-X/M-CIDI, Wittchen & Pfister, 1997) and a total score higher than 30 on the Liebowitz Social Anxiety Scale (LSAS; Liebowitz, 1987; German version: Stangier & Heidenreich, 2005). Exclusion criteria for the SAD patients were co-morbid substance related disorders, personality disorders (except avoidant, dependent or obsessive-compulsive disorder), psychotic or organic mental disorders, current psychotherapy or intake of any ataractics. Inclusion criteria for healthy controls were being 18 years or older, no lifetime psychiatric disorder (assessed with the DIA-X/M-CIDI), and a LSAS total score below 30. SAD patients were recruited from the outpatient clinic of the Institute of Clinical Psychology and Psychotherapy of the Technische Universität Dresden (Germany).

Healthy controls were recruited via flyers and advertisements in local newspapers. In accordance with Cohen (1988), we strived for a sample size of $n = 30$ per group to obtain a moderate effect size. Participants were included into the study from October 2009 to August 2011. During the survey and funding period the number of patients in the outpatient clinic was lower than usual and a surprisingly high number of patients declined to participate because of the unpleasant nature of the TSST. For this reason, the group sizes were lower than previously envisaged.

The study was approved by the local ethics committee (EK137062007) and participants gave written informed consent. The trial was registered on the German Clinical Trials Register (registration number: DRKS00009741).

Following inclusion into the study, SAD patients were randomly assigned to two groups of equal size: a treatment group and a waitlist control group. Randomisation using a binary allocation sequence was carried out blind by a member of staff from another department within the Technische Universität Dresden. As Fig. 1 shows, the present sample consisted of 20 patients in the waitlist control group (female $n = 8$, age: $M = 26.05$, $SD = 3.56$), 20 patients in the treatment group ($n = 8$ female, $M_{age} = 24.60$, $SD = 5.19$) as well as 21 healthy controls ($n = 9$ female, $M_{age} = 26.38$, $SD = 7.52$) who completed the pre- and post-treatment measures. The groups did not differ in age, $H(21, 20, 20) = 2.74$, $p = 0.250$, or sex distribution, $\chi^2_{Fischer}(2, 21, 20, 20) = 0.11$, $p = 0.491$. Women were tested in the luteal phase of their menstrual cycle.

### 2.2. Measures

One week before each TSST, the German LSAS (Stangier & Heidenreich, 2005) was conducted via telephone to assess the severity of social anxiety in social interactions and performance situations. Directly after each TSST, participants filled out an adapted version of the Cambridge Depersonalisation Scale (CDS; Sierra & Berrios, 2000; German version: Michal et al., 2004, adapted version: Hoyer et al., 2013) to measure the intensity of depersonalization experiences during the period of acute social stress. The 29 items of the original CDS assess the frequency and duration of depersonalization during the last six months. The questionnaire includes items concerning depersonalization and derealization as well as items that ask for micropsia, autoscopy, déjà vu, and out-of-body experiences (Michal et al., 2004; Sierra & Berrios, 2000). It should be mentioned that both the authors of the English as well as the authors of the German version do not consider depersonalization and derealization as independent phenomena and therefore do not provide separate subscales for them (Michal et al., 2004; Sierra & Berrios, 2000).

Hoyer et al. (2013) slightly modified the introduction and the items to assess depersonalization as a state variable. The 15 items of the adapted CDS were rated on a visual analog scale ranging from 0 (none, never, not at all) to 100 (very strong, always). A mean score for all items was used for analyses. Excellent reliability (internal consistency $\alpha = 0.95$ and Guttman split half reliability coefficient $r_{tt} = 0.95$) and good validity coefficients (high significant correlations with the Dissociative Experience Scale (Bernstein & Putnam, 1986; German: Freyberger, Spitzer, & Stieglitz, 1999)) have been reported for the original German trait version (Michal et al., 2004). The state version showed good internal consistency ($\alpha = 0.87$ in 23 respondents of the TSST; Hoyer et al., 2013). In the present study, the internal consistency was $\alpha = 0.93$ (both on the first measurement [before CT/waiting time] and on the second measurement [after CT/4-6 month waiting time]). The Guttman split half reliability coefficient was $r_{tt} = 0.87$.