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Post-event processing in social anxiety disorder after real-life social situations – An ambulatory assessment study

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ABSTRACT

Excessive post-mortem processing after social situations, a core symptom of social anxiety disorder (SAD), is thought to contribute to the perpetuation of social anxiety by consolidating negative self-schemata. Empirical findings on actual mechanisms underlying this so-called Post-Event Processing (PEP) are still scarce. The present study sought to identify variables associated with the experience of PEP after real-life social situations in a sample of 49 individuals diagnosed with SAD. Using an ambulatory assessment approach, individuals were asked to report on each distressing social event experienced during one week. A total of 192 events were captured. Hierarchical linear modeling indicated that next to trait social anxiety, the type of social situation (performance vs. interaction situations), self-focused attention, safety behavior use, and negative affect predicted levels of PEP after social situations. These findings add to the growing literature that emphasizes the importance of situational factors for the experience of PEP, and highlight potential venues to prevent it.

1. Introduction

Cognitive models emphasize the role of distortions in cognitive processing prior, during, and after social situations for the maintenance of Social Anxiety Disorder (SAD; Clark & Wells, 1995; Heimberg, Brozovich, & Rapee, 2010; Rapee & Heimberg, 1997). One hallmark, that seems to be rather specific to SAD, is excessive post-mortem thinking after social events (Dannahy & Stopa, 2007; Fehm, Schneider, & Hoyer, 2007; Kocovski, Endler, Rector, & Flett, 2005; Perini, Abbott, & Rapee, 2006). During this so-called post-event processing (PEP), individuals with high levels of social anxiety selectively retrieve negative information about themselves and the reaction of others in a preceding social situation, and brood over this information. They, thereby, consolidate negative self-representations, which in turn may increase anticipatory anxiety and avoidance of future social situations (Brozovich & Heimberg, 2008).

There is an ongoing debate whether PEP reflects a trait-like tendency to ruminate or whether it is rather based on an individual's processing in specific social situations. Some questionnaire-based studies point out that PEP at least partially overlaps with depressive symptoms (Brozovich & Heimberg, 2011), and a ruminative response style (Kocovski & Rector, 2007; Kocovski et al., 2005). However, there is also mounting evidence that specific individual perceptions of and experiences within a social situation might contribute to the formation of PEP. In line with assumptions of current cognitive models of social anxiety disorder, state anxiety, self-focused attention during a situation, and negative perceptions of oneself or one's performance were empirically supported as predictors of PEP (e.g. Abbott & Rapee, 2004; Dannahy & Stopa, 2007; Gaydukevych & Kocovski, 2012; Laposa & Rector, 2011; Makkar & Grisham, 2011; Rapee & Abbott, 2007). The relevance of these factors is supported by findings that state anxiety, attentional focus, and negative cognitions about one's performance actually mediate the associations between trait social anxiety and PEP (Chen, Rapee, & Abbott; 2013; Kiko et al., 2012; Perini et al., 2006). Interestingly, only one study investigated the effects of safety-seeking behaviors in this context, although cognitive models

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emphasize their contribution to the distorted processing of social situations (Clark, 2001). Safety behavior use during a speech or a conversation situation was indeed related to PEP, but did not add to its prediction beyond the impact of dysfunctional cognitions (Kiko et al., 2012).

The features of the social situations preceding PEP have not yet been comprehensively explored. CBT models of SAD as well as clinical experiences suggest that certain situational characteristics might increase the likelihood of post-mortem processing. However, only few studies actually investigated effects of different situational types on PEP, yielding somewhat contradictory results. Fehm et al. (2007) suggested that PEP might be especially relevant for interaction situations; however, these results were obtained in a non-clinical sample using a retrospective design. In contrast, Kocovski and Rector (2007) demonstrated higher rates of PEP after the recollection of a speech situation. Similarly, Makkar and Grisham (2011) found PEP to be more pronounced after an actual speech task compared to a conversation situation. The latter findings have also been supported in a clinical sample (Kiko et al., 2012).

It might further be reasonable to assume that in-situ anxiety and PEP is stronger after planned in contrast to spontaneous situations. Individuals with SAD tend to engage in anticipatory processing (Clark, 2001), which in turn increases self-focused attention and distorted processing within the situation. The same might hold true for situations with more than one interaction partner as these situations increase the subjective risk of being negatively evaluated. The impact of these factors has, however, yet to be explored.

Taken together, the current state of research on PEP is preliminary due to lack of comprehensive data, open questions and methodological limitations. As PEP is thought to consolidate negative self-representations, thus contributing to the persistence of SAD, further studies are needed that explore mechanisms underlying the experience of PEP. Up to date, the majority of findings on PEP have relied on questionnaire and laboratory studies in non-clinical samples. Only few studies have investigated relevant processes after naturally occurring social situations. One notable exception is a study using an ambulatory assessment design (Lundh & Sperling, 2002). Lundh and Sperling continuously assessed PEP after social distressing events in undergraduate students for one week. However, no variables potentially serving as moderators were included in the diary limiting the comparability of results to laboratory studies on PEP.

The present analyses are based on ambulatory assessments in a clinical sample allowing to study post-mortem processes after real-life social situations. We wanted to explore whether

1. PEP depends on characteristics of the social situation such as the type of social situation (performance vs. interaction, planned vs. unplanned) and the number of interaction partners involved;
2. Individual levels of PEP are associated with their specific experiences and behaviors within the social situation, such as self-focused attention, use of safety behavior, state anxiety and negative affect;
3. These in-situ factors substantially contribute to the experience of PEP over and above the contribution of trait factors, such as level of social anxiety, depression, or trait-like information processing (i. e., dysfunctional self-focused attention).

2. Methods

2.1. Study design and procedures

Data was collected during the intake assessment of a randomized clinical trial examining the effects of an internet-based attentional bias modification program (Neubauer, von Auer, Murray, Helbig-Lang, Petermann, & Gerlach, 2013). Participants were recruited via press announcements in local newspapers. Inclusion criteria were a) a primary diagnosis of SAD according to DSM-IV criteria, b) age between 18 and 65, b) no current psychotherapy, c) no psychopharmacological treatment or stable dosage for at least twelve weeks, d) provided informed consent.

Individuals interested in study participation were invited to an intake examination that included a clinical diagnostic interview and several self-ratings. Individuals eligible for the study were further asked to complete two behavioral assessment tests, and to take part in a one-week ambulatory assessment. Participants then received a Blackberry handheld computer, and were made familiar with the handling of the device. After one week, participants returned the device and started with the attention modification training. Fig. 1 provides an overview over the study design. An extensive description of the study procedures can be obtained by Neubauer et al. (2013). All study procedures were approved by the Ethics committee of the German Society for Psychology (DGPs).

2.2. Participants

59 individuals diagnosed with SAD were enrolled in the overarching randomized controlled trial. Due to technical problems, ambulatory assessment data was available for only 52 participants, with 49 participants reporting distressing social events during the assessment period. Mean age of these participants was $M = 39.6$ ($SD = 11.0$); 64% ($n = 34$) were female. The sample was highly educated with 81% having at least 12 years of formal education. About 47% ($n = 25$) of the sample met diagnostic criteria for at least one comorbid diagnosis, most often affective disorders ($n = 15$), specific phobias ($n = 11$), and panic disorder with agoraphobia ($n = 3$).

2.3. Assessments

2.3.1. Diagnostic status

At intake, all participants diagnosed using the Structured Clinical Interview for DSM-IV (SCID-I; First, Spitzer, Gibbon, & Williams, 1996; German: Wittchen, Fydrich, & Zaudig, 1997). The SCID-I is a widely used assessment tool with good psychometric properties (Zanarini et al., 2000). Four specially trained clinicians conducted all interviews, and evaluated the relevant diagnostic criteria.

2.3.2. Social anxiety

Participants completed the self-report version of the Liebowitz Social Anxiety Scale (LSAS; Baker, Heinrichs, Kim, & Hofmann, 2002; German: Stangier & Heidenreich, 2005) that assesses anxiety and avoidance in 24 social situations on 4-point Likert-type scales ranging from 0 (“none” or “never”, resp.) to 3 (“severe” or “usually”, resp.). Items can be assigned to a performance and a social interaction subscale as well as to a total sum score. The LSAS has good psychometric properties as well as good convergent and discriminant validity (Fresco et al., 2001). Internal consistency in the present sample was also high (Cronbach's $\alpha = 0.92$).

2.3.3. Depressive symptoms

The Beck Depression Inventory Revised (BDI-II; Beck, Steer, & Brown, 1996; German: Hautzinger, Keller, & Kühner, 2006) was used to assess the level of depressive symptoms. The BDI-II comprises 21 items that represent typical depression symptoms. It is widely used and has demonstrated favorable psychometric properties in both clinical and non-clinical samples (Kühner, Bürger, Keller, & Hautzinger, 2007; Cronbach's α in the present sample: $\alpha = 0.88$).