



Fear, avoidance and physiological symptoms during cognitive-behavioral therapy for social anxiety disorder



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ARTICLE INFO

Article history:

Received 10 October 2012

Received in revised form

21 February 2013

Accepted 13 March 2013

Keywords:

Social anxiety disorder

Cognitive-behavior therapy

Fear

Avoidance

Physiological symptoms

Expectancy

ABSTRACT

We examined fear, avoidance and physiological symptoms during cognitive-behavioral therapy (CBT) for social anxiety disorder (SAD). Participants were 177 individuals with generalized SAD who underwent a 14-week group CBT as part of a randomized controlled treatment trial. Participants filled out self-report measures of SAD symptoms at pre-treatment, week 4 of treatment, week 8 of treatment, and week 14 of treatment (post-treatment). Cross-lagged Structural Equation Modeling indicated that during the first 8 weeks of treatment avoidance predicted subsequent fear above and beyond previous fear, but fear did not predict subsequent avoidance beyond previous avoidance. However, during the last 6 weeks of treatment both fear and avoidance predicted changes in each other. In addition, changes in physiological symptoms occurred independently of changes in fear and avoidance. Our findings suggest that changes in avoidance spark the cycle of change in treatment of SAD, but the cycle may continue to maintain itself through reciprocal relationships between avoidance and fear. In addition, physiological symptoms may change through distinct processes that are independent from those involved in changes of fear and avoidance.

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Social anxiety disorder (SAD) is a common and debilitating psychiatric disorder with an estimated lifetime prevalence rate of 12.1% (Kessler et al., 2005). SAD is characterized by a fear of social interactions (e.g., talking to a stranger or peer, going to a party) and performance situations (e.g., giving a speech), behavioral avoidance of these situations, and physiological arousal (e.g., racing heart, sweating, trembling). Cognitive-Behavioral Therapy (CBT) is effective in reducing SAD symptoms (Acarturk, Cuijpers, van Straten, & de Graaf, 2009; Rodebaugh, Holaway, & Heimberg, 2004) and so are certain pharmacological therapies (Blanco et al., 2003; Hedges, Brown, Shwalb, Godfrey, & Larcher, 2007).

Although the efficacy of CBT for SAD is well established (e.g., Fedoroff & Taylor, 2001), the processes of change during treatment are not well understood. Some studies have examined cognitive mediators of treatment change (Hofmann, 2004), and some have examined the mediational relationship between social anxiety and depression during treatment (Moscovitch, Hofmann, Suvak, &

In-Albon, 2005), but to date, no study has examined the inter-relationships between fear, avoidance and physiological symptoms of social anxiety along the course of treatment. This is important as it can shed light on processes of symptom change and can inform our theoretical models of SAD, as well as the most effective targets for therapeutic intervention.

Current CBT models of SAD stress that avoidance plays a key role in the development and maintenance of the disorder (Clark, 2005; Clark & Wells, 1995; Hofmann, 2007; Rapee & Heimberg, 1997). Avoidance of stressful situations thwarts opportunities for inhibitory learning by blocking access to information that is incompatible with fear-related cognitions (Alden & Wallace, 1991; Hofmann, 2004; McManus, Clark, & Hackmann, 2000; Moscovitch, 2009; Wallace & Alden, 1995, 1997). Similarly, safety behaviors (sometimes referred to as subtle avoidance behaviors) have been found to maintain SAD symptoms (e.g., McManus, Sacadura, & Clark, 2008), and reductions in safety behaviors have been associated with reduced anxiety, and reduced negative cognitions (Kim, 2005; Morgan & Raffle, 1999; Stangier, Heidenreich, & Schermelleh-Engel, 2006; Taylor & Alden, 2010; Wells et al., 1995). Consistent with the causal role of avoidance behaviors in maintaining SAD, a chief

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objective of CBT is to target avoidance behaviors through exposure techniques, in order to reduce SAD-related fear (e.g., Clark, 2005).

The relationship between physiological symptoms on the one hand and avoidance and social fears on the other is less clear. It is possible that reductions in physiological symptoms would lead to reductions in social fears, as many individuals with SAD fear exhibiting physiological symptoms (e.g., “I will blush”). Conversely, it is possible that reduced fear would lead to reduced physiological symptoms because individuals experience lower levels of arousal in social situations. It is also possible that reductions in physiological symptoms would lead to reductions in avoidance of social situations, as social situations become less threatening when physiological symptoms are less salient. Maintenance models of SAD have not explicitly delineated the temporal relationships between physiological symptoms and fear and avoidance (Clark, 2005; Clark & Wells, 1995; Hofmann, 2007; Rapee & Heimberg, 1997). Thus, it remains unclear whether changes in physiological symptoms affect avoidance or fear, are affected by avoidance or fear, or both. Understanding this relationship is important as it can shed light on mechanisms of change during treatment and can help us understand whether targeting physiological symptoms can augment current treatments.

In the present study, our aims were three-fold. First, we wanted to examine the relationship between avoidance and fear during a full-length course of CBT. The vast majority of studies examining avoidance and safety behaviors have used one-session experiments in which participants conduct a single exposure and are measured on SAD symptoms before and after the session. Thus, we wanted to build on these studies and extend the examination of the avoidance–fear relationship to treatment settings. We hypothesized that based on previous findings from single-session experiments (e.g., Kim, 2005; McManus et al., 2009; Wells et al., 1995), avoidance would affect subsequent fear (but not vice-versa). Second, we wanted to explore the relationship between physiological symptoms on the one hand and avoidance and fear on the other. This second aim was exploratory because maintenance models of SAD and previous research have not focused on the temporal relationship between physiological symptoms and avoidance and fear. Third, as some researchers suggest that common treatment factors (e.g., insight, therapeutic alliance, treatment expectancy) play a large role in determining treatment outcome (Messer & Wampold, 2002), we examined one such factor – treatment expectancy – and its relationship to treatment outcome.

We hypothesized that fear, avoidance, and physiological symptoms would be correlated at each assessment point during treatment (synchronous effects). This is because all three are symptom clusters of social anxiety disorder. We also hypothesized that for each symptom cluster, symptom levels at each assessment point would predict symptom levels at the next assessment point (stability effects; e.g., fear at measurement t would predict fear at measurement $t + 1$). In addition, we hypothesized that avoidance at each assessment point would predict fear at the next assessment point (cross-lagged effects; avoidance at time t would predict fear at time $t + 1$). Finally, based on a previous study in SAD (Safren, Heimberg, & Juster, 1997) we hypothesized that treatment expectancy would predict treatment outcome.

Method

Participants

The sample included 177 individuals with generalized SAD who participated in a two-site, randomized controlled trial (Davidson et al., 2004). Only participants randomized to CBT were included in the present study (CBT alone, $n = 59$; CBT and Placebo, $n = 59$;

CBT and Fluoxetine, $n = 59$). Of the total sample, 85 (48.3%) were females. The mean age was 37.6 (SD = 10.0), and mean years of education were 14.7 (SD = 3.5). Most participants were Caucasian (77.1%), with the next largest group being African American (16.6%), followed by Asian (3.4%), Hispanic (2.3%), and Other (0.6%). There were no differences between treatment conditions on any of the demographic variable (all $ps > 0.05$). In addition, there were no differences between treatment conditions in terms of treatment outcome as measured by the Brief Social Phobia Scale (Davidson et al., 2004). The initial severity of SAD symptoms as measured by the Brief Social Phobia Scale was 38.74 (SD = 9.98).

Inclusion criteria for the trial were: (1) DSM-IV diagnosis of generalized SAD; (2) age between 18 and 65 years; (3) fluency in English. Exclusion criteria were: (1) a primary anxiety disorder other than SAD (defined by which disorder was the more debilitating and clinically salient); (2) lifetime history of schizophrenia, bipolar disorder, or organic brain syndrome; (3) major depression within the last 6 months; (4) substance abuse or dependence within the past year; (5) mental retardation or pervasive developmental disability; (6) unstable medical condition; (7) prior failure of response to fluoxetine at 60 mg/d for at least 4 weeks or to 12 weekly sessions of CBT for GSP; (8) concurrent psychiatric treatment or other psychoactive medications; (9) positive urine drug screen results; (10) inability to maintain 2 weeks' psychotropic drug-free washout; and (11) pregnancy or lactation.

Procedure

Following informed consent, participants were assessed using the Structured Clinical Interview for DSM-IV (First & Gibbon, 2004). In addition, participants underwent psychiatric and medical evaluation to establish inclusion and exclusion criteria. Of 722 individuals initially assessed for eligibility, 173 (24%) did not meet inclusion criteria and were excluded from study participation. Participants were randomized to one of the treatment conditions using a computer program. Participants were assessed at pre-treatment, as well as at week 4, week 8, and week 14 of treatment (post-treatment) by independent evaluators, blind to treatment conditions. Thirty-five participants (19.8%) dropped out of the study during treatment. Of these, 10 dropped out before week 4, 20 dropped out between week 4 and 8, and 5 dropped out between week 8 and 14.

Treatments

Comprehensive cognitive behavioral therapy

This treatment was a 14-week group treatment comprised of exposure exercises, cognitive restructuring, and social skills training. Each group included 5–6 participants, and two trained therapists (one male and one female). The first 2 sessions were psychoeducational, and included information regarding the CBT model of SAD and the rationale for treatment. Session 3 and 4 were devoted to social skills training, and included role-plays structured to teach social skills such as initiating and ending conversations, and negotiating. Session 5–13 included individualized role-plays tailored to participants' social fears. In addition cognitive restructuring was conducted before and after the role plays. Session 14 included a discussion of treatment gains and recommendations for future practices. For additional details, see Davidson and colleagues (Davidson et al., 2004).

Fluoxetine

Fluoxetine was started at 10 mg/d, and was increased by 10 mg increments after one week, two weeks, and four weeks. Thus, unless adverse effects became problematic, the goal was for subjects to reach 40 mg/d. If this target dose did not produce significant

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