

BEHAVIORISM AND BLACKBOX INFERENCE –

A REPLY TO ERIC CHARLES AND NICK THOMPSON

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ABSTRACT: This paper is a reply to Eric Charles and Nick Thompson’s critique of my 2017 paper, “Methodological behaviorism, causal chains, and causal forks.” My paper challenged the behaviorist thesis that postulating inner causes of outward behavior is pointless if the goal is to predict and explain behavior. I used the example of a literal blackbox (a box with a button on one side and two lights on the other) to develop my argument. In the present paper, I clarify my argument and discuss related issues concerning Ockham’s razor and operationalism.

In Sober (2017), I assessed a passage from Skinner (1953) in which he argues that “inner states ... are not relevant in a functional analysis.” If stimulus S causes inner state I, which in turn causes behavioral response R, Skinner claims that you can predict and explain R just by knowing that S occurs; bringing in I is unnecessary. I agreed with Skinner’s claim and added a further point that is congenial to his outlook: the fact that S and R are correlated does not favor the hypothesis that I exists over the hypothesis that I does not. In the 2017 paper, I argued that the situation can change if S causes two responses. I defended this point by considering a (literal) blackbox in which there is a button on the left side of the box and two lights on the right. Your experiment is to push the button repeatedly and record how often the first light goes on, how often the second light goes on, and how often they go on together. I then described two hypotheses about what is going on inside the box, which I called V and Y, so named because of the configuration of the postulated wires that connect button to lights. The V model postulates two nonoverlapping wires, one running from the button to light 1, the other running from the button to light 2. The Y model has a wire running from the button to a junction box, from which a second wire runs to light 1 and a third wire runs to light 2. The probabilistic formulation of the V model (wherein the state of a cause raises the probability of a state of its effect) entails that the lights should be probabilistically independent of each other, conditional on the state of the button, whereas the probabilistic formulation of the Y model entails that the lights should be probabilistically dependent on each other, conditional on the state of the button. Suppose you push the button a few thousand times and observe that each light goes on half the time, but the two go on together 45% of the time. This is strong evidence favoring the Y model over the V model. Your data provide evidence for the Y model, which includes the postulate of an internal junction box. I took this exercise to be relevant to behaviorism because behaviorists often criticize mentalistic explanations since such explanations postulate inner states. My point is that this is not a good criticism.

Eric Charles and Nick Thompson (whom I'll call "C&T" in what follows) say that I appear to be urging behaviorists to "speculate about neurophysiology" or that I am suggesting that "mental entities are essential to control, prediction, and explanation of behavior." I was doing neither. The point of the blackbox example is to show how data can favor one model over another; no need for speculation here. In addition, there is nothing specifically about mentality in my discussion of the blackbox.

C&T suggest that "nothing about the data [from the blackbox experiment] supports a simple V or Y model without the additional assumption that the effects were produced in the most economical manner. This assumption might be relevant to a wiring diagram or a computer program for which the artifact's creators are paid to be parsimonious. However, no such obligation applies to brains, which are often a tangle of kluges and historical accidents." This criticism also misses the mark. First, I wasn't attempting to survey all possible models of what is going on in the blackbox. I considered just two and sought to determine whether observations can favor one over the other. Second, I did not invoke Ockham's razor. C&T doubt that brains are maximally simple. They may be right, but the principle of parsimony, as I understand it, does not say that nature in general (or the brain in particular) is maximally simple. Einstein's formulation is closer to what I endorse

It can scarcely be denied that the supreme goal of all theory is to make the irreducible basic elements as simple and as few as possible without having to surrender the adequate representation of a single datum of experience. (1933)

Einstein is saying that observations may force you to make your theory more complex, but you shouldn't make it *more complex* than the data require.

In my 2017 article, a paragraph mentions a debate in cognitive psychology to which I devote a full chapter in my 2015 book, *Ockham's Razors*. The debate is about whether chimpanzees have beliefs about the mental states of others. The participants in that debate agree that chimpanzees have beliefs; the question of whether chimpanzees are "mind readers" is addressed within the context of that shared assumption. C&T quote me as saying that "for experimental psychologists, ... [the] task is to figure out what the psychological mechanisms are that mediate the connection between stimulus and response. These internal mechanisms are intervening variables. You don't observe internal processes directly: rather, you need to infer what they are like from what you do observe." When I described experimental psychologists here, I was talking about the cognitive psychologists who are engaged in the debate about chimpanzee mind-reading. I wasn't suggesting that behaviorists aren't experimental psychologists nor that behaviorists are interested in this debate. I have no quarrel with C&T when they say that "discovery of the psychological mechanisms 'that mediate the connection between stimulus and response' is not how we behavioral psychologists understand our task."

C&T say that "Skinner could easily have replied [to what I say about the blackbox] that behavior analysts don't need to posit any level of analysis between the physiological and behavioral to get their work done." My response is that a physiological event that occurs inside your body is inner. Skinner, in the passage I quoted, argues that the postulate of inner states is not needed.

C&T conclude their article by saying that “behaviorism is a form of pragmatism, or it is nothing. As pragmatists, we take seriously the pragmatic maxim, which says, in effect, that any concept that cannot be defined in terms of systematic experiment and observation is no concept at all.” C&T’s behaviorism is committed to *operationalism*. I am an anti-operationalist. I think that scientific concepts need to be constructed so that observations *provide evidence* for when they apply and when they do not, but that is a far cry from demanding that a scientific concept must be *definable* in a purely observational language; “x is evidence for y” and “x defines y” denote different relations. The positive result of a covid test is evidence that you have covid but having covid is not defined in terms of what the test outcome is or would be. To think otherwise is to assume that covid tests are perfectly reliable, which they are not.

References

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