

Does Affective Learning Exist in the Absence of Contingency Awareness?

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The proposal that affective learning, the learning of likes and dislikes, can exist in the absence of contingency awareness, whereas signal learning, the learning of stimulus relationships, cannot, was investigated in a differential conditioning paradigm that was embedded in a visual masking task. Startle magnitude modulation and changes in verbal ratings served as measures of affective learning, whereas skin conductance was taken to reflect signal learning. Awareness was assessed online with an expectancy dial and in a postexperimental questionnaire. Both between-subject comparisons of verbalizers and nonverbalizers and within-subject comparisons of verbalizers before and after verbalization failed to reveal any evidence for learning, whether affective or otherwise, in the absence of knowledge of the stimulus contingencies. © 2001 Academic Press

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Affective learning is the transfer of affective valence from an unconditional stimulus (US) to a conditional stimulus (CS) during contingent presentation of the two stimuli. Thus, a previously neutral CS presented together with a liked US becomes liked and a previously neutral CS presented together with a disliked US becomes disliked. Affective learning is of interest within the field of Pavlovian conditioning, as it provides a model for the investigation of the acquisition and extinction of psychopathologies, such as phobias (for a review see Davey, 1992). Moreover, a recent proposal by Baeyens and colleagues that affective learning is qualitatively different from relational learning, the learning of predictive relationships between events, has revived a discussion of the mechanisms that underlie affective learning (for a review see Baeyens, Eelen, & Crombez, 1995). Based on empirical work and reviews of the animal literature, Baeyens et al. (1995) proposed a theory of evaluative learning, which postulates that affective and nonaffective learning are mediated by distinct learning systems. The theory of evaluative learning posits a number of differences between the two forms

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of learning in that affective learning is said to be resistant to extinction, not to be subject to occasion setting or to manipulations of the CS-US contingencies, and to occur in the absence of contingency awareness. Contingency awareness is usually defined as the knowledge of the stimulus contingencies presented during training.

Support for evaluative learning theory has been found in a procedure known as the picture–picture paradigm, which was devised by Levy and Martin (1975). The procedure requires participants to rate a large number of pictures on a pleasantness/unpleasantness scale of +100 to –100 into liked, disliked, and neutral categories. Pictures from each category are selected for use as experimental stimuli and are presented in neutral-liked, neutral-disliked, and neutral-neutral pairings. After the experiment, participants again rate the pictures. Previously neutral pictures are more likely to be classified as liked after pairing with liked pictures and as disliked after pairing with disliked pictures. Baeyens, Eelen, and van den Bergh (1990) employed the picture–picture paradigm to investigate whether affective learning could exist in the absence of contingency awareness by adding an assessment of participant awareness to the procedure. They replicated the affective learning results obtained by Levy and Martin (1975). On the basis of postexperimental questioning, Baeyens et al. (1990) also found affective learning to be present in both aware and unaware participants.

The stimulus selection procedure used in the picture–picture paradigm has received much criticism. Shanks and Dickinson (1990) pointed out that the procedure used by Levy and Martin (1975) lacked proper counterbalancing in that different participants are trained with different CSs and USs due to individual differences in ratings and that the matching of CS and US pictures was based on a subjective similarity judgement which may give rise to selection biases. Although this critique is relevant for some evaluative learning studies, its generality has been questioned (see Baeyens, De Houwer, Vansteenwegen, & Eelen, 1998, for a response to some of the common criticisms made of evaluative learning paradigms). Shanks and Dickinson (1990) also suggested that postexperimental ratings of each CS might reflect properties of that CS itself rather than its relationship with the US. Other criticisms of the picture–picture paradigm include its lack of a concurrent measure of relational learning and the use of a trace conditioning procedure rather than the more effective delay procedure. The validity of the dependent measure, verbal ratings of likes and dislikes, has also been questioned, as ratings may be subject to demand characteristics (Lipp, Baker-Tweney, & Siddle, 1997). Given the criticisms associated with the picture–picture procedure, alternative methods seem desirable for further investigations of the predictions of evaluative learning theory.

One such procedure is the flavor–flavor paradigm (Baeyens, Crombez, Hendrickx, & Eelen, 1995) which employs flavors instead of pictures as CSs and USs. Within this paradigm, many of the criticisms relating to the lack

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