Avoidant decision-making in social anxiety disorder: A laboratory task linked to in vivo anxiety and treatment outcome

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ABSTRACT

Recent studies on reward-based decision-making in the presence of anxiety-related stimuli demonstrated that approach-avoidance conflicts can be assessed under controlled laboratory conditions. However, the clinical relevance of these decision conflicts has not been demonstrated. To this end, the present study investigated avoidant decisions in treatment-seeking individuals with social anxiety disorder (SAD). In a gambling task, advantageous choices to maximize gains were associated with task-irrelevant angry faces and disadvantageous choices with happy faces. The clinical relevance of avoidant decisions for in vivo anxiety in a social stress situation (public speaking) were examined (n = 44). In a subsample (n = 20), the predictive value for a reduction of avoidance following behavioral therapy was also evaluated. Results indicated a close link between more frequent avoidant decisions and elevated in vivo anxiety. Moreover, individuals who showed a deficit in the goal-directed adjustment of their decisions also showed higher and sustained distress during the social stressor and reported less decrease of avoidance following treatment. The findings highlight the importance of an avoidant decision-making style for the experience of acute distress and the maintenance of avoidance in SAD. Assessing avoidant decision-making may help to predict the response to behavioral treatments.

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1. Introduction

Avoidance of social performance and social interaction are hallmark features of social anxiety disorder (SAD) (American Psychiatric Association, 2013). Such behavioral avoidance is triggered by the confrontation with anxiety-related stimuli. In this regard, anxiety is thought to drive avoidance (Klein, 1980; Mowrer, 1960). In support, individuals who report higher anxiety also report higher levels of avoidance (e.g., Heimberg et al., 1999) and exhibit elevated behavioral and physiological indicators of avoidance (Heuer, Rinck, & Becker, 2007; Mogg, Bradley, Miles, & Dixon, 2004; Rinck & Becker, 2007; Schulz, Alpers, & Hofmann, 2008; Tolin, Lohr, Lee, & Sawchuk, 1999).

Other studies have, however, pointed to more de-synchrony between anxiety and avoidance in individuals with anxiety disorders (Craske & Barlow, 1988; Rachman & Hodgson, 1974). This de-

synchrony may indicate that avoidance is not a simple function of behavioral responding to anxiety-related stimuli, but dependent on additional factors such as incentives for approach (Craske & Barlow, 1988). Individuals with SAD, for example, do not always avoid social situations, but sometimes endure them with high levels of distress (Hofmann, Alpers, & Pauli, 2009). This motivation to enter and endure social situations may result from competing desires such as making new friends or performing well in a job interview (Kashdan, Elhai, & Breen, 2008). Resolutions of the resulting approach-avoidance conflicts may be seen as a repeated decision-making process that characterizes the daily life of individuals with anxiety disorders (Pittig, Schulz, Craske, & Alpers, 2014; Stein & Paulus, 2009). These decision conflicts may play an important role in the development and maintenance anxiety disorders, because a shift towards avoidant decisions results in severe impairments.

Following this assumption, recent experimental studies investigated decision conflicts between the approach of goal-directed rewards and avoidance by linking advantageous decisions to anxiety-related stimuli. Exemplary results showed that spider fearful individuals avoid advantageous decisions, when

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these decisions were also paired with a presentation of a spider picture (Pittig, Brand, Pawlikowski, & Alpers, 2014). These avoidant decisions resulted in significant cost (i.e., lower overall gains).

More importantly, there is first evidence that socially threating stimuli may trigger similar avoidant decisions in healthy (Averbeck & Duchaine, 2009; Furl, Gallagher, & Averbeck, 2012) and socially anxious individuals (Pittig, Pawlikowski, Craske, & Alpers, 2014). In these studies, participants had to maximize overall gains (i.e., hypothetical money) by repeatedly choosing pictures of either a happy or an angry face. In line with previous research, angry facial expressions were used as stimuli for social threat and rejection (e.g., Gilboa-Schechtman, Foa, & Amir, 1999; Mogg, Philippot, & Bradley, 2004; Wieser, Pauli, Weyers, Alpers, & Mühlberger, 2009). Although these facial expressions were irrelevant for goal-directed behavior, decisions of healthy individuals were initially biased towards selecting the happy face, even if prior reward feedback favored the angry face (Averbeck & Duchaine, 2009; Furl et al., 2012). We recently demonstrated that such initial avoidance may be even more pronounced in individuals with elevated levels of social anxiety (Pittig, Brand, et al., 2014; Pittig, Pawlikowski, et al., 2014). These pronounced avoidant decisions may reflect a habitual avoidance tendency and may thus be linked to individual levels of in vivo anxiety, which is thought to drive avoidance. However, no studies to date examined whether an avoidant decision-making style is associated with situational social anxiety in individuals with clinically severe SAD.

Of particular clinical interest is the predictive value of avoidant decision making for the outcomes following an intervention. Current behavioral treatments for anxiety disorders, such as cognitive-behavioral therapy (CBT) or acceptance-commitment therapy (ACT), include exposure-based interventions, which involve approach toward anxiety-related stimuli in order to enable corrective learning (Arch & Craske, 2009; Craske, Treanor, Conway, Zbozinek, & Vervliet, 2014). Exposure therapy requires the individual's courage to confront anxiety-related stimuli, otherwise common treatment failures of drop-out and refusal will arise (Alpers, 2010; Arch & Craske, 2009). Likewise, approach needs to be maintained and protected against habitual avoidance tendencies. The mechanisms of the initial confrontation with an anxiety-related stimuli and the maintenance of (goal-directed) approach may be captured in the laboratory decision task by initial avoidant decisions and their change due to the integration of ensuing reward feedback. Thus, performance in experimental decision-making paradigms may be predictive of successful reduction of avoidance following behavioral treatment.

In sum, the present study investigated avoidant decisions in individuals with SAD when they were confronted with angry facial expressions. In a gambling task, net gains were associated with pictures of angry facial expressions and net losses with pictures of happy facial expressions. Individuals with SAD had to learn to choose the advantageous angry facial expressions to maximize net gains. The first aim of the study was to evaluate the relationship between avoidant decisions in the laboratory task and in vivo social anxiety in a realistic social stress situation. Specifically, the link between avoidant decisions and anxiety during public speaking was investigated, which is one of the most commonly feared situations for individuals suffering from SAD (Mannuzza, Schneier, Chapman, & Liebowitz, 1995; Pollard & Henderson, 1988). The second aim was to evaluate the predictive value of avoidant decision making for treatment outcome after behavioral therapy. The second aim was investigated for a subgroup of the current sample who completed a 12-week behavioral treatment for SAD as part of a larger randomized controlled trial (see Craske, Niles, et al., 2014).

2. Methods and materials

2.1. Participants

Forty-seven individuals with a principal SAD diagnosis participated in the study. The sample reported herein is a subsample recruited for a clinical trial comparing two behavioral therapies for SAD (for more details see Craske, Niles, et al., 2014). Participants were diagnosed with the Anxiety Disorders Interview Schedule-IV (ADIS-IV; Brown, DiNardo, & Barlow, 1994), which assesses anxiety disorders, mood disorders, somatoform disorders, and substance disorders, screens for psychoses, and also includes a brief medical history. Participants with a clinical severity rating (CSR) of four or higher for SAD were included. The CSR is an interviewer rating to reflect symptom severity, distress, and disablement (0 = none, 2 = mild, 4 = moderate, 6 = strong, 8 = most severe). Participants were between 18 and 60 years and either medication free or stabilized on psychotropic medications before starting treatment (one month for benzodiazepines and beta blockers, three months for heterocyclics and SSRIs/SNRIs). Exclusion criteria included a history of psychiatric hospitalization in the last five years, active suicidal ideation, severe depression (clinical severity rating > 6 on the ADIS-IV), a history of bipolar disorder, psychosis, mental retardation or organic brain damage as well as substance abuse or dependence within the last six months, or any serious medical disease.

Three participants were excluded from further analyses, because they chose to not complete the public speaking task. Thus, analyses of baseline data are based on 44 participants (Age: $M = 30.35$, $SD = 7.63$, Range = 18—45 years, 50% females). Within this sample, the average number of comorbid anxiety disorders (CSR > 3) was $M = .70$, $SD = .13$. Twenty-two participants (50%) had a comorbid depressive disorder (major depression and/or dysthymia with a CSR > 3) and 13 participants received psychopharmacological medication for an emotional problem (29.5%). Of these 44 participants, two did not start treatment, ten dropped out during treatment, and 12 were assigned to the waitlist group. Therefore, treatment outcome analyses were based on 20 participants (CBT: n = 13, ACT: n = 7). Completers did not differ significantly from non-starters/drop-outs on age, gender, use of medication, average anxiety during public speaking, or clinical severity of SAD (CSR rating and LSAS scores), all $ps > .05$.

2.2. Treatment and therapists

Participants were randomized to either receive 12 weekly, 1-h individual therapy sessions of cognitive-behavioral therapy (CBT) or acceptance-commitment therapy (ACT), or to a waitlist control group (WL). CBT for social phobia largely followed standard CBT manuals (e.g., Hope, Heimberg, & Turk, 2010) and mainly included psychoeducation, cognitive restructuring, and exposure to feared social cues. ACT followed a manual by Eifert and Forsyth (2005) and mainly included psychoeducation, encouraging acceptance and cognitive defusion, as well as behavioral exposures. WL participants waited to begin treatment for 12 weeks and were offered treatment free of charge following their post assessment.

Study therapists had at least two years of supervised training in delivering psychological treatments, at least one year training in CBT or ACT, completed intensive in-person 2-day workshops for CBT or ACT, and had weekly supervision for CBT or ACT. For the complete sample of the main trial, no significant differences were found between ACT and CBT in terms of treatment outcome, attrition rates, treatment credibility and integrity, or therapist competence (Craske, Niles, et al., 2014).