



## Recognition bias for critical faces in social phobia: a replication and extension

Meredith E. Coles<sup>a,\*</sup>, Richard G. Heimberg<sup>b</sup>

<sup>a</sup> *Department of Psychology, Binghamton University (SUNY), Binghamton, NY 13902-6000, USA*

<sup>b</sup> *Department of Psychology, Adult Anxiety Clinic, Temple University, 1701 North 13th Street, Weiss Hall, Philadelphia, PA 19122-6085, USA*

Received 23 March 2003; received in revised form 13 November 2003; accepted 2 December 2003

### Abstract

Studies using linguistic stimuli have provided little support for explicit memory biases among individuals with social phobia (SP). However, using facial stimuli rated on their criticalness, Lundh and Öst (1996) found that individuals with SP recognized more critical than accepting faces, whereas non-anxious controls tended to show the opposite pattern. Since the publication of Lundh and Öst's findings, additional studies using a variety of facial stimuli have produced inconsistent findings (*J. Anxiety Disord.* 14 (2000) 501; *Behav. Res. Ther.* 39 (2001) 967). Unfortunately, these inconsistencies are difficult to reconcile given great variation in methods and stimuli. Therefore, we designed a study to replicate and extend the work of Lundh and Öst (*Behav. Res. Ther.* 34 (1996) 787). Similar to Lundh and Öst, individuals with SP identified a significantly higher proportion of old critical faces as old than did non-anxious controls. Further, extending the work of Lundh and Öst, signal detection analyses revealed group differences on response bias according to face type. Specifically, controls showed a response bias towards indicating that accepting faces were previously seen, whereas individuals with SP did not. Finally, signal detection analyses failed to reveal group differences in the accuracy of memory.

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*Keywords:* Social phobia; Memory bias; Critical faces; Signal detection analyses

\* Corresponding author. Tel.: +1-607-777-4710; fax: +1-607-777-4890.  
E-mail address: [mcoles@binghamton.edu](mailto:mcoles@binghamton.edu) (M.E. Coles).

## 1. Introduction

Clinical experience and information-processing models (e.g., Williams, Watts, MacLeod, & Mathews, 1997) suggest that individuals with social phobia (SP) are characterized by biased memory for threatening information. However, a large body of research using linguistic stimuli failed to provide much support for explicit memory biases among individuals with SP. For example, in a series of four studies using a wide variety of dependent measures (recall and recognition, cued recall, recall of feedback from a hypothetical performance task, and autobiographical memory), Rapee, McCallum, Melville, Ravenscroft, and Rodney (1994) failed to find any support for explicit memory biases in SP. Similarly, Cloitre, Cancienne, Heimberg, Holt, and Liebowitz (1995) failed to find evidence for recall and recognition for social threat words among individuals with SP. In addition, two studies using self-referential encoding also failed to find differences in memory for threat and non-threat words between individuals with SP and non-anxious controls (Becker, Roth, Andrich, & Margraf, 1999; Lundh & Öst, 1997). Finally, Amir, Foa, and Coles (2000) failed to find an explicit memory bias towards socially threatening sentences in patients with SP.

In contrast, Lundh and Öst (1996) found support for a recognition bias towards threat in individuals with SP. The Lundh and Öst study was unique in two important ways. First, the stimuli were pictures of faces, very externally valid stimuli for studying social anxiety. And, second, this study utilized an encoding task targeted at the core of SP, fear of negative evaluation; that is, they asked participants to rate how critical each person appeared. Individuals with SP later recognized significantly more critical faces than accepting faces, and the non-anxious controls showed a trend in the opposite direction. These findings were ground-breaking given their consistency with models of SP and that they were at odds with previous work using linguistic stimuli. However, the design of the Lundh and Öst study prohibited them from disentangling the relative contributions of memory and response bias (see Lundh & Öst, 1996: p. 792).

Two additional papers examining memory for faces in SP have been published since the Lundh and Öst (1996) paper. Foa, Gilboa-Schechtman, Amir and Freshman (2000) conducted two studies examining memory for negative emotional expressions in generalized SP. In their second study, patients with generalized SP demonstrated enhanced recognition for angry and disgusted faces compared to neutral and happy faces. While these findings do show support for a bias towards negative facial expressions, their applicability to expressions reflecting negative evaluation, the core of SP, is debatable. Indeed, it is possible to imagine a situation where an observer is angry or disgusted with someone for being socially skilled or performing well. In other words, anger and disgust are not equivalent to negative evaluation. An important strength of this study is the conduct of signal detection analysis. Weaknesses of this study include lack of instructions for encoding and a small sample ( $n = 15$  patients with generalized SP). More recently, Pérez-López and Woody (2001) examined memory for facial expressions under conditions of elevated state anxiety. In a comparison recognition task, individuals with SP were not found to demonstrate an explicit memory bias towards threatening expressions. In fact, both individuals with SP and non-anxious controls demonstrated a bias towards remembering more reassuring faces. Strengths of this study include the use of a comparison recognition task to eliminate ceiling effects frequently encountered on item recognition tasks and the use of stimuli that were classified as threatening or reassuring based on an independent sample. Limitations of

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