

ON THE TRAIL OF LITTLE ALBERT

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In 1920, John Watson and Rosalie Rayner published a study of the emotional conditioning of an 11-month old infant, "Albert B," which was to become a textbook classic. In the late 1970s, four critical reexaminations of that study revealed both a lack of scientific merit in the original work and the evolution of fictitious embellishments of it in later texts. Our analysis of leading and current introductory textbooks indicates that those critical reexaminations had but trivial effects on subsequent textbook content. Although many authors cite the critical literature, their discussions do not reflect its substance. The Little Albert legend may persist because it is an especially satisfying textbook story, to traditional behaviorist viewpoints, regardless of its validity.

Textbooks in introductory psychology routinely emphasize the early scientific landmarks on which the field was founded. Comments on the importance of research procedure appear throughout most chapters, and authors of these books extol experimental methods as the one achievement that made 20th-century psychology a science. In that spirit introductory texts also compete to be judged as most up-to-date with research citations. The need to replace older work with the most recent provides the justification for the frequently revised editions (typically every 3 years).

Of course every basic text includes certain classical examples of scientifically significant early work: Pavlov's rigorous study of reflexes, Ebbinghaus's intensive study of rote memory, Thorndike's quantitative study of instrumental learning, and Fechner's mathematical psychophysics. Those are influential examples of good early science in this field.

It is puzzling to find that most introductory texts routinely include, as of equal status, an early study that fails to meet the standards characteristic of those (previously cited) classic studies and that has been discredited in widely read publications: the Watson and Rayner (1920) study of the emotional conditioning of an 11-month old infant, identified as "Albert B." (popularly referred to as "Little Albert" by several decades of textbook authors). In introductory texts, this study is often treated with the same respect, given as much space and status, as those other classic early experiments in psychology.

However, to portray it as sophisticated and significant, writers have apparently been compelled to embellish the Little Albert story, even to the point of fabricating experimental manipulations that were not part of the original study (Cornwell & Hobbs, 1976; Harris, 1979; Prytula, Oster, & Davis, 1977; Samelson, 1980).

Watson and Rayner's experiment was an attempt to condition an emotional reaction—in Little Albert—to a specific stimulus, and then to see if that emotion would reappear in the presence of other similar stimuli and persist through time. Their subject was, in their words, an unusually "stolid and unemotional" baby, who showed no fear when confronted with such stimuli as a white rat, a rabbit, a dog, a monkey, masks with and without hair, and burning newspapers.

Albert did become emotional (i.e., he cried) when a steel bar suspended behind him was suddenly struck with a hammer. Watson struck the bar whenever Albert touched a laboratory white rat. After two trials (strikes of the steel bar in the presence of the rat) on one day and five more a week later, Albert acted fearful in the presence of the rat alone. To see if that fear would generalize and occur also in the presence of similar stimuli, Albert was then shown a rabbit, a dog, cotton wool, Watson's and two other observers' hair, a fur coat, and a Santa Claus mask. Five days later he was again shown the rabbit and the dog and, after waiting another month, the rat, the rabbit, the dog, a coat, and the mask. At best the timing, recording of events, and presentation of stimuli were casual or haphazard.

In their original article (but not in later ones) Watson and Rayner concluded that the experiments "show conclusively that directly conditioned emotional responses as well as those conditioned by transfer persist, although with a certain loss in the intensity of the reaction, for a longer period than one month" (1920, p. 12). Other investigators were later unable to replicate those results (Harris, 1979, p. 15; Hilgard & Marquis, 1940, p. 293). Moreover, when Albert's fear of the rat began to fade after 10 days, Watson and Rayner decided to "freshen" the reaction by striking the bar while placing the rat on Albert's hand. Even so, his reactions in some later trials are more accurately described as ambivalent than fearful. Thumbsucking, according to the original account, typically blocked the fear response. To obtain the predicted result, Watson and Rayner frequently had to remove Albert's thumb from his mouth. The forced removal of the thumb is a plausible alternative explanation for some of the crying behavior.

Attempts to transfer the response also produced ambiguous results. Albert reacted negatively to most, but not all, of the other stimuli. For example, he showed fear of Watson's hair, but no fear of the hair of two other observers. Moreover, Watson and Rayner tried to condition Albert directly to the rabbit and dog; nevertheless, he showed only a slight reaction to both. During one trial, the dog began to bark loudly when only 6 inches from Albert's face (producing "a marked fear response in the adult observers" as well as the infant). Watson and Rayners' descriptions are also imprecise and subjective. In short, theirs was a casual naturalistic observation rather than a true experiment conforming to the usual canons of experimental procedure. The researchers themselves later conceded the tentative character of their results. In a footnote to an article published in 1921, they wrote: "The work at Hopkins was left in such an incomplete state that verified conclusions are not possible; hence this summary . . . must be looked upon merely as a preliminary exposition of possibilities rather than a catalogue of concrete usable results" (Watson & Rayner, 1921).

Nevertheless, Little Albert soon became, for textbook writers, a model of the classical conditioning of emotional behavior. In the process, the story was also transformed—becoming in some ways simpler, and in others more complex. Aspects of the study that might have cast doubt on its validity were omitted, while various imaginative details were introduced. Erroneous textbook accounts had Watson and Rayner humanely extinguishing the fears they created. Some authors even described that fictional process in detail; Albert is deconditioned by having the rat presented while being fed candy, or even more specifically "pieces of chocolate" or "a bowl of ice cream" (Cornwell & Hobbs, 1976, p. 45). Both the details omitted and those added to the original result perhaps in a more favorable account of experimenters and experiment.

In 1976, the story of Little Albert began to unravel. In that year, David Cornwell and Sandy Hobbs reported various ways that textbook accounts had drifted from the original (Cornwell & Hobbs, 1976). The following year, Robert Prytula and colleagues noted yet other discrepancies, especially about Albert's ostensible deconditioning (Prytula et al., 1977). These articles appeared in publications that perhaps escaped the attention of textbook authors, editors, and manuscript reviewers. In 1979, however, Ben Harris's extensive critique of the Little Albert story appeared in the *American Psychologist* (Harris, 1979). It was shortly followed in the same widely read journal by Franz Samelson's comparison of Watson's Little Albert with Cyril Burt's (nonexistent) twins (Samelson, 1980). Both authors concluded that the experiment was vitiated by a multiplicity of flaws. Harris in particular took current texts to task for perpetuating what he called this "piece of social science folklore" (1979, p. 151).

How did textbooks change as a result? The answer is: trivially. Most introductory psychology textbooks published since 1984 continue to portray Little Albert as an exemplar of classical conditioning. We have

been able to examine 39 leading texts, representing approximately a third of those currently in print and including all those with a significant market share. Nine make no mention of Little Albert. Of the 30 remaining, only one accurately summarizes recent criticisms (Papalia & Olds, 1985). Stimuli specifically identified by Harris as fictitious (e.g., Albert's mother's coat, a teddy bear) continue to appear in some accounts (Dember, Jenkins, & Teyler, 1984; Rathus, 1987).

Current texts do differ from those of the 1960s and 1970s in having jettisoned stories about the *extinction* of Albert's fear. But they often assert that Watson and Rayner's intention to do so was thwarted by the infant's removal from the hospital where the experiment was conducted. For example: "The researchers have been criticized for this experiment, but it must be remembered that they were denied the opportunity to complete the therapy, for which they had made careful plans" (Fernald & Fernald, 1986, p. 466). Indeed, the strong implication of some of these accounts is that the mother is to blame for removing her child in the middle of the study. One author writes that, "Albert's mother . . . was so outraged by her son's fear of her (because of the [fur] collar) that she removed him before Watson could attempt to reverse the process" (Rathus, 1987, p. 219). However, Watson and Rayner knew a month in advance when Albert would leave and made no plans to remove the fears they themselves believed were "likely to persist indefinitely" (Watson & Rayner, 1920, p. 12). The fur collar is also fictional.

Authors' responses to exposés of the Little Albert story thus have generally been to correct only those details that could be changed or omitted without severely undermining the story's function in the textbook. Most current texts simply repeat the classic story and often reprint the familiar picture of Watson (in a Santa Claus mask) and Rayner testing Albert for stimulus generalization. Fourteen of the texts did report criticisms; five citing Harris, four Sameison, and three both authors (two provided no references). But even these texts generally report only that the study had been criticized and do not give the reasons. In the typical case, the author cites both Harris and Sameison after noting that "The Watson and Rayner study is open to several methodological criticisms" (Kalat, 1986, p. 502). But the criticisms are not described. A few authors do report problems in duplicating the results and one mentions the thumb-sucking maneuver. These appear, however, as minor qualifications. After all, one can not identify the range of criticisms, nor report Harris's or Sameison's general conclusions, and still make use of Little Albert for anything but historical purposes. Sameison characterized the experiment as "an interesting but not very compelling pilot study," and Harris judged the results "uninterpretable" (Sameison, 1980, p. 158). If authors or editors are unwilling to remove the tale, they must make selective use of their sources.

Why cite Harris or Sameison at-all? Textbook authors are under considerable pressure to keep their references current. An author who cites older works will often be instructed by manuscript reviewers and

editors to consult the current literature. Most surely do. But from the evidence of the texts, others simply update their citations or lists of "suggestions for further reading." As a result, references in introductory textbooks sometimes bear little relationship to authors' substantive discussions. Indeed, citations may directly contradict claims asserted in the text. Some authors who cite Harris and/or Sameison make points explicitly debunked by the critics they cite. Ironically, an important effect of updated citations is to provide new authority for discredited claims.

A particularly telling example of the forces at work in the textbook-writing process is provided by a text from the 1960s. In his recent history of American psychology, Ernest Hilgard notes that

Attempts to repeat the [Little Albert] experiment did not prove successful, but it long remained a paradigm for the acquisition of emotions. In fact, the experiment became decorated with mythical amendments, so that more was attributed to the report . . . than actually happened (Harris, 1979). The implausibility of the experiment had earlier been noted by Hilgard and Marquis (1940), who pointed out that in a naturalistic setting a frightened sound from the mother would not make the child fear the mother, but would lead to the child's approach to the mother as a source of security. (Hilgard, 1987, p. 326)

In the 1940 Hilgard and Marquis book, referred to previously, doubts are indeed registered about the Little Albert story (Hilgard & Marquis, 1940, pp. 293-294). But Hilgard also authored a leading introductory psychology text of the 1960s which states that

A famous experiment in which a child learned to fear a white rat serves as the prototype of emotional conditioning (Watson and Rayner, 1920). The infant Albert when shown a white rat reached for it and showed no signs of fear. While he was paying attention to the rat, he was suddenly frightened by a loud sound. Thereafter he was afraid of the rat. The originally neutral rat became a "conditioned stimulus" to fear. Albert now also showed fear of his mother's fur neckpiece and of other soft and furry objects. (Hilgard, 1962, p. 170)

In a personal communication, Hilgard has encouraged the exposure of such lapses and notes that he was unaware, at the time, that it had occurred in his introductory text (Hilgard, 1988).

Sixty-eight years have elapsed since the publication of the Watson and Rayner study. During that time, the study of avoidance conditioning became a major chapter in behaviorist psychology with the word "emotion" typically replaced by behaviorist terminology referring instead to bodily reactions and aversive stimuli. Influential behaviorist theorists, however, effectively continued to associate emotional life with classical conditioning (Mowrer, 1939; Wolpe, 1958).

In the perspective of such theorists, "fear and anxiety-based disorders can all be viewed as either instances of classically conditioned fear or anxiety responses, or as instances of avoidance responses motivated by classically conditioned fear and reinforced by anxiety reduction" (Mineka, 1985a, p. 55). During the past 20 years, however, well-designed laboratory experiments have led many researchers to revise their understanding of these conditioning phenomena. The revisions, as they relate to conditioning and emotional behavior, have recently been summarized in a research volume edited by Brush and Overmier (1985). That summary indicates that most, or at least many, conditioning researchers are now dissatisfied with the Watson and Rayner views about emotion in general.

According to Mineka, who has contributed the most extensive review of changes of viewpoints in this area, conditioned reactions of emotional behavior can be established but are atypical. One problem is that emotional behavior often reflects innate species and individual differences. Further, recent experimental work shows that being aware that one has self-control over one's environment usually immunizes an individual to the conditioning of emotional reactions. Moreover, most everyday fear reactions, when carefully studied, are found to arise without a classical conditioning background; that is, intense and persistent fears are shown to arise easily in humans and other animals through observational learning in the absence of any traumatic unconditioned stimulus. Concluding an extensive review of research on this subject, Mineka states, "It is highly unlikely that most fears or anxiety disorders can be thought to originate from a single or even a few trials of classical fear conditioning or avoidance learning occurring in an [isolated situation], as has been proposed in the past" (Mineka, 1985a, p. 70; see also Mineka, 1985b).

How can we explain the popularity and persistence of the Little Albert story in introductory textbooks, given both repeated debunking of the story itself and controversy over the point it is meant to illustrate? Some textbook authors may remain committed to the classic view of emotional conditioning and thus view Little Albert in a utilitarian way. That is, it may not matter to some authors whether the story is accurate, as long as it illustrates a point they consider fundamentally correct, and thus the story is convenient for pedagogical purposes. For other examples of tales that survive in texts long after they have been discredited in the professional literature, see Sommer and Sommer (1983), Paul (1987), and Gould (1988). The Little Albert story is only one particularly glaring example.

References

BRUSH, F. R., & OVERMEIER, J. B. (Eds.). (1985). *Affect, conditioning, and cognition*. Hillsdale, NJ: Erlbaum.

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- CORNWELL, D., & HOBBS, S. (1976). The strange saga of Little Albert. *New Society*, March 18, 602-604.
- DEMBER, W. N., JENKINS, J. J., & TEYLER, T. J. (1984). *General psychology*. Hillsdale, NJ: Erlbaum.
- FERNALD, L. D., & FERNALD, P. S. (1986). *Introduction to psychology*. Dubuque, IA: W. C. Brown.
- GOULD, S. J. (1988). The case of the creeping fox terrier clone. *Natural History*, 16, 20-24.
- HARRIS, B. (1979). What ever happened to Little Albert? *American Psychologist*, 34, 151-160.
- HILGARD, E. R. (1962). *Introduction to psychology*. New York: Harcourt Brace and World.
- HILGARD, E. R. (1987). *Psychology in America: A historical survey*. San Diego, CA: Harcourt Brace Jovanovich.
- HILGARD, E. R. (1988). Personal letter: E. R. Hilgard to A. L. Blumenthal.
- HILGARD, E. R., & MARQUIS, D. G. (1940). *Conditioning and learning*. New York: Appleton-Century.
- KALAT, J. W. (1986). *Introduction to psychology*. Belmont, CA: Wadsworth.
- MINEKA, S. (1985a). The frightful complexity of the origins of fears. In F. R. Brush & J. B. Overmier (Eds.), *Affect, conditioning, and cognition*. Hillsdale, NJ: Erlbaum.
- MINEKA, S. (1985b). Animal models of anxiety based disorders: Their usefulness and limitations. In J. Maser & A. Tuma (Eds.), *Anxiety and anxiety disorders*. Hillsdale, NJ: Erlbaum.
- MOWRER, O. H. (1939). A stimulus-response analysis of anxiety and its role as a reinforcing agent. *Psychological Review*, 46, 553-565.
- PAPALIA, D. E., & OLDS, S. W. (1985). *Psychology*. New York: McGraw-Hill.
- PAUL, D. B. (1987). The nine lives of discredited data: Old textbooks never die—they just get paraphrased. *The Sciences*, May-June, 26-30.
- PRYTULA, R. E., OSTER, G. D., & DAVIS, S. F. (1977). The 'rat-rabbit' problem: What did John B. Watson really do? *Teaching of Psychology*, 4, 44-46.
- RATHUS, S. A. (1967). *Psychology*. New York: Holt, Rinehart, and Winston.
- SAMELSON, F. (1980). J. B. Watson's Little Albert, Cyril Burt's twins and the need for a critical science. *American Psychologist*, 35, 619-625.
- SOMMER R., & SOMMER, B. A. (1983). *Mystery in Milwaukee: Early intervention, IQ, and psychology textbooks*. *American Psychologist*, 38, 982-985.
- WATSON, J. B., & RAYNER, R. (1920). Conditioned emotional reactions. *Journal of Experimental Psychology*, 3, 1-14.
- WATSON, J. B., & RAYNER, R. (1921). Studies in infant psychology. *The Scientific Monthly*, 13, 493-514.
- WOLPE, J. (1958). *Psychotherapy and reciprocal inhibition*. Stanford, CA: Stanford University Press.