

## COMMENTS ON “INTENTIONAL BEHAVIORISM” BY G. R. FOXALL

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**ABSTRACT:** Professor Foxall suggests the radical behaviorist language of contingencies is fine as far as it goes, and is quite suitable for matters of prediction and control. However, he argues that radical behaviorist language is extensional, and that it is necessary to formally incorporate the intentional idiom into the language of behavioral science to promote explanations and interpretations of behavior that are comprehensive in scope. Notwithstanding Professor Foxall’s arguments, radical behaviorists hold that the circumstances identified by the use of the intentional idiom are accommodated by the radical behaviorist language of contingencies, not only for prediction and control but also for explanations and interpretations. Of central importance is that individuals may have histories that lead them to generate descriptions of past and present behavior, as well as descriptions of prevailing circumstances that have caused that behavior or are likely to cause that behavior in the future. The resulting verbal behavior may then enter into contingencies influencing their behavior, although the extent to which it does so varies across individuals as a function of their histories. Overall, the way that the pragmatism of radical behaviorism conceives of the nature and contribution of covert events differs appreciably from the way Professor Foxall conceives of the nature and contribution of intentional phenomena.

*Key words:* intentional idiom, propositional attitudes, verbal behavior, contingencies of reinforcement, explanation, interpretation

Professor Foxall’s recent piece is an engaging, provocative, and exceptionally well-crafted essay outlining his ideas about what constitutes adequate explanatory language in behavioral science (Foxall, 2007). He argues that the intentional idiom (i.e., the use of propositional attitudes such as intention and belief, especially as represented in the work of Daniel Dennett) must be added to what Professor Foxall characterizes as the extensional language of radical behaviorism. In Professor Foxall’s view, the intentional idiom is necessary to go beyond prediction and control and secure explanations and interpretations of behavior that are comprehensive in scope. He acknowledges that radical behaviorism may be able to describe the environmental factors that influence the occurrence or nonoccurrence of behavior using the extensional language of contingencies, but he holds that the intentional idiom is necessary to specify what an organism believes or knows about

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those contingencies beforehand. In addition to Dennett, Professor Foxall cites such others as Bandura, Brentano, Chisholm, Malcolm, and Searle, who have argued in related ways.

More specifically, Professor Foxall argues that radical behaviorism is limited or incomplete in three ways. First, he argues that radical behaviorism cannot deal with the “personal level” of explanation (Foxall, 2007, p. 9). By the personal level of explanation Professor Foxall means that an acceptable explanation of an individual’s behavior must take into account an individual’s intentions, given that the actual consequence of the individual’s action as described in extensional language appears to be contrary to that intention.

Second, Professor Foxall argues that radical behaviorism cannot deal with the continuity of behavior across time and space (Foxall, 2007, p. 13). He argues that an appeal to the presence of a common stimulus or a component thereof can account for cases when a response is acquired at one time and place and then emitted at a new time or in a different place. However, in some instances behavior does not seem to be connected to the environment in the way he believes radical behaviorism requires. As a result, he calls for some other explanatory principle—namely, a principle that involves the intentional idiom to bridge the temporal and spatial gap between instances of behavior.

Third, Professor Foxall argues that radical behaviorism cannot offer plausible interpretations of behavior that meet the standards of validity and reliability that customarily apply in research or theorizing (Foxall, 2007, p. 18). He argues that although interpretation plays a major role in the radical behaviorist program, that program is limited in certain ways (e.g., to third-person accounts) and as such may be cut off from the reality of human functioning. Professor Foxall’s arguments raise important and long-standing issues. I would like to formulate a series of rhetorical questions to frame a discussion of those arguments.

### **What Is Meant by “Extensional Language”?**

Professor Foxall’s argument assumes that there is a category of language called extensional and that the radical behaviorist language of contingencies falls into this category. I confess I am not confident I understand exactly what Professor Foxall means by this category.

One possibility relates to logic. In logic, extensionality is usually contrasted with intensionality. A set of items is defined extensionally by listing all the items of the set. In contrast, a set of items is defined intensionally by specifying a property for being a member of the set. Intensionality is also commonly said to be concerned with an implication of meaning or content. On an intensional view, to say item X is a member of a set implies it has the necessary property to be included in the set. In addition, to say item X is a member of a set means that it has the same defining property as every other member of the set (Moore, 2008).

How might these terms relate to the analysis of behavior, as opposed to logic? Intensionality might be interpreted as the thesis that a behaving organism has a conception of the intentional organization of its behavior. Thus, intensionality

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might be interpreted as the property that binds together instances of behavior into a class defined by the achievement of some purpose. In effect, the organism has a choice of which response alternatives it can deploy to achieve its purpose. The point of view taken here suggests that while intentionality is concerned with the end or outcome of the behavior, intensionality is concerned with the means of securing that outcome. The concept of intensionality implies that insofar as an individual's behavior can be said to be intentionally driven (i.e., insofar as the individual is an *agent* and has some conception of what the individual is seeking to accomplish) the behavior is also intensionally driven. In other words, individuals also have some conception of what they must do or how they must act to accomplish that outcome. And what they must do is not always the same; perhaps it must do X on one occasion, and Y on another. With regard to behavior, intensionality is therefore concerned with defining the behavior in terms of the property that meets the intention.

As an aside, intentional and intensional explanations may be contrasted with mechanistic explanations. If mechanistic explanations are to make sense, they must hold that behavior is relatively fixed and invariable, in the sense that the mechanical release of a spring is fixed and invariable. The behavior is of a fixed form, mechanically "stamped in" by some environmental process that is specified in physical terms. Consequently, on a mechanistic view behavior is to be explained without recourse to such conceptions as intentionality and intensionality (Moore, 2008).

What does radical behaviorism have to say about these matters? Radical behaviorists define behavior generically, functionally, and relationally. A lever press or any other form of behavior is anything that has the functional property of pressing down the lever. It is not defined by enumerating all topographies of movement. The term "contingency" similarly implies functional relations among classes of responses and classes of stimuli, both antecedent and consequent.

For radical behaviorism, operant behavior, with its emphasis on the consequences of behavior, is the very field of what is traditionally identified as voluntary, purposive, or intentional behavior. Behavior is with respect to the environment, as implied by the notion of a contingency with the elements of a discriminative stimulus and consequence. Terms such as "intention" and "intension" seem to be meaningful because behavior is related to the environment in several important ways. First, the terms imply that behavior is functionally related to the consequences the behavior has achieved in the past. Second, the terms imply that the consequences of the behavior affect the class of behavior that produces them; the consequences do not affect only separate and stereotyped instances of that behavior. Third, the terms reflect that a consequence can affect an extended sequence of behavior; the resulting behavior is forged into an integrated whole and does not consist of a series of independent elements. However, it seems manifestly troublesome to invoke an intention as a future cause from some other dimension, in opposition to contingencies in the behavioral dimension. The dimensions of an explanation are of concern when the explanation includes elements that are not expressed in the same terms and cannot be confirmed with

the same methods of observation and analysis as the facts they are said to address (Moore, 2008).

Radical behaviorism makes sense out of the import of intensionality by pointing to the generic nature of operant behavior. To take a canonical example, when a rat learns to press a lever, it is the class of responses called “lever pressing” that is strengthened. Lever pressing with the right paw is not necessarily strengthened to the exclusion of lever pressing with the left paw, or both paws for that matter; any form of behavior that satisfies the operant contingency is strengthened. The form is flexible, in the sense that it can vary within the boundaries of the class from instance to instance. Thus, behavior analysis engages the sense of intensionality by rejecting the mechanical strengthening of a single, stereotyped form of behavior (e.g., through reinforcement) and pointing out the generic, functional, and relational nature of behavior. As with all analyses, behavior analysis rejects the appeal to another dimension, such as a logical dimension, beyond the one in which the behavior takes place.

Another possibility—and a different sense of extensional—might be derived from traditional approaches to explanation. One example of the traditional approach is Harré:

Scientific knowledge consists of two main kinds of information.

1. Knowledge of the internal structures, constitutions, natures, and so on of things and materials, as various atoms and galaxies, for these are what persist.
2. Knowledge of the statistics of events, of the behavior of persisting things and materials. In this way we discern patterns amongst events. In an explanation we show how the patterns discerned amongst events are produced by the persisting natures and constitutions of things and materials. (1970, p. 125)

A second example is Cummins (1983), who distinguishes between transition statements and property statements in theories and explanations. As described by Smith (1994, pp. 206-207), transition statements are said to explain changes of the state of a system (i.e., an event) by subsuming those changes as effects of previous causes. In contrast, property statements are said to explain by showing how something having certain components organized in a specific way generates those effects. Harré’s first kind of information gives rise to property statements, whereas the second kind of information gives rise to transition statements.

With further regard to the distinctions mentioned above, Smith (1994, p. 210) says that there are two quite different types of explanation: (a) a nonreductive causal account of why the pattern arose, and (b) a reductive account showing the pattern to be the result of some underlying process. Explanations of type (a) involve Harré’s second kind of information and Cummins’s transition statements. For convenience of exposition (and not as an ontological commitment) we might label this kind of information as external information, and the explanations so generated as external explanations. In contrast, explanations of type (b) involve Harré’s first kind of information and Cummins’s property statements. For convenience of exposition (and again not as an ontological commitment) we might

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label this kind of information as internal information, and the explanations so generated as internal explanations. Smith then suggests behavioral psychology produces type (a) or external explanations, and cognitive psychology produces type (b) or internal explanations. He regards the two types of explanations as complementary and as answering different questions, although the answers do overlap and are therefore also competitive. Whereas behavioral psychology “formulates causal principles about the environmental causes of learned behavior” (p. 217), cognitive psychology “provides an account of the mechanisms that underlie these environment-to-behavior causal relationships” (p. 217).

As stated above, these various positions represent a traditional orientation to causal explanation. At the heart of these positions is a distinction between (a) the relation between the publicly observable objects that make up the event, and (b) the postulated “internal” properties of the observable objects that make up the to-be-explained event. According to the traditional orientation, the observed relations need to be explained “in terms of” the internal properties. This general orientation follows from Harré (1970), Cummins (1983), and Smith (1994) and seems also to be an orientation consistent with Foxall (2007). Perhaps this sense of being concerned with external information and external explanation is close to what Professor Foxall means by extensional language. In any event, Professor Foxall’s concern with the radical behaviorist language of contingencies associated with prediction and control seems to be quite consistent with the ostensible nonreductive kind of causal account that is aimed at the overall features of the behavior, such as its occurrence or nonoccurrence. His concern with the intentional idiom and propositional attitudes seems to be quite consistent with the ostensible reductive kind of causal account that is aimed at identifying underlying entities and processes, the so-called internal properties. Readers may also note that the difference between the two types of information and explanation is similar to that between the performance stance and the design stance. This traditional orientation to causal explanation and differences between explanatory modes may now be more closely examined from the standpoint of radical behaviorism.

Radical behaviorism agrees in some ways—but not all—with the traditional orientation to causal explanation. Radical behaviorism agrees that objects participating in an event clearly do have internal properties, and that these properties are relevant to understanding the event being analyzed. After all, atoms do have electrons with certain properties that make them more or less susceptible to forming bonds with other atoms having other properties. Similarly, organisms have various physiological systems such as sensory systems, motor systems, and neural systems that connect the sensory and motor systems. These systems make it possible for organisms to respond to environmental stimulation and act with respect to features of the environment. For radical behaviorism, Moore (2008) has outlined the role of physiology in explanations of behavior, as well as the contribution of private behavioral events to discriminative control over ongoing behavior.

However, radical behaviorism disagrees in at least two ways with the traditional orientation. The first way concerns the very nature of the supposed

internal information. Is the information based on actual investigatory techniques appropriate to the discipline, or is the information simply an inference about properties that have not themselves been observed? If the former, then there is no problem. Neuroscience can clearly contribute to behavioral explanations and efforts to predict and control, and hence to explain, behavior (Moore, 2008). However, in traditional psychology, knowledge about supposed “internal structures” is typically only an inference based on the observable behavior of things and events. Radical behaviorists argue that when actual contact with what is taken to be internal information is limited or even absent, the postulations may then be of uncertain and dubious origin. The actual nature of anything internal may be incorrectly cast, in terms of metaphors and so on. The result is that any explanations produced by this mode of explanatory activity are deficient.

The pragmatism of radical behaviorism is central here. We can explain an event such as the behavior of an individual by knowing the history of interaction between the individual and the environment. Alternatively, we can explain the behavior by knowing how the individual has been changed by that interaction. If we want to use the term “state” to identify those changes, we need to be sure we are not implying factors from other dimensions. The more of one kind of information we have, the less we need of the other kind to explain the behavior. We can manipulate or control behavior by manipulating the features of the environment, or by directly changing the organism so that the various features of the environment act on a different organism and thereby produce a different response. Nevertheless, the information that is available to researchers and theorists is all in the same dimension. The internal information is not in a supposed mental or cognitive dimension, to which a specialized vocabulary of intentional idioms and propositional attitudes applies. Moreover, the internal information is not of some superior epistemological value, such that an explanation in terms of external information is regarded as limited, deficient, and incomplete, and the only way to make an explanation comprehensive, sufficient, and complete is to include some sort of internal information. Yet, this seems to be the stance adopted in traditional orientations, as evidenced in Harré (1970), Cummins (1983), Smith (1994), and also Foxall (2007). Although Professor Foxall acknowledges the pragmatism of radical behaviorism, that pragmatism is not followed through to its logical implications. Any information, including the so-called “internal information” described above, is important because of its pragmatic contribution to prediction, control, explanation, and interpretation, not because it represents some epistemologically superior or more valid form of information.

The second way that radical behaviorism disagrees with the traditional orientation is that the supposed internal structures may actually be only thinly disguised appeals to causal phenomena from another dimension. In other words, they may only be fanciful explanatory fictions. Consider how the traditional orientation conceives of the balance between the two sorts of data. Readers will recall that Harré (1970) stated that the second kind is “produced by” the first kind. This position indicates a bias in which internal information is privileged or held to be otherwise superior in an explanation, such that no explanation can respectably

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be labeled as such unless it includes such internal information. Indeed, part of the standard criticism of any form of behavioral psychology by cognitive psychologists is that any form of behavioral psychology, by definition, restricts itself to only observable data, which is inadequate. Skinner (1972) commented on the bias toward reductive explanations that appeal to internal causes in the following passage:

Inner entities do not “cause” behavior, nor does behavior “express” them. . . .In an acceptable explanatory scheme the ultimate causes of behavior must be found *outside* the organism. . . .Both sets of facts [physiological and behavioral], and their appropriate concepts, are important, but they are equally important, not dependent one upon the other. Under the influence of a contrary philosophy of explanation, which insists upon the reductive priority of the inner event, many brilliant men who began with an interest in behavior, and who might have advanced our knowledge of the field in many ways, have turned instead to the study of physiology. We cannot dispute the importance of their contributions; we can only imagine with regret what they might have done instead. (pp. 325-326)

Radical behaviorists argue that when traditional psychologists uncritically and inferentially embrace supposed data about internal structures or states or entities, traditional psychologists have committed themselves to the position where the inferred properties carry the entire burden of causal explanation. In effect, this commitment endows the inferred acts, states, mechanisms, processes, structure, and entities with efficient, homuncular power to cause behavioral events. In addition, the commitment limits the possibilities for prediction and control by foreclosing on the pragmatically balanced analysis of how environmental circumstances contribute to a given behavioral event. The commitment obfuscates the legitimate role of internal variables in causal explanations when those variables are physiological, and it compounds the problem when it conceives of the variables as from the mental dimension. So it is with the appeal to traditional conceptions of the intentional idiom and propositional attitudes, as in Professor Foxall’s analysis.

At this point suffice it to note that the descriptor extensional as distinguished from intensional or intentional implies a dichotomy that radical behaviorism does not recognize. It is not that some dichotomy actually exists, and the conceptual apparatus of radical behaviorism is too impoverished to deal with it. It is not that radical behaviorism merely translates explanations into behavioral terms in order to make those explanations respectable. Rather, radical behaviorism argues that any basis for making a linguistic distinction of the sort offered by Professor Foxall as a matter of either ontology or theory does not exist in fact. To be sure, radical behaviorism recognizes forms of verbal behavior that involve mechanistic assumptions. Such works as Chiesa (1994) and Lee (1988) have persuasively distinguished radical behaviorism from various forms of S–R, mechanistic behaviorism. In any case, to suggest that radical behaviorist language is limited, deficient, or incomplete because of its supposed extensional characteristics seems off the mark.

### **What Is the Basis for Saying that Radical Behaviorism Is Limited, Deficient, and Incomplete Because of Its Supposedly Extensional Language?**

A radical behaviorism is a thoroughgoing behaviorism. By thoroughgoing is meant that explanations of behavior can be effectively and comprehensively couched in behavioral terms. Thoroughgoing does not imply that the language of psychology can only contain terms that refer to singular, publicly observable physiological, behavioral, or environmental variables that are extended in space and time. Moreover, the use of “effectively” is a commitment to pragmatism or successful working in empirical terms as a truth criterion. In light of Professor Foxall’s implication that he is working from a different truth criterion, a common ground for discussion is therefore somewhat difficult.

A thoroughgoing behaviorism agrees that factual instances of behavior to which the term intentional or intensional is applied need to be accommodated by any satisfactory approach to behavioral science. As Day (1969a) put it in one place, “It is distinctively Skinnerian to urge the empirical study of whatever intellectual activities happen to characterize successful scientific behavior” (p. 505). As Day (1969b) put it in another place,

Yet the radical behaviorist is not basically concerned with whether or not a speaker is telling the truth. What he wants to know is what makes him say the things he does. This leads him inevitably to a concern, at least in part, with the environmental events that have acted to teach him to talk. . . .In searching for such influences he will be himself for the most part responding in some way to the environment. It is the belief of the radical behaviorist that by tracing the environmental chain of command over verbal behavior as far as possible, he can extend the range of his effective action as a scientist most profitably. Suppose, for example, that a student begins to suspect that he senses some order of a particular kind in human functioning. What must he do? He must not fail to proceed directly to an explicit verbal description of what he has seen that appears to make him think he has found something. This first step involves, of course, an analysis of the environmental control of his own behavior. . . .There is yet a fourth way in which the radical behaviorist is interested in the environment. He tends to regard explanations as simply incomplete if they do not involve tracing the observable antecedents of behavior back as far as possible into the environment. Many current psychological explanations are thus seen as incomplete, since they often do little more than specify some inner process as the cause of a particular aspect of behavior. Issues of ontology are again involved here, since explanatory inner processes are generally regarded as having a kind of power metaphorically related to a primitive animism. However, if the ontological pattern of language is insisted upon, it is only reasonable to ask what makes the inner process work as it does. Since an answer to this question is usually not provided, the radical behaviorist regards such explanations as incomplete. (pp. 322-323)

Radical behaviorism calls for a causal account of both the behavior of subjects being explained and the behavior of explaining on the part of the



researcher and theorist. Thus, a radical behaviorism is interested in why researchers and theorists come to use the intentional idiom and why they argue that radical behaviorism is incomplete or deficient.

### **What Is Meant by the Use of Intentional Idioms in Behavioral Science?**

At issue here is the conception of the behavior being explained. Radical behaviorism agrees that individuals may well be able to state just what some action is trying to accomplish before they engage in the action. Furthermore, they might well know what other action might accomplish the same outcome. On this basis, a thoroughgoing behaviorism agrees that it may be entirely reasonable to say that behavior is directed toward something, and the behaving individual might have a conception of what that something is and how it might be achieved. These facts need to be accounted for in a science of behavior. Of central importance for radical behaviorism are (a) the dimensions of the facts described above, (b) how the “conception” identified in the statements comes about, and (c) the nature of any causal relation between the conception and subsequent behavior.

Radical behaviorism agrees that in some cases individuals are able to state what circumstances are causing them to engage in the behavior in question. The verbalizations that are involved when individuals are said to know something about the consequences of their own behavior may be understood as additional cues, or discriminative stimuli, that can guide subsequent operant behavior. These verbalizations are typically concerned with the features of the environment that control or cause some form of operant behavior. Verbalizations that arise from behaving individuals about their own behavior and its causes may well be just as influential as verbalizations arising from others. Nevertheless, they are not features of a dimension that differs from the one in which behavior takes place. Moreover, whether they are present is an empirical question. Given that they are present, a second empirical question is whether they exert discriminative control.

In addition, if they are present and do exert discriminative control, there is a history that is responsible for the development of these sorts of verbalizations and their influence. The verbalizations do not just emerge spontaneously as the product of an autonomous, initiating, all-controlling mind. Thus, this form of verbal regulation is itself attributable to contingencies in the lifetime of the individual in question. The history may not be equivalent for all individuals, with the result that there are considerable differences among individuals.

Moreover, just because individuals say something about their behavior and its causes does not mean that the statements accurately reflect that behavior and its causes. We often intend to do one thing but actually end up doing something else. We may stop at the market on the way home from work with the intention of buying just a gallon of milk, but end up buying much more. We may be so distracted we do not even buy the milk. Presumably, accurate descriptions of behavior and its causes are important in self-management. In any case, the important point is that the term “intention” is itself occasioned by behavioral

relations rather than an entity from another dimension with non-behavioral properties.

Clearly, the individual represents a unique history of interaction with the environment as well as a specific genetic endowment, and so clearly the individual is contributing something unique to the explanation of behavior (Moore, 2008). Humans may also engage in covert behavior, some of which may be verbal and some of which may be occasioned by the contingencies that are in force, as in verbally-regulated behavior. These are naturalistic factors and relations, but they are mistakenly assumed in the other varieties of psychology to require a mode of analysis that assume other dimensions. Why are the assumptions mistaken? For radical behaviorists, the answer is to be found in the influence of past centuries of mentalistic social-cultural tradition concerning inner causes. An appeal to the supposed entities misleads researchers and theorists, thereby interfering with an understanding of the contingencies that actually cause the behavior. Attributing behavior to various internal entities of uncertain origin, such as takes place with appeals to the intentional idiom, is both mischievous and deceptive. For radical behaviorism, such statements are not to be justified because they are “theoretical.” Rather, they are to be challenged because of the conspicuous but unrecognized influence of inappropriate metaphors, as well as a return to well-established but nevertheless nonscientific traditions such as the religious soul or the secular mind. Using the brain and evolution as proxies does not change the problem noted here:

The ultimate justification for such ascription is provided by evolutionary thinking: the intelligent brain must be able to select the appropriate response to a specific stimulus. (Foxall, 2007, p. 25)

This orientation is troublesome because it does not promote effective prediction, control, explanation, or interpretation.

A further propositional attitude that we may address is belief. As with intention, the term is often cast in traditional psychology as a propositional mental state with a content. Individuals do not just believe. Rather, they are said to believe “that *p*. . .” The appeal to an underlying mental state with a content as a cause of subsequent behavior is typically reflected in such statements as “She took an umbrella because she believed that it was going to rain.” The belief is therefore something in another dimension (e.g., the mental dimension) that is formed prior to behavior and is necessary to explain the behavior. Further, the explanation may incorporate other beliefs such as the foundational belief that deploying an umbrella will keep one dry when it rains (Moore, 2008).

What does a thoroughgoing behaviorism have to say about this topic? One feature of the traditional position that is relevant is that the belief is something that is directed toward or with respect to some aspect of the circumstances in which we live. There is a virtue in this approach, in that the belief is explicitly related to some state of affairs in the environment.

Some views on philosophical psychology treat a belief as a “disposition.” Professor Foxall does not get into dispositional analyses, but the term “disposition” has such a pivotal history in philosophical psychology that it is difficult to pass it

by. A disposition is ordinarily talked about as some reasonably high probability that a given event will occur in some specified condition. For example, we might say that individuals who have been deprived of food for 24 hours have a disposition to eat. Of course, the term “intention” may also be treated as a disposition. To say that you have an intention to go to the store when you leave the house is to say that there is a high probability you will do so. Sometimes dispositional statements involving intentions and beliefs are inferred when others seek to make sense of an individual’s behavior, in what is called the third-person usage. Less often, intentions and beliefs are involved when individuals describe their own behavior, in what is called first-person usage.

An important question is the causal status of a disposition implied by such statements. Is a disposition regarded as synonymous with an entity from another dimension that is possessed by an individual? Is the observed probability to engage in some form of behavior merely evidence to permit use of the term? Does the possession of this entity cause the behavior to occur? If so, these treatments of beliefs and intentions as dispositions are equivalent. We have only substituted disposition for belief or intention as a kind of internal, causally effective antecedent from another dimension. Indeed, radical behaviorism views invoking any disposition as a causal entity for behavior as inappropriate.

As Moore (2008) has reviewed, dispositional analyses have been severely criticized in many orientations to philosophical psychology since Chisholm (1957) and Putnam (1980). The standard argument is that dispositional analyses only end up creating an endless chain of such dispositions, and in the end some cognitive entity like a mental state is needed to bring the chain to an end. Thus, cognitive orientations reject dispositional analyses, although the reasons they do so differ from the reasons that a thoroughgoing behaviorism is concerned about them.

A thoroughgoing behaviorism offers an alternative treatment. This alternative treatment maintains the analysis in the one, behavioral dimension. Radical behaviorism accepts that when applied to behavior, such terms as “disposition” or “belief” describe the probability of one form of behavior or of several related forms of behavior in some specified condition. To say that a person believes that a given team will win an athletic contest is to say that the person frequently says so, wears regalia promoting the team’s good fortunes, and so on. Thus, dispositional terms do have a legitimate descriptive usage.

However, dispositional terms do not have a legitimate causal or explanatory usage. They do not identify acts, states, mechanisms, processes, structures, or entities that literally exist as causally effective antecedents that can be uncritically invoked in an explanation. Thus, their usage as descriptive terms does not imply that they are entities from another dimension that cause behavior; if anything, they may be understood initially as names for effects. The specific causes of the behavior in question would have to be identified in an independent analysis, and those causes would not be from another dimension such as the cognitive or mental. If we want to use such terms as “disposition” or “belief” in a causal explanation of behavior, we presumably need to identify what caused the disposition or belief. The causal explanation of behavior is in terms of contingencies. In first-person

usage, a speaker may well be in contact with variables that control behavior that others are not in contact with, such as covert verbalizations occasioned by what the speaker is about to do and why. These covert verbalizations may subsequently enter into the complex of conditions that determine subsequent behavior, as behavior plays out. As before, the processes are always behavioral processes. In any case, believing is not an occurrent private event, as radical behaviorists use the term "private event." To so use "believing" implies that it is an activity verb denoting an occurrence. Indeed, usage as an activity verb is at the heart of the intentional idiom and mentalism. Although radical behaviorism has reservations about conceptual analysis (e.g., Ryle, 1949), in this sense radical behaviorism agrees that the most meaningful usage of believing is dispositional and descriptive in character.

Of course, we can say that we believe something is the case when it actually is not the case. We may believe that we can name, in order, the first six presidents of the United States. If we think about this statement, the empirical state of affairs is that either we can or we cannot name the presidents in order. If we can name the presidents, the statement asserting our belief correctly reflects our behavior. But suppose when we are asked to name the presidents, the best we can do is name a president who was actually number seven as the last instead of the president who was actually number six. What then is the status of our belief? How can we say we believe something that is false?

We need to start by conducting a causal analysis of what occasions our saying that we believe we can name the first six presidents in order. The presidents we have named are, in fact, six of the early presidents, although perhaps not the first six. Next we need to examine why we say we believe the six we can name are, in fact, the first six. What contingencies control the verbal behavior in question?

One possibility is that we are lying. Lying is a function of its own set of environmental relations. We might be seeking undeserved credit or avoiding deserved blame for some aspect of our behavior. For the sake of continuing our analysis, let us assume we are not lying, and consider alternative possibilities.

Were we once told that the six presidents we named were the first six? Was there a misprint in a book we once read? Were we once presented with the actual names of the first six presidents, as well as the seventh, but then in reciting the names skipped the name of the sixth and jumped to the seventh as some sort of generalization? In point of fact, the second president was John Adams, and the sixth was his son, John Quincy Adams. Maybe we skipped the name of the son because we had already mentioned one president whose name included the words John and Adams, and went on to the seventh, Andrew Jackson, whose name is very different. Any of these possibilities might be the case. An approach based on a causal analysis of verbal behavior admirably allows us to untangle problems nominally associated with "false beliefs." In contrast, a traditional approach based on mental states and the intentional idiom regrettably does not.

In short, what radical behaviorism does not agree with are the implications that any time the intentional idiom is used in connection with operant behavior, (a) there is some entity in the mental or cognitive dimension that is beyond the

reach of radical behaviorism, (b) the term refers to this entity, and (c) to be adequate, an explanation of the underlying basis for the behavior in question must appeal to it. These implications are at the heart of the mentalism to which radical behaviorism stands in opposition. Indeed, this usage seems to be at the heart of Professor Foxall's arguments.

### **What Factors Cause Researchers and Theorists to Embrace the Intentional Idiom?**

For radical behaviorism, the larger part of an appeal to propositional attitudes is simply an aspect of the pattern of use known as folk psychology. This language is comprehensively mentalistic, if not outright dualistic. It invokes metaphors and ancient ideas about cognitive and mental dimensions derived from social-cultural traditions. There is no more reason to embrace the metaphors and ancient ideas of folk psychology than to embrace the metaphors and ancient ideas of folk chemistry or folk physics (Moore, 2008).

For radical behaviorism, the point remains that to explain or interpret an instance of behavior is to engage in verbal behavior. That verbal behavior is typically going to involve words. How can we understand the status of the words in explanations and interpretations? A clarification of that status may reveal some clues about the underlying epistemological assumptions that in turn promote certain assumptions about the nature of explanation.

For radical behaviorism, words are not independent things that logically or symbolically represent other independent things called meanings. Neither verbal nor nonverbal behavior has a content, at least as the term "content" is conventionally used. Behavior is an event with respect to the environment., and the meaning of behavior is derived from its functional relation to the environment. At the heart of the radical behaviorist position is the causal analysis of behavior, including verbal behavior. Thus, we analyze the meaning of behavior, nonverbal or verbal, by relating it to the contingencies that cause it. We analyze the meaning of a pigeon's key peck reinforced with food by saying that to the pigeon the peck means food. It is no more appropriate to hold that human behavior, nonverbal or verbal, has a content than it is to say that a pigeon's key peck has a content. Once emitted, behavior may have a stimulus function with respect to some other behavior, of either a listener or the speaker. Higher-order concepts do not refer to or stand for singular things in either the world at large or the mind of a researcher of theorist. In a standard case, they indicate complex usages brought about by a restricted set of properties as encountered over many different verbal episodes. Although not exactly equivalent, the radical behaviorist position has some affinity to Quine's nominalism (as opposed to essentialist or realist tendencies in other philosophical positions). This affinity may account for the personal and intellectual friendship between Quine and Skinner going back to their graduate school days and the often-stated link between the two as empiricists.

The term "reference" does not denote a fundamental process in verbal behavior, as Skinner (1957) dealt with at length. The term, in its traditional usage,

implies dualism. If the term “reference” has any application to verbal behavior, its application is as an instance of autoclitic activity, in which certain features of the speaker’s verbal behavior reflect the sources of discriminative stimulus control over that verbal behavior. These features have been promoted through a history of interaction with the verbal community, as the verbal community reinforces the identification of these sources of control.

For radical behaviorism, the concern is always with the functional analysis of behavior. The behavior may be nonverbal or verbal; indeed, verbal behavior may influence subsequent verbal or nonverbal behavior. As described in an earlier section of the present comments, an analysis of such terms as “intention” and “belief” reveals that at heart they are occasioned by certain relations of which behavior is a function. It is not that the terms pertain to events in other dimensions—there are no other dimensions, so behavior and the functional relations responsible for that behavior are all to which such terms can pertain. Unfortunately, cultural usage has mischievously elevated the terms to a status that interferes with the recognition of functional relations in the behavioral dimension. The prediction, control, and indeed explanation and interpretation of behavior can proceed effectively without unwarranted digressions to intentional idioms. The reason they should be avoided is that they induce researchers and theorists to look for causes that do not exist and to fail to recognize the variables and relations of which the behavior is actually a function.

### **Why Is the Intentional Idiom Held to Uniquely Contribute to Explanations and Interpretations?**

On the one hand, Professor Foxall diplomatically said he was not being critical of radical behaviorism, but only wanted to add to it. On the other hand, he said radical behaviorism was deficient. He acknowledged the pragmatic basis of radical behaviorism but then suggested radical behaviorism was incomplete. He acknowledged its efforts at prediction and control but then indicated he wanted to go beyond prediction and control to explanation and interpretation. I am unclear how it is not a criticism of X to say that X is deficient or incomplete and that it is necessary to add something to X. He further stated he did not call for mediating events or the kind of theories that Skinner rejected (p. 46), but to me a call for the intentional idiom is exactly a call for mediating events (Moore, 2008).

Moreover, is it the case that some behavior can be explained in extensional terms and radical behaviorism is adequate in these cases, but not all can be explained in extensional terms, so in these other cases another approach is necessary? Or is it the case that the intentional idiom needs to be invoked in every case? Or is it the case that the intentional idiom needs to be applied only to certain populations of behaving organisms? I am reminded of a passage in Smith (1994), a source that Professor Foxall cites:

These arguments [against behavior analysis] do not attack the legitimacy of behavior analysis so much as attempt to contain its significance within certain boundaries. They readily concede that behavioral methods are valuable when

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applied to children, to the developmentally disabled, to victims of autism, and (more controversially) perhaps even to people who are behaviorally deviant. But what the preceding arguments attempt to show is that the closer we get to normal adult human behavior, the less adequate behavioral methods become. And when we reach highly skilled, creative behavior, their utility vanishes altogether. (p. 100)

Perhaps it is appropriate to begin by asking, for rhetorical purposes, whether the following statement (call it statement #1) is held to be true or false: There is at least one instance of behavior an explanation of which must appeal to the intentional idiom, beyond a contingency of reinforcement.<sup>1</sup> For radical behaviorists, statement #1 would be false. If statement #1 is held to be true, then a second statement (call it statement #2) needs to be considered: An appeal to the intentional idiom is necessary to explain every instance of behavior, beyond a contingency of reinforcement. On the one hand, radical behaviorists, having found statement #1 false, would similarly hold statement #2 to be false. On the other hand, it would be possible that if statement #1 were judged to be true, then statement #2 could be held to be either true or false. It could be true in the sense that no instance of behavior can be explained without appealing to the intentional idiom. It could be false in the sense that only some (but not all) instances of behavior need to be explained by appealing to the intentional idiom. Statements 1 and 2 above were composed in an attempt to clarify critical features of Professor Foxall's thesis. If alternative (but equivalent) renderings will be more useful in clarifying those features, presumably they should be pursued.

Professor Foxall outlined three ostensible shortcomings of radical behaviorism which he viewed as necessitating the intentional idiom. Readers will recall that the first ostensible shortcoming was that radical behaviorism could not accommodate the personal level of explanation, for which he argued that propositional attitudes were required. The discussion of intention and intension earlier in the present comments shows how radical behaviorism can, in fact, come to grips with the facts that occasion the use of intentional idioms. However, radical behaviorism does not translate the mental into behavioral to meet the requirements of a science. Rather, radical behaviorism simply says either of two things. On the one hand, it says that some instances of mental terms are occasioned by extraneous factors, and in those instances the terms try to represent what are actually fictions. On the other hand, radical behaviorism says that in other instances behavioral relations are all there is to occasion them, even if the behavior happens to be covert. An operational analysis of psychological language will determine which of the two possibilities is the case.

Readers will recall that the second ostensible shortcoming was that radical behaviorism could not accommodate the continuity of behavior across time and space. As I understand it, Professor Foxall's concern here was not so much that an individual might respond to an orange light in the same way as it had learned to

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<sup>1</sup> Note that here the intentional idiom is qualitatively different from anything recognized by a contingency, and not just a subset of something recognized by a contingency.

respond in the presence of a red light. Rather, the concern was how to account for behavior that is acquired in one setting but then comes to be emitted in an entirely different setting. This claim, of course, is reminiscent of the traditional claims appealing variously to the "Poverty of the Stimulus," the stimulus independence of behavior, or underdetermination. Clearly, behavior may be acquired in one setting and then emitted in another whose features do not share a common physical property such as wavelength or frequency. We call many timepieces clocks even though the specific tokens may have little in common. A grandfather clock has little in common with a sundial; nevertheless, conceptual generalization can occur along any number of features beyond wavelength or frequency. In the case of timepieces, the conceptual generalization occurs with respect to function: Clocks are devices that function to give us information about time. Moreover, research in the area called "Relational Frame Theory" is also showing how novel (but nevertheless orderly) responses can be emitted in new situations that are not related to old ones by virtue of some common physical property. Although Professor Foxall acknowledges this research, it seems to me that he does not give it sufficient credit.

Readers will recall that the third ostensible shortcoming of radical behaviorism was that the intentional idiom was necessary for proper explanation and interpretation of behavior in settings other than the ones in which more straightforward prediction and control might apply. For radical behaviorism, explanation follows from a causal account. A causal account of behavior is in terms of contingencies. To say that individuals have explained a behavioral event is to say that they have identified the contingencies that have caused the event. To ask individuals to explain what they mean when they say something is to ask them what contingencies are causing them to say what they are saying. Statements about prediction and control are statements that follow from causal accounts. This view goes beyond the time-honored view derived from the covering law model of explanation that prediction and explanation are symmetrical, differing only in the sense that predictions use the future tense whereas explanations use the past tense. The covering law itself typically identifies the causal relations, and the statement of antecedent conditions identifies which of the elements of the causal relations are present. However, what is important for radical behaviorists is the pragmatic basis of prediction, description, explanation, and even interpretation. Prediction is important in a pragmatic sense because we are prepared to deal effectively with that portion of the world with which we are concerned. We may actually be able to produce some event that is reinforcing, or we may only be able to prepare ourselves for some event. Nevertheless, it is the pragmatic basis that is relevant rather than some supposedly superordinate property of a formalized logical system. The behavior in question is simply the result of generalization from past to current circumstance.

Interpretation consists in applying principles derived from analyses in controlled situations to other situations. The other situations are less controlled for various reasons. In common examples, the principles of genetics derived from controlled research are applied in cases of evolution, or the principles of geology



and mechanical energy are applied in cases of plate tectonics. To be sure, in the case of behavior, an individual's private events, such as covert verbalizations, may well enter into the causal determination of behavior. In such cases, a third-person observer may well have to deal with the causal influence (i.e., the discriminative control) of the covert verbalization by inference. Interpretations of another's behavior may well involve inference about covert events. Again, any verbalizations, overt or covert, that exercise discriminative control would be traceable back to prior conditions in the lifetime of the individual. Nevertheless, for the behaving individual, the verbalizations are no inference. Thus, the accuracy of an interpretation of an individual's behavior turns on the degree to which various elements of contingencies actually participate in the behavioral event in question. Those elements can include nonverbal and verbal behavior at the overt or covert level. The extent of that participation is to be determined empirically—but those elements are all in the one dimension, not a cognitive or mental dimension. Appeal to a cognitive or mental dimension is the result of mischievous and deceptive social-cultural influences that are cherished for irrelevant and extraneous reasons. Such appeals are ultimately ineffective.

### Summary and Conclusions

All in all, I find that in contrast to Professor Foxall, radical behaviorism is an entirely satisfactory approach to behavioral science. I freely confess that I am one of those radical behaviorists who insists “that these putative problems can be overcome by means of private events, verbal behavior, rule-governance, relational frames, and other devices” (Foxall, 2007, p. 51). Perhaps Day (1976) is another source that is contrary to Professor Foxall's arguments. Skinner (1969) put it as follows:

Behaviorism, as we know it, will eventually die, not because it is a failure but because it is a success. As a critical philosophy of science, it will necessarily change as a science of behavior changes, and the current issues which define behaviorism may be wholly resolved. The basic question is the usefulness of mentalistic concepts. . . . We can indeed examine the extent to which a verbal community induces the individual to respond to events with which the community is not in contact, and our formulation will clarify many traditional problems in the so-called study of mind, but its principal merit from the present point of view is that it permits an analysis of what has traditionally been regarded as a very different kind of stuff. (pp. 267-268)

Professor Foxall admirably attempts to anticipate a rejoinder from the radical behaviorist side of the argument. However, if we start with a clear understanding of verbal behavior on the part of the behaving organism, one of whom is the researcher or theorist who does the predicting, controlling, explaining, and interpreting, we can lay a foundation for orderly answers to the important epistemological questions he raises.

It seems to me that the supposed limitations on which Professor Foxall's arguments rest do not actually exist, and to argue that they do is to commit *a priori*

to the tenets of cognitivism and mentalism, which Professor Foxall unselfconsciously does. In light of these *a priori* commitments, I must regrettably conclude that the additions Professor Foxall suggests devolve into invitations to return to the encumbrances of cognitivism and mentalism from which a truly effective behavioral science needs exactly and specifically to free itself. In offering its explanations of behavior, a thoroughgoing behaviorism takes into account all relevant factors of which behavior is a function. These factors may be nonverbal or verbal, overt or covert. Radical behaviorism rejects appeals to intentional idioms and a cognitive dimension not because they exist but are beyond extensional language, but because the language of intentional idioms is occasioned largely by mentalistic factors of social-cultural origin. A dimension beyond that in which behavior takes place does not exist, and appeals to supposedly explanatory entities in it interfere with identifying the actual factors and relations of which behavior is a function.

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