



## Self-representation in social anxiety disorder: Linguistic analysis of autobiographical narratives

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### ABSTRACT

Cognitive models of social anxiety disorder (SAD) posit aberrant beliefs about the social self as a key psychological mechanism that maintains fear of negative evaluation in social and performance situations. Consequently, a distorted self-view should be evident when recalling painful autobiographical social memories, as reflected in linguistic expression, negative self-beliefs, and emotion and avoidance. To test this hypothesis, 42 adults diagnosed with SAD and 27 non-psychiatric healthy controls (HC) composed autobiographical narratives of distinct social anxiety related situations, generated negative self-beliefs (NSB), and provided emotion and avoidance ratings. Although narratives were matched for initial emotional intensity and present vividness, linguistic analyses demonstrated that, compared to HC, SAD employed more self-referential, anxiety, and sensory words, and made fewer references to other people. There were no differences in the number of self-referential NSB identified by SAD and HC. Social anxiety symptom severity, however, was associated with greater self-referential NSB in SAD only. SAD reported greater current self-conscious emotions when recalling autobiographical social situations, and greater active avoidance of similar situations than did HC. These findings support cognitive models of SAD, and suggest that autobiographical memory of social situations in SAD may influence current and future thinking, emotion, and behavioral avoidance.

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### Social anxiety disorder

Social anxiety disorder (SAD, also known as social phobia) is a highly prevalent and often debilitating condition characterized by fear of negative evaluation and high levels of anxiety and avoidance when engaged in social or performance situations (Jefferys, 1997). Community surveys demonstrate that SAD is common with up to 13% lifetime prevalence (Kessler et al., 2005; Wittchen & Fehm, 2001), has an early modal age of onset (Otto et al., 2001), and often precedes the onset of other anxiety, mood, and substance abuse/dependence disorders (Lampe, Slade, Issakidis, & Andrews, 2003; Matza, Revicki, Davidson, & Stewart, 2003; Randall, Thomas, & Thevos, 2001).

One of the cardinal features of SAD is construing social situations as presenting threats that overwhelm the self's adaptive capacities. If we assume that memories of salient social interactions powerfully shape our sense of self, it seems likely that repeated encounters with subjectively overwhelming social situations will

lead to a deeply ingrained negative view of self that interferes with interpersonal functioning (Hirsch, Meynen, & Clark, 2004). In the present study, we tested this hypothesis by asking SAD and HC participants to recall and describe painful autobiographical social situations, and rate their current emotional responses.

### Memory and the self

The development of autobiographical memory coincides with the development of knowledge structures linking individual identity with personal experience (Howe & Courage, 1997). According to the self-memory system (SMS) model, specific autobiographical memories are constructed by the interaction between an autobiographical knowledge base and current goals (Conway & Pleydell-Pearce, 2000). The current goals function as a control process that modulates the construction of memories, and intense emotional experiences are a consequence of discrepancies between the current state of the self and goal states. In SAD, these discrepancies result from high perceived social standards and poorly defined goals in social situations (Hiemisch, Ehlers, & Westermann, 2002; Moscovitch & Hofmann, 2007). Autobiographical memories have

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the potential to reinstate goals and emotions featured in earlier experiences, which can have powerful disruptive effects on current cognition (Wheeler, Stuss, & Tulving, 1997). An individual's ability to respond to these dissonant autobiographical memories with appropriate cognitive reactions is positively related to a sense of well-being (Swann & Read, 1981). In SAD, however, anticipation of a social event often leads to intrusive, anxiety-inducing memories of past failures. Even after the event, the interaction is often reviewed in detail with a particular focus on anxious feelings and negative self-perceptions (Clark, 2001). These memories of social failure reinforce negative beliefs about the social self (Sutin & Robins, 2005).

#### *The self in social anxiety disorder*

Cognitive models of SAD describe several cognitive processing biases which can lead to and reinforce a negative internal representation of the social self (Clark et al., 1995; Hofmann, 2007; Rapee & Heimberg, 1997). These include high perceived social standards (Moscovitch & Hofmann, 2007; Wallace & Alden, 1995), poorly defined social goals (Hiemisch, Ehlers, & Westermann, 2002; Leary & Kowalski, 1995), increased self-focused attention in social situations (Clark & McManus, 2002; Hirsch & Clark, 2004; Hofmann & Heinrichs, 2003), a bias to interpret ambiguous information in an exaggeratedly negative way (Clark, 2001), and a tendency to overestimate the negative evaluations of oneself made by others (Hackmann, Surawy, & Clark, 1998; Strauman, 1989; Wells & Papageorgiou, 1998). Negative self-images also play an important role in the maintenance of anxiety in these models. Distorted images of the self are drawn from both long-term memory and exaggerated interpretations of immediate physiological feedback (Clark et al., 1995). Spontaneously recurring negative images of the social self are linked to early memories of aversive social experiences, which are resistant to change based on subsequent positive social experiences (Hackmann, Clark, & McManus, 2000). These processes and negative self-images result in dysfunctional views of the social self and distorted appraisals of social situations as dangerous to the self.

Under social threat, attention is withdrawn from processing external aspects of the situation, and is instead re-focused on the social self. This heightened focus on the self as a social object results in a variety of safety behaviors, cognitive distortions, and physiological symptoms in SAD, which, in turn, undermine performance in social situations and reinforce distorted assumptions about the self in the social world. The cognitive model of SAD predicts that during social threat SAD will recall more information related to the social self, with a specific emphasis on negative self-referential information (Mansell, Clark, Ehlers, & Chen, 1999).

#### *Autobiographical memory in social anxiety disorder*

Studies of autobiographical memory in social anxiety have provided mixed evidence for differential memory processing in SAD. When retrieving autobiographical memories based on self-concept related cues, anxious individuals tend to produce more negative emotional content (Strauman, 1992). Individuals with SAD tend to adopt the perspective of an external observer in their autobiographical memories, and to recall more self-referential information and fewer external sensory details (D'Argembeau, Van der Linden, d'Acromont, & Mayers, 2006). People with SAD who held a negative self-image in mind during an autobiographical memory retrieval task were more anxious, had lower self-ratings of performance, and took more time to retrieve positive memories and less time to retrieve negative memories (Stopa & Jenkins, 2007). When recalling autobiographical memories in response to a social threat cue, compared to HC, those with SAD show more negative affect as rated by independent observers (Wenzel, Jackson,

& Holt, 2002). During post-event processing, compared to HC, those with SAD recall significantly more negative and shameful memories (Field, Psychol, & Morgan, 2004). Other studies, however, have observed no differences between SAD and HC in the anxiety associated with or the specificity of memories retrieved in response to social threat cues (Rapee, McCallum, Melville, & Ravenscroft, 1994). One dimension that has yet to be examined in the context of autobiographical memories is linguistic analysis of the narratives produced by SAD. Application of computational methods to analyze the content of such memories may provide further evidence of cognitive biases in SAD.

There are two significant advantages of linguistic analysis of autobiographical narratives in the case of SAD. First, the act of writing about an aversive social experience does not itself require social interaction and is therefore less likely to induce stress than the verbal reports obtained in other autobiographical retrieval tasks. Second, it is possible to address predictions of the cognitive model, such as increased self-focused attention, by carefully examining specific aspects of language (e.g., greater use of first-person or negatively valenced emotional words). By selecting specific word categories related to distinct psychological processes, it is possible to examine natural language for evidence of cognitive biases identified by cognitive models of SAD.

#### *Negative self-beliefs in social anxiety disorder*

In SAD, beliefs associated with autobiographical memory for painful social situations often involve negative self-evaluations, for example, "I'm stupid", or "No one likes me," which can interfere with social performance (Trower, O'Mahony, & Dryden, 1982). In conjunction with exaggerated self-focused attention and taking the outside observer's view of self during social situations, SAD may produce negative self-beliefs which make reference only to the self (e.g., "I'm such a fool") as well as how SAD believe others see them (e.g., "Everyone is laughing at me"). Negative self-beliefs are better at differentiating SAD during social interactions than negative beliefs about other's reactions, as individuals with SAD are less likely to explicitly mention evaluation by other people (Stopa & Clark, 1993). This is consistent with the increase in self-focused attention in SAD during stressful social situations. Furthermore, this bias toward self-focused attention in SAD may reduce exposure to evidence that disconfirms these negative self-beliefs (Wells & Papageorgiou, 1998). More recently, studies have found that after treatment, SAD endorse significantly fewer negative self-beliefs, and that these changes are significantly correlated with changes in social anxiety (Hofmann, 2000; Hofmann, Moscovitch, Kim, & Taylor, 2004).

#### *The present study*

In the present study, we conducted a linguistic analysis of autobiographical memories in order to provide a window into experiences that have been integrated into an individual's self-concept. Linguistic Inquiry and Word Count (LIWC2001; Pennebaker, Francis, & Booth, 2001) is a software program that has previously been used to examine linguistic variables in text produced by individuals with psychiatric disorders, including eating disorders (Lyons, Mehl, & Pennebaker, 2006) and dysphoria (Sloan, 2005). Applications of this method have delineated cognitive processes underlying these disorders, such as increased self-focused attention in dysphoria (Sloan, 2005), and fewer social references in suicidal individuals (Stirman & Pennebaker, 2001). Linguistic analysis of autobiographical narratives has revealed an association between insight and the successful treatment of addiction disorders (Stephenson, Laszlo, Ehmann, Lefever, &

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