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Approach behavior as information

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ABSTRACT

Background and objectives: Anxious individuals infer danger from information about physiological responses, anxiety responses, and safety behaviors. This study investigated whether anxious individuals also infer safety from approach behavior.
Methods: 325 students rated the danger they perceived in general and spider-relevant scenarios in which information about objective safety versus objective danger, and approach behavior versus no approach behavior, was varied. A high and low spider fearful group was created with a median split on spider fear.
Results: Participants with a high fear of spiders, compared to participants with low spider fear, rated spider scenarios with approach behavior as safer than spider scenarios without approach behavior. This effect was similar for objectively dangerous and safe spider scenarios. No behavior as information effects were found for general scenarios.
Limitations: The data were collected in a non-clinical student sample.
Conclusions: Spider fearful individuals infer safety from approach behavior in spider-relevant scenarios. For spider fearful individuals, approach behavior may add to the beneficial effects of exposure therapy. Future research is needed to investigate whether patients with anxiety disorders also show a tendency to infer safety from approach behavior.

1. Introduction

Patients with anxiety disorders experience fear and display avoidance behavior in the absence of actual danger. According to cognitive theory, this is because they misinterpret a situation or stimulus as a sign of threat and expect that a catastrophe will follow (Salkovskis, Clark, & Gelder, 1996). Additionally, there is increasing evidence that anxious individuals infer danger from physiological, subjective, and behavioral (e.g., avoidance) anxiety response information. This study assessed whether anxious individuals also infer *safety* from opposing behavioral response information, in other words, from approach behavior.

To start with, studies have shown that patients with anxiety disorders tend to use physiological responses as information. Ehlers, Margraf, Roth, Taylor, and Birbaumer (1988) found that false feedback of an increased heart rate induced anxiety and physiological arousal in patients with panic disorder, but not in healthy controls. Additionally, individuals with a fear of snakes showed more approach to a live snake after Valins and Ray (1967) led them to believe that their heart rate did not increase while viewing pictures of snakes.

Furthermore, anxious individuals infer danger on the basis of a subjective fear response, that is, they tend to engage in emotional reasoning. In a study by Arntz, Rauner, and Van den Hout (1995), four groups of patients with anxiety disorders and a group of healthy controls rated the danger they perceived in scenarios. The scenarios described situations in which information about objective safety versus objective danger and information about an anxiety response versus no anxiety response were varied. Patients with anxiety disorders, but not healthy controls, perceived more danger in scenarios with an anxiety response than in scenarios without an anxiety response. This effect was not disorder-specific and was similar for scenarios with objective danger information and objective safety information (Arntz et al., 1995). Emotional reasoning has been associated with posttraumatic stress disorder (PTSD; Engelhard, Macklin, McNally, van den Hout, & Arntz, 2001), fear of contamination (Verwoerd, de Jong, Wessel, & van Hout, 2013), and social anxiety (Mansell & Clark, 1999). Emotional reasoning may be a general vulnerability factor that predisposes people to develop anxiety disorders (see Engelhard & Arntz, 2005). Longitudinal research showed that emotional reasoning shortly

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after trauma predicts later PTSD symptoms (Engelhard, van den Hout, Arntz, & McNally, 2002). Moreover, experimental research found that reducing emotional reasoning in spider fearful individuals reduces threat beliefs (Lommen, Engelhard, van den Hout, & Arntz, 2013).

Finally, patients with anxiety disorders infer danger from information about safety behaviors. Safety behaviors are actions aimed at detecting, avoiding, escaping, or minimizing a feared outcome (e.g., Deacon & Maack, 2008; Salkovskis, 1991). Gangemi, Mancini, and van den Hout (2012) and Van den Hout et al. (2014) performed vignette studies similar to the Arntz et al. (1995) and Engelhard et al. (2002) studies. Instead of information about an anxiety response versus no anxiety response, the protagonist did or did not display safety behavior. The presence of safety behaviors increased the perception of danger in patients with anxiety disorders, but not in healthy controls. This was especially so in objectively safe scenarios (Gangemi et al., 2012; Van den Hout et al., 2014; see also Van den Hout et al., 2016).

In this study, we investigated whether anxious individuals also infer safety from approach behavior. The previously mentioned findings by Valins and Ray (1967) suggest that anxious individuals also infer safety from response information. When anxious individuals falsely believed that snake stimuli did not affect them internally (i.e., their heart rate did not increase), they showed more approach to a live snake compared to individuals who had no information about their physiological response. Research into the role of behavioral response information on safety estimations can provide further insight into the way anxious individuals make danger estimations. In turn this may increase our understanding of the beneficial effects of exposure and response prevention (ERP). ERP is a highly effective treatment for anxiety disorders (Hofmann, Asnaani, Vonk, Sawyer, & Fang, 2012). It aims to violate excessive threat expectancies by repeatedly exposing the patient to the feared, but innocuous, stimulus. Exposure is often established by asking the patient to approach the stimulus. Possibly, approach behavior decreases danger estimations and thereby adds to the beneficial effects of ERP.

We therefore asked a large sample of students to rate the danger they perceived in scenarios with objective danger versus safety information, in which the protagonist did or did not display approach behavior. We hypothesized that highly anxious participants, compared to participants with low anxiety, would rate scenarios with approach behavior as safer than scenarios without approach behavior. On average, anxiety among students is relatively low (Lovibond & Lovibond, 1995a; De Beurs, Van Dyck, Marquenie, Lange, & Blonk, 2001), whereas fear of spiders is quite common (34%, Seim & Spates, 2009). We therefore also investigated whether this hypothesis holds true for participants with high versus low spider fear. Arntz et al. (1995) and Engelhard et al. (2001; 2002) found emotional reasoning effects in anxious individuals for objectively dangerous and safe scenarios, but Gangemi et al. (2012) and Van den Hout et al. (2014) found larger behavior as information effects in objectively safe versus dangerous scenarios. Therefore, we explored whether the hypothesized approach behavior as information effect was larger in scenarios with objective danger information or in scenarios with objective safety information.

2. Method

2.1. Participants and procedure

The sample consisted of 325 students from Utrecht University and the University of Applied Sciences Utrecht (226 women, $M_{age} = 21.44$, $SD = 2.32$, range 17–31), who received course credit or could join a raffle for a gift certificate. All materials were presented to participants as an internet-based questionnaire using Limesurvey software (Schmitz, 2012) that they could fill out on their own computer or smartphone. Participants gave written informed consent, filled out questionnaires,[1] and gave danger ratings for twelve scenarios (see Materials).

2.2. Materials

2.2.1. Depression anxiety stress scale (DASS)

The DASS (Lovibond & Lovibond, 1995b) was administered to measure anxiety. It also measures depression and stress. Each subscale consist of 14 items measured on a 0 (*never*) to 3 (*usually*) scale (range 0–42), e.g., "I felt terrified". Cronbach's alphas for these subscales were 0.91, 0.82, and 0.90, respectively, in this study. The DASS maintains its good internal consistency and inter-scale correlations when it is administered online (Zlomke, 2009).

2.2.2. Fear of spiders questionnaire (FSQ)

The FSQ (Szymanski & O'Donohue, 1995) measures self-reported spider fear. It consists of 18 statements that are rated on a 0 (*completely disagree*) to 7 (*completely agree*) scale (range 0–126), e.g., "Spiders are one of my worst fears". Cronbach's alpha in this study was 0.97.

2.2.3. Scenarios

Participants were asked to evaluate the danger of 12 scenarios on 0 (*extremely safe*) to 100 (*extremely dangerous*) Visual Analogue Scales (VAS). Scenarios described three situations: public speaking, spiders (cf. Arntz et al., 1995), and general anxiety (cf. Engelhard et al., 2002). They were adapted for the purpose of this study. Scenarios started with the same stem, for example, the spider scenarios started with "You just came back from the supermarket". They continued with (1) objective danger information, e.g., "You bought a cluster of bananas. You know that poisonous spiders are imported with bananas. You have just seen a documentary on television about this, where those spiders were shown. At home you notice a 1-inch spider in your shopping bag, the kind of spider you have seen on television. You think: A tropical spider!"; or (2) objective safety information, e.g., "At home you see a big house spider in your shopping bag". The objective information was followed by (3) approach behavior, e.g., "You grab a jar to catch the spider"; or (4) no approach behavior, in which case nothing followed the objective information. Participants were asked to evaluate the events as if they were happening to them at this moment and to identify themselves with the description as much as possible. Each scenario was presented on a new page in a randomized order, with the restriction that scenarios about the same situation were never presented in succession. A validation study prior to the experiment showed that the approach manipulation was unsuccessful in the public speaking scenarios. They were therefore used as filler scenarios in the experiment and not included in the analyses.[2]

2.3. Data analysis

Our hypotheses consisted of specific expectations that could be

[1] Additionally, the Fear of public speaking subscale of the Personal Report of Communication Apprehension (PRCA-24; McCroskey, 1982; see also McCroskey, Beatty, Kearney, & Plax, 1985) was administered, but these data were not used in this study.

[2] Public speaking scenarios, general scenarios, and information about the validation study are available on request from the first author.