

LITTLE EMOTIONAL ALBERT

Watson, J. B., & Rayner, R. (1920). Conditioned emotional responses. *Journal of Experimental Psychology*, 5, 1-14.

Have you ever wondered where your emotions come from? If you have, you're not alone. The source of emotions has fascinated behavioral scientists throughout psychology's history. Part of the evidence for this fascination can be found in this book; four studies are included that relate directly to emotional responses (Harlow, 1958; Ekman & Friesen, 1971; Seligman & Meier, 1967; and Wolpe, 1961). This study by Watson and Rayner on conditioned emotional responses was a strikingly powerful piece of research when it was published more than 70 years ago, and it continues to exert influence today. You would be hard pressed to pick up a textbook on general psychology or on learning and behavior without finding a summary of their findings.

The historical importance of this study is not solely due to the research findings, but also to the new psychological territory it pioneered. If we could be transported back to the turn of the century and get a feel for the state of psychology at the time, we would find it nearly completely dominated by the work of Sigmund Freud. Freud's psychoanalytic view of human behavior was based on the idea that we are motivated by unconscious instincts and repressed conflicts from early childhood. In simplified Freudian terms, behavior, and specifically emotion, is generated internally through biological and instinctual processes.

In the 1920s, a new movement in psychology known as behaviorism, spearheaded by Pavlov and Watson, began to take hold. The behaviorist viewpoint was radically opposed to the psychoanalytic school and proposed that behavior is generated outside the person through various environmental or situational stimuli. Therefore, Watson theorized, emotional responses exist in us because we have been conditioned to respond emotionally to certain stimuli in the environment. In other words, we learn our emotional reactions. Watson believed that all human behavior was a product of learning and conditioning, as he proclaimed in his famous statement of 1913:

Give me a dozen healthy infants, well-formed, and my own special world to bring them up in, and I'll guarantee to take anyone at random and train him to become any type of specialist I might select doctor, lawyer, artist, merchant, chief, and, yes, beggarman and thief. (Watson, 1913)

This was, for its time, an extremely revolutionary view. Most psychologists, as well as public opinion in general, were not ready to accept these new ideas. This was especially true for emotional reactions, which seemed to be somehow generated from within. So Watson set out to demonstrate that emotions could be experimentally conditioned.

THEORETICAL PROPOSITIONS

Watson theorized that if a stimulus that automatically produces a certain emotion in you (such as fear) is repeatedly experienced at the same moment as something else, such as a rat, the rat will become associated in your brain with the fear. In other words, you will eventually become conditioned to be afraid of the rat. He maintained that we are not born to fear rats, but that such fears are learned through conditioning. This formed the theoretical basis for his most famous experiment, involving a subject named "Little Albert B."

METHOD AND RESULTS

The subject, Albert B., was recruited for this study at the age of nine months from a hospital where he had been raised, as an orphan, from birth. He was judged by the researchers and the hospital staff to be very healthy, both emotionally and physically. In order to see if Albert was afraid of certain stimuli, he was presented with a white rat, a rabbit, a monkey, a dog, masks with and without hair, and white cotton wool. Albert's reactions to these stimuli were closely observed. Albert was interested in the various animals and objects and would reach for them and sometimes touch them, but he never showed the slightest fear of any of them. Since they produced no fear, these are referred to as *neutral stimuli*.

The next phase of the experiment involved determining if a fear reaction could be produced in Albert by exposing him to a loud noise. All humans, and especially all infants, will exhibit fear reactions to loud, sudden noises. Since no learning is necessary for this response to occur, the loud noise is called an *unconditioned stimulus*. In this study, a steel bar four feet in length was struck with a hammer behind Albert. This noise startled and frightened him and made him cry.

Now the stage was set for testing the idea that the emotion of fear could be conditioned in Albert. The actual conditioning test was not done until the child was 11 months old. There was hesitation on the part of the researchers to create fear reactions in a child experimentally, but they made the decision to proceed based on what was, in retrospect, questionable ethical reasoning. (This is discussed in conjunction with the overall ethical problems of this study, later in this chapter.)

As the experiment began, the researchers presented Albert with the white rat and the frightening noise at the same time. At first, Albert was interested in the rat and reached out to touch it. As he did this, the metal bar was struck, which startled and frightened Albert. This process was repeated three times. One week later, the same procedure was followed. After a total of seven pairings of the noise and the rat, the rat was presented to Albert alone, without the noise. Well, as you've probably guessed by now, Albert reacted with extreme fear to the rat. He began to cry, turned away, rolled over on one side away from the rat, and began to crawl away so fast that the researchers had to rush to catch him before he crawled off the edge of the table! A fear response had been conditioned to an object that had not been feared only one week earlier.

The researchers then wanted to determine if this learned fear would transfer to other objects. In psychological terms, this transfer is referred to as *generalization*. If Albert showed fear to other similar objects, then the learned behavior is said to have generalized. The next week, Albert was tested again and was still found to be afraid of the rat. Then to test for generalization, an object similar to the rat (a white rabbit) was presented to Albert. In the author's words: "Negative responses began at once. He leaned as far away from the animal as possible, whimpered, then burst into tears. When the rabbit was placed in contact with him, he buried his face in the mattress, then got up on all fours and crawled away, crying as he went" (p. 6). Remember, Albert was not afraid of the rabbit prior to conditioning, and had not been conditioned to fear the rabbit specifically.

Little Albert was presented over the course of this day of testing with a dog, a white fur coat, a package of cotton, and Watson's own head of gray hair. He reacted to all of these items with fear. One of the most well-known tests of generalization that made this research as infamous as it is famous occurred when Watson presented Albert with a Santa Claus mask. The reaction? Yes ... fear!

After another five days Albert was tested again. The sequence of presentations on this day are summarized in Table 1.

TABLE 1 Sequence of Stimulus Presentations to Albert on Fourth Day of Testing

STIMULUS PRESENTED	REACTION OBSERVED
1. Blocks	Played with blocks as usual
2. Rat	Fearful withdrawal (no crying)
3. Rat + Noise	Fear and crying
4. Rat	Fear and crying
5. Rat	Fear, crying, and crawling away
6. Rabbit	Fear, but less strong reaction than on former presentations
7. Blocks	Played as usual
8. Rabbit	Same as 6
9. Rabbit	Same as 6
10. Rabbit	Some fear, but also wanted to touch rabbit
11. Dog	Fearful avoidance
12. Dog + Noise	Fear and crawling away
13. Blocks	Normal play

Another aspect of conditioned emotional responses Watson wanted to explore was whether the learned emotion would transfer from one situation to another. If Albert's fear responses to these various animals and objects occurred only in the experimental setting and nowhere else, the significance of the findings would be greatly reduced. To test this, later on the day outlined in Table 1, Albert was taken to an entirely different room with brighter lighting and more people present. In this new setting, Albert's reactions to the rat and rabbit were still clearly fearful, although somewhat less intense.

The final test that Watson and Raynor wanted to make was to see if Albert's newly learned emotional responses would persist over time. Well, Albert had been adopted and was scheduled to leave the hospital in the near future. Therefore, all testing was discontinued for a period of 31 days. At the end of this time, he was once again presented with the Santa Claus mask, the white fur coat, the rat, the rabbit, and the dog. After a month, Albert was still very afraid of all these objects.

Watson and his colleagues had planned to attempt to *recondition* little Albert and eliminate these fearful reactions. However, Albert left the hospital on the day these last tests were made, and, as far as anyone knows, no reconditioning ever took place.

DISCUSSION AND SIGNIFICANCE OF FINDINGS

Watson had two fundamental goals in this study and in all his work: (a) to demonstrate that all human behavior stems from learning and conditioning and (b) to demonstrate that the Freudian conception of psychology, that our behavior stems from unconscious processes, was wrong. This study, with all its methodological flaws and serious breaches of ethical conduct (to be discussed shortly) succeeded to a large extent in convincing a great portion of the psychological community that emotional behavior could be conditioned through simple stimulus-response techniques. This finding helped, in turn, to launch one of the major schools of thought in psychology: behaviorism. Here, something as complex, personal, and human as an emotion was shown to be subject to conditioning, just as a rat in a maze learns to find the food faster and faster on each successive try.

A logical extension of this is that other emotions, such as anger, joy, sadness, surprise, or disgust, may be learned in the same manner. In other words, the reason you are sad when you hear that old song, nervous when you have a job interview or a public speaking engagement, happy when spring arrives, or afraid when you hear a dental drill is that you have developed an association in your brain between these stimuli and specific emotions through conditioning. Other more extreme emotional responses, such as phobias and sexual fetishes, may also develop through similar sequences of conditioning. These processes are the same as what Watson found with little Albert, although usually more complex.

Watson was quick to point out that his findings could explain human behavior in rather straightforward and simple terms, compared with the psychoanalytic notions of Freud and his followers. As Watson and Raynor explained in their article, a Freudian would explain thumb sucking as an expression of the original pleasure-seeking instinct. Albert, however, would suck his thumb whenever he felt afraid. As soon as his thumb entered his mouth, he ceased being afraid. Therefore, Watson interpreted thumb sucking as a conditioned device for blocking fear-producing stimuli.

An additional attack on Freudian thinking made in this article concerned how Freudians in the future, given the opportunity, might analyze Albert's fear of a white fur coat. Watson and Raynor claimed that Freudian analysts "will probably tease from him the recital of a dream which, upon their analysis, will show that Albert at three years of age attempted to play with the pubic hair of the mother and was scolded violently for it." Their main point was that they had demonstrated with little Albert that emotional disturbances in adults cannot always be attributed to sexual traumas in childhood, as the Freudian view was commonly interpreted.

QUESTIONS AND CRITICISMS

As you have been reading this, you have probably been concerned or even angered over the treatment by the experimenters of this innocent child. This study clearly violates current standards of ethical conduct in research involving humans. It would be highly unlikely that any human-subjects committee at any research institution would approve this study today. Eighty years ago, however, such ethical standards did not formally exist, and it is not unusual to find reports in the early psychological literature of what now appear to be questionable research methods. It must be pointed out that Watson and his colleagues were not sadistic or cruel people and that they were engaged in a new, unexplored area of research. They acknowledged considerable hesitation in proceeding with the conditioning process, but decided that it was justifiable, since, in their opinion, some such fears would arise anyway when Albert left the sheltered hospital environment. Even so, is it ever appropriate to frighten a child to this extent, regardless of the importance of the potential discovery? Today nearly all behavioral scientists would agree that it is not.

Another important point regarding the ethics of this study was the fact that Albert was allowed to leave the research setting and was never reconditioned to remove his fears. Watson and Raynor contend in their article that such emotional conditioning may persist over a person's lifetime. If they were correct on this point, it is extremely difficult, from an ethical perspective, to justify allowing someone to grow into adulthood fearful of all these objects (and who knows how many others!).

On a related point, several researchers have criticized Watson's assumption that these conditioned fears would persist indefinitely (Harris, 1979). Others claim that Albert was not conditioned as effectively as the authors maintained (Samelson, 1980). It has frequently been demonstrated that behaviors acquired through conditioning can be lost because of other experiences or simply because of the passage of time. Imagine, for

example, that when Albert turned five, he was given a pet white rabbit for a birthday present. At first, he might have been afraid of it (no doubt baffling his adoptive parents). But as he continued to be exposed to the rabbit without anything frightening occurring (such as that loud noise), very likely he slowly became less and less afraid until the rabbit no longer caused a fear response. This is a well-established process in learning psychology called *extinction*, and it happens routinely as part of the constant learning and unlearning, conditioning and unconditioning processes we experience throughout our lives.

RECENT APPLICATIONS

Watson's 1920 article continues to be cited in research in a wide range of fields, including parenting and psychotherapy. One potentially valuable study, examined the facial expressions of emotion in infants (Sullivan & Lewis, 2003). We know that facial expressions corresponding to specific emotions are consistent among all adults and across cultures. This study, however, extended this research to how such expressions develop in infants and what the various expressions mean at very young ages. A greater understanding of infants' facial expressions might be of great help in adults' efforts to communicate with and care for babies. The authors noted that their goal in their research was "to provide practitioners with basic information to help them and the parents they serve become better able to recognize the expressive signals of the infants and young children in their care" (Sullivan & Lewis, 2003). This study's use of Watson's findings offers us a degree of comfort in that his questionable research tactics with Little Albert, may, in the final analysis, allow for greater sensitivity and perception into the feelings and needs of infants.

As mentioned earlier in this discussion, one emotion, fear, in its extreme form, can produce serious negative consequences known as phobias. Many psychologists believe that phobias are conditioned much like Little Albert's fear of furry animals (see the discussion of Wolpe's research on the treatment of phobias). Watson's research has been incorporated into many recent studies about the origins and treatments of phobias. One such article discussed phobias from the nature-nurture perspective and found some remarkable results. Watson's approach, of course, is rooted completely in the environmental or nurture side of the argument, and most people would view phobias as learned. However, a study by Kendler, Karkowski, and Prescott (1999) provided compelling evidence that the development of phobias may include a substantial genetic component. The researchers studied phobias and unreasonable fears in more than 1,700 female twins (see the discussion of Bouchard's twin research). They claim to have found that a large percentage of the variation in phobias was due to inherited factors. The authors concluded that, while phobias may be molded by an individual's personal environmental experiences, the role of the family in phobias is primarily biological, not environmental.

Imagine: *Born to be Phobic!* This view flies directly in the face of Watson's theory and should provide plenty of fuel for the ongoing nature-nurture debate in psychology and throughout the behavioral sciences.

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