Chapter 14
Behavior Analysis and Psychological Concepts: Commentary on Foxall's Intentional Behaviorism

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One of the main characteristics of any movement or proposal self-named *behaviorism* is a major concern with the old philosophical mind-body problem, particularly as it was posited by Descartes as involving an interaction where an immaterial, non-extensive, mind (or soul) influences, and is influenced by, a material, extensive, body. *Intentional Behaviorism* is no exception to this tendency. Foxall's proposal is peculiar in that it originates from the adaptation of a behavioristic position (i.e., behavior analysis and radical behaviorism) with the purpose of interpreting consumer behavior (cf. the Behavioral Perspective Model, Foxall, 1990/2004), from which it explored the limits of behavior-analytic explanation and, finding it wanting, has incorporated, in posterior stages, ascription of intentionality and cognitive explanation. Latter stages of the project have been developed in the last 20 years (e.g., Foxall, 2004), including detailed examination of predominant features of radical behaviorism, central issues in contemporary philosophy of mind, major findings and theories in neurosciences, and theoretical and empirical approaches in social-cognitive psychology. The present chapter examines central aspects of Foxall's criticism of radical behaviorism and the proposal of ascribing intentionality as a way of overcoming its explanatory limitations.

Limitations of Radical Behaviorism and Reasons for Intentional Idiom

Since its incipient stage, Foxall's model of consumer behavior has presented itself as one more alternative way of interpreting consumer phenomena with emphasis in behavior and situational variables, rather than a solution that should replace existing

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social-cognitive approaches (e.g., Foxall, 1997). The original Behavioral Perspective Model (cf. Foxall, 1990/2004, 1998) was built on adaptations of the behavior-analytic three-term contingency, including a new and useful distinction between utilitarian (i.e., directly derived from the use of product and services) and informational (i.e., socially mediated) consequences, and has been widely adopted in empirical investigations of consumer behavior (e.g., Foxall, 2016b, 2017). Although the author considers that this type of behavioral approach makes possible prediction and control of behavior, he has concluded that the framework is not capable of explaining behavior fully, especially in open settings where it is not possible to identify a controlling stimulus field.

It seems that there are two intertwined lines of argumentation. One is related to the type of explanation that behavior analysis tends to adopt in such situations, where apparently there is no identifiable event in the environment that may be said to control or influence behavior. Here, the author is particularly concerned with the absence of a discriminative stimulus that would explain, in behavior-analytic terms, the occurrence of a given response due to its previous association to responses being reinforced in its presence. In such cases, Foxall stresses that it is common to find in the behavior-analytic literature explanations grounded on possible learning experience that the individual organism might have had or on possible private events, in the form of covert responses, that might have occurred, which are said to have increased response probability. Foxall has criticized such explanatory practice, for, he has argued, there is no empirical basis to infer the antecedent or private events, as there is in non-human laboratory experiments, where the organism's previous experiences are entirely known. This type of post hoc explanations that presupposes the occurrence of events that would be necessary to explain the phenomena is seen distrustfully by Foxall, as attempts to save the theory. In several of his writings, the author even asserts that this practice represents intellectual dishonesty (cf. Foxall, 2016a, p. 26, p. 113; Foxall, 2020, p. 186, p. 217).

Very closely associated to this criticism, Foxall advances a second line of argumentation that examines the difficulties that behavior analysis faces when trying to explain behavior in the absence of discriminative events in open settings. This is based on the distinction between the extensional and intentional languages and explanations. As exposed by Foxall (2021), intentionality is related to aboutness, in the sense that some mentalistic expressions refer to objects other than themselves, such as *belief* or *desire* and *perception* or *fear.* For example, no one simply believes; the person must believe *that such and such is the case*, that is, these expressions have, in the philosophical sense, an *intentional object*. The intentional object may not exist since Mary might believe that Santa Claus is responsible for the delivery of Christmas gifts. Her belief, however, is no less veridical because Santa Claus does not exist in the "real world." Objects of extensional sentence, in contrast, must exist in order for the sentence to have truth value. Then, if Peter is described as driving his car to Cardiff, he must have a car, and there must be a place called Cardiff for the sentence to have a truth value.

Another difference between extensional and intentional language relates to the fact that intentional sentences might not display "referential transparency via

substitutability of codesignatives terms" (Foxall, 2016a, p. 96). By this it is meant that an intentional sentence such as *Mary believes that that is the Morning Star* cannot necessarily be replaced by *Mary believes that that is Venus*, since Mary might not know that the *Morning Star* is the same as *Venus*. In extensional sentences, by contrast, codesignative terms can be replaced, for to assert that *That is the Morning Star* is the same as asserting that *That is Venus*. Another way to put this is to consider that whereas the truth value of the extensional statement is related to the planet Venus, an existing object in the real world, the truth value of the intentional statement is related to a fact about Mary (Foxall, 2020, p. 167).

According to Foxall, one of the main characteristics of radical behaviorism has been the exclusive adoption of extensional language, with the consequent rejection of intentional language. In his view, this produces limitations to the type of explanation that is offered by behavior analysis. After testing the limits of this kind of extensional explanations, the author defends that when it is not possible to explain behavior on the basis of antecedent and consequent events—no stimulus in the context, in open settings, not knowing the individual's learning history—then the behavior-analytic explanation breaks down, and it becomes imperative to add intentional idiom, including, for example, ascription of desires and beliefs to the person whose behavior one wants to explain.

This conclusion is derived from three main limitations associated to behavior-analytic explanation based on extensional language. The first is related to the difficulty of accounting for the continuity or discontinuity of behavior exclusively in extensional terms. According to Foxall (2016a, p. 99–100), the difficulty is to explain (1) how past events influence current behavior (e.g., how can I tell what I ate for lunch yesterday?) without some means of recording the experience; (2) changes in behavior when there is no change in the contingencies (e.g., a person that is a heavy alcohol user who reduces dramatically her drinking, a consumer that adopts a new brand to her brand repertoire); and (3) maintenance of behavioral patterns despite changes in the contingencies (e.g., an experiment participant who does not change her behavior despite changes in the contingencies). The argument is based on the assumption that the radical behaviorist account requires that a common stimulus be present on each occasion that a response is emitted. When it is not possible to detect each element of the three-term contingency, the tendency in behavior analysis is, then, to suppose that certain learning experiences occurred, or that private verbal behavior, in the form of rules, occurred, or that something occurs physiologically within the individual, which is the task of the physiologist to investigate. These are interpreted by Foxall as attempts to save the theory due to the refusal of employing intentional language.

The second important limitation pointed by the author is the impossibility of accounting for the personal level when adopting an exclusively extensional language, as does radical behaviorism. Inspired by Dennett's (1969, p. 93) ideas, by *personal level* it is meant "the level of people and their sensations and activities" rather than that of brains and events in the nervous system and rather than the environment and its reinforcing and punishing events (Foxall, 2020, p. 112). Although it is possible, according to Foxall, to study the environmental correlates of

emotionality in an extensional science of behavior, it "does not embrace the unanalyzable sensation to which emotional language refers" (Foxall, 2020, p. 112). The attempt to explain first-person enunciations, such as "I am looking for my glasses," as a particular case of third-person description, such as "I can observe that I am doing the sorts of things that I have done in the past when I lost my glasses," remounts to simple translation, with no explanatory function, and to speculation about the occurrence of an untestable learning history, about which there is no available evidence. The author considers that this is not science and that the ascription of intentionality is unavoidable (Foxall, 2020, p. 119). Radical behaviorists should consider the choice between believing that "I conclude I must be looking for a book because I have observed myself systematically eyeing my bookshelves in the past, or that I simply know that I am searching for the dictionary" (Foxall, 2020, p. 121).

A third main problem related to radical behaviorist approach, according to Foxall, is the absence of limits for the interpretation of behavior outside the laboratory. There is no methodology of interpretation that defines how one can plausibly identify discriminative stimuli, operant classes, and reinforcing and punishing consequences, when analyzing complex behavior in open settings, where it is impossible to test such relations experimentally and to obtain information concerning the person's learning history and, consequently, the functions of events in the setting. The same behavior, such as *walking downstairs at home in the morning*, might be part of functionally diverse behavioral patterns, such as going to work, getting a glass of water in the kitchen, or doing stepping exercises. The author argues that "it is impossible to define the bounds of behaviorism other than by the incorporation of intentional idiom" (Foxall, 2020, p. 140).

One way of analyzing Foxall's proposal is to consider that it has, at least, two parts: a) a criticism of radical behaviorist explanation, which might be sufficient to predict and control behavior, particularly in closed, laboratory settings, but cannot fully explain behavior, and b) a defense that such limitations can be overcome by the adoption of intentional language, where one ascribe desires, beliefs, emotions, and perceptions to the person whose behavior one wants to explain. Each of these parts of the author's position will be briefly considered in what follows.

Evaluating the Criticisms of Radical Behaviorism

Foxall's criticisms touch on some important and relevant points that should be carefully considered in behavior analysis. One of them relates to the little attention that has been dedicated to the development of systematic and consistent ways of identifying and characterizing the learning history of an organism. This theme has been also stressed by Tatham and Wanchisen (1998), who called attention to the absence of systematic approaches to behavioral history. In specific experimental settings, this has been done by referring to the type of contingencies to which the organism has been exposed, for example, accurate or inaccurate instructions (e.g., Galizio, 1979), pre-extinction baseline response rates in behavioral resurgence experiments

(Shahan & Sweeney, 2011), history of exposure to specific schedules of reinforcement (Tatham & Wanchisen, 1998), and different experiences with choice and no-choice contexts (Drifke et al., 2019). The reference to learning history by specifying the contingencies to which the organism has been exposed seems to be a natural route for behavior-analytic theorizing, considering the emphasis of the approach on environmental determinants of behavior. However, considering, as stressed by Foxall, the explanatory importance of learning history in reinforcement theory, it seems useful, in most contexts, to be able to describe the learning history of the individual in terms of what the individual is capable of doing or tends to do, that is, a description of, what is called in ordinary language, abilities and propensities to do things. So, for example, in experimental settings, the description that the subject was exposed to a DRL schedule (differential reinforcement of low rates; cf. Ferster & Skinner, 1957) does not necessarily describe the behavioral patterns that the individual is likely to emit. The behavior may not have reached stable levels of performance, or the reinforcer used, or motivational operation adopted, may not have been sufficient to establish the typical DRL performance. That is, what one needs to know is that in the presence of certain events the animal tends to emit responses in low rate. Part of Foxall's criticism related to the problem of continuity of behavior may be associated to the reluctance, in behavior-analytic tradition, to use expressions concerning abilities and propensities, what philosophers have named dispositional (e.g., Ryle, 1949) and power (e.g., Hacker, 2007) concepts.

Reluctance is perhaps due to the widespread interpretation of such expressions as referring to mental events that cause what people do. But this is a mistaken interpretation of the logical use of such concepts. In ordinary language, these concepts have the function of summarizing observations of behavior and predicting certain behavior given certain conditions (cf. Ryle, 1949; Hacker, 2007, 2013). The main problem with the scientific employment of such ordinary dispositional expressions, such as ability and propensity, lies not in their referring to mysterious and unobservable events but in their vagueness. These ordinary language expressions are vague and open-textured, in the sense that the instances of behavior that are summarized and predicted by the concept might vary significantly in their different usages. Then, for example, when in ordinary language John is described as being a vain person, what is being asserted, in most contexts, is that, based upon observations or information concerning John's usual behavior, one can predict that he will likely be careful with his clothing and appearance when going to a party, or that he will frequently talk about and aggrandize his achievements in social situations, or that he will have difficulties facing criticisms directed to his behavior or deeds, or that he will tend to be exaggeratedly pleased when receiving compliments, and such like. The expression *vain* can be correctly used in ordinary language as related to all or any one of these types of occurrences or many similar others. This is what Ryle (1949) called an open dispositional concept, which may function well for its job in ordinary conversation, but is rather vague for scientific adoption, for one does not know the kind of behavior that is being summarized and predicted. In ordinary language, most dispositional psychological concepts are open (Ryle, 1949), which hinders their use for scientific purposes (Harzem, 1986). If dispositional or power concepts are closed,

less vague, predicting specific behavior in specific conditions, they can fruitfully be adopted in scientific discourse.

This is what has been done in behavior-analytic research, although less extensively and systematically as one might have wanted. In behavior analysis research, there are some usages of dispositional concepts in very specific contexts such as preference for one of the alternatives in studies of choice, or impulsive or self-controlled choice patterns, or individual or group discount rates in intertemporal choice, and such like. The major point is that with this type of concept one describes what the organism is capable of doing or what the organism tends to do, that is, given certain conditions, the organism can or tends to respond in certain ways. The use of concepts describing what the individual is capable or prone to do might solve most of the problems raised by Foxall concerning the lack of continuity in behavior analytic explanation. With this, it becomes explicit that behavior analysis research is not describing only responses but also changes in repertoire of the individual, considering what in ordinary language are referred to as abilities and propensities.

Another point of criticism that is appropriately stressed is the loose treatment of "private events" as the concept has been employed in behavior-analytic circles. Sometimes it has been used as covert behavior that calls for explanation, sometimes used as stimuli that influence behavior. In this latter case, Foxall calls attention to the risk of adhering to a position that is close to "mental" causation, which would be inconsistent with radical behaviorism. This would occur, for example, when covert behavior is described as generating stimuli to subsequent behavior, in which case it could be interpreted as causing behavior. Part of the difficulties in dealing with covert behavior is due to a positive interpretation of the concept *doing in the head* or *doing mentally*, according to which the concept is taken as indicating the occurrence of unobservable responses. Having its original home in ordinary language, the concept performs a clear negative function, for it indicates the nonoccurrence of certain behaviors that occurred previously during training (cf. Ryle, 1949; Oliveira-Castro, 2000). For instance, when someone is described as making mental calculations, part of what is being said is that the person solves mathematical problems without looking up a multiplication table, without adding or multiplying the numbers on a piece of paper, without writing down or looking at the numbers on the blackboard, without using a calculator or counting fingers. The person can solve the problems without emitting any of these responses, which were necessary, and used to be emitted, in earlier stages of her training.

According to an operant approach, these responses that are skipped, as training increases (e.g., drawing bars to be added in a multiplication problem), may be interpreted as nonrequired precurrent behavior, considering that they increase, at least at the beginning of training, the likelihood of correct current responding (e.g., writing down the solution to the multiplication problem), and are not required by the programmed contingencies, that is, final responding may be reinforced even if they do not occur (cf. Oliveira-Castro et al., 1999; Oliveira-Castro et al., 2002). Moreover, these precurrent responses occur in situations where there is high correlation between the events produced by them (e.g., bars to be added in the multiplication problem, e.g., "IIII+IIII+IIII") and the stimuli in the problem situation (e.g., "3 × 4

="), which enables the transference of stimulus function between them. In the example used here, the stimulus "IIII+IIII+IIII," produced by the precurrent response, exerts a discriminative function in the original problem situation, for in its presence the responses of counting and writing down "12" have high occurrence probability (have been reinforced in the past). As the problem situation "3 × 4 =" is repeated and the final response "12" is reinforced, the discriminative function of "IIII+IIII+IIII" is transferred to "3 × 4," which then functions as discriminative stimulus for the final response of the chain (writing down "12"). The precurrent response, named *auxiliary behavior* (Oliveira-Castro et al., 2002), is no longer necessary for the occurrence of the correct response and stops occurring. This is when, in ordinary language, the child is said to solve the problem *in her head* or *mentally*. The recognition of the negative function of such ordinary language concepts would encourage the investigation of the conditions under which auxiliary responses stop occurring and under which performance can be improved or disrupted. After training, the child does not draw and count bars, although one could assert that she acts *as if* she could count them, that is, she can solve the problem as if she could count bars. The expression *as if* emphasizes the metaphorical use of the expression *doing in the head*. When interpreted as performing a positive function of indicating the occurrence of unobservable responses, the expression raises several conceptual difficulties, such as metaphorical uses of stimulus and response, lack of criteria to infer private events, and possible adherence to an additive theory (cf. Oliveira-Castro, 2000).

Another criticism posed by Foxall is the absence of a personal level of explanation in the radical behaviorist approach. By personal level the author means "as the level of people and their sensations and activities," the level at which emotion is known by the person experiencing it, which is not analyzable in terms of physiological or environmental events. In Foxall's words: "as the person who has felt pain knows what pain is, so the person whose behavior has been reinforced and punished knows what these effects are. But this knowing is unanalyzable: it is a feature of the personal level rather than either the physiological or environmental level" (Foxall, 2020, p. 112). In this context, the author criticizes the exclusive adoption of third-person description in behavior analysis, using as example Skinner's interpretation of how someone knows that she is looking for her glasses, avoiding the use of intentional language (Skinner, 1953, pp. 89-90). Again, the author calls attention for difficulties faced by behavior analysis with the interpretation of psychological concepts from ordinary language, in this case with the interpretation of goal-directed, intentional, behavior. The question of how one gets to know her own goals is not a promising question, since knowing one's goal is part of having a goal, that is, of behaving intentionally. It is understandable the reluctance to employ psychological concepts that have been poorly interpreted by philosophers and theoreticians alike, as pointed out by Hacker (2007, 2013), but its complete avoidance might not be the best way of approaching the phenomena of interest. An understanding of the usage of the concept may be helpful in dissolving conceptual confusions, overcoming theoretical difficulties, and directing sound empirical questions. Explicating the logic of the usage of the concepts in ordinary language reveals that they do not refer

to unobservable events, accessible only to the person to whom the concept is attributed, nor to causes of behavior (Hacker, 2007, 2013; Harzem & Miles, 1978; Machado & Silva, 2007; Ryle, 1949).

This is why Foxall has a point when it comes to the difficulties to deal with psychological concepts. There is a tendency in behavior analysis to avoid using mentalistic concepts and little effort to understand how they function and how they are used and employed in language, that is, what the verbal contingencies for their uses are. This posture may hinder the development of certain research themes in behavior analysis. They do not refer to mental mysterious events, but have complex uses that have several other functions, some of which involve the description of capacities and tendencies of behaving (see, for instance, Ryle, 1949, and Hacker, 2013).

On the other hand, Foxall's criticisms sound too severe with behavior analysis, particularly when he suggests that some interpretations might be characterized as attempts to save the theory or intellectual dishonesty. These accusations do not seem helpful to improve the field or stimulate academic discussions since they resemble moral judgments rather than epistemological criticism. Moreover, such criticisms appear too severe when one compares this tone with that used by Foxall to refer to cognitively inspired theories in psychology and neurosciences, which, predominantly, maintain a dualist Cartesian theory where the immaterial mind has been replaced by an anthropomorphized brain, what has generated serious conceptual confusions (for systematic examinations, see Bennett & Hacker, 2003; Hacker, 2007, 2013).

Having briefly looked at the criticisms posed by Foxall, which suggest that the behavior-analytic framework might be improved, it is necessary to examine, in general terms, Foxall's proposal to overcome such limitations.

The Ascription of Intentionality

The center of Foxall's project is to add intentional language as a complement to behavior-analytic explanation. This would be done in those situations where the explanation in extensional terms, such as the typical behavior-analytic explanation, breaks down. This occurs, according to the proposal, mainly when there are no identifiable stimuli in the environment that could explain the emitted response (cf. Foxall, 2020, p. 171). Additionally, diverging from the position defended by other authors, Foxall defends that intentional description should be applied only to entities that are intensionally fluent and are not amenable to explanation via the physical or the contextual stance (Foxall, 2020, p. 171-172). Ultimately this implies that intentional explanation should be used only at the personal level and with reference to "cognitive humans" (Foxall, 2020, p. 172), which would exclude animals, inanimate objects, and parts of animals (avoiding thus the mereological fallacy pointed out by Bennett & Hacker, 2003). Then, in the absence of a stimulus field that would extensionally explain a given behavior, desires and beliefs, perceptions and

emotions, would be ascribed to the person. But would intentional ascription be compatible with and complementary to behavior-analytic explanation?

Foxall's proposal, significantly inspired by Dennet, is rooted on the assumption that the distinction between extensional and intentional idioms is essential and separates the behavioral description from psychological explanation. However, as discussed by Hacker (cf. 2013), this separation might be oversimplistic when one considers that a closer investigation of the logical functions of expressions that occur as grammatical complements of some psychological verbs, or of some uses of psychological verbs, reveals a more complex picture. Several concepts, sometimes included in the category of mental or psychological, are not intentional. Sensations, such as pain, illustrate this, for they are not directed towards objects as hopes are directed towards what is hoped for. Nor can one feel a headache if there is no headache. Moreover, some cognitive verbs (e.g., know, remember, be aware of, be conscious of) are factive, that is, they have grammatical objects but their objects exist "in reality" not only "in thought." Additionally, perception verbs may be characterized as non-intentional in some of their uses, for they sometimes function as achievement verbs whose objects must occur. If John saw Mary, there must be a person called Mary; otherwise he did not see her, and he was mistaken. He might have taken her for someone else. Then, the philosophical use of *intentionality* is not necessarily a mark of the mental or psychological phenomena and is the center of a variety of puzzles and confusions dealing with the relations between thought and reality, a theme that lies beyond the scope of the present work but suggests that the route might not be the most promising one (cf. Hacker, 2013).

Epistemological Limitation or Absence of Empirical Evidence?

Another point that calls attention in Foxall's proposition is the tendency to conclude that there are insurmountable epistemological limitations in behavior analysis in contexts where absence of empirical evidence seems to be the problem. The followed line of argument establishes that in the absence of a stimuli field that might explain the occurrence of a given behavior, in behavior-analytic terms, it is imperious to adopt intentional language by ascribing to the person desires and beliefs, perceptions, and emotions. But how one would ascribe desires and beliefs? Foxall is careful about this and asserts repeatedly that the ascription of intentionality must be conducted responsibly. But what would a responsible ascription consist of, in the case of an adoption of innovation by a consumer? "Sources of intentional interpretation might include, for instance, knowledge of those elements of an innovation that ensure its more rapid diffusion . . . personality and cognitive style of the innovator . . . the nature and extent of the motivators of the innovative process . . . desires, beliefs, emotions, and perceptions in terms of which the consumer perceives her consumption history and its outcomes, the current behavior setting with its

indications of the consequences that are contingent upon the execution of particular consumer behaviors, and the pattern of utilitarian and informational reinforcement that she expects to be the result of her behavior" (Foxall, 2020, p. 188). Part of this information would be obtained from verbal behavior emitted by the person requested to respond ad lib (Foxall, 2020, p. 214).

The proposal requires the collection of additional data, mainly derived from verbal behavior emitted by the person being studied. But if more data are collected would not the behavior-analytic explanation also change in order to consider the additional information? The person's reports concerning her previous experiences, her perceptions of the experimental situation, and such like, might also be considered as indicative of previous experiences, existing behavioral repertoires, and, consequently, of the functions performed by different events in the consumer setting. There is no a priori or epistemological reason, in behavior analysis, for not considering and examining verbal behavior of those whose behavior one is investigating. But there is no such obligation either, because the data that must be collected in any research depends essentially on the types of questions one intends to answer. Most examples presented by Foxall, concerning behavior-analytic speculative explanations, seem to be typical of theoretical works, where the focus is not in collecting data, or discussion sections of empirical investigations, where the focus is on interpreting findings which will be very likely the object of subsequent empirical research. In these new empirical investigations, data collection will be directed to answer the proposed speculative interpretations. Gathering more data to respond previous questions is one of the most typical characteristics of empirical science. This seems to be the typical sequence of events in empirical sciences, and behavior analysis is no exception. The theoretical interpretation advanced as attempt to explain the observed behavior is typically submitted to subsequent empirical tests.

But Foxall's criticisms are directed to those circumstances where one does not have access to additional data. To illustrate this point, Foxall (2020, p. 138) presents an example of a professor who twice a week has lunch with colleagues in the faculty club. The author cites elements in the environment, such as the notice "Faculty Club" and the time shown by the clock on the building's façade, that might work as discriminative stimuli for his entering the building and having a meal. The identification of these contingencies can form the basis of predictions of his future behavior in similar circumstances. According to Foxall this would be a typical and confirmed behavior-analytic interpretation of the professor's behavioral pattern. However, the author raises the possibility that the professor may be entering the club in order to pursue his extramarital affair with the catering manager, something he has done without his colleagues' knowledge on the remaining days of the week for the last 7 years, facts that were exposed in the tabloids later on. Based on this and other similar examples, Foxall (2020) stresses the impossibility of establishing even approximately the learning history of an adult and, consequently, it must be recognized the limitation of behavior analysis to give anything more than a plausible explanation (p. 139), which makes one conclude that "radical behaviorism has no mechanism by which to identify the context of any relevant behavior that takes place beyond the closed setting of the laboratory" (p. 145). Using Rachlin's (2000,

p. 58–59) example, of discovering what a man swinging a hammer is doing (e.g., hammering a nail, joining pieces of wood, building a house?), Foxall (2020) defends that the behavior of the builder is predictable only insofar as we ascribe to him the desire to build a house and the belief that placing this brick will lead to building a wall, that building the wall will contribute to the fabrication of a room, and so on (p. 144). But how would one know that the person has such desires and beliefs (although people usually do not believe these things about house building, they know them)?

Again, more information is needed. In order to identify someone's goals or intentions, in addition to having information concerning some aspects of the person's experiences, abilities, and motivations, one must consider the social context within which the person is behaving. This includes the kinds of behaviors that are means for what types of ends in a given society, that is, the typical behavioral patterns and respective social consequences in a community. And, of course, if the person says what it is that she is doing, the identification of her goals might become easier (cf. Hacker, 2013; Peters, 1958; Oliveira-Castro & Harzem, 1990). The identification of people's goals is part of our everyday conversation about people and part of the repertoire of any language-user adult, who is also capable of telling or refraining from telling his or her goals to someone else (Hacker, 2013). It seems that there is no reason that prevents the use of these types of information in formulating behavior-analytic interpretations of people's behavior. Based on this, one can speculate about the social contingencies to which the person is exposed, the current motivating operations that are prevalent, the person's behavioral repertoire, and such like. If the occasion demands, then the researcher, or practitioner, might look for empirical evidence that may corroborate or refute such speculations. What one would not typically do, in behavior-analytic circles, is to suggest that desires and beliefs are unobservable events that cause what the person does. The fact that these concepts have been widely interpreted, in philosophy and psychology, as the name of causative unobservable occurrences, and that they are intensively used in ordinary language, where their usage is appropriately vague and open-textured, might, perhaps, explain why behavior analysts have avoided them in their theorizing. In ordinary discourse, for example, the adequate level of description of someone's goals depends on what is expected in the context of the conversation. Answer to "what is he doing with the hammer?" can be adequately answered by "he is building a house" as well as by "he is joining wood pieces," for both may be correct, as stressed by Rachlin (2000). The context usually defines the level of analysis that is of interest to the audience, that is, the kind of answer that is likely to be socially reinforced in specific contexts. In the example of the professor and his lover, cited above, it seems that it would be equally adequate to assert that "he was having lunch with his colleagues" as well as "he was secretively saying hello to his lover." The best answer will depend on the context of the question "what was he doing?"

The importance of what the person says about her own goals is also relative to the context in which the conversation unrolls. When the behavioral patterns one observes, or is informed of, fit the known means-ends fluxes in a given society and also fit what the person says about her goals, the task of characterizing what the

person is doing becomes much simpler. But, in certain contexts, what the person says is neither necessary nor sufficient to identify someone's goals (cf. Peters, 1958). This is often the case in courtrooms where defendants deny that they have committed any crime and do not reveal their motivations. Despite this, a jury, and the majority of public opinion, may reach conclusions concerning the person's motivation and past behavior. This is an extreme example to show that one cannot always rely on what people say about their intentions, desires, and, even, beliefs, as a way of identifying their intentions, desires, and beliefs. The typical case where these verbalizations are most relevant is the context of friendly and sincere conversations. In such contexts, what people say is usually sufficient to reveal their desires and beliefs, and, consequently, what they say is compatible with what they do. But the point here is to stress that this is not necessarily the case. Different social contingencies have the potential to influence the correspondence between what people say and do. The identification of the contexts in which what people say correspond to what they do is an important empirical question, one that has been neglected by most authors in cognitive social psychology for a long time.

These considerations lead to the conclusion that the untested and speculative interpretations advanced by behavior analysis may be so characterized as long as there is no reason to gather more data and information. If the questions are posed in contexts where there is relevance to find the answers, more data would have to be collected with the purpose of identifying crucial variables that might be influencing a given behavior, be them historical or contextual. This is what is done in applied settings. Interventions are based on data collection related to individual cases, firms, schools, persons, families, and so on. This is usually how empirical science and technology advances.

The Search for Intentional Objects and Representations

The emphasis on intentional idiom, as suggested by Foxall, might have the undesirable consequence of encouraging the search for mysterious objects. Because the proposal stresses the peculiar characteristics of "objects" of psychological verbs, related for example, to desires, beliefs, and emotions, which may not exist, as contrasted with the characteristics of possible "objects" of non-psychological verbs, which must exist in the "real world," it raises questions concerning the relation of intentional objects to reality and the nature of their existence. In searching for such relations, it is tempting to forget that these are grammatical objects of transitive verbs, in the case of object-accusatives, which are not to be understood as "things" in the sense that a chair or a car are said to be objects. These grammatical objects can be classified as material or intentional object-accusatives. In the case of a material object-accusative, its denotation must exist for the acceptable use of the verb in the sentence. One cannot know Jill if there is no such person, and one cannot believe a rumor if there is no rumor to believe. As for intentional object-accusatives, their denotation need not exist for the verb in the sentence to be true, since one may look

for Eldorado, although it does not exist, and Mary may expect Santa Claus to visit her tonight. Other grammatical complements include nominalization- and sentence-accusatives and infinite accusative which are not objects but answers to questions (for a detailed analysis, see Hacker, 2013).

Overlooking the grammatical status of object-accusatives, philosophers have frequently instigated interpretations that they are like real objects that exist not in the world but in the mind (Hacker, 2013). In several of his works, Foxall has been careful about this issue and has attempted to make clear that his proposal is non-ontological, in the sense that intentional ascription would not refer to things in the mind that cause behavior but would be only descriptive. The suggestion had been to overlay another type of description that includes the ascription of intentionality, similarly to what Dennet has proposed (e.g., Foxall, 2016a; Foxall & Oliveira-Castro, 2009). In the present chapter (Foxall, 2021), however, it seems that the author accepts the interpretation that intentional objects exist in the mind and that the investigation should shift from the analysis of environmental contingencies to the analysis of mental representation of these contingencies. This is most clear in his analysis of hyperbolic discounting (p. 41–61). This phenomenon is usually investigated in situations of intertemporal choice, where consumers choose between one alternative that offers a smaller-sooner reward (SSR) and another that offers a larger-later reward (LLR). One of the most robust findings concerning intertemporal choice is the reversal of preference from the larger-later reward to the smaller-sooner reward, as time approaches the opportunity to obtain the smaller-sooner reinforcement. The finding has been reproduced in hundreds of experiments with different species, including animals and humans, using both real and hypothetical rewards, and indicates that a hyperbolic discount function is more adequate to describe the results than an exponential function, this latter representing the predictions from neoclassic economic model of consumer choice (cf. Mazur, 1987; Kagel et al., 1995; Rachlin, 2000).

Foxall criticizes the explanation of hyperbolic discounting found in the literature on akrasia, according to which choices are determined by the value that the individual attributes to each alternative at different points in time. According to the author, this type of explanation requires that the individual compares the two alternatives at certain moment in time in order to choose the most valued reward. Considering, however, that the alternatives are not present at the moment of choice (t_0), Foxall (2021) raises the question concerning their location. In his words: "At t_0 the larger reward is said to be valued more highly than the smaller. What can this mean? Neither the SSR nor the LLR is empirically available . . . at t_0. Where can they exist in order to be evaluated?" (p. 42). The author concludes that the only possible answer, according to behavior analysis, would be to locate the choice alternatives in the person's learning history or in learned (or self-created) rules, neither of which could serve as explanation because they are unknown and purely speculative. Based on this line of reasoning, the author defends that behavior analysis cannot avoid using intentional language and that an interpretation about the individual's representations of the contingencies must be considered in the explanation of consumer choice. Several aspects of this formulation deserve consideration.

The first one is related to the criticism towards behavior-analytic explanation of akrasia in terms of changes in values. Foxall (2021) mentions vaguely "the literature of akrasia" (p. 42) without specifying any author or particular work. Despite this, it seems possible to consider the work of Rachlin (2000) as a typical example of behavior-analytic approach to akrasia, particularly his work on self-control, where he uses the notion of increases and decreases in subjective value as part of his analysis. It seems that when "subjective value" is used as part of an explanation of the choices organisms make in intertemporal choice situations, Rachlin is asserting that preference reversal can be predicted, it is a widely observed phenomenon, replicated across a large variety of species and contexts, and that a quantitative relation, the hyperbolic function, has been shown to describe well such results. Based on this, one is not surprised to observe preference reversals when they occur. Additionally, given certain empirical evidence concerning individuals' choices in specific contexts, it is possible to make predictions concerning which alternative certain individuals or groups (e.g., children, adults, and older adults) are likely to choose under what conditions and which group show higher or lower discounting. Moreover, this type of analysis suggests the use of commitment procedures that might increase the probability of later-larger choices. Then, in such context, when one asserts that the value of one alternative increased, it seems that one is asserting that the hyperbolic function predicts a higher probability of choosing that alternative. The level of analysis is restricted to general patterns of behavior given certain conditions, typical regularities that one finds in empirical sciences. The analysis is not necessarily suitable to explain particular cases, such as John's choices of having several drinks last Monday, unless one can obtain enough data to calculate individual discount rate in a given choice context. Therefore, it would be unusual in behavior-analytic literature to explain choices as caused by changes in values, taking "changes in value" to refer to events that occur prior to choices, which cause them. However, considering that Foxall does not cite specific works, it is not possible to attempt to analyze the matter in more detail.

Another point that needs consideration in Foxall's formulation is the assumption, suggested in the chapter, that in order to choose between alternatives the person needs to make a comparison between things that are present. The author raises the question concerning the location of SSR and LLR at the moment of choice, emphasizing that the alternatives are not "empirically available" at the moment of choice. This is an unusual conception of choice. It is true that in some situations choice occurs at the physical presence of the alternative rewards, as when one chooses between two different beverages or between two flavors of ice cream. But this does not seem to be the case in most situations, where choices do not occur at the presence of the rewards but at the presence of events that have been associated with different consequences. In typical experiments of intertemporal choice with animals, for instance, at the first choice opportunity (t_0) the animal is presented with two alternative response keys, for example, a green and a red key, one of which having delivered, over several choices, a SSR and the other, a LLR. By pecking one of the keys the animal is said to have chosen one or the other reward. In this procedure, at the second choice opportunity (t_1) the animal is again presented with both

alternative keys, green and red, and chooses one of them by pecking (e.g., Mazur, 1987). In this situation the choice is made in the presence of the response keys that have been associated to the SSR and LLR. The rewards SSR and LLR are not present neither at t_0 nor at t_1, but the keys associated to them are. The behavior-analytic interpretation for this is intrinsically related to the notion of discriminative stimulus, an event in present of which previous responses have been followed by certain consequences, and which acquires, on the basis of such associations, reinforcing or punishing functions, as well as the potential to alter the occurrence probability of such responses.

In choice situations with humans, these relations between events associated with the rewards and the rewards should be analogous, for there are events or things in the environment that have been associated to the consequences programmed by each alternative. When someone is asked to choose between, for instance, "U$ 100 in one month" or "U$ 140 in six months," the verbal stimuli have been associated, through a long history of training, to their respective purchase potentials and to ordinary economic rules about how to manage money. The person is not responding to empirically unavailable money amounts, but to a question concerning delayed money amounts. The posed question "Where are the U$ 100 and U$ 140 located when the question is presented to the person?" seems in need of clarification and does not seem promising for directing empirical research or interpretation. Where is any future event before it occurs? Must it be located anywhere? Why? Foxall suggests that for behavior analysts the events are in the past. But this is also a strange way to put it, for the events of the past are not in any location. Indeed, they occurred in the past. But does this mean that they are located anywhere? The question about the location of events seems to divert the focus from what seems most relevant in the explanation of this type of choice, which is the type of learning experience that might explain the observed choice patterns, as the literature on intertemporal choice has widely demonstrated with systematic empirical results.

Additionally, based on the puzzle concerning the location of the alternative rewards, not yet presented to the chooser, Foxall reaches the conclusion that the only possible answer to the puzzle is to assume that there occur mental representations of the rewards, which are part of the variables that explain individual's choice. As representations, the events are said to exist (as representations) in the present and to be located in the mind of the person who is choosing, which would solve the puzzle concerning the location of the alternative rewards. If, in the proposal of intentional behaviorism, representations are to be posited when discriminative stimuli are present, it seems even more natural to posit them when no discriminative stimulus is present in the behavior setting, a situation much stressed in the author's writings because it represents a clear point where behavior-analytic interpretation breaks down. According to Foxall, behavior analysis simply cannot explain choices in the absence of discriminative stimulus in the field and has tried to invent specific learning histories and self-created rules as attempts to save the theory. As discussed earlier, most situation where there is "absence of discriminative stimulus in the field" might be better understood if more data and information were gathered about the behavior and the circumstances where it occurred and occurs. In fact, this would

also be necessary to ascribe intentionality, as proposed by Foxall. However, sometimes it will be impossible to gather more information, in which case we may never know the answer concerning the variables that influenced what the person did. But this negative conclusion would be not due to epistemological problems; it would derive primarily from the impossibility of obtaining more information. If a bird that is singing at the far end of the backyard flies away before we can take a look at it, we may never know what kind of bird it was. But this is not an epistemological mystery; it is an empirical impossibility of gathering more information (cf. Austin, 1946). Considering that the need to gather more information was discussed earlier, it might be useful now to focus on the ascription of mental representations.

The imperative of ascribing mental representations seems to be derived, at least partially, on the assumption that an adequate explanation of behavior should be based on events that are present when behavior is emitted. This represents a limiting assumption, because time intervals can be divided indefinitely, depending on the desired level of analysis. This can be illustrated by a situation where a pigeon is trained to peck either of two lateral white keys depending on the color of a central key that can be lit green or red for 2 s. If the central key is red, after it turns off, the lateral keys are lit, responses on the left key are reinforced, and there is no programmed consequence for responding on the right key. If the central key is green, after it turns off, the lateral keys are lit, responses on the right key are reinforced, and there is no programmed consequence for responding on the left key. Let us assume that, after learning this discrimination task, it takes the pigeon 0.5 s, on average, to peck the corresponding lateral key after the central key turns off. It is possible to imagine experimental manipulations that would increase gradually the time between turning off the central key and turning on the lateral keys, let us say from 1 to 400 s. Although this would be an empirical issue, let us assume that the pigeon displays perfect discriminated performance, pecking the lateral key where there is programmed reinforcement on 100% of trials, even in the 400-s delay condition. At what point, along the 1 to 400-s interval, would one consider that the response occurs in the absence of the discriminative stimulus and, therefore, requires the inference of mental representation? Taken literally, one can assert that even when the peck occurred 0.5 s after the central key was turned off, responses occurred in the absence of the discriminative stimulus. If this is so, representations would almost always have to be inferred, as in fact most cognitive theories in psychology have done (even in the case of non-human animals). There seems to be an increased tendency to infer mediating events as the interval between influencing events and behavior increases (Oliveira-Castro, 2000).

But what would be the disadvantages or problems related to inferring mental representations? Theoretically, if it is assumed that mental representations are necessary for the explanation of behavior, this would require the identification of the variables that generate or cause representations. Otherwise, one would be simply postponing explanation without identifying the variables that influence behavior (cf. Skinner, 1953). From the philosophical point of view, the attribution of representation in the interpretation of psychological phenomena has a long history of discussion, immersed in puzzles and confusions, most of which related to attempts to

elucidate the relation between thought (or language, or perception) and reality. The philosophical position defending that intentionality is the mark of the mental, which has inspired Foxall's intentional behaviorism, is a central part of this web of conceptual difficulties (cf. Hacker, 2013).

Conclusions

For 40 years, Foxall has led the development of consumer behavior analysis, a theoretical framework developed to interpret consumer behavior on the basis of principles derived from behavior analysis, behavioral economics, and marketing, which has generated a wide range of international research, on a variety of relevant topics concerning consumer behavior. Despite the success of his project, the author has kept questioning the limits of the approach, particularly in its role of interpreting and explaining complex human behavior in natural settings. In this legitimately motivated academic quest, the author has identified limitations in behavior-analytic explanation, such as the difficulties of explaining the continuity of behavior and delimiting behaviorist explanation, which are related, mainly, to the behavioristic restrictions in using psychological concepts.

The proposed solution by intentional behaviorism is to superimpose the ascription of intentionality to behavior, by referring to individuals' desires, beliefs, emotions, and perceptions. The great merit of the proposal is to call attention to the importance of considering, more closely, the logic of the use of psychological expressions. The limitations pointed out by Foxall stress the need to adopt systematic theoretical treatment of learning history in behavior analysis, with the adoption of theoretical concepts related to, what in ordinary language would be called, abilities and propensities that can summarize what individuals typically do, or are capable of doing, in certain situations and predicting what they are likely to do. A better understanding of the logic of the use of these kinds of expressions (e.g., dispositional concepts or powers) in ordinary language reveals that they do not refer to unobservable mental events that cause behavior. The problem in adopting them is associated to their vagueness. If used more precisely, concepts that describe individuals' learning history and make predictions concerning probable behavioral patterns might be useful to behavioral theories.

Despite calling attention to the need of incorporating psychological concepts in behaviorism, Foxall's proposal is inspired by a philosophical tradition that has emphasized the dichotomy between intentional and extensional idiom, which tends to overlook important logical differences across psychological expressions. Many psychological concepts are not intentional and intentional concepts are of several different kinds. Beliefs are not like desires, which are both different from emotions and perceptions, differences that tend to be overlooked in the approach. The dichotomy also encourages the search for the nature and location of intentional objects, a philosophical practice that has orbited an amalgam of confused puzzles concerning the relations between thought and reality, from which representational theories of

mind have evolved (Hacker, 2013). Following this philosophical trend, Foxall proposes that intentional behaviorism should consider not only the contingencies of reinforcement but also the representations the individual has about reinforcement contingencies. This approach seems to face two obstacles. The first is to establish criteria to specify when representations should be posited. The criterion, proposed by the author, based on the "absence of discriminative stimulus" has been shown to be fragile due to the relative nature of stimulus delay (i.e., as time is indefinitely dividable) and the need to gather more empirical evidence. The second obstacle is that one would need to identify the variables that generate or influence representations; otherwise one would be encouraged to elaborate post hoc explanations.

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