

The emotional Stroop effect: Cognitive, emotional, and physiological aspects

Results:

We examined how interference by emotional stimuli on a cognitive task was related to a) explicit affective ratings, b) electromyographic recordings of facial expressions, and c) skin conductance measures of arousal. We used a method of evaluative conditioning where initially neutral stimuli were repeatedly paired with negative or neutral images to manipulate their emotional connotation. The conditioned stimuli were then used in an Emotional Stroop task where participants named the colour in which the stimuli were presented. Participants high in anxiety were generally slower at naming the colour of negatively-conditioned stimuli, suggesting that the emotional connotation of these words interfered with the primary cognitive task. In different experiment, we compared supraliminal and subliminal presentation of the stimuli. An important finding was that emotional connotation acquired subliminally produced Stroop interference if the stimuli were presented subliminally, but not supraliminally. However, physiological measures of emotional reactions were sensitive to affective connotation even when cognitive measures were not, especially in highly anxious participants. For instance, anxious participants displayed elevated skin conductance to the subliminal presentation of negatively conditioned stimuli even when they were not explicitly aware of these stimuli. Another important finding was that micro facial expressions of emotion in reaction to the presentation of the emotional stimuli was a better predictor of Stroop interference than explicit affective ratings of these stimuli. The data from these experiments suggest that there are complex dissociations between implicit and explicit components of emotional processing.

Published work:

Conference presentations:

Richards, A., & Blanchette, I. "*The emotional Stroop effect: Cognitive, emotional and physiological aspects*". Abstract, BIAL Foundation, 6th Symposium. 29th March - 1st April, 2006.

Richards, A., Blanchette, I., Hamilton, V., & Lavda, A. (2007). "*Cognitive, emotional and physiological components of emotional Stroop using associative conditioning*". Talk delivered at the 2nd European Cognitive Science Conference, Delphi, Greece, May 2007.

Lavda, A., Blanchette, I., Richards, A., & Hamilton, V. (2006). "*Facial expressions are better predictors of the emotional Stroop effect than explicit emotional ratings*". Poster presented at the 13th Annual Conference of the Cognitive Section of the British Psychological Association, Lancaster, UK, September, 2006.

Journal articles:

Richards, A., Blanchette, I., Hamilton, V., & Lavda, A. (submitted). *"Conscious and nonconscious components of anxiety using psychophysiological and behavioural measures"*. *Neuropsychologia*.

Blanchette, I., Richards, A., Lavda, A., & Hamilton, V. (in preparation). *"What is the best predictor of interference by emotional stimuli? Comparing facial expressions and subjective evaluations"*.

Blanchette, I., & Richards, A. (2013). Is emotional Stroop interference linked to affective responses? Evidence from skin conductance and facial electromyography. *Emotion, 13*(1), 129-138. doi: 10.1037/a0029520

Blanchette, I., & Richards, A. (2010). The influence of affect on higher level cognition: A review of research on interpretation, judgement, decision making and reasoning. *Cognition & Emotion, 24*(4), 561-595. doi: 10.1080/02699930903132496

Book chapter:

Blanchette, I., & Richards, A. (2010). The influence of affect on higher level cognition: A review of research on interpretation, judgement, decision making and reasoning. In J. De Houwer & D. Hermans (2010). *Cognition and emotion: Reviews of current research and theories* (pp. 276-324). Hove, UK: Psychology Press.

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