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On Mentalism, Privacy, and Behaviorism

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The present paper examines three issues from the perspective of Skinner's radical behaviorism: (a) the nature of mentalism, (b) the relation between behaviorism and mentalism, and (c) the nature of behavioristic objections to mentalism. Mentalism is characterized as a particular orientation to the explanation of behavior that entails an appeal to inner causes. Methodological and radical behaviorism are examined with respect to this definition, and methodological behaviorism is held to be mentalistic by virtue of its implicit appeal to mental phenomena in the account of how knowledge is gained from scientific endeavors. Finally, it is noted that the behavioristic objection to mentalism is pragmatic: mentalism interferes with the effective explanation of behavioral events.

A number of authors have noted that one of the salient—if not one of the defining—characteristics of Skinner's radical behaviorism is its unrelenting opposition to "mentalism" (e.g., Day, 1976b, p. 535; Day, 1980, p. 208, 256; Natsoulas, 1983; Schnaitter, 1984, 1986, 1987). Interestingly, however, that very same oppposition to mentalism constitutes the source of most of the controversy concerning radical behaviorism as a philosophy of science (e.g., Dennett, 1978; Fodor, 1968; Modgil and Modgil, 1987; Sober, 1983).

Indeed, cognitive psychology, which is extraordinarily influential on the contemporary scene, prides itself on its embrace of mentalism. Cognitive psychologists believe they can offer better causal explanations of behavior than behaviorists precisely because they adopt a mentalistic orientation and behaviorists do not. Fodor (1968) is quite straightforward about his embrace of mentalism and rejection of behaviorism: "The distinction between mentalism and behaviorism is both exclusive and exhaustive" (p. 55). Clearly, mentalism is focally involved in discussions of current systematic positions in psychology. The purpose of the present paper is to examine three issues con-

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cerning mentalism from the perspective of Skinner's radical behaviorism: (a) the nature of mentalism, (b) the relation between behaviorism and mentalism, and (c) the nature of behavioristic objections to mentalism.

Mentalism

Definition of Mentalism

Day (1980, p. 208) has suggested that for radical behaviorists, mentalism consists in citing feelings and inner states as causes of behavior. However, examination of the literature of radical behaviorism suggests that the term mentalism has a broader usage than might be understood from the foregoing statement (e.g., Day, 1969a, p. 319; 1969b, p. 501; 1976a, p. 88; Moore, 1981). Accordingly, for present purposes, the following broad-scope definition of mentalism is proposed:

> An orientation to the study of behavior, which holds that a unique, a necessary, and the primary contribution to the causal explanation of behavior consists in proposing various internal acts, states, mechanisms or processes, presumed to be operating in neural, conceptual, or psychic dimensions.

This broad-scope definition embraces a wide variety of intellectual perspectives. For example, it embraces traditional psychophysical dualism (e.g., as in a Cartesian approach), even though dualistic explanations of this form are not highly regarded in explanatory circles (Fodor, 1968, p. 50; see also Eccles, 1973; Natsoulas, 1984; Zuriff, 1985, esp. p. 185). Consequently, not much will be said about this form.

The definition also embraces forms of mentalism that claim to be materialistic (e.g., Fodor, 1968, p. 56). However, as will be noted below, closer examination of these forms suggests problems of dualism exist, despite claims to the contrary. Common examples of mentalism (without regard to whether they are dualistic) are explanations of behavior that appeal to the initiating causal efficacy of feelings, mental states, cognitive processes, subjective interpretations, subjective perceptions, attitudes, thoughts, ideas, drives, needs, memories, images, representations, sensations, reasons, purposes, beliefs, wants desires, attributions, the ego/superego/id, moods, brain states, expectations, etc. From the perspective of radical behaviorism, these various examples of mentalism typically claim that (a) there are in fact such underlying private, or inner, phenomena; (b) these phenomena are quite properly regarded as aspects of a dimensional system that differs from the one in which behavior takes place; and (c) the causal explanation of behavior consists in accounting for behavior in terms of the autonomous causal efficacy of these phenomena,

at the expense of any concern with the relation between the behaving organism and its surrounding circumstances.

Sources of Mentalism

In a very important sense, to understand the nature of mentalism is to be able to specify the conditions responsible for the verbal behavior called mentalistic. As Day (1976a) suggests, "certain natural contingencies, largely irrelevant to what would be revealed in a causal analysis of the behavior at issue, have acted to shape . . . [mentalistic] explanatory practices in us" (p. 90). What is the nature of these contingencies?

From the perspective of radical behaviorism, the contingencies responsible for mentalism consist in metaphorical extensions of our linguistic practices and of our cultural traditions (e.g., Moore, 1984a). With respect to metaphorical extensions of our linguistic practices, we often conclude that any time a term is used, it must be because there is an entity out there, in the world at large, to which the term refers. As noted elsewhere (Hineline, 1980, pp. 79–83; Skinner, 1974, p. 165; Zuriff, 1985, p. 269), we all too easily convert adjectives, adverbs, and verbs into nouns, and then begin to look for the entities to which the nouns are said to refer. The verbal process of abstraction is particularly well-suited to the invention of an underlying causal power or force, appeal to which may then be regarded as the explanation of the behavioral event in question (Skinner, 1953, p. 277).

In this regard, we further learn to partition our experience into a linear succession of named phenomena. We learn that when one phenomenon precedes another, we may take the first as the cause of the second. Although there is much virtue in a concern with antecedent conditions, we metaphorically cite an organocentric phenomenon as the cause of behavior when it precedes behavior. Thus, Skinner (1974, p. 8) says that feelings occur at just the right place (i.e., in the temporal sequence) to be taken as entities that cause succeeding behavior.

With respect to cultural traditions, mentalism reflects unfortunate metaphorical tendencies that are as old as the human species itself, almost certainly originating with a primitive animism (Skinner, 1969, p. 221). The ancient philosophers, though more so Plato than Aristotle (see Kantor, 1963, for development of this point), inaugurated what would now be viewed as a dualistic orientation to human nature. This orientation has been uncritically perpetuated by social and cultural institutions over the years. The process of acculturation is primarily that of coming under the influence of these social and cultural institutions. Skinner (1974) suggests that the consequence is a comprehensively mentalistic world view, with metaphors borrowed from various sources and applied to the analysis of behavior:

> Plato is said to have discovered the mind, but it would be more accurate to say he invented one version of it. Long before his time, the Greeks had constructed an elaborate explanatory system, a strange mixture of physiology and metaphysics. A pure mentalism was not long in making its appearance, and it has dominated Western thinking for more than two thousand years. Almost all versions contend that the mind is a nonphysical space in which events obey nonphysical laws. (p. 31)

Thus mentalism has its roots in nothing less than the underlying conceptions of human nature that are tacitly assumed to be true and that are deeply ingrained in Western culture. Indeed, it was precisely these values that were challenged in *Beyond Freedom and Dignity* (Skinner, 1971). Writing from a Skinnerian perspective, Day (1980) has provided further insightful commentary on a wide range of historical factors, ranging from pre-Socratic philosophy to the grand learning theories of the 1940s and 1950s, as they relate to the history of behaviorism. Day (1980) is a source of prime importance in understanding the history of behaviorism vis-a-vis mentalism.

The Relation Between Behaviorism and Mentalism

Definition of Behaviorism

Addis (1982, p. 419) has suggested that mention of the mental is superfluous in the explanation of behavior, and Bergmann (1956) has stated that "It must in principle be possible to predict future behavior, including verbal behavior, from a sufficiency of information about present (and past) behavioral, physiological, environmental variables" (p. 270). Combining these two positions yields the following definition of behaviorism:

> An orientation to the study of behavior that assumes it must be possible, in principle, to secure a full, lawful explanation of any instance of behavior, including verbal behavior, in terms of present and past behavioral, physiological, and environmental variables, without mentioning the realm of the mental.

As noted earlier (Fodor, 1968, p. 55), the distinction between mentalism and behaviorism is ordinarily regarded as exlusive and exhaustive. At face value, the present definition appears to respect such a distinction. However, at least two different interpretations are possible of the definition. These two interpretations lead to two very different conceptions of the nature of behaviorism and its relation to mentalism.

Interpretation 1

By this interpretation, explanations are to be in terms of (a) phenomena and variables expressed in a physical-thing language, and (b) mediating en-

tities logically inferred therefrom. Thus, unobservables may certainly enter into an explanation in the form of mediating theoretical entities, such as hypothetical constructs or intervening variables, so long as they are operationally defined in terms of intersubjectively verifiable phenomena, and their contribution to the logic of the explanation may be specified. Moreover, many theorists argue that appeals to unobservable, theoretical entities are necessary to overcome the limitations imposed by dealing strictly with intersubjectively verifiable phenomena. The theoretical entities serve a heuristic function, promote parsimony, and facilitate prediction. In addition, they simplify, are unavoidable in practice, and are part of every mature science (Killeen, 1984; Williams, 1986; Zuriff, 1985).

The resulting explanations may involve appeals to a mental dimension that is irreducibly distinct from the physical, and not just a subset of it. Such appeals are particularly likely in cases of intentions and introspections, so long as either (a) a corresponding account of the behavior in question may be provided in physical terms, (b) the mental term may be operationally defined as a theoretical term using intersubjectively verifiable phenomena (e.g., as a behavioral disposition), or (c) its contribution to the logic of the explanation may be specified (see Natsoulas, 1984). As before, any question of ontology may be finessed by claiming that the unobservable element in the explanation only serves a pragmatic function, with reference to parsimony, heuristics, or as a mediator of prediction/deduction. Whether the phenomenon in question actually exists does not need to be formally addressed. It is sufficient to say that it is "as if" the phenomenon exists, and leave the matter at that.

Viewed as a whole, this interpretation of behaviorism attempts to circumvent problems arising from the appeal to unobservables in the explanation of behavior. In fact, under the influence of logical positivism, logical empiricism, and conventional operationism, unobservables are to be welcomed into the causal explanation of behavior as theoretical terms, so long as they may be regarded as logical inferences from publicly observable behavior. The incorporation of publicly observable phenomena is held to be the necessary check against non-scientific, non-objective elements intruding into science. In fact, knowledge is regarded as always a theoretical inference from an intersubjectively verifiable data base. As Day (1976a, 1983) has noted, this interpretation has now become orthodox in virtually all branches of contemporary psychology: most forms of learning theory, social psychology, personality theory, sensation and perception, behavior pathology, psychotherapy, humanistic psychology, phenomenological psychology, and cognitive psychology.

As readers might suspect by this time, behaviorism according to Interpretation 1 is only a "methodological" behaviorism, and is not really a behaviorism at all. Rather, it is mentalism. Methodological behaviorism qualifies as men-

talistic because it has a person whose behavior is presumed to be caused by "mental" phenomena. The one person is the scientist. The behavior in question is the scientist's behavior of predicting, controlling, interpreting, and explaining. The mental phenomena are the mediating logical constructs and theoretical inferences that are implicitly endowed with the power to cause the scientist's behavior of predicting, controlling, interpreting, and explaining. Note that nothing in the present analysis of methodolgical behaviorism precludes methodological behaviorists from also stating that mental phenomena cause the behavior of the organism under observation. In fact, methodological behaviorists often do. The present analysis simply states the minimal conditions according to which methodological behaviorism is mentalistic.

Interpretation 2

An alternative interpretation of the definition is as follows. The phenomena and variables in question need not be intersubjectively verifiable to participate in the explanation. Private phenomena, accessible only to one person but nevertheless physical and material, are important in the discriminative control of behavior and need not be regarded as theoretical inferences from observable behavior to be respectable. The private phenomena may be regarded as either stimuli or responses, serving much the same function as public stimuli and responses.

If an explanation happens to use a "mental" term, the usage may be analyzed to determine the background of the mental term in question. For example, it may be that the term is an "explanatory fiction." It is cherished for extraneous and irrelevant reasons, such as by being part of the traditional conception of human nature that is so deeply ingrained into our mentalistic Western culture. It is of interest only in regard to the linguistic, social, and cultural conditions that promote its use. Little more will be said about this possibility.

Alternatively, the term may relate to behavioral processes, whether public or private, or to physiological processes. If the term relates to a behavioral process or relation, then it relates to a phenomenon that is appropriate for analysis as a behavioral phenomenon. On this view, any appeal to the causal contribution of a private phenomenon—as a stimulus or a response—involves recognizing the contribution of the private phenomenon to discriminative control of the behavior in question. Many aspects of recall, problem-solving, and thinking may therefore be understood as behavioral phenomena, rather than as mental phenomena from an extra-behavioral dimension that cause behavior. However, the private phenomenon does need to be further connected with the public phenomenon—either stimulus or response—to which the private phenomenon is functionally related. Failure to do so results in

an incomplete account, in terms of behavior-behavior relations rather than environment-behavior relations (Hayes and Brownstein, 1986, p. 185).

If the term relates to a physiological process, then the term may be used in psychological explanations, but in a special way (see discussion in Skinner, 1972, pp. 269–270, 308–309; 1974, p. 221). More will be said about the contribution of physiology to psychological explanations below.

The Process of Explanation

As seen above, each of the two interpretations views the process of explanation in a different way. A good deal has been written about the process of explanation from the point of view of methodological behaviorism (e.g., Hempel, 1958), but little has been written from the point of view of radical behaviorism. How does radical behaviorism view the process of explanation?

At the heart of the radical behaviorist point of view is the position that explanation is verbal behavior. Verbal behavior is not to be used as the index for logical processes underlying explanation. Rather, to explain an event is to engage in verbal behavior.

This point of view rests solidly on a thoroughgoing behavioral conception of language. As an instance of verbal behavior, an explanation may therefore be examined from the point of view of the speaker or the point of view of the listener (see Day, 1969b, pp. 504–505). With regard to the speaker, to raise questions concerning how a particular explanation happens to have been given is to inquire about the discriminative and reinforcing conditions that engender a particular kind of behavior on the part of the speaker. To raise questions concerning how an explanation *should* be made is to invite behavioral control in the form of advice, that is, concerning how the speaker's explanation might be made even more effective.

Other questions relating to the process of explanation concern the listener. For example, from the point of view of the listener, an explanation is verbal material that functions as discriminative stimulation for actions that achieve a reinforcing state of affiars. In this sense, to raise questions concerning the adequacy of an explanation is to inquire about the discriminative effect of the explanation upon the behavior of persons who entertain the explanation. There is a continuum of possibilities for such behavior, ranging from (a) direct intervention by manipulation and control into natural events to (b) predictions suggesting appropriate action when direct intervention is not feasible.

Most explanations include other verbal material as well. For example, many explanations include sufficient assurances that the listener/reader will not take the verbal behavior as simply autistic. In this regard, an explanation often includes statements that qualify the scope of the response. In addition,

an explanation often includes statements on the relation between the current statement and other statements concerned with generically related phenomena.

Similarly, an explanation will also typically indicate how scientific terms and principles derived from a more rigorous analysis might profitably be used to talk about cases in which too little is known to make prediction and control possible. Thus an explanation is of sufficient abstractness and generality to promote interpretive statements, so that those who entertain the explanation can make sense out of a broad range of related phenomena. In sum, an explanation is produced as verbal behavior by a speaking person, and is not a logical property of formally organized or theoretical symbols.

In short, to view the problem of explanation as a logical problem that is different from a behavioral problem is to miss the force of what may well be radical behaviorism's major contribution to philosophical thought. To conceive of explanation as a logical rather than a behavioral problem not only distorts the contribution of logic to the process of explanation, but it also perpetuates a mentalistic orientation to verbal behavior more generally.

What Occasions Explanations?

To the extent explanations are verbal behavior, they may be analyzed in the same way as other behavior, in terms of the discriminative conditions that occasion them and the consequent conditions that reinforce them. The reinforcers for explanations are presumably effective action, although other reinforcers may exert supplemental control (Moore, 1981, 1984b). What then occasions explanations of behavior?

From the perspective of radical behaviorism, there are four classes of factors that occasion explanations. First, there is the reinforcing consequence that the to-be-explained response has achieved in the past. Second, there is the antecedent condition that makes the to-be-explained response more likely, in virtue of its relation to the reinforcing consequence. Third, there is the contingent relation among the antecedent condition, the response, and the reinforcer. Fourth, there are the characteristics of the living organism itself, which are brought to the situation in which the behavioral event occurs. They include the general physiological characteristics of the sentient organism: (a) a genetic endowment that accommodates innate, operant, and respondent behavior, (b) sensory systems that are responsive to stimulation in various forms, and (c) a nervous system that provides continuity between stimulus and response.

Ordinarily, explanations of behavior are offered in terms of the first three factors, because those are the factors of which we will have the most knowledge

and those are the factors that offer the most practical means of prediction and control. Great importance is placed on the third factor, contingencies of reinforcement, insofar as it incorporates the contribution of the first and second factors. By their very nature, factors in the fourth class, physiological factors, are relatively less likely to be manipulated within the event, although such practices as selective breeding give evidence that manipulation may nevertheless be carried out at this level. In the vocabulary of behavior analysis, most explanations will therefore tend to be occasioned by organism-environment interactions, i.e., by contingencies.

However, suppose that the functional relation between a physiological characteristic and behavior is known. Perhaps this information will come from physiologists, who will supply the details concerning the events that transpire during the spatial and temporal gaps between contact with a stimulus and the ensuing response, and how an organism is changed when exposed to contingencies of reinforcement so that it later behaves in a different way.

These events, of course, are a legitimate subject matter for some aspect of biological science. The possibilities for explanations of behavior are increased if the gaps are filled by some discipline, as presumably they will be some day. Note that cognitive psychology is ostensibly concerned with filling these gaps with metaphors derived from information processing, but presumably it would be a remarkable coincidence if contemporary cognitive psychology proves to be helpful in filling the gaps. Although cognitive psychology claims to be materialistic and biologically oriented (Wessells, 1981, 1982), its appeal to computational metaphors and the acknowledged, ahistorical causal status of the inner entities are the legacy of the Platonic dualistic commitment to the reductive priority of causes from the inner dimension.

At issue is whether an understanding of the structure of the dependent variable justifies an inference that that structure may only be understood as the artifact of some generative private phenomenon similarly structured, such that the principal contribution to causal explanation has been achieved. Presumably, the answer is no (see also Hineline, 1984; Marr, 1983; Morris, Higgins, and Bickel, 1982; Schnaitter, 1986). Rather, the issue is that if the physiological characteristics are known, then effective action may be based on information about those characteristics, rather than on a possibly inadequate specification of contingencies. That is, a specification of the prevailing antecedent state of an organism, such as how that organism has been changed by events within its lifetime or how the organism stands in respect to third variables, may compensate for a lack of knowledge regarding historical interactions between organism and environment (cf. "An organism behaves as it does because of its current structure," Skinner, 1974, p. 8; "In a more advanced account of a behaving organism 'historical' variables will be replaced by 'causal.' When we can observe the momentary state of an organism, we

shall be able to use it instead of the history responsible for it in predicting behavior," Skinner, 1969, p. 283).

In short, for radical behaviorism, causal explanation does not consist in identifying some organocentric mechanism or process, but in locating an organism in a matrix of relevant factors, some of which may well be part of its anatomy and physiology. Radical behaviorists distinguish between the question of "How does an organism's body work when it responds to the world?" and the question of "What are the aspects of the world to which an organism's body responds?" Answers to both questions are relevant to a science of behavior but an answer to one does not constitute an answer to the other.

Radical Behaviorism versus Traditional Approaches

This perspective is quite different from that of traditional approaches. For example, the philosopher of science Harré (1970) has suggested that scientific knowledge consists of identifying both the regularities of patterns of events and the internal constitution of the elements making up the event. Scientific explanation is held to consist in accounting for the former in terms of the latter. Analysis of mature sciences indicates that science progresses by appealing to unobservable aspects of that constitution, as theoretical entities.

Two recent advocates of the traditional approach in the analysis of behavior are Williams (1986) and Killeen (1984). Williams advocates the introduction of hypothetical constructs and contends that

> all theoretical terms, including those commonly used by radical behaviorists who believe themselves to be following Skinner's positivistic dicta, involve the postulation of unobservable entities or processes as causes of behavior. In other words, theory construction inherently entails conjectures about a level of reality not available for direct empirical observation. (p. 112)

Assuming a comparably mentalistic posture, Killeen (1984) calls for an "emergent behaviorism": "Its goals are to develop successful theories of behavior, and it recognizes that those theories may involve mental terms" (p. 36).

These two passages exemplify the mentalism of Interpretation 1 as it applies to the process of explanation. The explanations concern factors that operate somewhere else, at some other level of observation, and for which some other terms are required. Logic is used to validate appeals to entities at this other "level of reality." Neither the dimensional system of the explanation itself nor of the causal factors identified in the explanation is the same as the dimensional system of the behavior being explained.

The traditional approach is troublesome because it assumes that an appeal to supposedly underlying, unobservable phenomena, operating at another level of reality, and engaged by logically rigorous inferential processes, is

necessary to secure an adequate account of the regularities in observed behavior. To be sure, chemists do appeal to valences of atoms, polarization of molecules, and so on, in their work (e.g., Killeen, 1984; p. 28). Similarly, there is the germ theory of disease, the synapse, the gene, and atomic theory of matter. There is surely a place in the account of the life activity of organisms for an abstract, functional description of the material machinery of the body, through whose functioning organisms are capable of behaving in context (e.g., Schnaitter, 1987).

However, if the concern is with the causal contribution of some inner phenomenon, then one has to decide what dimension is at issue. This concern is not necessarily one of objectivity, parsimony, or whether the inner phenomenon is too far removed from observable data (cf. Williams, 1986, p. 121). As Hayes (1984, p. 205) has noted, radical behaviorism does not regard a distinction between subjective and objective as critical. To so regard the distinction is to create a dimensional problem. Subjective may mean private and objective may mean public, but nothing more than accessibility is involved. Failure to come to grips with the dimensional issue, through an assessment of the factors influencing the behavior of the scientist, has meant that the problem of mentalism has lingered in the discipline.

Radical Behaviorism and Objections to Mentalism

Overview

Why then does radical behaviorism object to mentalism (e.g., Keat, 1972; Modgil and Modgil, 1987; Wessells, 1981, 1982)? Is the objection that the mental dimension does not exist? Despite Skinner's repeated expressions of concern about the dimensional problems of psychology, care must be taken here. Is it a criticism to claim that there exists no such thing as a mental dimension, wherein are claimed to dwell the phenomena of mentalistic explanations? If the behavioristic position is that verbal behavior is occasioned by physical discriminative stimuli, then presumably even the language of the mentalist is so occasioned. If so, then how can it be a criticism to claim that what mentalists are talking about does not exist? If the mental dimension does not exist, then how can the mental dimension be what the mentalists are talking about? The claim has tacitly supported the very premises of the mentalist's argument, namely that the logical operations underlying language and explanations do in fact have the capacity to reify phenomena.

As noted earlier in this paper, at issue are the factors that lead the mentalist to talk about mental acts, states, mechanisms, and processes as mental rather than behavioral. The behavioristic objection to talk of mental phenomena is that such talk bespeaks in large measure a metaphorical concern for issues

that are cherished for irrelevant and extraneous reasons, for example, as aspects of the traditional conception of human nature that is deeply ingrained in Western culture. Of course, Skinner has made what sometimes seem to be perplexing statements, such as "The basic issue is not the nature of the stuff of which the world is made or whether it is made of one stuff or two" (Skinner, 1969, p. 221); and "The behavioristic objection is not primarily to the metaphysical nature of mind stuff" (Skinner, 1978, p. 72). These statements seem evasive on the issue of physicalistic materialism and therefore inconsistent with Skinner's expressed position on the dimensional problems of traditional psychology. Presumably, Skinner does not want to get drawn into a never-ending battle of ontology with a mentalistic tar-baby (see also Day's 1969b, remarks on Skinner's—and Wittgenstein's—peculiarly anti-ontological position, pp. 500–501).

Is the objection that the knowledge claims of a mentalistic psychology should be disregarded because they are not a consequence of the "right method"? To quote Skinner, "We may quarrel with any analysis which appeals to . . . an inner determiner of action, but the facts which have been represented with such devices cannot be ignored (1953, p. 284), and "No entity or process which has any useful or explanatory force is to be rejected on the ground that it is subjective or mental. The data which have made it important must, however, be studied and formulated in effective ways" (1964, p. 96). On the basis of such passages, it appears that Skinner's concerns do not turn upon methodology as such (see also Day, 1969a, p. 320).

In fact, Skinner is more than willing to listen to the statements of anyone who is interacting effectively with nature, even if the effective action began serendipitously (Skinner, 1972, p. 103, 112). Obviously important statements are not to be rejected out of hand because of particular personal prejudices. Indeed, as Skinner (1974, p. 243) has noted, an analysis of many successful scientists reveals that in the main, they rarely operate according to the formal reconstruction of science suggested by logical positivists and operationists, with their precise definition of terms, carefully wrought hypotheses, statistical evidence, and so on (see also Skinner, 1956; Skinner, 1974, pp. 148, 170, 241; Smith, 1986, pp. 267–274, 281–283, 294). A person may operate successfully by following the hypothetico-deductive method, of course (Skinner, 1969, p. ix), but that method neither defines nor exhausts the possibilities for effective action. In fact, when the hypothetico-deductive method proves to be effective, the argument is that it is effective because it has incorporated stimuli, responses, reinforcers, and so on, not because it has correctly heeded some superordinate, "logical" process. Skinner's position means that he does appreciate whatever results in effective action. He does not dismiss someone with obviously sophisticated discriminative capacities because some effective action was not a consequence of hypothetico-deductive methods. Rather, the

concern is for a functional analysis of the process by which the effective action was carried out.

Is the objection that mentalism involves circular explanations? Charges of circularity are complex. According to the behavioristic perspective, no one's language, including the mentalist's, is essentially a logical phenomenon, wherein that language is assumed to possess a logical content. Thus, to put the matter in an exceedingly superficial way, the language of neither the behaviorist nor the mentalist is a thing that is, or can be, circular, in the sense in which it is traditionally implied. To object to mentalism because it supposedly involves circular explanations concedes, rather than challenges, the mentalistic premise that linguistic activity is essentially a logical, as opposed to a behavioral, activity.

Rather, what is at issue in a charge of circularity is how the language in question has been constructed. Presumably, in the language called "circular," structural relations among components of sentences have led to the transposing of terms within a sentence, much as if slips of paper marked with mutually substitutable words are rearranged according to grammatically acceptable conventions within a sentence (Skinner, 1957, pp. 423–424). Such language is not especially useful because no new form of action arises from it, insofar as its components are themselves essentially occasioned by the same set, or two closely overlapping sets, of phenomena.

Such a position does not imply that the techniques of logic or that constructed verbal discriminative stimuli are without value. It also does not imply that the kind of argument called circular should be regarded as helpful after all. Rather, it implies that logic may profitably be construed as a system of rules about rules (Skinner, 1974, chapter 8; Zuriff, 1985, pp. 255–257). The rules ultimately pertain to actions generated by relations among classes of stimuli. As Skinner (1945, p. 294) once disingenuously quipped, the underlying issue is psychological, not logical.

Is the objection that mentalism incorporates events that are not publicly observable? Given his position on private events, there seems ample evidence that Skinner has always been willing to consider the importance of events that cannot be seen by more than one person. Assertions that Skinner rejects mentalism because it considers events that are not publicly observable seem to be derived from taking Skinner to be too close to logical positivism and conventional operationism (Moore, 1985; see also Moore, 1980, 1981, 1984a).

Is the objection that mentalism entails theories that go beyond the facts? Again, consider Skinner's own writing on this topic.

> Behavior can only be satisfactorily understood by going beyond the facts themselves. What is needed is a theory of behavior . . . . Facts and theories do not stand in opposition to each other. The relation, rather, is this: theories are based upon facts; they are

> statements about organizations of facts . . . . [Theories] have a generality which transcends particular facts and gives them wider usefulness . . . . [E]xperimental psychology is properly and inevitably committed to the construction of a theory of behavior. A theory is essential to the scientific understanding of behavior as a subject matter. (Skinner, 1972, pp. 301–302)

According to Skinner, theories per se are not objectionable, and never have been. However, the theories Skinner has in mind to not involve "theoretical" terms referring to unobservable entities lurking in another level of reality. As Zuriff (1985) and Smith (1986) have noted, acceptable theories for Skinner attempt to collate observations into economical formulations, by using a minimal number of terms to represent a large number of facts.

In short, Skinner's argument is that scientific knowledge should not be portrayed as the unique achievement of the particular kinds of theories or inferential processes that invoke fictitious entities from other dimensions, unobservable in principle to anyone. In fact, the argument is that such theories entail mischievous kinds of metaphorical extensions. The theories have traditionally caused trouble and continue to do so. To regard knowledge as the product of such entities and activities, as do Killeen (1984) and Williams (1986), only perpetuates the problem.

Clarification of Skinner's Objections

If Skinner's critics have not accurately portrayed his objections to mentalism, then what is his position? As Day (1976a) has noted, "The basic difficulty with mentalism . . . is that it is contrary to fact . . . . The objection is that although we generally regard mentalistic explanations as adequate and successful, it is inappropriate for us to do so, since they mistakenly identify the causes actually at work in governing our behavior" (pp. 86, 90). Plain and simply, then, Skinner's position is that mentalism detracts from an analysis of environment-organism interactions, and this interaction is the concern of a science of behavior. Thus, Skinner's various arguments that mentalistic approaches are misleading and vague, obscure important details, lead experimenters to be wasteful with the societal resources that support science, impede the search for relevant variables, misrepresent the facts to be accounted for, give false assurances about the state of our knowledge by inducing us to accept fictitious way stations as explanatory, perpetuate the use of scientific techniques that should be abandoned, and so on, may all be subsumed under one heading: mentalism fundamentally interferes with an effective explanation of behavioral events.

What is an effective explanation of behavior according to radical behaviorists? As noted earlier, radical behaviorists explain behavior in terms of contingencies of reinforcement. Explanations that do not engage contingencies are inadequate, and interfere with those that do.

This position on explanation does not imply that radical behaviorism endows contingencies with the power to cause *any* behavior, however. To so assign causal power is what is meant by radical environmentalism, and radical behaviorism does not advocate radical environmentalism. Behavior is not endlessly malleable. Rather, internal and external factors need to be regarded as coordinated participants within a total system.

Of course, the explanatory statements of radical behaviorists do seem to emphasize environmental determinants of behavior, and to disregard characteristics of the organism. An often cited example is Skinner's (1956, pp. 230–231) publication of cumulative records from a pigeon, a rat, and a monkey, along with his rhetorical comment that it did not matter which was which. (Worth noting is that Skinner immediately qualified the comment by acknowledging that experimenters need to make allowances for the way the organism comes into contact with the environment; thus, it clearly does matter which is which.) For radical behaviorists, explanatory scientific statements frequently involve abstractions. Abstractions are instances of verbal behavior predominantly under the control of a relatively limited subset of discriminative stimuli, even though other potential discriminative stimuli may be present. Under other circumstances, these stimuli would contribute to stimulus control over the verbal behavior in question (Skinner, 1957).

The verbal behavior in many explanatory statements for radical behaviorists, then, is under the discriminative control of the effects of environmental determinants of behavior, even though other factors could potentially contribute to an understanding of the behavior being explained. These other factors include "third variables," such as heredity, age, or special endocrine conditions, and indeed the very neurophysiology through whose functioning organisms are capable of behaving in context. As noted earlier, knowledge of these factors will make it easier to predict and control how an organism will respond when it does confront a given contingency. Occasionally, an explanation may more concretely incorporate these factors, but there is nothing inconsistent about this approach. When appropriate, the verbal statement simply is less abstract than otherwise. Nevertheless, the question of "What are the various aspects of the world to which an organism's body responds?" is not the same as the question of "How does an organism's body work when it responds to the various aspects of the world?" Although answers to both questions may well be relevant to predictions in a science of behavior, an answer to one question does not provide the same information about the control of behavior as an answer to the other.

Radical behaviorists do not deny that mentalists are able to accurately predict behavior. However, they do not concede that the mentalists' accurate predictions should be attributed to their mentalism as such. Rather, radical behaviorists argue that mentalists are at least partially and implicitly respon-

sive to the contingencies controlling the behavior about which the predictions are being made, even though mentalists claim not to be concerned with behavior at this level.

For instance, it would be churlish to suggest that in general, behaviorists could, on the spur of the moment, predict the results of most information-processing experiments better than cognitivists. That cognitivists can accurately predict the outcomes of their experiments is irrefutable evidence that they are interacting effectively with nature. Thus, the verbal behavior of cognitivists is at least partly occasioned by contingencies affecting their subjects. The contingencies may have existed prior to the experiment, or they may be implicit in the experimental procedure itself. In either case, the essence of the radical behaviorist argument is that cognitivists could predict the outcomes of their experiments *even more accurately* if they talked about events going on in their experiments more in terms of discriminative stimuli, responses, reinforcers, and contingencies, and less in terms of expectancies, representations, images, encoding, storage, retrieval, and other computer metaphors.

Summary and Conclusions

At issue are the factors that psychologists need to entertain in order to accurately manipulate, predict, control, or interpret behavior. Radical behaviorists argue that it is useful for psychologists to focus on contingencies. Information about internal factors, for example, how an organism's physiology has already been influenced by past stimulation, may be important because such information makes easier the job of predicting how an organism will respond when exposed to contingencies in the future.

The acknowledgement of this relevance of inner information does not grant privileged epistemological status to those internal factors, however. On the contrary, knowledge of contingencies is necessary to derive the relation among environmental events, the current physiological state of the organism, and subsequent behavior. In addition, there will always be a need to predict and control behavior through contingencies, in ways that do not depend on knowledge of the current physiological state of the organism.

Insofar as mentalism detracts from an analysis of contingencies, antimentalism is one of the principal features of the radical behaviorist approach. The radical behaviorist's enthusiastic embrace of particular modes of explanation, as well as what seems at times to be a nearly pathological concern with labeling any explanation that does not conform to these modes as an instance of creeping mentalism, no doubt owes some supplemental strength to John B. Watson's polemics, but its primary strength derives from the weight of the accumulated evidence. As Hineline (1984) has noted, what the behaviorist does works.

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