

Radical Behaviorism and the Subjective–Objective Distinction

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The distinction between subjective and objective domains is central to traditional psychology, including the various forms of mediational stimulus–organism–response neobehaviorism that treat the elements of a subjective domain as hypothetical constructs. Radical behaviorism has its own unique perspective on the subjective–objective distinction. For radical behaviorism, dichotomies between subjective and objective, knower and known, or observer and agent imply at most unique access to a part of the world, rather than dichotomous ontologies. This perspective leads to unique treatments of such important philosophical matters as (a) dispositions and (b) the difference between first- and third-person psychological sentences.

Key words: radical behaviorism, subjective, objective, dispositions, first- and third-person sentences, private events

Folk psychology is the name given to ordinary language in our culture concerned with the “mental.” It is not the technical language of the brain and the central nervous system. Rather, it is the everyday talk of wants, wishes, hopes, fears, beliefs, and intentions, where such talk is taken to identify entities and processes from a domain that is distinct from the domain in which behavior takes place.

The domain of these entities and processes is generally called the *subjective* domain. By tradition, it is the domain of unobservable immediate experience, personal consciousness, and the self as an agent. Importantly, knowledge of the entities and processes in this domain is regarded as necessary for a causal explanation in psychology. In contrast, the domain in which behavior takes place is generally called the *objective* domain. It is the domain of the material, physical, and publicly observable (see Moore, 1990,

for discussion of the possible origin of the distinction).

Behavior analysis has its own perspective on the nature of the subjective–objective distinction that is quite different from that of folk psychology (Day, 1980, p. 231; see also Hayes, 1984, p. 205). On the one hand, behavior analysis rejects many of the features of the subjective–objective distinction as embraced by folk psychology. On the other hand, behavior analysis does not simply ignore all talk of subjective phenomena. As Skinner (1978) said,

I am, of course, a radical behaviorist rather than a methodological behaviorist. I do not believe that there is a world of mentation or subjective experience that is being, or must be, ignored. (p. 124)

Indeed, behavior analysis has taken the lead in attempting to understand the actual circumstances under which subjective phenomena occur (Skinner, 1974, p. 229). The aim of the present paper, therefore, is to examine the subjective–objective distinction, so prominent in folk psychology, from the perspective of that noble viewpoint in contemporary psychology, behavior analysis.

THREE DIMENSIONS OF THE SUBJECTIVE–OBJECTIVE DISTINCTION

From a behavior-analytic point of view, the subjective–objective distinc-

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tion has three dimensions. One dimension relates to accessibility. Subjective might mean accessible to only one individual, whereas objective might mean accessible to two or more. Important questions then are, given that language is inherently a social activity, how might language concerning subjective phenomena be acquired and maintained when those phenomena are accessible to only one person, and what kind of issues are raised by the answer to this question? Skinner recognized these questions early on:

The only problem a science of behavior must solve in connection with subjectivism is in the verbal field. How can we account for the behavior of talking about mental events? The solution must be psychological . . . (Skinner, 1945, p. 294).

This perspective is especially interesting given the place of introspection in the history of psychology. From the standpoint of radical behaviorism, introspection need not be regarded as a method to identify nonphysical causes of behavior from another domain. Rather, introspection is an instance of verbal activity that is occasioned by certain antecedent circumstances and maintained by certain consequences. Introspection is itself a verbal activity that is just as worthy of analysis as any other behavioral phenomenon. Indeed, an adequate science of behavior needs to give an account of how introspection is possible (Skinner, 1945, p. 294; see also Moore, 1994).

A second dimension of the subjective-objective distinction is epistemological. On a behavior-analytic view, knowledge is simply a name for the capacity to act differentially with respect to one's environment. The capacity is established as different responses are selected in different circumstances. According to this position, subjective and objective imply nothing more than labels for two sorts of phenomena about which one can become knowledgeable. In particular, behavior analysis rejects the view of folk psychology, attributable perhaps to Descartes, that processes taking place in a subjec-

tive domain precede and create knowledge of an objective domain.

A third dimension relates to subjective and objective in the sense of personal and unique. Each individual has a unique genetic history. In addition, each individual has a unique history of interaction with the environment. Finally, each individual comes to a particular circumstance under particular motivating conditions. For instance, Leigland (1989, pp. 27–29) has offered an informed and useful review of the terms objective and subjective in this sense. Approaching the distinction from the perspective of verbal behavior, Leigland (1989) suggests that

verbal behavior is generally described as "objective" if the current discriminative stimulus control of the verbal behavior is strong relative to the effects of any specific establishing operation. (p. 28)

By extension, we can conclude that verbal behavior can be described as subjective if the current discriminative stimulus control of the verbal behavior is weak relative to the effects of any specific establishing operation. Note that Zuriff (1985), in his authoritative review of behaviorism as a philosophy of science, advocates an "objective" science of behavior. He states that

objectivity will be taken to mean simply that psychology should be independent of the individual prejudices, tastes, and private opinions of the scientist. Statements of findings and theories should therefore be as precise and unambiguous as possible so they are not subject to diverse individual interpretations. . . . Results of empirical methods are objective in that they are open to anyone's observation and do not depend on the subjective belief of the individual scientist. (Zuriff, 1985, p. 9)

In analyzing the subjective-objective distinction, the present paper will emphasize the first of these dimensions, although it will occasionally draw on the second and the third as necessary. We begin with the "behavioral revolution."

THE BEHAVIORAL REVOLUTION

The Two Phases of the Behavioral Revolution: Classical Stimulus–Response Behaviorism and Mediational Stimulus–Organism–Response Neobehaviorism

In the late 19th and early 20th centuries, first structuralism and then functionalism predominated in American psychology. Both movements took subjective phenomena as revealed through introspection as their subject matter. The “behavioral revolution” in psychology is sometimes credited with weakening, if not eliminating, the subjective–objective distinction taken for granted by structuralism and functionalism, but the matter is extremely complex.

As suggested elsewhere (Moore, 1987), the behavioral revolution may usefully be considered to have occurred in two distinct phases. The first phase began with Watson’s classical stimulus–response (S-R) behaviorism (Watson, 1913). Koch (1964) has noted that classical behaviorism’s emphasis on publicly observable variables made it “objective.” It emphasized S-R associations and learning. Although Watson was one of the most celebrated comparative psychologists of his time, he also emphasized environmentalism over nativism. In addition, he emphasized peripheral events within the body. There were no “centrally initiated processes” (Watson, 1913, p. 174) that were relevant to understanding behavior, and introspection as a method was certainly irrelevant to understanding behavior.

In any case, most scholars eventually judged classical S-R behaviorism to be inadequate to account for the whole range of human behavior. Stimuli and responses were not always correlated in the way that classical behaviorism required. In addition, classical behaviorism could not come up with an acceptable account of the use of

“subjective terms” (Skinner, 1945, p. 271).

Consequently, during the late 1920s and early 1930s, the behavioral revolution entered its second phase. This phase was characterized by the rise of mediational stimulus–organism–response (S-O-R) neobehaviorism. Mediational S-O-R neobehaviorists attempted to include “organismic” variables that mediated between stimulus and response, in an effort to account for the difficult problems that classical behaviorism could not satisfactorily explain (see discussion in Koch, 1964). An early proponent was Woodworth (1929), who sought to include such mediating variables as motives, response tendencies, and purposes. These variables, Woodworth believed, modulated the effects of prior, publicly observable stimuli. The era of “grand learning theories” saw the refinement and elaboration of further variables in the positions advocated by Tolman, Hull, and Spence.

Theoretical Terms

An important question for the mediational neobehaviorists was how to guarantee the meaning and scientific validity of the terms that they introduced. The answer was operationism. In its most general sense, operationism was the thesis that the meaning of abstract theoretical terms be tied to concrete operations performed by the scientist. Operationism was thought to provide a link between theoretical terms and the world at large, so that their applicability was assured. In short, the mediating variables of mediational neobehaviorism became designated as *theoretical terms*, which could then be operationally defined to make them scientifically respectable.

The matter of theoretical terms soon became controversial, however. For example, did all experimental psychologists use theoretical terms in the same way? In an influential treatment, MacCorquodale and Meehl (1948) suggested that psychologists in fact

used two sorts of theoretical terms. MacCorquodale and Meehl called one an "intervening variable" and the other a "hypothetical construct."

To be sure, there are many ways of characterizing the differences between intervening variables and hypothetical constructs. For example, Turner (1965, p. 259) organizes some 40 references into five groups, each of which is associated with a slightly different way of characterizing the differences (see also Zuriff, 1985, chap. 4 and p. 290). For present purposes, and recognizing that other ways of differentiating between the two sorts are possible, we regard intervening variables as theoretical terms that are exhaustively reducible to a set of publicly observable phenomena. They involve no hypothesis as to the existence of unobserved entities or the occurrence of other, unobserved processes. They have no surplus meaning, or meaning beyond the immediate observations from which they are derived. This interpretation is in keeping with the original sense of "operational definitions."

In contrast, we regard hypothetical constructs as theoretical terms that refer to a possibly existing, but at the moment unobserved, process or entity. If the existence of a process or entity is entertained, then presumably the process or entity has some other property as well; this property might be observed at some time in the future. Thus, because they are thought to refer to processes or entities that possibly exist, hypothetical constructs do allow surplus meaning, or meaning beyond the set of publicly observable phenomena from which they are derived (see Zuriff, 1985, pp. 72-73). MacCorquodale and Meehl (1948) argued that either sort of theoretical term was permissible, so long as the usage is consistent in a given theoretical statement.

In practice, the hypothetical construct interpretation came to predominate in theoretical psychology (Gergen, 1985; Tolman, 1949). Zuriff (1985, pp. 79-80, 85-90) mentions a variety of

examples that emerged as hypothetical constructs, such as mediating responses, hope, fear, attention, anticipatory set, and attitude. The critical issue was what else was implied by the surplus meaning of the hypothetical constructs. Skinner (1945), of course, objected to the entire orientation:

But by the time Bridgman's book was published, most of the early behaviorists, as well as those of us just coming along who claimed some systematic continuity, had begun to see that psychology actually did not require the redefinition of subjective concepts. The reinterpretation of an established set of explanatory fictions was not the way to secure the tools then needed for a scientific description of behavior. . . . There was no doubt that . . . subjective terms could be operationally defined. But such matters were of historical interest only. What was wanted was a fresh set of concepts derived from a direct analysis of the newly emphasized data. . . . [T]he position taken [was] merely that of "methodological" behaviorism. . . . This was never good behaviorism. . . . It is least objectionable to the subjectivist because it permits him to retain "experience" for purposes of self-enjoyment and "non-physicalistic" self-knowledge. The position is not genuinely operational because it shows an unwillingness to abandon fictions. (pp. 292-293)

In any case, as a result of treating subjective terms as hypothetical constructs, traditional psychology has never critically examined its doctrine of mutually exclusive subjective and objective domains. Instead, the matter has been insulated from critical analysis in traditional psychology, with the unfortunate result that the distinction has perpetuated itself in the discipline as a matter of ontology.

SKINNER'S RADICAL BEHAVIORISM

Skinner on Private Events

Skinner's radical or thoroughgoing behaviorism (Schneider & Morris, 1987; Skinner, 1945) is a form of neobehaviorism in the chronological sense that it arose at about the same time as did mediational neobehaviorism. However, its conceptual features differ markedly from the mediational neobehaviorism reviewed above (see Catania

& Harnad, 1988, for numerous examples of the differences).

One of the most noteworthy conceptual features of radical behaviorism is its doctrine on private events. Radical behaviorism engages the substance of phenomena that traditional forms of psychology label as subjective through its doctrine on private events. Let us now examine this doctrine.

For radical behaviorism, most of the variables with respect to which humans behave are publicly observable. However, not all the variables need be public. Some phenomena, accessible only to one person, may influence behavior in important ways. However, we need not assume that these private phenomena have any special properties, calling for any special analysis, simply because they are private. Skinner (1953) referred to the coming into contact with these phenomena as "private events." As events, they are occurrent and episodic in nature. The private phenomena with which we come into contact function as stimuli for subsequent behavior, both verbal and non-verbal.

From our own self-observation and from the verbal reports of others, we know that these private phenomena occur continuously in our lives. By definition, all of them are susceptible to being mentioned in verbal reports given by their hosts, but only a tiny fraction is ever reported. Two kinds of private phenomena are involved: (a) stimulation arising from processes in parts of the body other than the brain and central nervous system, and (b) covert behavior on the part of the individual that may or may not involve interoceptive or proprioceptive feedback from reduced or incipient movements (Moore, 1980).

These phenomena do not necessarily modulate all forms of overt activity. When they do play a functional role, that role can only be understood in light of the individual's past history of reinforcement. Nothing in their character as described in the verbal reports supports the view that they are quali-

tatively different from publicly observable behavioral events, of which they form an integral part. Their only distinctive feature is that, of the many events that take place within the individual's skin, they are the only ones whose occurrence the individual can report and to a limited extent describe (U. T. Place, personal communication, November 26, 1994). For radical behaviorism, then, dichotomies between subjective and objective, knower and known, or observer and agent imply at most unique access to a part of the world, rather than dichotomous ontologies.

What is the Nature of the Functional Relation Between Private, Subjective Phenomena and Subsequent Behavior?

One important question regarding private events is as follows: What is the nature of the functional relation between private events and subsequent behavior? We can consider the two sorts of private events, those related to private bodily conditions and those related to covert behavior, individually.

With regard to private bodily conditions, consider pain as an illustration. Pain is ordinarily a result of coming into contact with certain kinds of stimulation, which then create the bodily condition felt as pain. In broad terms, a causal explanation of behavior that appeals to pain is incomplete unless it specifies what caused the pain to begin with. Individuals ordinarily act to decrease pain, but they may not do so in the heat of battle, athletic competition, or other emergencies, when they may not even notice the pain until after some period of time has passed. Private events become involved when individuals learn to verbally describe the pains they feel with such terms as "piercing," "stabbing," or "excruciating." At issue is how they come to describe their pains using these terms and not others.

With regard to covert behavior, consider "thinking" as an illustration.

Thinking is “behaving which automatically affects the behavior and is reinforcing because it does so” (Skinner, 1957, p. 438). That is, thinking is acting in a way that produces stimuli that have some effect on the thinker and that are associated with subsequent reinforcement. Such behavior need not be private, nor is the subsequent response to the stimuli produced by the behavior necessarily private. From the perspective of radical behaviorism, thinking does not cause behavior in the sense that cause is used in folk psychology or in the traditional view. If one accepts folk psychology, at the very least one is left with the question of explaining where the thinking came from, and this question opens the door to dualism. As with the analysis of pain, radical behaviorism is concerned with “causation” in the sense of discriminative control, rather than in the sense of an initiating, efficient cause. Thus, Skinner used cause in a different sense here to allow for discriminative control by certain kinds of internal events:

[T]he private event is at best no more than a link in a causal chain, and it is usually not even that. We may think before we act in the sense that we may behave covertly before we behave overtly, but our action is not an “expression” of the covert response or the consequence of it. The two are simply attributable to the same variables. (Skinner, 1953, p. 279)

Thus, we have it that private, subjective phenomena are not autonomous causes. Typically, they are located in a matrix of causal circumstances. Some of these circumstances are accessible to more than one individual; others, such as private phenomena, are accessible to only one individual. In any case, the private phenomena do not explain behavior. Rather, they are additional behavioral phenomena to be explained.

Note especially that although radical behaviorism is willing to acknowledge the importance of private, subjective phenomena, it is not willing to accept as legitimate every “mental” or “subjective” term that folk psychology

happens to designate as an actual phenomenon. To the contrary, analysis of the usage of many of the subjective terms from folk psychology reveals that in many cases, they are inappropriate metaphors, cherished for reasons that are irrelevant and extraneous from a strict scientific perspective (Moore, 1990). They are not from a domain that is qualitatively distinct from the domain in which behavior takes place, because there is no such domain. For example, Skinner (1989, 1990) reviews the origins of numerous terms and suggests that many, particularly in cognitive psychology, are uncritically based on metaphors of storage and retrieval, internal determiners of behavior, and so on, none of which have a place in a science of behavior.

How Do Private, Subjective Phenomena Come to Exert Discriminative Control Over Subsequent Behavior, Including Verbal Behavior?

A second important question regarding private events is as follows: How do private, subjective phenomena come to exert discriminative control over subsequent behavior, including the verbal behavior that describes them? Let us now consider this question.

As operant behavior, verbal behavior presumably develops through differential reinforcement supplied by the verbal community, even when the verbal behavior is occasioned by private stimuli. In his initial rhetorical treatment of the question, Skinner (1945) then asked whether such a position is tenable, given that the verbal community operates under a handicap. That is, in the case of verbal behavior under the discriminative control of private phenomena, such as introspections and verbal reports, the requisite differential reinforcement must come from the verbal community. However, the verbal community cannot administer differential reinforcement if important aspects of the contingency are private. In

the two passages below, Skinner acknowledged that the verbal community does not have contact with the pattern of private stimuli appropriate to reinforcement or lack of reinforcement, and consequently has some difficulty with administering the requisite differential reinforcement:

There is apparently no way of basing a response entirely upon the private part of a complex of stimuli. *A differential reinforcement cannot be made contingent upon the property of privacy.* This fact is of extraordinary importance in evaluating psychological terms. (Skinner, 1945, p. 275, emphasis in the original)

A world of experience which is by definition available only to the individual, wholly without public accompaniment, could never become the discriminative occasion for self-description. (Skinner, 1953, p. 280)

The problem is roughly the same as if the verbal community was trying to teach a child to identify and label colors, but the members of the verbal community were blindfolded. If the child says "red," the verbal community does not know if the child is actually in the presence of a red object. Consequently, the verbal community does not have access to the private phenomena, and cannot use them to determine whether it is appropriate to deliver the necessary reinforcement. Nevertheless, Skinner (1945) continued, the responses do seem to develop:

There is, of course, no question of whether responses to private stimuli are possible. They occur commonly enough and must be accounted for. But why do they occur, and what, if any, are their distinguishing characteristics? (p. 273)

Skinner concluded that an analysis of verbal behavior in terms of antecedents, consequences, and contingencies, where some of the antecedents may be private, is nevertheless tenable. In brief, he argued that the necessary differential reinforcement is originally administered on the basis of public features and may even include publicly observable behavior. However, after the verbal behavior is established, stimulus control is transferred to the private stimuli. At the end of the process, private stimuli come to control

the behavior, so that in any given instance, talk of the subjective or private phenomenon is controlled only partially, if at all, by publicly observable behavior. For example, in recent commentary (Catania & Harnad, 1988), Skinner stated

When a person says, "My tooth aches," stimulation from the tooth is in control, but it does not "elicit" the response as in a reflex. . . . [A] cry of pain or a hand to the jaw . . . play no part at the time. They were important to the verbal community in setting up the response at some earlier date, but this instance of the response is now under the control of private stimulation. (pp. 186–187)

Skinner (1945, pp. 273–274) suggested at least four ways in which a verbal response comes under the discriminative control of a private phenomenon. The first three concern the labeling of internal states and events. In the first two of these, the role of the verbal community in establishing the response is critical. In the third, the response is established through the action of the verbal community and then transfers to a private phenomenon through stimulus generalization without any explicit mediation by the verbal community. The fourth concerns the development of discriminative control by covert behavior, which occurs again through stimulus generalization without any explicit mediation by the verbal community.

In the first way, the verbal community may administer differential reinforcement based on a "public accompaniment." For example, suppose some object forcefully strikes an individual (the public accompaniment). The striking generates a private condition felt as pain. The verbal community may then reinforce use of the term *pain* in connection with this state of affairs, for example, by instructing the individual to report the presence of pain. In the future, the individual may speak of being in pain on the basis of the private condition, even without the public accompaniment.

In the second way, the verbal community may administer differential re-

inforcement based on a "collateral response." For example, suppose an individual holds some part of the body that is inflamed or that has suffered tissue damage (the collateral response). The inflammation or tissue damage generates a private condition felt as pain. As before, the verbal community may then reinforce use of the term *pain* in connection with this state of affairs, for example, by instructing the individual to report the presence of pain. In the future, the individual may speak of being in pain on the basis of the private phenomenon, even without the collateral response.

In the third way, the private phenomenon may come to exert control by virtue of stimulus generalization or metaphorical extension from public to private stimuli. For example, suppose an individual has learned to use the term *fluttering* when a butterfly brushes against the skin, through the first of the ways described above. In the future, the individual may speak of "butterflies in the stomach," presumably on the basis of the metaphorical extension of the private phenomenon called "fluttering" (e.g., via its intermittent, temporal qualities), and then the further association with butterflies, even though no butterflies are literally in the abdomen.

The fourth way relates to discriminative control exerted by private phenomena that take the form of covert behavior, rather than by private phenomena that take the form of internal states or events. In the fourth way, covert behavior may come to exert control by virtue of the stimulus control shared between public and private stimuli as a response is executed. For example, suppose an individual engages in some temporally segmented form of behavior that has both overt and covert components, as in solving a problem. Ordinarily, the overt components will exert stimulus control during the process. However, the covert components will acquire some measure of stimulus control because they are present as well. In the future, if the public

stimuli that occasion the overt response are inadequate (e.g., by being too weak), the individual may engage in the covert behavior and still solve the problem. That is, something goes on covertly that is a component of that which goes on overtly when the act is ordinarily carried out. The stimulus control is exerted via the private components, through interoceptive and proprioceptive systems.

As seen from the examples given above, some forms of private, subjective phenomena are themselves covert behavior, including covert verbal behavior. In many cases, covert behavior was acquired in its overt form. The behavior then receded to the private form where, as private stimulation, it then joins with other stimuli to form a complex of controlling stimuli. The private stimuli gain control via the fourth way identified above. Such control is by no means inevitable, any more than control by a given public stimulus is inevitable. Again, the control exerted by this verbal behavior does not differ from that which would develop if the same verbal behavior arose as a public event.

Why should public behavior recede to the covert form (Skinner, 1957, pp. 434 ff.)? One possibility is that the public form is punished. Individuals are often encouraged to read silently when they are bothersome to others around them. A second possibility is that the environment contains only some portion of the discriminative stimuli that ordinarily occasion the response in its public form, thereby making the behavior weak. A third possibility is that the behavior is faster and less troublesome in a covert form, particularly when the behavior is in its inchoate or incipient stages. A common example involving all three processes is when individuals attempt to solve a difficult problem. In a public setting, they might try to solve the problem privately "in their heads." However, when the individuals are alone, the accompanying verbal behavior might reemerge in an overt form, and they

might begin to talk out loud during the attempt to solve the problem.

Private Events As Inferences

Radical behaviorists start by recognizing that some set of contingencies acts on speakers to emit verbal responses in the way that they do. The statements may be classified according to the contingencies that control those statements. On the one hand, such statements are called *first-person reports* if the statements are under the discriminative control of an internal condition of the body. On the other hand, the speaker might be just saying something to evoke attention, as in hypochondria and malingering. Perhaps the statements are then only attempts to solicit attention. The statements could also be under the control of other variables, with corresponding contingencies. At issue is the set of conditions that controls a given statement, rather than its grammatical and syntactical form.

Which of these interpretations is a listener to make of the speaker's statement? That question is different. That question is about the discriminative control of the listener's behavior, not the speaker's. Contingencies affecting the speaker are not the same as contingencies affecting the listener, and one set of contingencies cannot be reduced to the other.

For example, consider Skinner's reply to commentary in Catania and Harnad (1988). Skinner stated that

the practice of the verbal community is to infer the private event in arranging instructional contingencies, but the person who thereby learns to describe the event is responding to it directly, not by inference. (Catania & Harnad, 1988, p. 217)

Clearly, Skinner acknowledged that listeners must infer the existence of private phenomena, such as aches and pains, in others (e.g., "In studying behavior we may have to deal with the stimulation from a tooth as an inference rather than as a directly observable fact," Skinner, 1953, p. 258). Skin-

ner similarly acknowledged that reports of private phenomena in others may be unreliable. Speakers may be influenced by conflicting motivation and may consequently engage in fictional distortions, as in rationalizing (Skinner, 1945, p. 275). There are also limitations on establishing the discriminations, both (a) because we do not have nerves going to the right places to mediate contact with the relevant phenomena within the skin, and (b) because the verbal community does not have direct contact with the necessary discriminative stimuli and consequently cannot differentially reinforce a verbal response with the requisite precision.

However, these concerns do not imply that private events must be regarded as nothing but inferred, hypothetical constructs (cf. Zuriff, 1979, 1985). As Skinner stated explicitly above when he said that individuals respond directly to private events, they are not inferred as far as the individual is concerned. If they are not inferred for the individual, we need not designate them as wholly speculative, inferred entities as far as science is concerned.

Importantly, then, actors' private events are no inference for the actors. Actors could arrive at a prediction or an explanation of behavior that involved their own private events and that was valid from a scientific point of view. Observers would have to infer any private events on the part of the actors, but that is a problem for the observers, not the actors. The problem for the actors is to propose some plausible account of how the private events can come to influence their behavior, as in Skinner (1945).

In any case, the scientific validity of a phenomenon need not be determined by whether two persons can come into contact with the phenomenon. Rather, its validity is determined by whether one person can come into contact with it. Ultimately, the phenomenon might be available to others, for example, through technological improvement. Biofeedback procedures are a step in

that direction. In any case, the skin is not that important as a boundary. An adequate science of behavior must still explain how private phenomena influence individuals in their everyday lives, without instrumental invasion (Skinner, 1953).

DISPOSITIONS

Dispositions and the Private Language Argument

In general terms, a disposition is regarded as some physical property, inherent in an object, by virtue of which a given set of circumstances is likely to cause some event to take place concerning that object (Quine, 1974, p. 8). For example, one might attribute the disposition of "solubility" to a sugar cube when placing the sugar cube in water causes the sugar cube to dissolve, and the disposition of "brittleness" to glass when throwing a rock at the glass causes the glass to break. Looked at one way, dispositions are physical states of affairs, such as specific though probably unspecified arrangements in the microstructure (Quine, 1974, p. 13). Looked at another way, dispositions are conditional probabilities, that is, publicly observable symptoms of the property that are liable to obtain in particular circumstances (Hocutt, 1985, p. 93).

Dispositional analyses have a long history in philosophical psychology. Early logical positivist philosophers, such as Carl Hempel (1935/1949), attempted to make sense out of the "mental," subjective language that prevailed in psychology during the early part of the century. They felt that they could best do so by relating that language to dispositions, which were then defined in terms of publicly observable phenomena. This movement gained the name *logical behaviorism*. On this view, to attribute "mental" properties to a state of mind or trait of character was unacceptable in a scientific statement because the mental properties were not publicly observable and therefore were not scientific.

Logical behaviorists argued instead that to attribute a state of mind or trait of character to individuals is to say that their bodies are in a condition that disposes them to behave in a particular way. The condition of the body could then be detected, at least in principle, through such publicly observable measures as pointer or meter readings. Thus, logical positivists argued that statements invoking states of mind or traits of character can be translated without remainder into statements about physical conditions that prevail within the body, which then may be correlated with subsequent behavior (Hocutt, 1985, p. 88).

The literature on dispositional analyses in philosophical psychology is enormous, and justice cannot be done to that literature in this brief space. Suffice it to say that its strongest representation is in analytic philosophy, particularly associated with the work of Austin (1961) and Ryle (1949), with some of the insights having been anticipated by Wittgenstein (1953). However, analytic philosophy takes a slightly different approach than did such early logical positivists as Hempel (see discussions in Miles, 1994, and Schnaitter, 1985). For example, analytic philosophy is more concerned with a "conceptual analysis" of language in use, and of the precise circumstances in which particular combinations of words are uttered, than with pointer or meter readings. A conceptual analysis is carried out by substituting words that are supposed to be of the same logical type. If the words are indeed of the same logical type, then they ought to function equivalently in the same context. If they do not so function, then they are not of the same type, and knowledge claims involving these words can be rejected. Ryle's (1949) attempts to reveal "category mistakes" followed this line of reasoning. In a well-known example, suppose an individual visited a university and was shown classrooms, laboratories, the library, and so on. Suppose that the individual then asked to see "the univer-

sity.” In so doing, the individual would have made a category mistake, by treating “the university” as an instance of the same category as classrooms, libraries, and laboratories, when it is of a different type (see other examples in Schnaitter, 1985, p. 146). On the basis of such conceptual analyses, analytic philosophers argue that folk psychology makes a category mistake when so-called mental words are used to imply special phenomena taking place in a special domain apart from the behavioral world. Analytic philosophers argue that such words actually relate to the probability of engaging in publicly observable behavior.

In any case, as suggested above, an important concern in dispositional analyses is how language designating so-called mental phenomena is meaningful. Wittgenstein’s (1953, paragraph 242 ff.) argument against the possibility of “private language” illustrates some of the important epistemological issues involved. The argument is a kind of *reductio ad absurdum* that attempts to rebut folk psychology and the traditional view, and begins as follows. Suppose we believe that language is the sort of phenomenon in which all statements that speakers make, including verbal reports of internal sensations, are construed as “observations” of their own private sensory experiences. If so, then the language in which those statements are formulated must consist of words that derive their meaning from private processes in which speakers resolve to use a particular word to denote a kind of experience that they are currently undergoing. However, as Wittgenstein pointed out, no other person can then learn the meaning of words that derive their meaning in this way, because no one other than the individual concerned can have the experiences to which a particular name has been assigned. The implication is that there is no possible way in which such private “observation” sentences could provide the meaning of statements about private phenomena, and that language

cannot be generally construed as a phenomenon in which individuals are presumed to be observing their own subjective sensory experiences (see also important discussion in Place, 1993, pp. 28–29; Zuriff, 1979, pp. 128–131). Thus, the account on which folk psychology and the traditional view rests is not tenable. The alternative is that even subjective words derive their meaning from their relation to publicly observable phenomena.

An important consideration now is: How far can one extend the interpretation that the meaning of subjective terms is derived from publicly observable phenomena? For example, what do individuals mean when they say they are in pain? Is it the case that subjective or mental terms are meaningful only to the extent that they refer to the public circumstances, such as publicly observable behavior? Is it the case that speakers reporting they are in pain mean only that they have a disposition to engage in publicly observable pain behavior, such as moaning and groaning, and not that they are experiencing some kind of private sensation, because there is no basis for the putative private meaning of the term? Whether anyone has ever held such an extreme position is not clear, but is it even a defensible position to hold?

Radical Behaviorist Interpretation of Dispositional Analyses

Skinner’s position is often held to be a somewhat odd and not particularly well-developed version of a dispositional approach, but is it really? To be certain, Skinner did talk about verbal behavior as operant behavior, so in a sense his position does involve a concern with language and the circumstances in which it is used. Indeed, as operant behavior, the verbal behavior does depend on reinforcement from “outside.” In addition, on Skinner’s view, publicly observable phenomena do in fact occasion many terms taken to refer to “mental” items.

However, not all mental terms are

occasioned by publicly observable phenomena. For example, bodily sensation words are not. In an earlier section, I outlined how Skinner conceived of the processes pertaining to the development of control of both bodily sensations and covert behavior. Skinner talks of what is in control of speakers' verbal behavior when they say they have a pain. In responding to one commentator in Catania and Harnad (1988), Skinner clearly indicates that a private stimulus at least partially controls the response when speakers talk about those conditions:

[The commentator] evidently uses the term "toothache" for all behavior elicited or evoked by a carious tooth, where I was using it to mean only the stimulation arising from such a tooth. He also speaks of thoughts, feelings, and other mental events and argues that they must be . . . [overt, publicly observable instances of operant behavior] because they have "no apparent external antecedent stimulus" [that can be said by the laws of the reflex to elicit them in the sense of a respondent]. But one point of "Terms" was that a substantial amount of behavior that would be called operant was indeed under the control of private stimuli; that was the problem I was discussing.

I do not see why it follows from the fact that "in teaching people to use the mentalistic vocabulary, it must be overt behavior that society observes and then rewards or punishes" that "a person who uses that vocabulary to refer to private events must be using it incorrectly." To the extent the private event correlates with the public evidence, terms will be used correctly. (pp. 201–202)

The conclusion is that when verbal behavior is emitted by the competent user in customary circumstances, publicly observable phenomena are not the only source of control over the verbal behavior.

By themselves, of course, dispositions are perfectly reasonable descriptive terms relating to the strength of a response ("A disposition to perform behavior is not an intervening variable; it is a probability of behaving"; reply by Skinner in Catania & Harnad, 1988, p. 360). To say that individual W "believes" X is the case is presumably to say that W is disposed to state, or has a high probability of stating, that X is the case, of acting in ways consistent

with X being the case, and so on. This probability is itself a function of various conditions, such as the precision of discriminative stimulus control, the certainty of reinforcement, and so on. As suggested in Skinner's quote above, certain conditions contribute to the establishment of the disposition in the first place. Therefore, dispositional analyses are sometimes useful in countering mentalistic explanations of behavior. Skinner (1953) acknowledged this form of analysis when he suggested that "An angry man, like a hungry man, shows a disposition to act in a certain way" (p. 168).

However, a problem arises when a causal explanation of behavior is sought. If dispositions are used in causal explanations, they either become mentalistic causes in their own right (as in, "He acted *because* of his beliefs"; see discussion in Schnaitter, 1985, pp. 146–147), or else they become treated as another sort of theoretical term, as they did eventually for Carnap (1956). Thus, dispositions are not spatiotemporal elements that are themselves manipulated in any direct, pragmatic sense of a functional relation. Consequently, analyses couched in terms of dispositions may obscure more pragmatic concerns with the spatiotemporal elements that participate in contingencies, with respect to which the causal explanation is more properly sought. Behavior analysts find fault with Ryle's (1949) view that "the explanation is not of the type 'the glass broke because a stone hit it,' but more nearly of the different type 'the glass broke when the stone hit it, because it was brittle' " (p. 50). Behavior analysts suggest that the statement ought more properly to take the form, "What caused the glass to break, *given that the glass was brittle*, was being hit by the stone." This locution has the virtue of identifying the cause of the glass's being brittle as its molecular structure or the manufacturing processes that are responsible for that structure. It then identifies the cause of its breaking as being hit by the stone (see the example

of magnetism in Hocutt, 1985, pp. 93–94).

FIRST-PERSON VERSUS THIRD-PERSON PSYCHOLOGICAL SENTENCES

The Issue of Stimulus Control

The philosophical literature contains many discussions of the distinction between first-person psychological sentences, such as “I am in pain,” and third-person psychological sentences, such as “Individual X is in pain.” The distinction is important if one assumes (a) that language is generally a process of commenting on some observed state of affairs, in both first- and third-person instances, and (b) that whether the language is meaningful is determined by verifying the content of an utterance through one or another kind of test. The usual outcome of these discussions is that a verificationist treatment of first-person statements is rejected, and rightly so. Speakers might well describe or observe that others are in pain, but when they state that they themselves are in pain, the statement is not usually regarded as a description or observation that then has to be verified in the same sense. An individual’s sense of being in pain is immediately apparent, and is not something that has to be verified. Thus, different principles are taken to apply to first- and third-person reports, and an “asymmetry” is said to exist.

The entire matter is clarified by the radical behaviorist perspective. The question becomes: What is in control of the speaker’s verbal behavior? First-person statements are at least partially under the control of private stimuli, such as bodily states and conditions. The process by which such statements come under this sort of control, given the handicap posed by the private nature of the stimuli, has been reviewed above. Third-person statements are predominantly under the control of public stimuli, such as whether the observed individual is moaning, groan-

ing, and holding areas of the body that have just suffered tissue damage. The asymmetry lies in the stimulus control over the verbal behavior. The principles of operant behavior apply to all forms of verbal behavior, regardless of whether the verbal behavior assumes the syntactical and grammatical form called first person or third person. The verbal behavior is occasioned by certain discriminative stimuli and is reinforced by certain consequences. There is no problem of the reference of the speaker’s utterance, or of the speaker expressing some meaning or content that is communicated from the mind of the speaker to the mind of the listener and that is capable of verification by one kind or another of test, irrespective of whether the statement is in the first person or the third person. That is not the kind of phenomenon that verbal behavior is. We do not say that a rat’s lever press “refers” to something else, or that the rat “uses” the lever press to “express” some “meaning,” or that the lever press has some “content” that is capable of verification by one kind or another of test, and we should not do so when dealing with verbal behavior. As Skinner (1974) said,

One of the unfortunate implications of communication theory is that the meanings for speaker and listener are the same, that something is made common to both of them, that the speaker conveys an idea or meaning, transmits information, or imparts knowledge, as if his mental possessions then become the mental possessions of the listener. There are no meanings which are the same in the speaker and listener. Meanings are not independent entities. (p. 95)

On this view, what specifically is the meaning of “meaning” for behavior analysts? In brief, behavior analysts are concerned with two senses of the term *meaning*. The first sense is meaning for the speaker. The second sense is meaning for the listener. Let us continue our interpretation by addressing both senses of the term.

Meaning for the Speaker

Meaning for the speaker is a matter of the contingencies, particularly the

discriminative stimuli in those contingencies, that control the emission of the utterance. What then is the meaning for the speaker of first-person psychological sentences, such as "I am in pain"? Presumably, speakers who report themselves to be in pain can, and often do, mean they are being stimulated by conditions called painful. These conditions may not be accessible to anyone else. As we have seen, their meaning when saying they are in pain is not restricted to an enhanced probability of moaning and groaning.

What then is the meaning for the speaker of third-person psychological sentences, such as "Individual X is in pain"? For third-person psychological sentences, speakers who report others to be in pain are obviously not in contact with the private conditions stimulating those other persons. What occasions their verbal response? Presumably, it is some set of publicly observable circumstances, such as moaning and groaning, and maybe even more.

Meaning for the Listener

Recall that meaning for the listener is a matter of the contingencies into which an utterance subsequently enters, as the utterance exerts a discriminative function. The utterance is essentially one form or another of discriminative stimulus for the listener, and guides the subsequent behavior of the listener, mediating some subsequent form of reinforcement for the speaker.

What is the meaning for a listener of a first-person psychological sentence, for example, when the listener hears someone say, "I am in pain"? Wittgenstein (1953) talked about first-person subjective reports as being the "criteria" for the ascription of a subjective term, such as being in pain. On a radical behaviorist interpretation, such a position relates to meaning from the point of view of the listener. Listeners interact with and receive subsequent reinforcers from speakers. Pain statements function as criteria, or dis-

criminative stimuli, that in conjunction with other factors, occasion some behavior from the listener that is in turn reinforced via the speaker according to the conventional practices of the verbal community. Thus, listeners who hear speakers report that they are in pain will typically receive reinforcement for administering care to those speakers (for further discussion of the behavior of the listener, see Stemmer, 1992). The presence of the statement is one criterion, or discriminative stimulus, for administering the care. There may well be other criteria that are applicable. For that matter, the speaker may be deceiving the listener and exaggerating or simply soliciting attention, as in hypochondria or malingering. Thus, there is no necessary connection between a simple statement of being in pain and other correlates.

What is the meaning for the listener of a third-person psychological sentence, for example, when the listener hears someone say, "Individual X is in pain"? A speaker is reporting to the listener that another individual is suffering from a particular state of affairs. The meaning for the listener is that the listener is well advised to refrain from some actions, such as antagonizing the individual, that will engender behavior by the individual that could conceivably be aversive or punishing to the listener. Similarly, the listener is well advised to engage in other actions, such as administering care to the individual, that will engender behavior by the individual that is reinforcing to the listener.

In summary, meaning for the speaker is not the same thing as meaning for the listener. Some set of contingencies acts on speakers to emit terms, even subjective terms, as they do. Meaning for the speaker is a matter of those contingencies.

Once emitted, the utterance then enters into another set of contingencies that affects the behavior of the listener, for example, by alerting the listener to a situation in which behaving in certain ways is liable to have certain conse-

quences. Meaning for the listener is a matter of this second set of contingencies, particularly of their discriminative functions. In no case is a common content communicated between speaker and listener, especially when subjective terms are involved. Consequently, no attention needs to be devoted to dealing with the referent for subjective terms, or with what subjective terms connote or denote. To so regard the problem is to misformulate the nature of language in general and its relation to private, subjective phenomena in particular.

SUMMARY

Despite the many claims to the contrary because of Watson's (1913) manifesto, such nominally subjective phenomena as consciousness, introspection, and awareness have long been a source of concern to behaviorists. Skinner (1974) posed the essential question in the following way: "What is inside the skin, and how do we know about it? The answer is, I believe, the heart of radical behaviorism" (p. 218).

Skinner's particular concern was the assumption that we have privileged, incorrigible knowledge of a subjective domain that is qualitatively distinct from an objective domain. That assumption, attributable in many instances to Descartes, is comprehensively mentalistic. It assumes a superordinate "mind" that possesses the requisite sort of knowledge and initiates action, including speaking about the subjective phenomena. Indeed, being against this kind of mentalism is a major part of what Skinner's radical behaviorism is all about.

Nevertheless, Skinner (1974) stated that "It would be foolish to rule out the knowledge a person has of his current condition or the uses to which it may be put" (p. 215). One important question is: What kind of organisms are humans, such that they can report about phenomena that aren't accessible to anyone else? A second important ques-

tion is: What processes are involved in the emission of such reports?

Skinner (1945) proposed that "being conscious, as a form of reacting to one's own behavior, is a social product" (p. 277; see also Catania & Harnad, 1988, pp. 150-217). He further outlined the process by which we are able to do so. On this view, our knowledge of the subjective derives from our interaction with others. This position differs substantially from the traditional position, which holds that knowledge of the subjective is a precondition for understanding behavior.

The differences with respect to traditional psychology are far reaching. Suppose we have three classes of variables. The first consists of *fictitious* variables. These variables are not accessible to anyone, even in principle. The second consists of *private* variables. These variables are accessible only to one person. The third consists of *public* variables. These variables are accessible to two or more persons. At issue is where to draw the line separating variables that are scientifically valid from those that are not. Traditional psychology draws the line between the second and third, because only the third is publicly observable. Traditional psychology then tries to bring the second to the other side of the line, and to incorporate elements from a subjective dimension into a science of behavior, by going the route of hypothetical constructs, operational definitions, and so on. Whether this strategy actually succeeds in dissociating the first from the second is an open question.

Radical behaviorism draws the line for scientific validity between the first and second, because it regards the second and third as equally valid. For example, both are phenomena that have a physiological basis. Indeed, one wouldn't want to accept that any behavioral event had transpired, public or private, if no physiological process had transpired. Knowledge of the physiology will add to the stimulus control over verbal behavior concerned with

the second class of variables (see Skinner, 1957, p. 425, on confirmation). Thus, Skinner's acceptance of the scientific validity of the second class of variables is a significant feature of his position, despite his ostensible concern with observability and manipulable independent variables. Indeed, drawing the line between the second and third is the very essence of methodological behaviorism. Of course, the radical behaviorist must still be able to explain how the individual comes to speak of fictitious events, which are not observable to anyone, even in principle. This matter has been addressed elsewhere (Moore, 1990; Skinner, 1989, 1990).

In any case, we are just beginning to realize the implications of Skinner's (1974) suggestion that "behaviorism calls for probably the most drastic change ever proposed in our way of thinking about man. It is almost literally a matter of turning the explanation of behavior inside out" (p. 256). Ironically, when compared with traditional psychology, the possibilities for expanding our self-awareness appear promising indeed.

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