

Is conditioning a useful framework for understanding the development and treatment of phobias?[☆]

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Abstract

Despite the prevalence of therapeutic interventions based on conditioning models of fear acquisition, conditioning has been seen by many as a poor explanation of how fears develop: partly because research on conditioning has become less mainstream and models of learning have become increasingly more complex. This article reviews some of what is now known about conditioning/associative learning and describes how these findings account for some early criticisms of conditioning models of fear acquisition. It also describes how pathways to fear such as vicarious learning and fear information can be conceptualised as forms of associative learning that obey the same learning rules. Some popular models of conditioning are then described with a view to highlighting the important components in learning. Finally, suggestions are made about how what we know about conditioning can be applied to improve therapeutic interventions and prevention programs for child anxiety.

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Conditioning as an explanation of phobic responding arose from [Watson and Rayner's \(1920\)](#) famous demonstration that aversive and avoidant responses towards a previously neutral stimulus could be learned. In their study, a 9-month-old child, Albert B, was pre-tested to see whether he was initially fearful of various stimuli (including a white rat and the noise made by banging a claw hammer on an iron bar). Having established that Albert was not fearful of the rat but was scared by the noise, Albert was placed in a room with the rat and every time he touched the rat, or the rat approached him, Watson hit the iron bar, thus scaring the child. After several pairings of the rat with the loud noise, Albert began to show signs of anxiety when the rat was presented without the loud noise. Although Watson himself did not formulate a coherent theory of phobia acquisition, the implication from the study was that excessive and persistent fear (i.e. a phobia) could be acquired through experiencing a stimulus in temporal proximity to some fear-inducing or traumatic event.

In conditioning terminology, this stereotyped and oversimplified account would suggest that the rat was a conditioned stimulus (CS) and the loud noise an unconditioned stimulus (US), which is a stimulus that evokes a natural response called the unconditioned response (UR): in this case anxiety. Through pairing of the CS and US, and the formation of a CS–US association in memory, the CS comes to evoke a response called the conditioned

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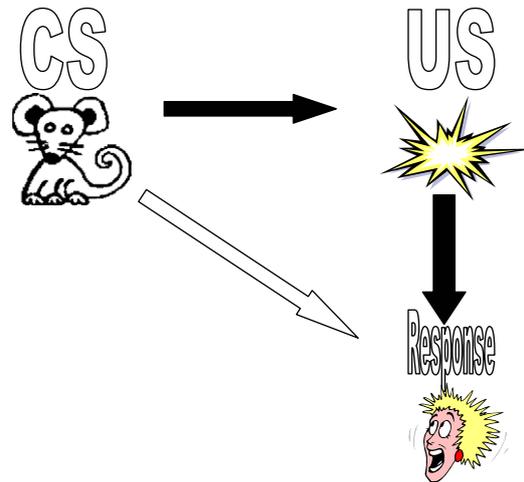


Fig. 1. Shows the stereotypical conditioning model of phobia acquisition using the example of [Watson and Rayner \(1920\)](#). A previously neutral stimulus, CS (a white rat) is paired with an aversive outcome, US (in this case a loud noise) which naturally evokes an anxiety response (UR). Through association with the aversive outcome, the CS comes to evoke an anxiety response (CR).

response, CR (see [Fig. 1](#)). Clinically speaking, conditioning at the time had two important characteristics: *Equipotentiality* and *Extinction*. Equipotentiality refers to the observation that any predictor should be able to enter into an association with any outcome; the implication is that a phobia of anything can develop provided that it is at some point experienced alongside trauma. Extinction refers to the well-demonstrated effect that if a predictor (CS) is presented alone (i.e. without the outcome) after a response has been acquired, then the strength of that response will decline over successive trials until the predictor stimulus no longer elicits a CR. The implication of extinction for clinical psychology was that exposure to the CS (the target of the phobia) without the trauma would allow the anxious response to extinguish. This simple idea formed the basis of behaviour therapy (see [Wolpe, 1961](#)) which even to this day is successful in treating specific phobias ([Öst, Svensson, Hellstrom, & Lindwall, 2001](#)).

1. Evidence for conditioning as a pathway to fear

Although ethical considerations prevent detailed study of the role of conditioning in the development of anxiety in childhood, naturalistic studies support the idea that conditioning is a mechanism through which fears develop. For example, compared to control children, 29 child survivors of a severe lightning-strike showed more numerous and intense fear of thunderstorms, lightning and tornadoes ([Dollinger, O'Donnell, & Staley, 1984](#)) and 25 teenage female survivors of a sinking cruise ship also had an excess of fears relating to ships, water travel, swimming and water, and their fear even generalised to other modes of transport ([Yule, Udwin, & Murdoch, 1990](#)). Both of these studies support the idea that a single traumatic event can lead to intense fears of objects related to the trauma. There is also retrospective evidence that anxious children (or their parents) will attribute fears to direct traumatic experiences. [King, Gullone, and Ollendick \(1998\)](#) reviewed seven studies that had looked at self-reported attributions of childhood fear and found that conditioning was endorsed as an explanation in 0% (for fear of water) to 91% (fear of dogs) of the children. The weighted mean endorsement of conditioning across these studies was 38%. With the notable exception of fear of water (in which 78% endorsed a 'fear at first contact' explanation), nearly all of the endorsements were direct conditioning, learning through observing others (vicarious learning) or through receiving fear-relevant information. In fact the weighted mean percentage of children or parents endorsing these combined categories was 94%. What I hope to demonstrate in due course is that all three of these categories are, in fact, forms of associative learning with the same underlying mechanism. As such, conditioning, as a theoretical framework, has enormous power to explain how fears develop (at least in terms of phobics' attributions of the origin of their fear). However, before then we shall look at some of the criticisms traditionally directed at conditioning as an explanation of fear, and then explore some lesser-known aspects of conditioning theory.

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