

‘Behavioural psychology can only reveal the effects of our upbringing, not our nature.’

Discuss.

For the purpose of this essay, *behavioural psychology* refers to the study of the mind through observable behaviour, and especially the tradition of Watson and Skinner that explains behaviour through conditioning.¹ *Upbringing* (or nurture) means the environmental and learned side of us: everything experienced writes onto a person’s character. *Nature* means the innate side of what our biology brings to the table before experience gets to work. And *only* is the word that really matters, because it makes the claim absolute—that behavioural psychology only reveals nurture.

This essay argues that behavioural psychology does not only reveal the effects of our upbringing. First, behavioural psychology’s own methods keep turning up evidence *about* our nature, so it plainly does not reveal upbringing alone. Second, and more interestingly, this essay argues that behaviourism only ever observes a person’s current state based on how they behave in the present, and it cannot, by itself, sort that product into proportions of nature and an upbringing because nature and nurture are intercorrelated. So the mistake in the claim isn’t that it picks the wrong option, but that it assumes any behaviour’s causal history can be inferred in the present. This essay will demonstrate that one cannot correctly attribute what in us is nature and what is upbringing, thus making behavioural psychology not able to only reveal the effects of our upbringing, not our nature.

Why the claim sounds right

Behaviourism was born as a rebellion against unobservable inner causes.² John Watson wanted psychology to look at what organisms *do*, not at hidden minds, and he pushed this famously: give him a dozen healthy infants and his own world to raise them in, and he could train any of them into any kind of adult he preferred—doctor, artist, or thief.³ In this view, any person is essentially clay waiting to be moulded by a sculptor.

¹ John B. Watson, "Psychology as the Behaviorist Views It," *Psychological Review* 20, no. 2 (1913): 158–77.

² Watson, "Psychology as the Behaviorist Views It," 158.

³ John B. Watson, *Behaviorism*, rev. ed. (Chicago: University of Chicago Press, 1930), 82.

The theory methodologically asserts that a conditioning experiment works by holding the organism roughly constant and by varying the environment.⁴ If you change behaviour by changing the environment, then what's isolated does seem like the effect of experience. So it's tempting to conclude that the whole discipline is just a machine for measuring upbringing. This is the strongest version of the claim.

The method keeps bumping into nature

The trouble is that when behaviourists actually ran the experiments, nature kept showing up uninvited. The sharpest example is John Garcia's work on taste aversion. Rats will readily learn to associate a novel taste with later nausea, but they will *not* learn to associate that same taste with an electric shock; flip it around, and they easily link sights and sounds with shock but not with sickness.⁵ This rebuts the behaviourist assumption that any stimulus can be linked to any consequence, because the animal comes pre-wired to connect certain things, which is nature, and it was discovered by a behavioural experiment.

Keller and Marian Breland found the same thing from another direction. Trying to condition animals for commercial shows, they watched trained behaviours always drift back toward instinct, such as raccoons that washed coins instead of depositing them and pigs that rooted at tokens rather than carrying them. They called it instinctive drift and admitted, with some embarrassment, that the animal's evolved nature kept overriding the training.⁶ Martin Seligman later tidied this into the idea of *preparedness*, stating that organisms are biologically prepared to learn some associations quickly and others barely at all.⁷ Every one of these is a fact about innate structure, learned by behavioural psychology.

Skinner, unlike Watson, explicitly attributed human character to two levels, the "contingencies of survival" (nature) that natural selection stamps into a species over evolutionary time, and the

⁴ Watson, "Psychology as the Behaviorist Views It," 158–59.

⁵ John Garcia and Robert A. Koelling, "Relation of Cue to Consequence in Avoidance Learning," *Psychonomic Science* 4, no. 1 (1966): 123–24.

⁶ Keller Breland and Marian Breland, "The Misbehavior of Organisms," *American Psychologist* 16, no. 11 (1961): 681–84.

⁷ Martin E. P. Seligman, "On the Generality of the Laws of Learning," *Psychological Review* 77, no. 5 (1970): 406–18.

“contingencies of reinforcement” (nurture) that shape an individual over its lifetime.⁸ The discipline’s own leading theorist did not believe behaviour was only upbringing.

Additionally, Noam Chomsky argued that conditioning cannot explain how children, without having properly learnt language, produce sentences they have never heard.⁹ Because young children’s parents speak conversationally with grammatical errors and inconsistencies, it cannot account for their ability to speak fluently and logically. This is the “poverty of the stimulus,” which points to an innate capacity for language.¹⁰ Behaviour reveals a nature that pure learning cannot account for.

So the word *only* is already incorrect, as behavioural psychology does not *only* reveal upbringing. It repeatedly reveals the shape of our nature, usually by finding the limits of what conditioning can do.

The deeper problem: you can’t read origin off behaviour

Eliminating the “only” is the easy half. The more interesting question is *can behaviourism ever correctly attribute parts of a real person to nature and upbringing?*

Behaviour only gives you the present state of a person, or the finished product. But “this trait comes from your upbringing” and “this trait is innate” are both claims about *where the product came from*, and one cannot derive a product’s history off the surface. Two people can behave identically for completely different reasons, and no amount of watching them behave will tell you which is which. Attribution is an inference about the past, and since behaviour is only evidence about the present, a connection cannot be made. Fundamentally, behaviour, on its own, is silent about origin in either direction. To claim this is learned or this is innate, one needs extra “machinery”.

And, that machinery is mostly behaviour genetics, such as twin studies, adoption studies, and now molecular methods,¹¹ which try to separate the two sources by comparing people who share

⁸ B. F. Skinner, "Selection by Consequences," *Science* 213, no. 4507 (1981): 502.

⁹ Noam Chomsky, "Review of Verbal Behavior by B. F. Skinner," *Language* 35, no. 1 (1959): 26–58.

¹⁰ Chomsky, "Review of *Verbal Behavior*," 26–58.

¹¹ Robert Plomin, John C. DeFries, and John C. Loehlin, "Genotype-Environment Interaction and Correlation in the Analysis of Human Behavior," *Psychological Bulletin* 84, no. 2 (1977): 309–22.

genes but not homes, or homes but not genes.¹² And the crucial thing to notice is the machinery sits outside plain behavioural observation. Eric Turkheimer summarised behavioural psychology's hard-won findings as three laws, the first being that essentially all human traits are heritable to some degree.¹³ That conclusion took a whole apparatus of comparison groups to get there because heritability cannot be seen by only looking at behaviours.

Even machinery can't do individual attribution

Even behaviour genetics, the scientific study of how an organism's genetic composition influences its behaviour and psychological traits, cannot tell you which parts of your character are a result of nature or nurture. The reason is that the field calculates heritability based on a characteristic's variation in a population.¹⁴ Based on these standards, a trait that is 50% heritable only means that half of the variation among people in that group traces to genetic differences.¹⁵ It does not mean that half of one's personal trait is genetic and half is upbringing. The number changes when the population or the environment is changed, which is why a trait's heritability can rise or fall between countries or eras.¹⁶ So even genetics cannot correctly attribute characteristics of a person's current state to nature and nurture.

Donald Hebb argued that heredity and environment are so thoroughly interdependent that asking which contributes more to behaviour is not a meaningful question because every trait is the product of both at once.¹⁷ Take away either and there's nothing at all; the contributions don't add up as strict parallels conjoining at the same level, they multiply and build on each other. Thus, the question of "which part of you is nature and which is upbringing" may not have a true answer to find since both are intercorrelated at all stages of human development.

¹² Thomas J. Bouchard Jr. et al., "Sources of Human Psychological Differences: The Minnesota Study of Twins Reared Apart," *Science* 250, no. 4980 (1990): 223–28; Tinca J. C. Polderman et al., "Meta-analysis of the Heritability of Human Traits Based on Fifty Years of Twin Studies," *Nature Genetics* 47, no. 7 (2015): 702–9.

¹³ Eric Turkheimer, "Three Laws of Behavior Genetics and What They Mean," *Current Directions in Psychological Science* 9, no. 5 (2000): 160–64.

¹⁴ Richard C. Lewontin, "The Analysis of Variance and the Analysis of Causes," *American Journal of Human Genetics* 26, no. 3 (1974): 400–411; David S. Moore and David Shenk, "The Heritability Fallacy," *WIREs Cognitive Science* 8, no. 1–2 (2017): e1400.

¹⁵ Polderman et al., "Meta-analysis of the Heritability of Human Traits," 702.

¹⁶ Lewontin, "Analysis of Variance," 400–401.

¹⁷ Donald O. Hebb, "Heredity and Environment in Mammalian Behaviour," *British Journal of Animal Behaviour* 1, no. 2 (1953): 43–47.

Upbringing becomes biology

Michael Meaney's team showed that rat pups whose mothers licked and groomed them more frequently grew into calmer adults with a calmer stress response—and, remarkably, this difference was written into the pups' biology, as a chemical change in how a stress-related gene was switched on.¹⁸ Hence, an event that is unambiguously *upbringing* became part of the rats' physical constitution, or *nature* in any ordinary sense. This shows that nature and nurture are intercorrelated and interdependent, they may even affect each other in ways and form abstract relations that cannot be understood by behavioural psychology.¹⁹

Avshalom Caspi and colleagues reported that a genetic variant predicted depression only in those who had also experienced serious life stress.²⁰ Neither the gene nor hardship had much effect alone, but they did together. Findings of this specific kind belong to an early candidate gene era that has since given way to the recognition that behavioural traits are polygenic, shaped by thousands of genetic variants each of vanishingly small effect²¹—which only tightens the knot, since the more numerous and interwoven the causes, the harder any single one is to prise apart from the environment.²² It is because human nature constitutes the precondition under which upbringing can properly exert its influences, and upbringing affects a person's nature to a certain extent. Essentially, genes and environments don't sit in separate boxes waiting to be tallied side by side; they act on each other, so that the same upbringing lands differently on different natures and the same nature unfolds differently under different upbringings.²³ Hence, the question of “can behavioural psychology only reveal the effects of our upbringing, not our nature” rests on the incorrect assumptions that nature and nurture are non-related elements of equal importance.²⁴

¹⁸ Ian C. G. Weaver et al., "Epigenetic Programming by Maternal Behavior," *Nature Neuroscience* 7, no. 8 (2004): 847–54.

¹⁹ Michael J. Meaney, "Maternal Care, Gene Expression, and the Transmission of Individual Differences in Stress Reactivity Across Generations," *Annual Review of Neuroscience* 24 (2001): 1161–92.

²⁰ Avshalom Caspi et al., "Influence of Life Stress on Depression: Moderation by a Polymorphism in the 5-HTT Gene," *Science* 301, no. 5631 (2003): 386–89.

²¹ Christopher F. Chabris et al., "The Fourth Law of Behavior Genetics," *Current Directions in Psychological Science* 24, no. 4 (2015): 304–12.

²² Richard Border et al., "No Support for Historical Candidate Gene or Candidate Gene-by-Interaction Hypotheses for Major Depression Across Multiple Large Samples," *American Journal of Psychiatry* 176, no. 5 (2019): 376–87.

²³ Plomin, DeFries, and Loehlin, "Genotype-Environment Interaction," 309–11.

²⁴ Hebb, "Heredity and Environment," 43–44.

Because of that, psychologists, given a person's actions, cannot accurately distinguish nature and nurture because both are inextricably entangled.

The best objection, and why it fails

The strongest objection asserts that a controlled conditioning experiment *does* isolate the effect of the environment by varying only the training when holding the animal's nature fixed.

Therefore, behaviourism really can reveal upbringing's effects.

There are two main problems with this argument. First, nature is still playing a role in the experiment. As Garcia's research showed, animals are born with biological tendencies that make some things easy to learn and others very difficult.²⁵ This means that even when researchers only change the environment, the results still depend partly on the animal's inborn nature.²⁶ For example, the animal's nature constrains the degree that a demonstrated action can be learned.

Second, and more importantly, a laboratory experiment is very different from explaining why a real person has a particular trait. An experiment can show that a certain kind of upbringing can influence behaviour. However, it cannot look at an adult and determine whether their kindness, anxiety, confidence, or aggression was actually caused by their upbringing or by their natural temperament. This cannot be answered by behaviour alone.

In short, behaviourist experiments can answer the question, "Can the environment influence behaviour?" The answer is yes. But behavioural psychology cannot answer the question, "was this person's behaviour caused by their upbringing rather than their nature?"

Conclusion

So, does behavioural psychology reveal only the effects of our upbringing and not our nature?

No, based on two reasons: the small reason is that behavioural methods keep uncovering our nature directly, from prepared taste aversions to instinctive drift to the limits of conditioned language; the "only" is simply false. The large reason is that behaviourism observes the finished

²⁵ Garcia and Koelling, "Relation of Cue to Consequence," 123.

²⁶ Breland and Breland, "Misbehavior of Organisms," 683–84.

person and cannot, on its own, separate that person into a nature-part and an upbringing-part, because both are inherently mixed and their origin is not legible in present behaviour.²⁷

The correct position, then, is that behavioural psychology reveals *us as we now are*, while not being able to know how much of that product is under nature and how much under nurture.

²⁷ Lewontin, "Analysis of Variance," 402–4.

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