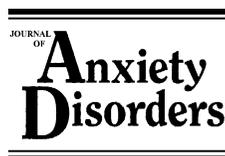




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Evaluative learning and emotional responding to fearful and disgusting stimuli in spider phobia

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Abstract

The present study explores possible changes between spider phobics ($N = 22$) and nonphobics ($N = 28$) in fear, disgust, and neutral ratings of neutral expressions as a result of their pairing with spiders. No statistically significant differences were detected between pre and post fear ratings of the expressions as a result of their association with spiders. However, post disgust ratings were marginally higher than pre disgust ratings and post neutral ratings were significantly lower than pre neutral ratings. The present study also examined differences in fear and disgust responding to threat-relevant and disgust-relevant stimuli between spider phobics and nonphobics. Spider phobics reported significantly more fear and disgust than nonphobics towards threat and disgust-relevant stimuli. The relation between spider phobia and disgust responding to spiders was partially mediated by fear whereas the relation between spider phobia and disgust responding to rotting foods and body products was fully mediated by fear. Emotional responding to threat-relevant and disgust-relevant stimuli was also significantly associated with disgust sensitivity when controlling for trait anxiety. These findings support the notion that the disgust response in spider phobia is independent of fear to the extent that it is specifically bound to spiders. © 2006 Elsevier Ltd. All rights reserved.

Keywords: Evaluative learning; Fear; Disgust; Spider phobia; Emotions

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Evaluative conditioning (EC) proposes that presentation of subjectively neutral material (conditioned stimuli; CS) with positive or negative stimuli (unconditioned stimuli; UCS) will change the valence of the neutral stimuli in the direction of the UCS (Levey & Martin, 1975). Evaluative responses are considered basic and primitive to all evocative UCSs (Martin & Levey, 1987), and are akin to an immediate gut reaction of preference, such as good/bad, pleasant/unpleasant; reactions that often mediate avoidance (e.g., Mulkens, de Jong, & Merckelbach, 1996). Unlike other forms of conditioning that are said to involve the learning of relations between stimuli (i.e., referential or signal learning), evaluative conditioning is said to involve a holistic form of learning where the CS and UCS become fused. Several studies have demonstrated the EC effect using various stimuli (see De Houwer, Thomas, & Baeyens, 2001 for a review) and the EC paradigm has been recently applied as an experimental means of better understanding the etiology of various anxiety-related disorders (e.g., Lascelles, Field, & Davey, 2003; Olatunji, Lohr, Sawchuk, & Westendorf, 2005). EC has also been implicated as a potential mechanism by which people learn to be fearful and disgusted (i.e., Merckelbach, de Jong, Arntz, & Schouten, 1993; Schienle, Stark, & Vaitl, 2001). The acquisition of such affective responses may then transcend into pathological emotional responses in the context of clinical disorders (Merckelbach et al., 1993).

Consistent with an EC account, phobic avoidance of various stimuli capable of eliciting fear and disgust (i.e., spiders) may be a result of the evaluative properties (i.e., unpleasant) associated with those stimuli (Hekmat, 1987). Indeed, it has been suggested that spider phobics may be more vulnerable to EC processes and, as a result, benefit less from exposure treatment (e.g., Baeyens, Eelen, & van den Bergh, 1992). Although empirical evidence for this claim is limited (e.g., de Jong, Vorage, & van den Hout, 2000), it has been noted that vulnerability to EC processes in spider phobia may be related to heightened disgust responding (Merckelbach et al., 1993). Rather than the traditional fear mediated predator-defense model of animal phobias (e.g., Öhman, Dimberg, & Öst, 1985), there is accumulating evidence that spider phobia may be better characterized by a disgust-mediated disease-avoidance model (Olatunji & Sawchuk, 2005). The disease-avoidance model (e.g., Matchett & Davey, 1991) suggests that aversive, but nonpredatory, animals elicit avoidance due to concerns of contamination (disgust mediated) rather than concerns of being physically harmed (fear mediated).

Fear and disgust are negative withdrawal emotions that may both contribute to the etiology and maintenance of spider phobia (Woody & Teachman, 2000). Accordingly, studies have shown that spider phobics report feelings of fear *and* disgust when exposed to spiders (Sawchuk, Lohr, Tolin, Lee, & Kleinknecht, 2000; Tolin, Lohr, Sawchuk, & Lee, 1997). However, recent findings suggest that disgust may be more central than fear in spider phobia (de Jong & Muris, 2002). For instance, Woody, McLean, and Klassen (2005) found that disgust was a stronger predictor than anxiety of avoidance of spiders. A recent study also showed that an expectancy bias towards disgust consequences, rather than fear-relevant

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