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### Cognitive Factors that Maintain Social Anxiety Disorder: a Comprehensive Model and its Treatment Implications

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# Cognitive Factors that Maintain Social Anxiety Disorder: a Comprehensive Model and its Treatment Implications

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**Abstract.** Social anxiety disorder (SAD) is a common, distressing and persistent mental illness. Recent studies have identified a number of psychological factors that could explain the maintenance of the disorder. These factors are presented here as part of a comprehensive psychological maintenance model of SAD. This model assumes that social apprehension is associated with unrealistic social standards and a deficiency in selecting attainable social goals. When confronted with challenging social situations, individuals with SAD shift their attention toward their anxiety, view themselves negatively as a social object, overestimate the negative consequences of a social encounter, believe that they have little control over their emotional response, and view their social skills as inadequate to effectively cope with the social situation. In order to avoid social mishaps, individuals with SAD revert to maladaptive coping strategies, including avoidance and safety behaviors, followed by post-event rumination, which leads to further social apprehension in the future. Possible disorder-specific intervention strategies are discussed. *Key words:* social anxiety disorder; social phobia; maintaining factors; cognitive behavioral therapy; exposure therapy.

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Contemporary theories of social anxiety and its clinical expression, social anxiety disorder (SAD), emphasize the role of cognitive processes in the maintenance of the disorder (Clark & Wells, 1995; Leary & Kowalski, 1995; Rapee & Heimberg, 1997). The most popular and best-researched treatment approach is cognitive behavioral group therapy (CBGT) (Heimberg & Becker, 2002). This treatment is an adaptation of Beck and Emery's (1985) cognitive therapy of anxiety disorders. In fact, due to the similarities between Beck's cognitive therapy and Heimberg's treatment of SAD, previous investigators have labeled the intervention that is based on this model "Beck-Heimberg CBT" (Feske & Chambless, 1995, p. 714).

This intervention is typically administered by 2 therapists in 12 weekly 2.5-hour sessions

to groups of 6 and consists of several distinct, but interwoven, treatment components. In the first 2 sessions, patients are taught the Beckian CBT model as applied to SAD, and they are introduced to cognitive restructuring techniques. Specifically, patients practice identifying negative cognitions (automatic thoughts), observing the co-variation between anxious mood and automatic thoughts, examining the errors of logic, and formulating rational alternatives to their automatic thoughts. In the remaining 10 sessions of acute treatment, patients confront increasingly difficult feared situations (simulated in the therapy group) while applying cognitive restructuring techniques. Behavioral experiments are utilized to confront specific reactions to exposure experiences. When this process is complete, the patient and group agree on assignments for

exposure to similar real-life situations during the week. Patients complete self-administered cognitive restructuring exercises before and after each behavioral homework assignment. Heimberg's treatment protocol is the most widely accepted and disseminated approach to treating SAD. Similar treatment protocols have been developed and tested by others (e.g. Davidson et al., 2004; Lucock & Salkovskis, 1988; Mattick & Peters, 1988; Mersch, Emmelkamp, Bögels, & van der Sleen, 1989). For the remaining discussion, I will refer to this approach as the "conventional CBT model of SAD".

### The conventional CBT model

Although the conventional CBT model for SAD has stimulated a great amount of research, the treatment strategies have shown only modest effects. For example, in a large-scale study on the efficacy of CBGT, 133 patients with SAD were randomly assigned to phenelzine (Nardil) a monoamine oxidase inhibitor (MAOI) commonly used to treat SAD, educational support group therapy, a pill placebo, or CBGT (Heimberg et al., 1998). After 12 weeks, both the phenelzine (65%) and the CBGT conditions (58%) had higher proportions of responders than pill placebo (33%) or educational support group therapy (27%), which served as a psychotherapy placebo condition. The criterion for treatment response was based on a 7-point rating of

change on the Social Phobic Disorders Severity Change Form (Liebowitz et al., 1992). Patients rated as markedly or moderately improved were classified as responders. Using a stricter improvement criterion, Mattick and Peters (1988) found that only 38% of individuals with SAD who completed a treatment very similar to Heimberg's protocol achieved high end-state functioning. The controlled effect size estimate comparing CBT and educational supportive therapy at post-test based on the Liebowitz Social Anxiety Scale (LSAS; Liebowitz, 1987) was in the small-to-medium range (see Table 1). Similar effect sizes were found in an earlier study (Heimberg, Dodge, Hope, Kennedy, Zollo, & Becker, 1990).

Another example of a conventional CBT model is comprehensive cognitive behavioral therapy (CCBT; Foa, 1994). This treatment protocol was included as a treatment condition in a recently published clinical trial (Davidson et al., 2004). The treatment protocol is derived in part from CBGT (Heimberg & Becker, 2002) and combines exposure techniques, Beckian cognitive restructuring therapy, and social skills training. The intervention differs from CBGT primarily in that it includes specific social skills training in addition to the conventional cognitive restructuring exercises and exposure tasks. Furthermore, the roleplays are shorter and the treatment is 2 sessions longer than CBGT. The study by Davidson et al. (2004) suggests

Table 1. Summary of randomized-controlled studies testing conventional cognitive behavioral therapy for social anxiety disorder (SAD).

Study	Comparison group	Sample size of CBT	Number of sessions	Duration of session (hours)	Measures	Controlled effect size $d^1$
Davidson et al. (2004)	Pill placebo	48	14	2.5	BSPS CGI-S	0.24 0.30
Heimberg et al. (1990)	Educational supportive	25	12	2.5	FNE SADS	0.25 0.27
Heimberg et al. (1998)	Educational supportive	33	12	2.5	LSAS (fear) LSAS (avoidance)	0.10 0.31
Mattick & Peters (1988)	Guided exposure	25	6	2	FNE	0.30

BSPS= Brief Social Phobia Scale (Davidson, Miner, deVeauh Geiss, Tupler, Colket, & Potts, 1997); CGI-S= Clinical Global Impression Scale, Severity (Guy, 1976); FNE= Fear of Negative Evaluation Scale (FNE; Watson & Friend, 1969); LSAS= Liebowitz Social Anxiety Scale (Liebowitz, 1987); SADS= Social Anxiety and Distress Scale (SADS; Watson & Friend, 1969).

<sup>1</sup>The controlled effect size  $d$  was calculated according to the formula:  $d = (\text{mean of comparison group at post-test} - \text{mean of CBT group at post-test}) / \text{pooled standard deviation}$ .

that Foa's treatment shows efficacy rates that are similar to CBGT. Specifically, the study randomized 295 patients with generalized SAD to 1 of 5 groups: (i) fluoxetine, (ii) CCBT, (iii) placebo, (iv) CCBT combined with fluoxetine, or (v) CCBT combined with placebo. The results showed that all active treatments were superior to placebo, and the combined treatment was not superior to the other treatments. The response rates in the intention-to-treat sample (using the Clinical Global Impressions scale) were 50.9% (fluoxetine), 51.7% (CCBT), 54.2% (CCBT/fluoxetine), 50.8% (CCBT/placebo) and 31.7% (placebo). These findings are comparable to other clinical trials, and suggest that many participants remain symptomatic after conventional CBT. Davidson and colleagues (2004), therefore, wondered whether "changes in the delivery of CBT would improve the results" (p. 1012). Table 1 depicts a summary of the trials that tested treatments based on the conventional CBT model against credible placebo treatments.

### Disorder-specific CBT models

Preliminary evidence in support of the notion that disorder-specific intervention strategies could lead to improved outcomes comes from a recent study by Clark and colleagues (2003). The treatment used in this trial is based on the Clark and Wells' (1995) model of SAD and focuses on modifying safety behaviors and self-focused attention, in addition to the conventional CBT strategies. Clark and Wells (1995) discuss at least four psychopathological processes that prevent individuals with SAD from disconfirming their maladaptive beliefs. First, when individuals with SAD enter a social situation they shift their attention to detailed monitoring and observations of themselves. This attentional shift produces an enhanced awareness of feared anxiety responses, interferes with processing the situation and other people's behavior, and produces interoceptive information that is used to construct a negative self impression. Secondly, individuals with SAD engage in a variety of safety behaviors to reduce the risk of rejection. These behaviors prevent them from critically evaluating their feared outcomes (e.g. shaking uncontrollably) and catastrophic beliefs. Thirdly, Clark and

Wells assume that individuals with SAD show an anxiety-induced performance deficit and overestimate how negatively other people evaluate their performance. Fourthly, the model suggests that prior to and after a social event, individuals with SAD think about the situation in detail and primarily focus on past failures, negative images of themselves in the situation, and other predictions of poor performance and rejection. The model further assumes that these anxious feelings and negative self-perceptions are strongly encoded in memory because they are processed in such detail.

Based on this model, Clark and colleagues (Clark et al., 2003) developed an individual treatment approach consisting of 16 sessions. An abbreviated version of this protocol was developed earlier by Wells and Papageorgiou (2001). The Clark et al. (2003) trial randomly assigned 60 patients with generalized SAD to one of 3 conditions: (i) cognitive therapy alone; (ii) fluoxetine combined with self-exposure; and (iii) fluoxetine combined with a pill placebo. Treatment efficacy was measured by calculating a composite score that was based on 6 frequently used self-report measures of SAD and a rating based on a structured clinical interview. The results at post-treatment and 12-month follow-up assessments showed that cognitive therapy was superior to the other 2 conditions, which did not differ from one another. The results showed that the uncontrolled effect size of the severity rating based on the clinical interview was 1.41 (pre-test to post-test) and 1.43 (pre-test to 12-month follow-up) in the cognitive therapy group. Even stronger effects were found for the composite score, which was associated with an uncontrolled pre-post effect size of 2.14.

The trial by Clark et al. (2003), however, also showed a number of notable weaknesses. First, the study did not include a method to assess responder status and most of the results were based on self-report instruments. Secondly, another recently published study by Stangier et al. (2003) reported a considerably smaller uncontrolled pre-post effect size after administering Clark's protocol (0.77) and an even smaller effect size when administering this treatment in a group format (0.60). Nevertheless, the Clark et al. (2003) trial suggests that it is possible to improve the treatment effects by targeting additional cognitive variables that

have not been systematically addressed in previous CBT protocols for SAD.

The following will describe a comprehensive maintenance model of SAD that is built upon recent laboratory findings and results from clinical trials. This model shows a number of similarities to the cognitive model by Clark and colleagues (Clark & Wells, 1995; Clark et al., 2003) but also includes a number of significant differences and unique features. Some of its unique features are based on the recent acceptance-based literature, action theory, emotion theories, and studies on self-perception. The goal is to develop a comprehensive, disorder-specific maintenance model that is based on a broad psychopathology and treatment literature.

### A comprehensive and disorder-specific CBT model for SAD

Based on the existing literature on the maintaining factors of SAD, a theoretical

model was generated (Figure 1). According to this model, individuals with SAD are apprehensive in social situations in part because they perceive the social standard (i.e. expectations and social goals) as being high. They desire to make a particular impression on others, but doubt that they will be able to do so (Leary, 2001), partly because they are unable to define goals and select specific achievable behavioral strategies to reach these goals (Hiemisch, Ehlers, & Westermann, 2002). This leads to a further increase in social apprehension and increased self-focused attention (Clark & McManus, 2002; Heinrichs & Hofmann, 2001; Hirsch & Clark, 2004; Woody, 1996), which triggers a number of additional cognitive processes. Specifically, vulnerable individuals exaggerate the probability of a negative outcome of a social situation and overestimate the potential social costs (Foa, Franklin, Perry, & Herbert, 1996; Hofmann, 2004). This is consistent with the model by Clark and Wells (1995), which

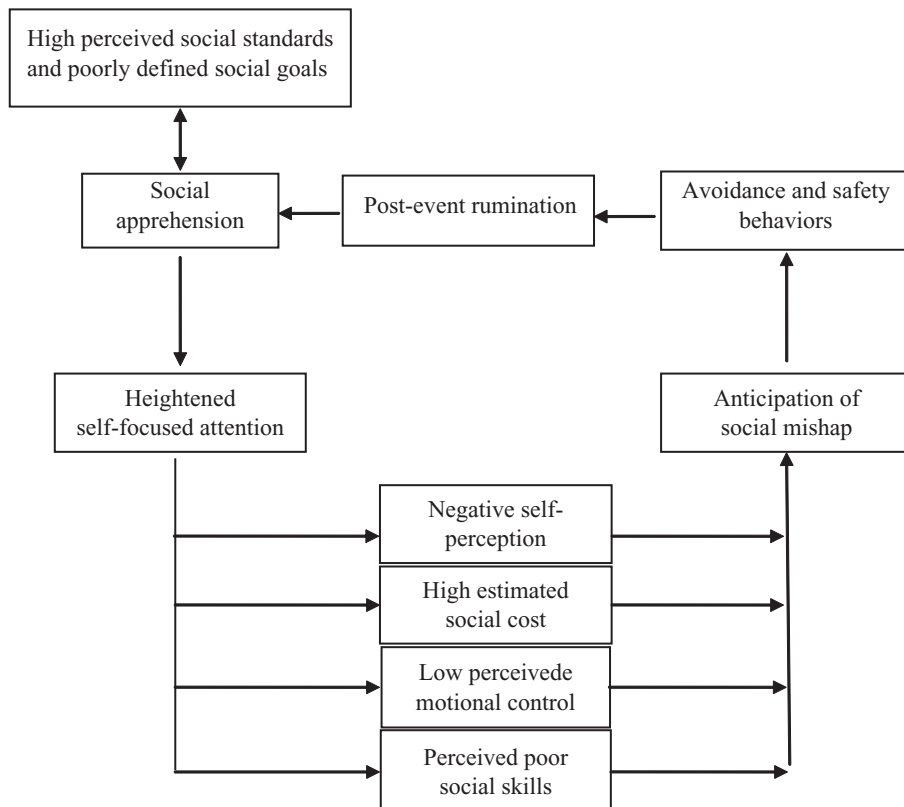


Figure 1. Psychological factors that maintain social anxiety disorder.

assumes that individuals with SAD believe that they are in danger of behaving in an inept and unacceptable fashion and that this will result in disastrous consequences. In addition, the model posits that individuals with SAD perceive little control over their anxiety response in social situations (Hofmann & Barlow, 2002), hold a negative view of themselves as a social object, and view their social skills as very poor or inadequate to master the social task. As a result, the individual with SAD anticipates social mishaps and engages in avoidance and/or safety behaviors (Wells et al., 1995), followed by post-event rumination (Mellings & Alden, 2000; Rachmann, Grüter-Andrew, & Shafran 2000). This cycle feeds on itself, ultimately leading to the maintenance and further exacerbation of the problem (Figure 1). The following paragraphs will provide the empirical and theoretical basis for this model.

### ***High perceived social standards***

The motivation to be a valued member of a social group appears to be a basic evolutionary-determined human motivation (Baumeister & Leary; Gilbert, 2001; Gilbert Price, & Allan, 1995). Several models of social anxiety and SAD assume that anxiety arises in social situations when individuals wish to convey a desired impression but are unsure about their ability to do so (Clark & Wells, 1995; Leary, 2001; Trower & Gilbert, 1989). Consistent with this model are studies which suggest that individuals with SAD show a discrepancy between perceived social standards and their perceived social abilities (Alden, Bieling, & Wallace, 1994; Alden & Wallace, 1991, 1995; Wallace & Alden, 1991, 1995). This discrepancy was found to be largely due to the individuals' underestimation of their ability level in relation to the perceived social standard. Similarly, it has been shown that patients with SAD perceive their self-attributes to fall short of the characteristics they believe others expect them to have (e.g. Strauman, 1989, 1992; Weilage & Hope, 1999).

Although, the estimations that individuals with SAD have of others' standards do not typically exceed those of non-anxious controls (Alden, Bieling, & Wallace, 1994; Wallace and Alden, 1991), research does suggest that individuals with SAD are concerned that

others may hold high standards for their performance in social situations and that this concern may significantly influence their emotions and behavior. For example, patients who receive feedback that they performed well during a social encounter have been found to react with *increased* anxiety when anticipating a subsequent encounter due to their perception that their initial success may have led evaluators to raise expected performance standards (Wallace & Alden, 1995). Similarly, when individuals with social anxiety perceive expected standards to be unreachable, they may employ the self-presentational strategy of purposeful failure in order to influence potential evaluators to lower their performance expectations to a level they can more confidently match (e.g. Baumgardner & Brownlee, 1987). Similar strategies seem to be applied when the situational standards are ambiguous, as suggested by a study by Moscovitch and Hofmann (2007). In this study, individuals with generalized SAD and controls were exposed to cues indicating that standards for performance were high, low, or ambiguous prior to being asked to perform a socially threatening task. The results showed that individuals with SAD rated their performance as being worse in the high and even more so in the ambiguous standards conditions. No group difference in appraisal was observed in the low standards condition.

Finally, it has been shown that affect can impact people's constructions of desired performance standards and evaluations of prospective outcomes ("affect-as-information" model; Cervone, Kopp, Schaumann, & Scott, 1994) and that experiencing anxiety can implicitly influence people to set higher minimal standards for their performance (Scott & Cervone, 2002). It can be concluded that the perception of social standards is in a close interactive relationship with self-appraisal and subjective social anxiety.

### ***Poorly defined social goals***

Leary and colleagues (Leary & Kowalski, 1995; Schlenker & Leary, 1982) note that social anxiety occurs if individuals with social anxiety doubt that they are able to make a desired impression, which is typically the goal of the social situation. The effects of goal-setting on information processing have been well researched by action theorists (e.g.

Gollwitzer & Moskowitz, 1996). Action theory emphasizes cognitive processes relevant for successful goal attainment. The goal a person is trying to achieve not only determines the demands of a situation, but it also influences cognition, affect, and behavior in a specific way. In case of SAD, individuals engage in information processing that interferes with successful goal attainment when approaching social situations. The process of goal achievement has been described by the Rubicon Model of Action Phases (Gollwitzer, 1996; Heckhausen, 1991). This model distinguishes 4 action phases during goal pursuit. In the first (pre-decisional) phase, people deliberate and choose among potential goals. In the second (pre-actional) phase, people form a plan for how to achieve the intention in the given situation. The plan is put into action during the third (actional) phase. Finally, the outcomes of the action are evaluated during the fourth (post-actional) phase. Each of the 4 phases is accompanied by specific mindsets that facilitate the processing of certain types of information and successful goal attainment (e.g. Gollwitzer & Bayer, 1999). For example, the pre-decisional phase is characterized by a deliberative mindset during which the desirability and feasibility of the various goals are examined. In contrast, the pre-actional phase is characterized by an implemental mindset during which the chosen goal is processed preferentially, in a partial and optimistic manner. A study by Hiemisch and colleagues (2002) suggested that individuals high in social anxiety show an inappropriate deliberative mindset when required to plan how to achieve a certain goal (which requires an implementation mindset). This mindset is inappropriate because it is incompatible with a particular action toward goal attainment. In sum, individuals with SAD are deficient in setting, defining, and achieving social goals.

### ***Heightened self-focused attention***

The cognitive model assumes that, when confronted with social threat, socially anxious individuals shift their attention inward and engage in a process of detailed monitoring and observation of themselves (Hirsch, Clark, Mathews, & Williams, 2003), which is consistent with the information processing literature (Clark & McManus, 2002; Heinrichs & Hofmann, 2001; Hirsch & Clark, 2004).

Studies have further shown that under conditions of high self-focused attention, individuals with SAD experience spontaneous, recurrent, and excessively negative self-images, which they believe to be accurate at the time they occur (Hackmann, Clark, & McManus, 2000; Hackmann, Suraway, & Clark, 1998; Hofmann & Heinrichs, 2003). Compared with non-anxious controls, individuals with SAD are more likely to “see” themselves in social situations as if from an observer’s perspective (Hackmann et al., 1998). When instructed to focus their attention on aspects of the external environment, individuals with SAD report less anxiety and fewer negative beliefs (Wells & Papageorgiou, 1998). Moreover, individuals with SAD have a tendency to miss important positive cues during a social encounter and lack the type of positive inferential bias that characterizes the cognitive processes of non-anxious controls (Hirsch & Matthews, 2000).

This is consistent with the information processing literature on SAD, including experiments that utilized the modified dot-probe paradigm (for a review, see Heinrichs & Hofmann, 2001). As part of a typical dot-probe experiment, participants are asked to press 1 of 2 buttons to identify the location of a dot that follows 1 of 2 stimuli (words or faces) presented on a computer screen. These words typically vary in their emotional valence. The dot detection latencies determine whether visual attention has shifted toward or away from the threatening stimulus. Asmundson and Stein (1994), for example, conducted a dot-probe experiment with individuals with SAD and normal controls and found that individuals with SAD responded faster than normal controls to probes that followed social threat cues than probes that followed either neutral or physical threat cues. However, this result was only observed when cues appeared in the upper area of the monitor to which subjects were initially directing their attention. In contrast, the attention did not shift towards the threatening cue when it appeared in the lower area. This finding suggests that selective attention occurs only if a threat cue is actively perceived. Furthermore, the faster response toward probes in general indicates that patients with SAD may exhibit generally heightened environmental awareness and show selective processing of social threat cues.

A study by Chen, Ehlers, Clark and Mansell (2002) tested whether patients with SAD direct their attention to or away from faces with a range of emotional expressions. A dot probe paradigm measured whether participants with SAD or controls attended more to faces or to household objects. Participants with SAD were faster in identifying the probe when it occurred in the location of the household objects, regardless of whether the facial expressions were positive, neutral, or negative. In contrast, controls did not show an attentional preference. These findings point to reduced processing of external social cues for the maintenance of SAD.

Another frequently used paradigm to measure attentional bias in SAD is the emotional Stroop test. As part of this task participants are asked to name the color of words with different emotional significance while ignoring the words' content (e.g. "humiliation" written in red). One of the first studies to demonstrate a Stroop effect in SAD was conducted by Hope, Rapee, Heimberg, and Dombeck (1990). The authors found a distinct pattern comparing individuals with SAD and panic disorder; individuals with SAD showed longer color-naming latencies for words with a socially threatening connotation than for words with a neutral connotation, whereas individuals with panic disorder showed longer color-naming latencies for words with a physically threatening connotation than for words with a neutral connotation. Finally, Amir and colleagues (1996) reported that the situational context moderates the inhibition effect of Stroop interference. This brief review of the information processing literature suggests that individuals with SAD show selective attentional biases to social threat words and emotional faces. These biases may be diverting attentional resources from processing other information, including other threat, positive, and neutral stimuli.

### ***Negative self-perception***

Cognitive models of SAD have placed a particular emphasis on self-perception as an important maintaining factor of the disorder (Beck & Emery, 1985; Clark, 2001; Clark & Wells, 1995; Leary, 2001; Mansell & Clark, 1999; Rapee & Heimberg, 1997). Social anxiety is thought to arise from the perception that one is unable to convey a desired

impression of oneself to important others (Leary, 2001; Leary & Kowalski, 1994, 1995; Schlenker & Leary, 1982). This conceptualization of social anxiety has received support from research on self-discrepancy theory (e.g. Higgins, 1987; Strauman & Higgins, 1987; Strauman, 1989, 1992), which distinguishes between beliefs individuals hold about their *actual* self (the attributes people believe someone – self or other – feels they actually possess), their *ideal* self (the attributes people would like to possess), and their *ought* self (the attributes people believe they ought to possess). Studies have consistently found that patients with SAD experience significant *actual:ought/other* trait self-discrepancies, indicating that they perceive their self attributes to fall short of the characteristics they believe others expect them to possess (e.g. Strauman, 1989, Weilage & Hope, 1999).

Socially anxious individuals under social threat experience state self-discrepancies that are characterized by an underestimation of their abilities relative to others' standards (Alden, Bielings, & Wallace, 1994; Wallace & Alden, 1991). It has further been shown that patients with SAD form negative mental self-representations based not on how they view themselves but on how they believe potential evaluators (or an audience) view them at any given moment (Hackmann, Surawy, & Clark, 1998; Rapee & Heimberg, 1997; Wells, Clark, & Ahmad, 1998; Wells & Papageorgiou, 1999). This view is typically negative and improves as a result of successful treatment of the disorder (Hofmann, 2000a; Hofmann, Moscovitch, Kim, & Taylor, 2004).

Negative self-perception plays a central role in the development and maintenance of SAD (e.g. Hook & Valentiner, 2002). Cognitive theories (e.g. Beck & Emery, 1985; Clark & Wells, 1995; Rapee & Heimberg, 1997) posit that on the basis of early learning experiences, individuals with SAD develop a number of distorted, negative assumptions about themselves (e.g. "I'm stupid," "I'm unattractive"; Clark & Wells, 1995) that become reinforced over time by selective information processing errors that occur both within and between social encounters (Bögels & Mansell, 2004; Clark & McManus, 2002; Heinrichs & Hofmann, 2001; Hirsch & Clark, 2004). When faced with social threat, individuals with SAD shift their attention inward and



engage in a process of detailed self-monitoring (Mansell & Clark, 1999; Spurr & Stopa, 2002), during which they experience spontaneous, recurrent, and excessively negative self-images that they perceive as being accurate (Hackmann, Clark, & McManus, 2000; Hackmann, Surawy, & Clark, 1998).

It has been argued (e.g. Alden & Wallace, 1995) that biased, negative self-appraisals are "a general feature" (p. 503) of SAD that occur irrespective of the social context. In support of this view, individuals with SAD have been found to appraise their own behavior in a manner that greatly minimizes their performance accomplishments (Norton & Hope, 2001; Rapee & Lim, 1992; Stopa & Clark, 1993), regardless of their level of skill or the degree of warmth and friendliness exhibited by their interaction partners (Alden & Wallace, 1995). In contrast, other evidence suggests that for highly self-conscious individuals, negative self-appraisals are actually context-specific and activated only by social cues that trigger memories and expectancies of social rejection and failure (Baldwin & Main, 2001). In sum, negative self-perception is an important maintaining factor of SAD, and changes in negative self-perception are closely associated with treatment progress.

### ***High estimated social cost***

One of the most popular mediation hypotheses is that certain changes in cognitive schemata account for therapeutic changes. This has been studied mainly in depression (Barber & DeRubeis, 1989; Evans & Hollon, 1988; Hollon, Evans, & DeRubeis, 1990; Whisman, 1993). Similarly, anxiety disorder researchers believe that effective psychotherapy either directly modifies the patient's irrational beliefs, or deactivates them while making other schemata available (e.g. Clark, 1986).

Clark and Wells (1995) argue that individuals with SAD believe that "(i) they are in danger of behaving in an inept and unacceptable fashion, and (ii) that such behavior will have disastrous consequences in terms of loss of status, loss of worth, and rejection" (pp. 69–70). Consistent with this model are the results from studies showing that socially anxious individuals believe that negative social events are more likely to occur than positive social events (Luckock & Salkovskis,

1988), and assume that most people are inherently critical of others and are likely to evaluate them negatively (Leary & Kowalski, 1995). Furthermore, the belief system of individuals with SAD appears to magnify the competitive aspects of interpersonal relationships, but minimize the co-operative, supportive aspects (Trower & Gilbert, 1989).

Estimated social cost is a specific expression of the dysfunctional beliefs about the potential outcome of a social encounter. Like other dysfunctional social beliefs, this maladaptive thought should be responsive to cognitive intervention. Direct evidence for the role of estimated social cost as a treatment mediator comes from studies by Foa et al. (1996), McManus, Clark and Hackmann (2000), and Hofmann (2004). Foa and colleagues found that patients evidenced socially relevant judgmental biases prior to treatment, which were attenuated following treatment. Specifically, the investigators treated 15 individuals with generalized SAD using a modified version of Heimberg's CBGT protocol (Heimberg & Becker, 2002). Before and after treatment, all patients and 15 non-anxious controls completed the experimenter developed Probability/Cost Questionnaire (PCQ). The results were consistent with Foa and Kozak's (1986) hypothesis that individuals with SAD would exhibit specific judgmental biases for the costs of negative social events. Patients evidenced socially relevant judgmental biases prior to treatment, which were attenuated following treatment. A decrease in both estimated costs and overestimation of the probability of negative social events was highly associated with post-treatment level of symptom severity. The relationship between estimated costs and post-treatment scores remained strong after controlling for change in estimated probabilities ( $r=0.76$ ). However, the partial correlation between social probability and post-treatment scores was considerably smaller when controlling for estimated costs ( $r=0.27$ ). Furthermore, appraisals of cost and probability of negative social events were highly correlated ( $r=0.74$ ), suggesting that estimated costs, as measured with the PCQ, were the best single predictor for treatment outcome.

Similar results were reported by McManus et al. (2000) and Hofmann (2004). The latter

study showed that direct cognitive intervention leads to better maintenance of treatment gains, and this effect appears to be mediated via changes in estimated social cost during treatment. It can be concluded that cognitive biases leading to an exaggeration of estimated social cost are important maintaining factors that appear to mediate successful treatment changes.

### ***Low perceived emotional control***

Emotional disorders are frequently associated with a perception of a lack of control over aversive events (Alloy, Abramson, & Viscusi, 1981; Barlow, 2002), which can result in subjective, behavioral, and physiological distress (Geer, Davison, & Gatchel, 1970; Glass & Singer, 1970; Sanderson, Rapee, & Barlow, 1989). Furthermore, it has been demonstrated that repeated experience with uncontrollable aversive events can lead to anxiety and depression (Abramson, Seligman, & Teasdale, 1978; Barlow, 2002). Therefore, the degree to which people view events as within their control may be a fundamental mediator of psychopathology and treatment (e.g. Rotter, 1966, 1975). Similarly, Barlow (2002) suggested that the unexpected experience of bursts of emotions may lead to anxiety disorders in vulnerable individuals because they view their own emotions or bodily reactions as out of control. In the case of panic disorder, for example, vulnerable individuals may unexpectedly experience a brief and intense burst of fear and subsequently develop anxiety over the possibility of the reoccurrence of this response in an uncontrollable manner. Moreover, Barlow (2002) hypothesized that all anxiety disorders share a lack of perceived control over negative emotional and bodily reactions.

Consistent with this hypothesis are the findings from studies suggesting that patients with SAD perceive a lack of internal control (Leung & Heimberg, 1996) and believe that events are controllable only by people other than themselves (Cloitre, Heimberg, Liebowitz, & Gitow, 1992). In fact, people who are afraid of public speaking attribute their fear more often to "panic attacks" (defined as a sudden rush of intense fear without apparent reason) than to traumatic events (e.g. the individual with SAD

experienced herself an embarrassing public speech) or indirect conditioning events (e.g. the individual witnessed and heard of such a traumatic situation) (Hofmann, Ehlers, & Roth, 1995). Although all subjects of the Hofmann et al. (1995) study met diagnostic criteria for SAD, they regarded panic attacks as more important for their speech anxiety than their fear of negative evaluation by others (which is considered the core feature of SAD). Similarly, a more recent study (Hofmann, 2005) employed structural equation modeling procedures in a large and representative sample of individuals with SAD. The results suggested that "costly" social situations are anxiety provoking in part because individuals with SAD perceive their anxiety symptoms as being out of control. In sum, the literature suggests that individuals with SAD believe that they have little control over their emotional response in the threatening social situation and that this lack of control can be easily noticed by other people.

### ***Perceived poor social skills***

It has been suggested that increasing one's sense of competence in mastering a feared situation (i.e. perceived self-efficacy) is the single result of all successful anxiety reduction techniques (Bandura, 1977, 1983, 1984). Earlier versions of Bandura's theory assume that performance capabilities can be predicted independently from the person's anxiety state. However, Borkovec (1978) pointed out that self-efficacy is more likely to be a reflection of a behavioral change mechanism than to be the mediator of such change. Furthermore, performance capabilities alone often play little or no role in many anxiety disorders (Barlow, 2002). In fact, most people with SAD seem to possess adequate social skills, but are inhibited when it comes to applying them in social situations. As a result of these and other criticisms, subsequent versions of Bandura's theory conceptualized self-efficacy more generally as a perceived ability to manage potential threats that also increases the sense of predictability and controllability of anxiety-provoking events (Bandura, 1986).

The perception of one's social skills and abilities appears to be an important component of perceived self-efficacy in SAD. Although it remains uncertain whether

socially anxious individuals are in fact deficient in any of their social skills (Clark & Arkowitz, 1975; Glasgow & Arkowitz, 1975; Halford & Foddy, 1982; Hofmann, Gerlach, Wender, & Roth, 1997; Rapee & Lim, 1992; Stopa and Clark, 1993), they do tend to appraise their own performance in social situations more negatively than non-anxious individuals, even when actual differences in performance are accounted for (Alden & Wallace, 1995; Glasgow & Arkowitz, 1975; Rapee & Lim, 1992; Stopa & Clark, 1993). For example, Stopa and Clark (1993) asked individuals with SAD, anxious controls and non-anxious controls to engage in a brief videotaped conversation with a confederate. Compared with the control groups, individuals with SAD systematically underestimated their performance. After successful therapy individuals with SAD showed less anxiety and rated themselves as more improved on a social performance test, although they did not objectively show better social performance than individuals from a waitlist control group (e.g. Newman, Hofmann, Trabert, Roth, & Taylor, 1994). These results and others question the value of social skills trainings (Stravynski & Amado, 2001). Although social skills training seems to be effective in reducing social anxiety (Stravynski, Grey, & Elie, 1987; Stravynski, Marks, & Yule, 1982), there is no clear evidence to suggest that it is more effective than exposure therapy or cognitive behavior therapy for reducing social anxiety, even for individuals who were judged to have poor social skills (Mersch, Emmelkamp, Bögels, & van der Sleen, 1989; Mersch, Emmelkamp, & Lips, 1991; Wlazlo, Schroeder-Hartwig, Hand, Kaiser, & Münchau, 1990).

In sum, socially anxious individuals appraise their own performance in social situations more negatively than non-anxious individuals, even when accounting for differences in actual performance. Although social skills training is often beneficial (most likely due to the exposure part of therapy), it does not seem to be a necessary treatment component. However, effective treatments typically lead to an improvement in the perception of the patient's social skills.

### ***Avoidance and use of safety behaviors***

Avoidance and safety behaviors constitute critically important components of the model,

because these behaviors establish a positive feedback loop, as shown in Figure 1. As a result of this positive feedback loop, anxiety in social situations remains unchanged despite repeated and often-successful social encounters (Wells et al., 1995). Safety behaviors are behaviors that are intended to reduce distress or "hide" a person's anxiety (e.g. Voncken, Alden, & Bögels, 2006), such as stereotypic movements when giving a speech or inappropriate smiling during a social interaction. A study by Alden and Bieling (1998) found that socially anxious students who participated in a getting-acquainted task used more safety behaviors and elicited more negative responses from others when they were led to believe that others were particularly likely to appraise them negatively, compared with individuals who engaged in positive appraisal. Wells et al. (1995) further demonstrated that exposure interventions with specific instructions to abandon safety behaviors are more effective than exposure therapy without instructions to refrain from such behaviors. Similar results were reported by Morgan and Raffle (1999). In this study, individuals with SAD were assigned to either a standard CBT program or to a CBT program that also included instructions to refrain from any safety behaviors. As expected, individuals showed greater improvement if they were instructed to abandon their safety behaviors. These studies provide support for the notion that safety behaviors are important maintaining factors.

### ***Post-event rumination***

Post-event rumination is a frequently occurring phenomenon after an unsuccessful or ambiguously successful social encounter, especially after situations that are associated with high-perceived social costs and negative self-perception because of the assumed catastrophic outcome of a social situation. According to the cognitive model of Clark and colleagues (e.g. Clark, 2001; Clark & Wells, 1995), individuals with SAD engage in post-event processing during which they mentally review the social interaction in detail. This processing typically centers on anxious feelings and negative self-perceptions, in which the individual recalls the interaction as being more negative than it actually was. As a result, individuals with SAD engage in anticipatory

processing in which their thoughts are dominated by the recollections of past failures, leading to the maintenance of the problem. Recent studies found a high degree of association between post-event processing of negative-evaluative events and social anxiety in student samples (Abbott & Rapee, 2004; Dannahy & Stopa, 2007; Lundh & Sperling, 2002; Mellings & Alden, 2000; Rachman et al., 2000). For example, a study by Rachman and colleagues (2000) found that post-event rumination was associated with anxiety during the situation and avoidance of similar social situations in the future. Moreover, the study by Dannahy and Stopa (2007) reported that high socially anxious participants experienced more anxiety, predicted worse performance, underestimated their actual performance, and engaged in more post-event processing 1 week after a social interaction task than low socially anxious participants. The degree of negative post-event processing was further associated with social anxiety and negative appraisals of performance, both immediately after the social interaction and 1 week later. Similarly, the study by Abbott and Rapee (2004) found that individuals with SAD had a more negative appraisal of an impromptu speech task 1 week after the task, whereas non-anxious individuals developed a more positive attitude about their performance. The SAD group also engaged in more negative rumination than controls. Successful psychological treatment improved perceptions of performance and reduced negative rumination.

### ***Discussion and implications for treatment***

SAD is a persistent disorder. Conventional CBT and pharmacotherapy show only limited efficacy. However, there is preliminary evidence to suggest that CBT strategies that target disorder-specific aspects show greater efficacy. I have presented here a comprehensive maintenance model of the disorder. This model assumes that individuals with SAD are apprehensive of social situations because they have unrealistic social standards and are deficient in selecting attainable social goals. Upon entering the socially threatening situation, individuals with SAD typically shift their attention toward their anxiety and negative aspects of themselves. As a result, they view themselves negatively as a social

object, overestimate the negative consequences of a social situation, believe that they have little control over their anxiety in the situation, and view their social skills as inadequate to effectively cope with the situation. They anticipate social mishaps and, in order to avoid those, revert to avoidance and safety behaviors. After the situation has passed, individuals additionally engage in post-event rumination, which leads to further social apprehension in the future.

This model has direct treatment implications because these maintenance factors are also likely to be important treatment mediators (Hofmann, 2000b). These are as follows:

- Perception of social standard and goal setting can be modified through discussions about the perceived expectations of others. Once the goals are clearly defined, they can then be used to evaluate the social encounter as either successful or unsuccessful, regardless of the subjective anxiety encountered in the situation.
- The tendency toward focusing on anxiety symptoms or negative cognitions in a fearful social situation can be retrained by encouraging individuals to direct their attention toward the situation or other external cues instead of their bodily symptoms, fearful thoughts, or negative aspects of themselves. In addition, interoceptive exposure exercises may be used in order to demonstrate to the patient that bodily sensations are not dangerous and may, in fact, indicate engagement in social situations. Contrary to the patients' common belief, these sensations are further under the patient's control and typically not visible to the observer.
- Self-perception can be modified by the use of video feedback, audio feedback, mirror exposures, and group feedback. Video feedback, in particular, is an effective way of correcting distorted self-perception and for correcting negative and distorted self-perception (Rapee & Hayman, 1996). The effects of the video feedback can be maximized by including a cognitive preparation period prior to viewing the video (Harvey, Clark, Ehlers, & Rapee, 2000;

Hirsch et al., 2003; Kim et al., 2002). As part of the cognitive preparation period in this protocol, patients are asked to predict in detail what they will see in the video, form an image of themselves in the social situation, and then watch the video from an observer's point of view (i.e. as if they were watching a stranger) following completion of an exposure task. The perception of one's social skills is an aspect of a person's self-perception and can, therefore, be modified with the same strategies as other distorted aspects of self-perception (i.e. via video feedback, audio feedback, mirror exposure, and group feedback).

- Behavioral experiments in which the person purposefully creates social mishaps to observe the consequences can be an effective method for targeting the patients' over-estimation of social cost. To be effective, these exposure exercises should specifically violate the patient's perceived social norms and challenge the social cost estimates (e.g. walking around with toilet paper hanging out of the shirt, buying and minutes later returning the same book, walking on a busy street with the zipper of the pants wide open, spilling water in a restaurant, asking a random woman on a street out on a date).
- Perception of emotional control may be targeted by creating a state of dissonance between the individual's perception of their own autonomic arousal and an outsider's perspective by watching video-recordings of their speeches and by eliciting feedback from the audience members (e.g. "other people cannot see that my heart is racing, palms are sweating"). Control can be further elevated through repeated and prolonged exposure to physiological (anxiety) symptoms in social situations while encouraging patients to experience and accept the feeling of anxiety to its fullest. This approach is similar to the acceptance technique in Acceptance and Commitment Therapy, as advocated by Hayes, Strosahl and Wilson (1999), among others.
- Safety behaviors and other avoidance strategies are the most critical maintaining

factors in the model because they close a positive feedback loop, leading to high anxiety in social situations despite repeated and often-successful social encounters. This is targeted through repeated and continuous exposure to fearful social situations while eliminating any safety behaviors.

- Post-event rumination can be targeted by helping patients process negative social events more adaptively through guided questions (e.g. "How will your life change as a result of a particular social mishap?").

SAD is a heterogeneous diagnostic category (Hofmann, Heinrichs, & Moscovitch, 2004) and not all of the maintenance factors discussed here are responsible for every individual's SAD. It is more likely that some of the maintenance factors are more salient for some individuals than others. Therefore, a treatment approach that is tailored to the particular individual may result in the greatest treatment benefits. The Appendix includes a brief instrument to assess the expression of each of these maintenance factors. This instrument is not intended to be used as a self-report instrument to measure a particular construct. Instead, it was developed as a tool to tailor the treatment to a particular patient and to monitor specific changes in the maintaining factors. I hope that future investigators will adopt some of these treatment recommendations and examine the efficacy of this approach in controlled studies.

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## Appendix

### Approach to Social Situations Scale

Please answer the following questions as honestly as you can. Your honest answers will help us tailor the treatment that you are about to receive to your specific needs. Please rate how much you agree with the following statements on a scale from 0 (I don't agree at all/this is not typical of me) to 10 (I agree very much/this is very typical of me):

1. I believe that the expectations of me in social situations are very high.  
0 - 1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 9 - 10
2. I am often not quite clear about what I personally want to achieve in a social situation.  
0 - 1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 9 - 10
3. I tend to focus my attention toward myself when I am in a social situation.  
0 - 1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 9 - 10
4. I tend to overestimate how bad a social situation can turn out.  
0 - 1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 9 - 10
5. I believe that my social skills to handle social situations are poor.  
0 - 1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 9 - 10
6. I don't like myself very much when it comes to social situations.  
0 - 1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 9 - 10
7. I have little control over my anxiety in social situations.  
0 - 1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 9 - 10
8. I think that people can tell when I am anxious in social situations.  
0 - 1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 9 - 10
9. I usually expect that something bad will happen to me in a social situation.  
0 - 1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 9 - 10
10. I tend to dwell about social situations after they happened.  
0 - 1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 9 - 10
11. I often avoid social situations.  
0 - 1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 9 - 10
12. I often do things that make me feel less uncomfortable when I am in social situations.  
0 - 1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 9 - 10