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Reinforcement, explanation, and B. F. Skinner. In the famous 1924 debate between John Watson and William McDougall, McDougall predicted that Watson's "peculiar dogmas" would soon "fade away like the insubstantial fabric of a dream, leaving not a wrack behind" (Watson and McDougall, 1928, p. 92). Bindra now tells us that at least one dogma that Watson's successors have successfully fostered for more than fifty years has finally seen its day. But his attack has two major shortcomings: First, it is based on certain misconceptions about at least one important formulation of the reinforcement concept, and second, the "new" view that he offers is not so new.

Bindra spends much time criticizing a straw man, namely a hedonic view of reinforcement. For Bindra, a "basic tenet" of the reinforcement view is that behavioral consequences are effective by virtue of their value as "pleasure and pain," "rewards and punishers," and in terms of how "pleasant" they are. But a hedonic view of reinforcement was rejected by many early behaviorists (cf. Meehl, 1950) and is far from the representative view of modern behavioristic formulations.

Skinner clearly and explicitly rejected the hedonic view of reinforcement (e.g., Skinner, 1938, p. 62 *op. cit.*), and even Thorndike was careful to define "satisfiers" and "annoyers" in terms of their observable effects rather than their putative hedonic value (e.g., Thorndike, 1931, p. 36). Skinner's concept of reinforcement, as elaborated by his students (e.g., Catania, 1973; and this *Commentary*), may be briefly stated as follows: If we can show that a response increases in frequency because (and only because) it is followed by a particular stimulus, we call that stimulus a *reinforcer*, and its presentation, *reinforcement*. Reinforcement, so defined, is a term we invoke when we observe certain relations between events in the world. It is neither a circular concept, nor a hedonic concept. It is simply a name we give to certain facts.

Bindra lists what he believes to be three important characteristics of the reinforcement concept. He says, first of all, that a reinforcement "hypothesis" "assumes" that behavior is modified because of a contiguity between behavior and "hedonic" stimuli. But there is no reinforcement "hypothesis"; the term is invoked only to label certain facts. Moreover, that response-stimulus contiguity affects subsequent responding is not an "assumption"; it, too, is a fact. And, as mentioned above, hedonism need not be part of the reinforcement concept.

Second, Bindra claims that implicit in the reinforcement view is an assumption about neural connections, and he then proceeds to pose his own set of assumptions about these connections. But Skinner's view of reinforcement explicitly avoids such weak assumptions, as Bindra himself briefly notes later in his essay.

Finally, Bindra objects to the fact that reinforcement is said to act only on one particular response, which is then "more strongly connected" to a stimulus situation. But Skinner has managed without any connectionistic assumptions, and, as Bindra correctly notes, he avoided the so-called motor equivalence problem by defining a response class in terms of its measurable effects.

In short, not one of Bindra's characterizations of the concept of reinforcement is appropriate to Skinner's formulation. Bindra's presentation would have been more effective had it addressed itself more directly to Skinner's view, especially considering the great impact that Skinner's work has had on modern psychology.

The few comments that Bindra does make about Skinner's position are inaccurate. He says, for example, that Skinner promoted a position that "sacrificed explanation to the empirical goal of enunciating descriptive principles." But Skinner never "sacrificed explanation"; he simply dispensed with "explanation" that appealed to hypothetical constructs in favor of explanation in terms of antecedent and current observables. It is also not true, as Bindra claims, that Skinner took "no clear stand on how reinforcing stimuli reinforce responses" (e.g., see Skinner, 1953, pp. 81-84 *op. cit.*). Finally, Bindra is disturbed because a variety of experimental phenomena indicate that learning can take place although no obvious response-reinforcement pairings have occurred and that reinforcement does not account for *all* behavior. But these phenomena do not indicate a failure of the concept of reinforcement, only that the concept has been misunderstood (Skinner, 1977). Reinforcement is not an account of all behavior; it is a name for one important relationship between behavioral and environmental events.

Bindra's own model suffers from some of the faults of the straw man it is supposed to replace. For one thing, it ignores certain data. Bindra looks to research in classical conditioning for understanding of the learning process. He seems to believe, in fact, that *all* behavior is elicited and thus arbitrarily excludes data from his consideration that demonstrate consequential control.

Bindra's program, furthermore, is reminiscent of early British associationism, clearly evident in a main "tenet" of his program that "building . . . representations . . . of stimulus-stimulus correlations is the sole basis of learned modifications of behavior." He is concerned with the acquisition of "knowledge," and, as John Locke did in the fourth edition of his *Essay*, Bindra invents a phenomenon of association ("correlation") of ideas ("representations" of stimuli) as an explanation for observed changes in behavior. As was true for Locke, Bindra's theory of unobservables is not supported by current physiological knowledge, and hence, is still more philosophy than science.

As is true of any theory that depends on hypothetical constructs, Bindra's theory is ultimately at the mercy of observed events in behavior and environment, no matter what physiological mechanisms are eventually unearthed. The theory could not have arisen if orderly relationships between such events had not been observed, and the theory's maintenance must always be subject to these relationships. Skinner's work has done much to clarify the relationships between behavioral and environmental events and has established a body of data that construct theories such as Bindra's can only serve.

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