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I like it by mere association: Conditioning preferences in infants



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ABSTRACT

Preferences have a profound impact on our behavior; however, relatively little is known about how preference formation works early in life. Evaluative conditioning occurs when the valence of an initially neutral object changes when it is paired with a positively or negatively valenced stimulus. It is possible that evaluative conditioning may account for early preference learning; however, the extent to which this kind of learning operates during infancy has not been empirically tested. The aim of the current studies was to assess whether infants' preferences for neutral objects is influenced by pairing them with affective stimuli (Experiment 1: happy vs. angry faces, $N = 20$; Experiment 2: mother vs. stranger faces, $N = 22$). Infants' preferences were tested using both looking time and behavioral choice measures. The results showed that infants tended to choose the object that had been paired with the positive stimulus (Experiment 1: 13/20; Experiment 2: 14/22). Gaze behavior at test did not differentiate between the two objects; however, gaze behavior during conditioning predicted infants' behavioral preference. Only infants who looked longer at the affective stimulus than at the object during learning chose the object that had been paired with positive valence more often than chance. These results suggest that infants' preferences may be influenced by learned associations between objects and affective stimuli, a process akin to evaluative conditioning in adults.

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Introduction

Human behavior is often guided by our preferences. Decisions about what we buy, the activities we engage in, the food we eat, and the people we socialize with are influenced to a large extent by our likes and dislikes. Although preferences have a profound impact on our behavior, relatively little is known about how such preferences are formed, particularly early in life (De Houwer, Thomas, & Baeyens, 2001).

One mechanism that may account for some instances of preference learning is evaluative conditioning, or the conditioning of evaluations via association with liked versus disliked stimuli (Levey & Martin, 1975; Martin & Levey, 1978). Evaluative conditioning occurs when the valence of an initially neutral conditioned stimulus (CS) changes as the result of being paired with a positively or negatively valenced unconditioned stimulus (US). For example, by pairing George Clooney (a positively valenced stimulus) with the brand Nespresso (an initially neutral stimulus), advertisers aim to increase our liking of the Nespresso brand and ultimately increase sales.

Evaluative conditioning is a form of Pavlovian conditioning that involves a change in the response to a CS as the result of it being paired with a US. A recent meta-analysis (Hofmann, De Houwer, Perugini, Baeyens, & Crombez, 2010) showed that, just like traditional Pavlovian paradigms, changes in liking of a CS are greater when adult participants report awareness of the CS–US contingency than when participants are unaware. Similarly, effect sizes are greater when explicit measures of liking are used (i.e., self-report or behavioral choice) relative to implicit measures (i.e., implicit association or affective priming). In contrast to traditional Pavlovian conditioning, however, learned evaluations may be more resistant to extinction and may depend on co-occurrence of the CS and US rather than the predictive contingency between the CS and US. There was a relatively small body of research on evaluative conditioning in children to draw from; however, the meta-analysis also showed that evaluative conditioning effects may be less robust in children than in adults (Hofmann et al., 2010). On the one hand, effect sizes may be smaller because children are less aware of experimenter expectations and therefore are less likely than adults to show evidence of demand effects. Alternatively, given that explicit memory for the CS–US contingency influences evaluative conditioning independent of demand effects, smaller effect sizes may be attributed to age-related changes in explicit memory (O'Donnell & Brown, 1973).

In children, evaluative conditioning has been studied by pairing initially neutral stimuli (novel cartoon characters) with food that children like (ice cream) or dislike (brussels sprouts) (Field, 2006). In this study, children in the experimental group saw one Pokémon-like character paired with ice cream and another paired with brussels sprouts; each CS–US pair was presented 10 times. Children in the control group received the same amount of exposure to the CS (characters) and US (foods) as those in the experimental group; however, the characters and foods were never paired. The results showed that for participants in the experimental group, liking of the character paired with ice cream increased following conditioning, whereas liking for the character paired with brussels sprouts decreased. For children in the control group, there was no change in preferences for the characters as a result of exposure. Interestingly, differences in preference ratings remained significant even after the CS was presented in the absence of the US during the extinction phase, suggesting that, much like in adults (Vansteenwegen, Francken, Vervliet, De Clercq, & Eelen, 2006), evaluative conditioning in children may be relatively resistant to extinction. This insensitivity to extinction suggests that, like in adults, changes in liking may be the product of referential learning rather than expectancy learning (Baeyens, Vansteenwegen, Hermans, & Eelen, 2001). The findings were replicated in a second experiment in which an implicit measure (affective priming) was used as the index of stimulus liking. Field (2006) concluded that evaluative conditioning operates during middle childhood and may be a mechanism via which preferences are formed early in life.

Most recently, evaluative conditioning has been demonstrated during early childhood. Using a similar paradigm, Halbeisen, Walther, and Schneider (2016) showed that 3- to 6-year-old children's preference for novel characters was influenced by pairing them with either liked and disliked animals (Experiment 1) or liked and disliked foods (Experiment 2). The results showed that across this age range, changes in preference were age invariant and did not depend on children's recollection of

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