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Invited essay

How do I look? Self-focused attention during a video chat of women with social anxiety (disorder)

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ABSTRACT

We investigated the role of self-focused attention (SFA) in social anxiety (disorder) in an ecologically valid way. In Experiment 1 high ($n = 26$) versus low ($n = 25$) socially anxious single women between 18 and 30 years had a video ("Skype") conversation with an attractive male confederate, while seeing themselves and the confederate on-screen. The conversation was divided in four phases: (I) *warm-up, (II) positive* (confederate was friendly to the participant), (III) *critical* (confederate was critical to the participant), and (IV) *active* (participant was instructed to ask questions to the confederate). Participant's SFA was measured by eye-tracked gaze duration at their own image relative to the confederates' video image and other places at the computer screen. Results show that high socially anxious participants were more self-focused in the critical phase, but less self-focused in the active phase than low socially anxious participants. In Experiment 2 women diagnosed with SAD ($n = 32$) and controls ($n = 30$) between 18 and 30 years conducted the same experiment. Compared to controls participants with SAD showed increased SFA across all four phases of the conversation, and SFA predicted increased self-rated anxiety during the conversation.

In conclusion, in subclinical social anxiety SFA is high only when the interaction partner is critical, whereas instructions to ask questions to the confederate reduces subclinical socially anxious' SFA, while clinical SAD is characterized by heightened self-focused attention throughout the interaction. Results support theories that social anxiety disorder is maintained by SFA, and imply that interventions that lower SFA may help prevent and treat social anxiety disorder, but that SFA can also be adaptive in certain types of interaction, such as when receiving compliments.

1. Introduction

Clark and Wells' (1995) cognitive model of social anxiety disorder (SAD) predicts that self-focused attention (SFA) plays a central role in maintaining social anxiety. Since the publication of this model SFA and social anxiety has been repeatedly investigated. Studies that *experimentally manipulated* SFA (e.g. with mirrors, video cameras, an audience) report mixed results. Some studies found SFA to be related to social anxiety (e.g. Meral, Vriends, & Meyer, 2013; Woody & Rodriguez, 2000; Zou, Hudson, & Rapee, 2007), whereas others failed to show an association between social anxiety and SFA (e.g., Bögels, Rijsemus, & De Jong, 2002; see for review: Bögels & Mansell, 2004). *Probe-detection paradigms* investigating attention towards internal cues (e.g. physical cues, such as heart rate) versus external cues (e.g. a visual probe of household objects or emotional faces) found an attentional bias toward internal cues (indicating SFA) in speech-anxious individuals (Deiters, Stevens, Hermann, & Gerlach, 2013; Mansell, Clark, & Ehlers, 2003) and in socially anxious individuals (Mills, Grant, Judah, & White, 2014; Pineles & Mineka, 2005). More specifically, this internal attentional bias was only found in women (Mansell et al., 2003) and

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in socially anxious participants with an independent (versus interdependent) self-construal (Vriends et al., 2016). *Self-report studies* on SFA show more congruent results, namely higher SFA in high socially anxious individuals compared to low socially anxious individuals (e.g. Alden & Mellings, 2004; Bögels & Lamers, 2002; Perowne & Mansell, 2002; Spurr & Stopa, 2003; Woody & Rodriguez, 2000; Woody, 1996).

Cognitive behavioral treatments for SAD that included exercises to reduce SFA show to be effective in reducing SFA and social anxiety, as measured by self-report questionnaires (e.g. McManus et al., 2009; Schreiber, Heimlich, Schweitzer, & Stangier, 2015). Task concentration training, an intervention that solely focuses on reducing SFA, was found to be more effective than applied relaxation (Bögels, 2006) or exposure in vivo (Mulkens, Bögels, de Jong, & Louwers, 2001) in reducing fear of showing bodily symptoms in patients with social anxiety (disorder), and reduced self-reported SFA was shown to mediate these superior results (Bögels, 2006).

In sum, there is ample evidence that social anxiety is related to SFA from questionnaire and intervention research, but experimental research provided mixed results. A reason for the mixed picture in experimental research might be the challenge to measure SFA validly within social experiments. Another explanation is that subjective SFA report might be biased, as it is the same reporter reporting SFA and social anxiety. Also, participants might have difficulties being aware of the focus of their attention during social interaction. Therefore it is worthwhile to use implicit assessment methods for SFA. Probe-detection tasks do this, but have other disadvantages such as interfering with the social task itself. Another challenge is that social situations are dynamic, continuously demanding different tasks. Thus, there is need to explore more ecologically valid and creative ways to implicitly measure SFA within social situations.

In the present study, we measured SFA using eye-tracking methods within a social situation – in a "Skype" conversation (the Swiss Social Interaction Task (SSIT)) with a confederate in which the participant underwent four phases: (I) '*warm-up', (II) 'positive'* (confederate was friendly to the participant), (III) '*critical*' (confederate put the participant in the center of attention and was critical to the participant), and (IV) '*active'* (participant had to ask questions to the confederate). This way, the social interaction involved positive and negative social challenges as well as being evaluated (the confederate is asking questions) and evaluating (the participant is asking questions). Eye-tracking methods have proven to be an adequate method to asses attentional processes in social anxiety (e.g. Buckner, Maner, & Schmidt, 2010; Gamble & Rapee, 2010; Schofield, Johnson, Inhoff, & Coles, 2012; Wieser, Pauli, Alpers, & Muhlberger, 2009), but none of these studies investigated SFA. In Experiment 1 we piloted the paradigm with high versus low socially anxious women. In Experiment 2 we tested the paradigm in a clinically relevant sample of women with social anxiety disorders versus controls.

2. Experiment 1

Socially anxious people are assumed to suffer from heightened SFA. They direct too much attention to themselves during social interactions and have little attention for other people, their task or their environment (e.g. Bögels, 2006; Clark & Wells, 1995; Rapee & Heimberg, 1997). Therefore we assume that watching one's own video image on a computer screen during an online-chat situation would indicate heightened SFA. Chatting online is nowadays a common way of online-dating or peer-to-peer communication and therefore an ecologically valid situation (Smith & Anderson, 2016). Eye-tracking allows a non-invasive direct and continuous measurement of visual attention within the situation without interfering in the current social task. We invited high and low socially anxious single women for a social experiment. They were instructed to have a real-time video conversation with a male participant, who actually was a confederate. SFA during the conversation was measured directly by eye-tracking (focusing on self-image versus on image of confederate or on other places at the computer screen) and self-rated by participants after the conversation. Before and after the conversation, participants also rated their level of current stress. We expected (I) increased SFA (measured by self-report and eye-tracking) during the conversation in the high socially anxious group, and (II) a significant correlation between eye-tracked SFA and current stress after the conversation. Explorative we analyzed the effect of the phases of the conversation on SFA and other-focused attention next to self-focused attention.

2.1. Material and methods

2.1.1. Participants

Single women with an age between 18 and 30 years participated in a video conversation study. They were recruited with advertisements on the University of Basel study advertisement webpage and with posters at local University restaurants. We recruited only female individuals due to found sex effects with respect to SFA in previous studies (Mansell et al., 2003; Vriends et al., 2016). We selected women with high versus low social anxiety through an online screening – the Social Interaction Anxiety Scale (Mattick & Clarke, 1998; german version:; Stangier, Heidenreich, Berardi, Golbs, & Hoyer, 1999), which was added at local advertisement webpages. Individuals with a SIAS-score above 40 and below 20 were invited for the experiment. One woman was excluded from the analyses due to outlier results (more than 2 SD's from the mean on relevant variables). The study-sample ($n = 51$) was median-split on the scores of the Social Phobia Scale (which was filled out at the beginning of the experiment) for high and low social anxiousness groups. The two groups (high socially anxious $n = 25$ and low socially anxious $n = 26$) did not differ in age and education (see Table 2).

2.1.2. Materials

2.1.2.1. Social anxiety. The German version of the Social Phobia Scale (SPS: Mattick & Clarke, 1998; German version: Stangier et al., 1999) was used to measure social anxiety. The SPS assesses anxiety in performance situations and includes 20 items rated on a 5-point scale ranging from 0 (*not at all*) to 4 (*very much*). A total score (ranging from 0 to 80) consists of the sum of all items. Scores above 24 on the SPS indicate social anxiety disorder (Heimberg, Mueller, Holt, Hope, & Liebowitz, 1992). The questionnaire showed high internal consistency for the present study (Cronbach's alpha = 0.91).

2.1.2.2. Instruction for the Swiss Social Interaction Task (SSIT). The experimenter informed the participant that she would have a video conversation with a male participant (who was our confederate, but the participant was led to believe that the male counterpart was also a participant), who was sitting in another experimental room. The task was to get to know each other. The experimenter told the participant that the confederate was instructed to ask her some questions in the first 4 min to get to know her better. After that she would have also 4 min to get to know him by asking questions. Participants were also informed that their gaze would be tracked during the video conversation.

2.1.2.3. Confederates. Seven attractive male confederates, of similar ages than the female participants, were involved in this study. They were briefly informed about the study (they were told that our