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Vicarious learning and the development of fears in childhood

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Abstract

Vicarious learning has long been assumed to be an indirect pathway to fear; however, there is only retrospective evidence that children acquire fears in this way. In two experiments, children (aged 7–9 years) were exposed to pictures of novel animals paired with pictures of either scared, happy or no facial expressions to see the impact on their fear cognitions and avoidance behavior about the animals. In Experiment 1, directly (self-report) and indirectly measured (affective priming) fear attitudes towards the animals changed congruent with the facial expressions with which these were paired. The indirectly measured fear beliefs persisted up to 3 months. Experiment 2 showed that children took significantly longer to approach a box they believed to contain an animal they had previously seen paired with scared faces. These results support theories of fear acquisition that suppose that vicarious learning affects cognitive and behavioral fear emotion, and suggest possibilities for interventions to weaken fear acquired in this way.

Keywords: Anxiety; Vicarious learning; Fears; Information processing

Introduction

Early conditioning models of fear acquisition, typically illustrated by Watson and Rayner's (1920) 'Little Albert' study, stated that fear develops as a result of a direct traumatic experience with a stimulus. The basic assumption was that an individual would learn to fear any animal or object (the conditioned stimulus, CS) that was experienced in temporal proximity with something that elicits fear (the unconditioned stimulus, US). However, by the 1970s the limitations of this overly simplistic model had become evident (e.g. Rachman, 1977). One particular problem was that many individuals with phobias do not recall a causal traumatic event involving their feared stimulus (e.g. Withers & Deane, 1995). However, as our understanding of basic conditioning processes has developed, it has become clear that many other factors other than the number of contiguous experiences of the CS and US affect the outcome of conditioning (Field, 2006d; Rescorla, 1988) and these advances have been incorporated into contemporary conditioning models that have successfully addressed criticisms of traditional theory (e.g. Davey, 1997; Field & Davey, 2001). One such innovation has been to integrate indirect learning processes into conditioning models.

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Rachman (1977) suggested that fears can be socially transmitted, either vicariously (observationally) or via information, without an individual directly experiencing trauma themselves. Although it is well accepted that fears can be acquired by observing others responding fearfully to a particular stimulus (e.g. Bandura, 1969), there is little research on whether children can acquire fears in this way. In adults, the majority of evidence for vicarious learning of clinical fears comes from questionnaire studies that require phobic individuals to retrospectively attribute their fear to direct conditioning, verbal information or vicarious learning (see King, Gullone, & Ollendick, 1998 for a review). Between 15.5% (Kleinknecht, 1994) and 42% (Merckelbach, De Ruiter, van den Hout, & Hoekstra, 1989) of individuals with specific phobias recall vicarious learning events at onset and these experiences are important in the etiology of animal phobia (e.g. McNally & Steketee, 1985). However, these retrospective studies have been criticized (see Field, Argyris, & Knowles, 2001; King et al., 1998) for (1) using questionnaires that force participants to attribute their fear to specific pathways; (2) memory bias in the data caused by testing adults years after their phobia was acquired; and (3) not using non-fearful control groups to demonstrate the general importance of vicarious learning events.

Non-clinical experimental work on adult humans has used a confederate's apparent reaction to an alleged aversive stimulus (e.g. electric shock) to condition autonomic arousal, in an observing participant, to a signal (e.g. a buzzer or light) that predicts the model's aversive stimulus (e.g. Bandura & Rosenthal, 1966; Brown, 1974; Vaughan & Lanzetta, 1980). The model's reaction to the aversive stimulus is assumed to act as the observer's US: the observer learnt that the buzzer or light (the CS) predicted the occurrence of the model's reaction (the US). Observers exhibited increased galvanic skin responses both to the model's response during the presentation phase, and later to the CS alone (Berger, 1962). However, because an aversive US (e.g. electric shock) was typically presented between the CS and the model's response (the observer's US), the mechanism underlying the learning is unclear: an observer's response could be elicited by experiencing the model's response, the model's aversive US or both (see Green & Osborne, 1985). However, skin conductance responses to CS pictures paired with a US that the observer does not find aversive can be acquired vicariously if they believe that the US was aversive for the model (if, for example, they heard the model tell the experimenter that they had a phobia for the US, Hygge & Öhman, 1978). This effect was found only for fear-relevant CSs (snakes, spiders and rats) but, nevertheless, implies that the observer need not experience discomfort themselves for them to acquire fear vicariously. These human studies have generally shown only that fear responses survive the duration of the experiment; if vicarious learning is relevant for fear and phobia acquisition, responses need to endure (Mineka & Zinbarg, 1996).

Mineka, Cook and colleagues in a series of innovative studies, showed that laboratory-reared rhesus monkeys rapidly learnt to fear snakes after witnessing wild-reared monkeys acting fearfully toward real and toy snakes, and this fear was still present 3 months later (e.g. Cook & Mineka, 1989; Mineka, Davidson, Cook, & Keir, 1984). Mineka and Cook (1993) have convincingly shown that vicarious learning is conditioning also (i.e. associative learning) by showing that: (1) observer monkeys respond with distress to fearful models during learning (Mineka & Cook, 1993); (2) second-order conditioning can occur (Cook & Mineka, 1987); and (3) prior exposure to non-fearful models 'immunizes' against future vicarious fear acquisition (Mineka & Cook, 1986). However, their effects have been demonstrable only towards fear-relevant stimuli such as snakes and crocodiles and not to rabbits or flowers (Cook & Mineka, 1989).

This primate research is extremely persuasive; however, the extent to which these findings can be generalized to humans is uncertain. Despite the ethical challenge of conducting similar studies in human children, Gerull and Rapee (2002) showed that toddlers' (aged 15–20 months) fear expression and their avoidance of fear-relevant stimuli (a rubber snake or a rubber spider) were greater after witnessing their mother displaying a negative (fearful/disgusted) facial expression. However, the mechanism of vicarious learning is unclear because a no-modeling control condition was not used. Field et al. (2001) showed 7–9-year-old children's self-reported fear beliefs increased, but non-significantly, from before to after watching a video in which an adult female acted fearful/avoidant with a novel toy monster. This methodology addressed many of the criticisms directed at past human vicarious fear learning research: it avoids the memory issues in the retrospective literature; it uses non-clinical samples to inform us about the development of fears in normal children; children are not forced to ascribe an existing fear to a particular onset pathway pre-determined by theoretical assumptions; the manipulation of vicarious learning experiences allows causal inferences about the mechanisms underlying any observed changes in emotional response systems; and the use of animals that children had not encountered