

## ON PSYCHOLOGICAL TERMS THAT APPEAL TO THE MENTAL

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**ABSTRACT:** A persistent challenge for nominally behavioral viewpoints in philosophical psychology is how to make sense of psychological terms that appeal to the mental. Two such viewpoints, logical behaviorism and conceptual analysis, hold that psychological terms appealing to the mental must be taken to mean (i.e., refer to) something that is publicly observable, such as underlying physiological states, publicly observable behavior, or dispositions to engage in publicly observable behavior, rather than mental events per se. However, they do so for slightly different reasons. A third viewpoint, behavior analysis, agrees that (a) some terms are functionally related to (i.e., occasioned by) the link between publicly observable behavior and publicly observable features of the environment, (b) some terms are dispositional, and (c) a purely private language could not arise. However, behavior analysis also recognizes that some psychological terms relate to private behavioral events, such as occur when speakers report internal sensations or engage in covert behavior.

*Key words:* conceptual analysis, behavior analysis, logical behaviorism, Ryle, Place, Skinner, private events.

The purpose of the present article is to critically examine how nominally behavioral viewpoints make sense of psychological terms that appeal to the mental.

We begin with two viewpoints in philosophical psychology: logical behaviorism and conceptual analysis. Logical behaviorism is a viewpoint that grew out of the logical positivist application of the principles of verificationism and physicalism to psychology, beginning in the 1930s. In its simplest form, logical behaviorism holds that terms in psychology can't be taken to refer to mental phenomena per se because the mental phenomena aren't directly, publicly observable. Consequently, they can't be measured using the instruments of physics for purposes of verification. Therefore, logical behaviorism advocates the semantic thesis that psychological terms must be taken to refer to either (a) publicly observable behavior, (b) physiological states correlated with publicly observable behavior, or (c) dispositions to engage in publicly observable behavior, so that the

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**AUTHOR'S NOTE:** I thank A. C. Catania for helpful comments on an earlier draft. A related version of this article appears in *The European Journal of Behavior Analysis*. Portions of this article were presented at the conventions of the Behavior Analysis Association of Michigan, Ypsilanti, MI, in March 2000 and the Association for Behavior Analysis, Washington, DC, in May 2000. This article is dedicated to the memory of U. T. Place, who listened patiently and encouraged me to develop many of the ideas herein. Please address all correspondence to J. Moore, Ph. D., Department of Psychology, University of Wisconsin-Milwaukee, Milwaukee, WI 53201. Email: jcm@uwm.edu.

referents can be verified (e.g., Carnap, 1932-1933/1959, pp. 166, 167, 186; Hempel, 1935/1949, p. 18; Kitchener, 1999).

Conceptual analysis is a viewpoint that is largely British in origin. It was influenced significantly by logical positivism in the 1930s and 1940s, although it came to depart from logical positivism in certain ways as it evolved. It is principally concerned with clarifying and sharpening the meaning of ordinary language and correcting misuses of it, though this process may well reveal theories underlying our use of language (Lyons, 1980, p. 12). For conceptual analysis, the important activity consists in mapping the “logical geography” of any concept. Mental concepts in psychology are a special concern. As did the logical behaviorism, conceptual analysis advocates the semantic thesis that mental terms should be taken to refer to either publicly observable behavior or dispositions to engage in publicly observable behavior. Mental terms do not reflect the Cartesian, solipsistic perspective of language based on a myth of a “ghost in a machine.” According to this myth, mental terms are presumed to be based on the “observation” of events in a mental, subjective dimension. However, whereas the logical positivists held their position because of a commitment to physicalism and establishing truth by agreement, conceptual analysts such as Ryle and Austin held the position for either or both of two different reasons.

The first reason is that to accept this Cartesian, solipsistic model of language constitutes a “category mistake” (Ryle, 1949). The second is that to accept this solipsistic model constitutes an acceptance of the possibility that individuals must have developed a private language that they use to describe their own privately registered experiences; Wittgenstein (1953/1973) argued against the possibility of a purely private language arising in this sense. These arguments are available elsewhere and need not be reviewed here. In sum, whereas logical behaviorism was a semantic thesis about how to unambiguously verify the meaning of psychological terms referring to the mental by identifying the physical evidence, conceptual analysis was a semantic thesis about how to unambiguously establish the usage of psychological terms referring to the mental by identifying the criteria for their correct application.

In part because of the influence of logical behaviorism and conceptual analysis, many scholars take the very definition of behaviorism to entail the rendering of the mental in terms of publicly observable behavior or dispositions to behave. For example, Fodor (1968) writes as follows:

To qualify as a behaviorist in the broad sense of that term that I shall employ, one need only believe that the following proposition expresses a necessary truth: For each mental predicate that can be employed in a psychological explanation, there must be at least one description of [publicly observable] behavior to which it bears a logical connection. . . . A mentalist is, then, simply someone who denies “necessarily P.” . . . The distinction between mentalism and behaviorism is both exclusive and exhaustive. (pp. 51, 55)

In any event, an important consideration now is, how far can one extend the interpretation that subjective terms really refer to publicly observable phenomena?

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For example, when speakers report they are in pain, are they really reporting that they are disposed to engage in publicly observable pain behavior, such as moaning and groaning? When listeners pity a man for having a toothache, are they really pitying him for putting his hand to his cheek (Luckhardt, 1983)? Similarly, when speakers report they are thinking, are they reporting a nonevent? Whether anyone has ever held such an extreme position is not clear, but is it even a defensible position to hold? Interestingly, these questions now bring us to how the behavior analysis of B. F. Skinner approaches the question of psychological terms that appeal to the mental.

### **Behavior Analysis**

The behavior analysis of B. F. Skinner is a science of behavior, rather than exclusively a philosophical viewpoint, although it is informed by its own brand of philosophy: radical behaviorism. Many writers lump behavior analysis with logical behaviorism and conceptual analysis, assuming that it shares its defining features with these other forms by virtue of the common appellation “behaviorism.” In actuality, behavior analysis differs appreciably from them (Moore, 1999; Schnaitter, 1984, 1999). One of the principal features that distinguishes behavior analysis from logical behaviorism and conceptual analysis is its conception of “private events,” which bears directly on the issue of psychological terms that appeal to the mental. Let us now examine this conception (e.g., Moore, 1990, 1995, pp. 37-41).

#### ***Behavior Analysis and Private Events***

For behavior analysis, 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 these private phenomena have any special properties, calling for any special analysis, simply because they are not accessible to more than one person. Skinner (1953, chap. 17) referred to the functional influence of these phenomena as “private events.” As events, they are occurrent and episodic in nature. Moore (1980, 1995) divided them into two sorts of functional influences: (a) that of stimulation arising from processes and sensations within the body and (b) that of covert behavior. These private 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. To be sure, many events take place within an individual’s skin, but the ones at issue here are the ones whose occurrence the individual can report and to a limited extent describe (U. T. Place, personal communication, November 26, 1994). For behavior analysis, 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.

***How do Private, Subjective Phenomena Influence Subsequent Behavior?***

How then do private events influence subsequent behavior? Let us consider individually the two sorts of private events: (a) those functionally related to private bodily conditions and (b) those functionally related to covert behavior.

**Private Bodily Conditions.** With regard to private bodily conditions, consider pain as an illustration. Pain is ordinarily a result of coming into contact with certain kinds of exteroceptive stimulation, which then creates the bodily condition that occasions the use of the term “pain.” In general terms, a causal explanation of behavior that appeals to the motivating properties of pain is incomplete unless it specifies what caused the pain to begin with. Individuals ordinarily act to decrease pain, but they may not even report they are in pain, given such reason to do so as significant injury, if they are in the heat of battle, athletic competition, or beset by some other emergency. They may only report the pain after some period of time has passed, if at all. Private events become involved when individuals learn to verbally describe the pains they feel with such terms as “sharp” or “dull.” At issue is how such pains occasion these terms, rather than others.

How then are verbal reports describing such phenomena as sharp and dull pains acquired? Behavior analysis would agree to some extent with Wittgenstein’s antiprivate language argument, in the sense that if language is acquired through the differential reinforcement provided by the verbal community, the verbal community has no direct way of knowing whether the correct occasion is present and whether it should reinforce pain statements. Therefore, as Wittgenstein (1953/1973) argued, how one might account for the development of verbal behavior under the control of private stimuli is not immediately obvious.

However, in an argument that goes beyond even the later Wittgenstein, Skinner (1945) outlined three ways that the verbal community with no access to a private stimulus may nevertheless generate verbal behavior in response to it. These ways involve the acquisition based on public events and then the transfer to private stimuli, based on public accompaniments, collateral responses, and stimulus generalization from public to private. For example, one presumably acquires language describing a pain as sharp when one is struck by a sharp object, as dull when one is struck by a dull object, and so on. Other articles (e.g., Moore, 1980, 1995) have described these ways in some detail, so they need not be reviewed here.

**Covert Behavior.** With regard to covert behavior, consider “thinking” as an illustration. Thinking may be defined as “behaving which automatically affects the behaver 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. The behavior called thinking is not necessarily private, nor is the subsequent response to the stimuli produced by the behavior necessarily private. In addition, the behavior called thinking is not necessarily verbal: we may discover that in an emergency, although

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we are just a passenger in the rear seat, we have actually been covertly driving when we begin to overtly press our feet against the floor to stop the car (Skinner, 1957, pp. 448-449). From the perspective of behavior analysis, then, “thinking” is not some antecedent activity that causes behavior in the sense that cause is used in folk psychology. 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 the dualism of the self as an initiating agent. As with the analysis of pain, behavior analysis is concerned with the “causation” associated with private events such as covert behavior in the sense of discriminative control, rather than in the sense of an initiating, solely sufficient cause.

But what does it mean to say a response is covert? For example, what efferent systems are involved in its execution? Initially, Skinner (1957) declined to “make guesses about the muscular or neural substratum of [covert] verbal events . . . we can talk about both [covert and overt] forms of response . . . without identifying physiological mediators” (p. 435). Eventually, Skinner (1969) stated that “So far as we know, the [covert] responses are executed with the same organs as observable responses but on a smaller scale” (p. 242). In the following material, Skinner (1953) linked covert behavior to discriminative control:

Sometimes it is said that the reduced form is merely the beginning of the overt form—that the private event is incipient or inchoate behavior. . . . The organism is generating the same effective stimuli, albeit on a much smaller scale. . . . The private response may produce discriminative stimuli which prove useful in executing further behavior of either a private or public nature. . . . [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. (pp. 263, 273, 279)

Somewhat later, Skinner was even willing to talk about the possibly central locus of physiological events associated with private responses:

I agree that the kind of thinking which seems to be merely covert behavior (“truncated, unemitted, reduced, impotent behavioral acts”) may be so reduced that there is no muscular involvement to be sensed proprioceptively. Must we appeal to some minute behavior which never reaches a muscle? If so, it is a problem for the physiologist. . . . I see no reason why we should not also call the action of efferent nerves behavior if no muscular response is needed for reinforcement. That may occur in the thinking that retreats beyond the point at which muscular action can be detected. (Skinner in Catania & Harnad, 1988, pp. 331, 485)

A natural question is why behavior acquired in its public form should 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 their reading aloud is 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 privately solve the problem “in their heads.” However, when they are alone, the accompanying verbal behavior might re-emerge in an overt form, and they might begin to “talk to themselves out loud” as they attempt to solve the problem. The discriminative control arises when the stimulation from the covert response is similar to that of the overt form of the response.

### ***What Afferent Systems Detect the Covert Response?***

For behavior analysis, the question of what afferent systems detect the execution of a covert response is analogous to asking what afferent systems detect the execution of an overt response but again no more troublesome in principle. We have exteroceptive systems that detect public stimuli, and we have interoceptive and proprioceptive systems that detect private stimuli, such as those associated with internal states of the body and the activity of efferent structures. Thus, our internal sensations and covert responses are detected by our interoceptive and proprioceptive systems (although cf. Schnaitter, 1984).

With specific regard to the matter of how precisely the interoceptive and proprioceptive systems can resolve stimuli associated with internal conditions and covert responses, Skinner (1974, pp. 221-223) has suggested that we may not have nerves going to the “right places.” At issue are some of the more extravagant claims about our nervous system. For example, early in the 20<sup>th</sup> century the structuralists claimed that with proper training, one might introspect as many as 42,415 different sensations (e.g., Lundin, 1991, p. 88). The sensations were presumably different activities of the central nervous system. Such claims are problematic for at least two reasons. First, because the verbal community does not have precise access to the private stimulus, it will not be able to establish such a fine-tuned repertoire in us. Second, we lack sensitivity to many activities going on inside our skins because of low representation of interoceptive and proprioceptive information. Presumably, we don’t have sensory nerves going to places that make it possible for us to discern the many sensations the structuralists proposed, even if our interactions with the verbal community were favorable.

On this view, private, subjective phenomena are not initiating, autonomous causes from another dimension that folk psychology characteristically takes them to be. Typically, private phenomena are located in a matrix of causal circumstances. Some of these circumstances are accessible to more than one individual and are called public; others are accessible to only one individual and are called private. Importantly, responses to private stimuli do not appear to differ from responses to public stimuli (Skinner, 1957, p. 130). In any case, the private

phenomena do not explain behavior. Rather, they are additional behavioral phenomena that need to be explained themselves.

*The Inferential Status of Private Events*

Behavior analysis recognizes that some sets of contingencies engender the emission of verbal responses on the part of speakers. The resulting statements may be classified according to the contingencies that control those statements. On the one hand, such statements are traditionally called “first-person reports” if the statements are under the discriminative control of an internal condition of the body. On the other hand, speakers who say something having the form of a first-person report might be just saying something to evoke some particular outcome, as in the attention received by the hypochondriac or the avoidance of an arduous or dangerous task by one who malingers. The statements could also be under the control of other variables, with corresponding contingencies. For example, the statements might deflect punishment, as in rationalizing. At issue, then, is the contingency that controls a given statement, rather than the grammatical and syntactical form of the statement.

Which of these interpretations is a listener to make of the speaker’s statement that has the form of a first-person report? That question is different. That question is about the discriminative control of listener’s behavior, not about the conditions that cause the speaker’s behavior. Contingencies affecting the speaker are not identical with contingencies affecting the listener, and one set of contingencies cannot be reduced to the other. Clearly, listeners must infer the existence of private phenomena, such as aches and pains, in others. Similarly, reports of private phenomena by others may be unreliable. Speakers may be influenced by conflicting motivation and consequently engage in fictional distortions (Skinner, 1945, p. 275). As noted earlier, there are also limitations on establishing the precision of the discriminations. Presumably, listeners seek additional evidence of the kind identified earlier, such as public accompaniments or collateral responses, before they accept a speaker’s report of pain.

Nevertheless, this conception of private events does not imply that they must be regarded as nothing but inferred, hypothetical constructs (cf. “It seems appropriate to judge Skinner’s private events as inferred and therefore as hypothetical constructs,” Zuriff, 1985, p. 87; see also Zuriff, 1979). A logical empiricist might say they are hypothetical constructs, but behavior analysis does not distinguish terms by what is called their logical status. Consequently, behavior analysis does not deploy the formal categories of traditional philosophy of science. Indeed, behavior analysis argues that it is mentalistic to do so because they are the product of mentalistic assumptions about the processes by which knowledge is gained (Moore, 1998). Certainly, the private events are not inferred as far as the individual who experiences them is concerned. The point here is that if the private events are not inferred for the individual, they should not be designated as inferred entities as far as science is concerned. 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, “all by himself if need be” (Skinner, 1945, p. 293). Barnes-Holmes (2000) has recently provided a powerful exegesis of this individualized pragmatic position. Whether one person is in contact with it on any particular instance is an empirical question, to be dealt with on a case by case basis. Even though instrumental amplification of these private events in the laboratory may yield confirming data, the issue remains as to how one can account for influence of private events in ordinary life, outside of the laboratory, in cases without instrumental amplification (Skinner, 1953, p. 282).

***Why Can't We Just Say That Private Events Are Physiological Rather Than Behavioral?***

To be sure, there is the ample precedent in behavioral science for treating the mental in terms of the physiological. Recall that logical behaviorists were willing to consider physiological events and states as the proper referent of mental events. Similarly, in mid-century, Place (1956; see also Feigl, 1967) proposed what is conventionally called the “identity theory”: that the mental is identical with the physiological, just as “water” is identical with H<sub>2</sub>O. Hence, consciousness was a brain process (see also Place, 1992, 1993). To be in a state of pain was to have one set of nerve fibers firing, to believe that P was to have another set of nerve fibers firing, and so on. Why then are private events distinguished as behavioral events, rather than simply as matters of physiology?

At first glance, framing the mental in terms of the physiological does have two virtues. First, it recognizes inner events as genuine, physical, and episodic. Second, it does not equate inner events with publicly observable behavior or hypothetical dispositions to engage in publicly observable behavior.

However, the two virtues may be more apparent than real. At issue is the role of physiology in explanations of behavior. To be sure, neurophysiological activity of some sort participates in every behavioral event. Nevertheless, concepts derived from neurophysiological activity do not explain instances of behavior, at least as behavior analysts use the term explain (Moore, 1996, 2000). Consider the rat's lever press. Neurophysiology certainly participates in the motor activity of pressing the lever, but the rat's physiology does not identify the antecedent stimulus that exerts discriminative control or the schedule of reinforcement according to which the response is reinforced. So is it with private behavioral events. Neurophysiology participates in the private behavioral event, as it does in a public behavioral event, but an appeal to physiology does not explain how the private behavioral event develops or how it comes to exert discriminative control.

A number of commentators have raised incisive concerns about the behavior analytic approach and whether it is supported by physiology. For example, Natsoulas (1983) pointed out that:

the behaviorist account holds that all awareness of anything *requires* that whatever it is stimulate one or more of our sense receptors. In addition to a form



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of responding's being necessary for awareness of anything, *the activation of sense receptors is also necessary*. Otherwise, we cannot do what is supposed to be necessary to all awareness of anything, namely, that which is called by radical behaviorism "respond to it." (p. 21, italics in original)

Natsoulas (1985, p. 93) then questioned Skinner's statement that we do not have nerves going to the right places. In addition, Natsoulas (1985, p. 89; cf. Place, 1956; Feigl, 1967) has asked, "Why cannot brain processes be objects of introspection?" Presumably Place and Feigl would have been sympathetic, but the matter has not been satisfactorily resolved. Standard texts in neurophysiology such as Shepherd (1979, chap. 16, e.g., p. 365) point out that perhaps as many as one-third of the motor neurons in the cortex are located outside of classical motor cortex of the frontal lobe and are actually in classical somatosensory areas of the parietal lobe. Perhaps the overlapping pathways with the collaterals and various other projections provide a relatively central point of contact between "motor" functions and "sensory" functions, given the traditional dichotomy. Thus, there may well be relatively central points of contact that plausibly account for the development of some kinds of introspective reports and covert responses (cf. Skinner, 1974, p. 223). However, even if talk of this kind of central sensory contact is valid, the sensory contact is presumably insufficient to support the many extravagant claims made by contemporary traditional psychologists about the relation between brain processes and behavior as it involves introspective reports and private events.

### **Behavior Analytic Disagreements With Logical Behaviorism and Conceptual Analysis**

We have now seen that logical behaviorism, conceptual analysis, and behavior analysis all agree that psychological terms appealing to the mental can't be taken to refer directly and literally to mental events. However, we have also seen that each of the three viewpoints does so for different reasons. Let us now address three specific areas of disagreement between behavior analysis, on the one hand, and logical behaviorism and conceptual analysis, on the other. The three areas of disagreement are (a) ontology, (b) the behavioral nature of private events, and (c) the underlying conception of verbal behavior.

#### ***Ontology***

An often unappreciated point is that at least some of the logical positivists were unselfconsciously dualistic, as evidenced by their embrace of psychophysical parallelism. Consider the thesis of physicalism as applied to psychology, resulting in logical behaviorism: that every psychological term can be expressed in the language of physics. Taken literally, this thesis implies that for every statement in the mental/subjective language there must be a corresponding statement in the physical/physiological language. This is precisely parallelism. Indeed, Gustav

Bergmann was a noted logical positivist, and Natsoulas (1984) has expertly pointed out that Bergmann adopted a robust version of psychophysiological parallelism that fully endorsed minds and causal mental phenomena that were qualitatively different from publicly observable behavior.

Ryle's version of conceptual analysis went to great lengths to invalidate the "Cartesian myth" that psychological terms refer to separate mental/cognitive episodes that precede overt behavior. However, a legitimate question may be raised as to whether he was successful in avoiding a dualistic ontology. For example, consider Ryle's analysis of "thinking." During his distinguished professional career, Ryle proposed three accounts of thinking (Lyons, 1980, pp. 182-195; Sibley, 1970, pp. 75-104). The first two accounts (often given as parts of one account, which is the basis for presenting them together here) took their departure from the traditional view of thinking as a singular mental activity of pondering and deliberating that preceded acting. According to Ryle, thinking consists in "multiple activities" and is "polymorphous." Thinking is thereby reflected through a predisposition to engage in intended, controlled, and purposeful overt behavior, rather than a single activity. The difficulty with these accounts is that walking deliberately around the block would count as thinking. Clearly, Ryle's first two accounts fall victim to his own *reductio ad absurdum*.

In an effort to correct these sorts of problems, Ryle eventually proposed a third account of thinking, called the "adverbial account." On this account, to do something that constitutes thinking is to do it vigilantly, pertinaciously, attentively, voluntarily, with initiative and care and control. Thinking becomes a qualification of an activity and is not an ingredient of an episode. The difficulty with this position is that it strikes one as a bit awkward to tell a student who is going slowly on a math test to "Try to work thinkingly but much faster." Similarly, it is difficult for Ryle to account for usage in which one says, "I couldn't stop thinking of that tune." Indeed, in a posthumously published work, Ryle (1979) himself conceded (albeit elliptically) that

There really are, in these cases, some positive, concrete, per se, non-adverbial things that Le Penseur is doing, perhaps even audibly doing, in composing, translating, and counting, which are such that he might have audibly done these self-same things non-translatingly and non-enumeratingly, that is, as Behaviourists would relish them. (pp. 26-27)

Ironically, this account ends up looking very like, at least from a certain perspective, Cartesian dualism. Thus, a legitimate question exists as to just how faithful Ryle was to his purported rejection of the Cartesian myth.

Moreover, conceptual analysis doesn't preclude that there is still a mental dimension, in which (a) mental phenomena cause behavior, even though mental terms don't refer to those causal phenomena, and (b) publicly observable behavior is justification for using those terms. For example, Place (1999) stated that "there is, nevertheless, a small minority of such [psychological] terms [for Ryle's conceptual analysis] that refer or contain reference to an event or process taking

place beneath the individual's skin to which he or she has some kind of 'privileged access' that is not available to another person" (p. 380). In recognition of this problem, Place (2000) indicated that he "was critical of . . . [Ryle's] . . . reluctance to be more systematic in developing his ontology" (p. 32). This recognition opens the door for the dualistic ontology of mental and physical.

In contrast, behavior analysis comprehensively rejects the traditional dualistic ontology. In short, there is no mentalistic dimension and no causal phenomena in it: "Private and public events have the same kinds of physical dimensions" (Skinner, 1964, p. 84); "A radical behaviorism denies the existence of a mental world" (Skinner, 1969, p. 267); "No special kind of mind stuff is assumed" (Skinner, 1974, p. 220); "I am a radical behaviorist simply in the sense that I find no place in the formulation for anything which is mental" (Skinner, 1964, p. 106). To be sure, behavior analysis does agree with conceptual analysis and Wittgenstein that verbal behavior cannot *originate* under the control of private stimuli. Indeed, to so allow would be a hallmark of dualism. However, behavior analysis argues that verbal behavior can originate under the control of public circumstances and control can then transfer to private stimuli, such that in specific instances, the verbal behavior in question can come to be occasioned by private stimuli. But the distinction between public and private in behavior analysis is at heart not an ontological distinction between physical and mental. Rather, it is distinction of access.

### ***The Behavioral Nature of Private Events***

The second area of disagreement concerns the conception of private events as behavioral in nature. For logical behaviorism and conceptual analysis, to be behavioral was to be publicly observable, and because private events weren't publicly observable by definition, they simply couldn't qualify as behavioral. To be sure, conceptual analysts like Ryle have written on the topic of thinking (and on such associated topics as imagination and perception), but as reviewed above, a treatment that relegates them to something other than private behavior, like physiology, raises insurmountable problems.

In contrast, behavior analysis has no difficulty with formulating thinking as a behavioral process. In particular, as noted above, Skinner (1953, chap. 16, 1957, chap. 19) has written extensively on it. The key lies in a conception of behavior that is not limited to the publicly observable. By so doing one avoids a wide variety of problems, such as those with which Ryle struggled.

On a behavior analytic view, both logical behaviorism and conceptual analysis illustrate the point of view called "methodological behaviorism" (Bergmann, 1956; Moore, 1981, 1999; Skinner, 1945). Although specific definitions of methodological behaviorism may differ, it is generally agreed that methodological behaviorism directly considers only the publicly observable in its analyses of behavior. This stance implies that thinking and verbal reports cannot be engaged *directly* in a science of behavior. In seeking to be objective and scientific, many ostensibly behavioral viewpoints either ignore private phenomena entirely,

or else seek to engage them *indirectly and inferentially*, through what is taken via the process of “operational definition” to be evidence arising from their publicly observable surrogates. Mentalism, of course, would directly and explicitly acknowledge the causal efficacy of mental states. Skinner was opposed to mentalism from the start and began to rail against the bankruptcy of methodological behaviorism as early as 1945.

The thesis of methodological behaviorism is far from dead. For example, Rachlin (1995) has recently advocated a position he calls “teleological behaviorism:” “Teleological behaviorism [is] the belief that mental terms refer to overt behavior of intact animals. . . . Each mental term stands for a pattern of overt behavior” (p. 179). In short, Rachlin (personal communication, April 7, 2000) unselfconsciously identifies himself as a methodological behaviorist, which is somewhat ironic given his affiliation with the Harvard program where Skinner taught and given Skinner’s bitter repudiation of methodological behaviorism over the years. What is necessary is to carefully distinguish between (a) the conditions responsible for the acquisition of verbal behavior, which do include publicly observable factors, with (b) the conditions responsible for verbal behavior in the current instance, which do not necessarily include publicly observable factors. This distinction accepts private events as behavioral, but does not link behavior to only the publicly observable. Consequently, it avoids the methodological behaviorism of Carnap, Hempel, and Ryle, as well as such modern advocates as Rachlin.

### ***The Underlying Conception of Verbal Behavior***

The final area of disagreement concerns the fundamental conception of verbal behavior. For logical behaviorism and conceptual analysis, mental terms are things that gain their meaning by referring to or symbolically representing something else, such as some physiological measure or publicly observable behavior or a disposition. This view of verbal behavior as referential, symbolic activity was formalized in such treatises as Whitehead and Russell’s *Principia Mathematica* (1913) and Wittgenstein’s *Tractatus Logico-Philosophicus* (1922/1974), which were highly influential in the development of logical positivism and hence logical behaviorism, as well as in the development of conceptual analysis.

In contrast, on a behavior analytic view, verbal behavior is operant behavior. Verbal behavior is like other forms of operant behavior in the sense that it may be analyzed in terms of the contingencies that have promoted it. Hence, on a behavior analytic view, scientific terms are not things that stand for, symbolize, or refer to other things. Skinner (1945, pp. 270-271) explicitly rejected the traditional referential model of verbal behavior derived from logical analyses over 50 years ago. To view scientific terms as essentially symbols for other things is to make mentalistic assumptions about what it means for an individual to engage in verbal behavior. A given instance of verbal behavior may be under the discriminative control of an object or event or property of an object or event, but no scientific term is a thing or construct that stands for, symbolizes, or refers to any other thing. Moore (1999, pp. 57 ff.) and Skinner (1957, pp. 114 ff.) have elsewhere pointed

out the mentalistic implications of viewing language in terms of logic and reference, notwithstanding Whitehead, Russell, and the early Wittgenstein.

### **Some Further Implications of the Behavior Analytic View of Verbal Behavior**

#### ***What Occasions Language Appealing to Mental Events Qua Mental?***

As noted earlier, if there is no mental dimension, there obviously can be no causal mental phenomena that occasion the talk. Yet, the verbal behavior of the mentalist is just as orderly as that of the behavior analyst, and the behavior analyst must be able to specify the contingencies that operate in space and time to control the verbal behavior called mentalistic. How does behavior analysis account for talk of the mental qua mental?

The answer lies in an understanding of the multiple control of verbal behavior. Some years ago, Moore (1975, 1981) suggested that much psychological verbal behavior is controlled (a) partly by social-cultural traditions and (b) partly by operations and contacts with data. When the proportion of control exerted by the latter classes of stimuli relative to the former is great, the resulting verbal behavior could legitimately be called mentalistic, and there is trouble.

Thus, the argument is that many so-called mental terms are controlled more by culturally established patterns of speech and vast intraverbal vocabularies of ancient and nonscientific origin, and hence the talk is of such fanciful explanatory fictions as inner determiners of action, subjective or mental elements, habits, cognitive processes, and so on. Indeed, Skinner identified the importance of spurious contingencies affecting the use of scientific terms in psychology, particularly the contingencies that involve a social/cultural tradition, when he talked about the origin of mental terms in cognitive psychology:

The reasons for the popularity of cognitive psychology . . . have nothing to do with scientific advances but rather with the release of the floodgates of mentalistic terms fed by the tributaries of philosophy, theology, history, letters, media, and worst of all, the English language. (Skinner in Catania & Harnad, 1988, p. 447)

In fact, much of Skinner's last writing was concerned with elucidating the prevalence of this form of stimulus control over the verbal behavior called "cognitive" (e.g., Skinner, 1989, 1990). Other verbal behavior is more effective in promoting practical action because it is controlled more by facts than social/cultural tradition. The scientific method is concerned with sharpening the control by facts and reducing the control by extraneous social/cultural factors (Skinner, 1957, chap. 18).

For behavior analysis, then, the analysis of verbal behavior is the analysis of the contingencies controlling the emission of the verbal behavior in question. The validity of a scientific term, for example, would be found in critically assessing the

extent to which operations and contacts with data occasion its use, rather than social-cultural traditions, inappropriate metaphors, or other extraneous factors. This is what is meant by “operational analysis” (e.g., Skinner, 1945), and this kind of linguistic analysis differs appreciably from the conventional interpretation of operationism (Catania & Harnad, 1988, pp. 150-217; see also Moore, 1975; Bridgman, 1928).

### ***Behavior Analytic Interpretation of Dispositional Analyses***

The behavior analytic position is sometimes held to be a somewhat odd and peculiarly developed version of a dispositional position, but it clearly is not (e.g., Moore, 1995, pp. 43 ff.). Although publicly observable phenomena do in fact occasion many terms taken to refer to mental items, not all mental terms are dispositional. For example, bodily sensation words are not, as when speakers describe pains as sharp or dull. Similarly, terms occasioned by covert behavior are not, as when individuals engage in thinking.

By themselves, of course, dispositions are perfectly reasonable *descriptive* terms relating to the strength or probability of a response. Skinner used the term occasionally himself: “A disposition to perform behavior is not an intervening variable; it is a probability of behaving” (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. One’s degree of “belief” is identical with the probability that one will take action with respect to what is believed in (Skinner, 1957, pp. 159 ff.). As a factor on the dependent variable side, the disposition is presumably established by certain environmental factors: the precision of discriminative stimulus control, the certainty of reinforcement, the amount and pattern of reinforcement, and so on.

The problem with dispositional analyses comes when a causal explanation of behavior is sought. If dispositions are invoked in causal explanations, either they 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 intervening theoretical term, as they did eventually for Carnap (1956). Thus, dispositions are not spatio-temporal 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 spatio-temporal elements that participate in contingencies, with respect to which a causal explanation in terms of manipulable variables is sought.

In this regard, 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 effectively to take the form, “*Given that the glass was brittle, it broke when it was hit by the stone.*” This locution has the virtue of identifying the cause of the glass’s being

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brittle as its molecular structure, or the manufacturing processes that are responsible for that structure. It then indicates that the glass actually broke when it was hit by the stone (see also the example of magnetism in Hocutt, 1985, pp. 93-94).

With respect to psychology, behavior analysts find fault with explanations taking the form, “the pigeon pecked the key when it was exposed to the contingency, because it was hungry.” As before, the statement is perhaps acceptable as an illustration of a simple descriptive statement, but the difficulty comes when one pursues a causal explanation. The risk is that invoking the disposition of “hunger” will elevate hunger to the status of an internal entity that can be taken as a solely sufficient cause of publicly observable behavioral events such as pecking a response key. Behavior analysts suggest that an answer to the question of why the pigeon pecked the key ought more effectively to take the form, “*Given that the pigeon was hungry*, it pecked the key when it was exposed to the contingency.” This locution has the virtue of identifying the cause of the pigeon’s being hungry as the establishing operation of food deprivation, or the changes in blood glucose resulting therefrom. It then indicates that the pigeon actually pecked the key when it was exposed to the contingency. Consequently, psychological explanations in behavior analysis reflect more pragmatic concerns with the spatio-temporal elements that participate in contingencies, with respect to which the causal explanation is more effectively sought (Moore, 1999).

Interestingly, Place (2000), who identified himself as “one of the few dyed-in-the-wool Ryleans still around” (p. 32), recently argued that analytic philosophy should recognize that in fact it has treated dispositions as causal entities, “I see the concept of a dispositional property as an integral part of the concept of causation. . . . As such, dispositional properties are omnipresent and omnipotent. Without them, nothing changes; nothing persists” (pp. 35-36). Unfortunately, Place’s move unselfconsciously elevates the disposition to the status of a conceptual cause, thereby ironically opening the door to mentalism.

### Summary and Conclusions

How then might we define a genuine behaviorism? Consider the statement below, fashioned from Addis (1982, p. 400) and Bergmann (1956, p. 270), with some influence from Natsoulas (1984, pp. 48, 53):

Behaviorism is a viewpoint that assumes that it must be possible, in principle, to secure an adequate causal explanation of behavior, including verbal behavior in humans, in terms of present and past behavioral, physiological, and environmental variables, in ways that do not require a direct appeal to causal phenomena in a mental dimension. As used in this statement, a “mental dimension” is qualitatively distinct from the behavioral dimension (e.g., mental, psychic, spiritual, conceptual, hypothetical), and not just a subdomain of it. As used in this statement, “causal phenomena in a mental dimension” are acts, states, mechanisms, processes, structures, entities, and the like that are held to be

qualitatively distinct from the behavioral, physiological, and environmental variables of a behavioral dimension, and not just a subdomain of them.

Does this statement adequately define behaviorism? From the perspective of the present paper, the statement above does not because it is ambiguous. Two critical terms in the definition are “require” and “direct.” Consider the use of the term “require.” The definition above does not *require* appeals to mental events, but it does *admit* them. For example, the definition admits parallelism as a form of behaviorism because it holds that events in the mental dimension are just as good a basis by which to predict and understand behavior as are events in the behavioral dimension. On this basis, Bergmann and others who are dualists could and do lay claim to being behaviorists. The problem is that there is no mental dimension, and psychologists who think they are talking about events in it and securing an adequate explanation are making a grave mistake, because their verbal behavior is not controlled by events in the mental dimension. Hence, one can legitimately challenge whether Bergmann and others should actually be grouped with Skinner under a common heading as behaviorists.

Consider also the use of the term “direct.” Logical behaviorism appeals *indirectly*, rather than *directly*, to mental events through the use of hypothetical constructs (Moore, 1998, 1999). This evasion allows logical behaviorism to count as a behaviorism. Yet, we have already seen how troublesome this position is, and how different behavior analysis is from it. Moreover, as noted above, conceptual analysis admits the possibility that events in a mental dimension cause behavior, although psychological terms do not identify anything having to do with the process. As before, the generic statement above would admit conceptual analysis as a behaviorism. Hence, one can also legitimately challenge whether conceptual analysis constitutes a behaviorism in the same sense as Skinner’s behavior analysis.

What is an alternative statement that disambiguates the several possible interpretations of behaviorism? Consider the following statement, with a few but nevertheless important changes from the prior statement:

Behaviorism is a viewpoint that assumes that it must be possible, in principle, to secure an adequate causal explanation of behavior, including verbal behavior in humans, in terms of present and past behavioral, physiological, and environmental variables, in ways that reject any sort of appeal, however indirect, to causal phenomena in a mental dimension. The variables can be either publicly or privately accessible. As used in this statement, a “mental dimension” is qualitatively distinct from the behavioral dimension (e.g., mental, psychic, spiritual, conceptual, hypothetical), and not just a subdomain of it. As used in this statement, “causal phenomena in a mental dimension” are acts, states, mechanisms, processes, structures, entities, and the like that are held to be qualitatively distinct from the behavioral, physiological, and environmental variables of a behavioral dimension, and not just a subdomain of them.



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In this alternative statement, the mental dimension is rejected because when individuals talk of mental phenomena, individuals are not actually talking about phenomena from another dimension at all. Rather, any talk appealing to this dimension and these sorts of causal phenomena is occasioned by (a) social-cultural traditions or spurious social factors, (b) physiological factors, (c) the relation between publicly observable behavior and present and past behavioral, physiological, and environmental variables, or (d) private behavioral events. If (a) is the case, the talk is not functionally related to any factors in space and time that can be manipulated to affect behavior, but rather only to fictions that are cherished for irrelevant and extraneous reasons, perhaps as unwarranted metaphors from language patterns or fictional distortions. If (b) is the case, the talk is functionally related to organized physiological systems that are the province of neuroscience and its methods. If (c) is the case, the talk is functionally related to how various circumstances affect the probability of engaging in behavior. If (d) is the case, the talk is functionally related to felt conditions of the body or covert operant behavior, as those conditions or behavior are situated in a context. The conditions of the body or covert operant behavior assume the form they do, and acquire the behavioral effect they do, by virtue of public relations. However tortuous, this alternative statement offers some possibility of identifying a genuine behaviorism that differs from ersatz versions that have emerged as intellectual compromises in the last 75 years. It explicitly rejects mentalism and instead calls for the analysis of verbal behavior ostensibly concerned with the mental but in terms of naturalistic contingencies that operate in space and time.

To be certain, an approach restricted to publicly observable factors was thought to safeguard the scientific character of a science of behavior. However, history reveals that the particular way the restriction was implemented has been and indeed continues to be troublesome. Moore (2000) pointed out that this restriction has only preserved the old explanatory fictions unharmed—in some cases quite unselfconsciously (e.g., Stevens, 1939, p. 231), instead of banishing them (see also Skinner, 1945, p. 292). At the root of the trouble is the conception of language as a logical, symbolic process instead of a behavioral process. By properly understanding language as verbal behavior, we can properly understand behaviorism, and we can finally reject “modes of thinking that are wholly incompatible with the ways of science . . . related to the religious, the mystical, and the metaphysical interpretations of the world . . . the result of old wives’ tales and monks’ lore, of the teachings of medicine men and priests” (Heidbreder, 1933, p. 235). Then we can begin to embrace a genuinely effective intellectual position.

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