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# Using facial expressions as CSs and fearsome and disgusting pictures as UCSs: affective responding and evaluative learning of fear and disgust in blood-injection-injury phobia

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## Abstract

Two experiments examine use of an evaluative conditioning (EC) paradigm in the acquisition of fear and disgust responding to neutral facial expressions. In Experiment 1, 60 participants were randomly assigned to one of three evaluative learning conditions in which neutral facial expressions were paired with fearsome, disgusting, or neutral pictures. No statistically significant differences were detected between the three conditions. However, significant differences emerged within subjects as post-exposure of fear and disgust ratings were higher among expressions that were paired with pictorial stimuli. Experiment 2 sought to examine if an analogue sample of BII phobics would be more susceptible than nonphobic controls to fear and disgust EC utilizing a similar experimental design, given the co-occurrence of fear and disgust in BII-phobic responding. Results failed to demonstrate an EC effect specific to the analogue phobic group, although both groups showed an evaluative shift toward disgust for those facial expressions paired with BII-relevant pictures. Consistent with previous findings, examination of picture rating data suggested that analogue BII phobics rated the BII pictures as significantly more disgusting than

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fearful. The role of EC processes and a priori expectancy biases in the associative learning of disgust in BII phobia is discussed.

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Evaluative conditioning (EC) theory 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). Traditional EC studies have participants initially rate a series of pictures on a scale ranging from –100 (dislike) to 0 (neutral) to +100 (like). Materials rated as neutral are then used as CSs, and are subsequently paired with liked or disliked pictures (UCSs). After repeated pairings, studies generally demonstrate an EC effect, in which the affective ratings of the CS shift in the direction of its paired UCS (De Houwer, Thomas, & Baeyens, 2001). Theoretical and empirical developments suggest that the principles of associative learning may improve our understanding of how individuals acquire maladaptive responses in specific circumstances (e.g., Walther, 2002).

Several studies have demonstrated the durability and generalization of the EC effect across a range of stimuli and sensory modalities (De Houwer et al., 2001; Hermans, Vansteenwegen, Crombez, Baeyens, & Eelen, 2002). For instance, van Reekum, van den Berg, and Frijda (1999) demonstrated that participants' affective evaluation of paintings previously rated as neutral shifted in the direction of contingently paired liked or disliked odors and sounds. In a recent study, Mitchell, Anderson, and Lovibond (2003) demonstrated that non-words given pleasant meanings were more easily paired with pleasant than unpleasant characteristics, compared to non-words associated with unpleasant meanings. Lascelles, Field, and Davey (2003) found that pairing obese body shapes (UCSs) with foods (CSs) resulted in a significant postconditioning negative food evaluation. Finally, Baeyens, Crombez, Hendrick, and Eelen (1995) have shown that by pairing a neutral flavor with a putrid taste, the neutral flavor will be subsequently evaluated more negatively than a neutral flavor that was not associated with a putrid taste.

A number of authors have proposed that stimuli capable of eliciting fear and disgust may have acquired such an effect through EC processes (i.e., Merckelbach, de Jong, Arntz, & Schouten, 1993; Rozin, Wrzesniewski, & Byrne, 1998). Negative evaluative properties associated with fear and disgust has been implicated as core themes in various anxiety disorders, including obsessive–compulsive disorder and specific phobias (e.g., Power & Dalgleish, 1997; Rachman, 1990). Consistent with EC theory, phobic avoidance of various stimuli capable of eliciting fear (i.e., snakes) and disgust (i.e., blood) may be influenced by earlier evaluative pairings and experiences (i.e., bad, unpleasant; Hekmat, 1987).

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