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METHODOLOGICAL BEHAVIORISM

BEHAVIORISMO METODOLÓGICO

JAY MOORE

UNIVERSITY OF WISCONSIN-MILWAUKEE, USA

RESUMO

As abordagens iniciais da psicologia supunham que a vida mental era o assunto apropriado desta nova ciência e que relatos verbais introspectivos e os tempos de reação eram os métodos apropriados para dar suporte às inferências sobre esse assunto. O problema foi que essas abordagens iniciais eram vagas, pouco confiáveis e geralmente ineficazes. O behaviorismo metodológico surgiu como uma tentativa de lidar com esse problema, afirmando que as teorias e explicações em psicologia, bem como os conceitos que eles implantaram, devem ser acordados. A chave para este acordo era que os psicólogos deveriam falar apenas do que é observável, embora falar de eventos mentais inobserváveis fosse posteriormente permitido se fossem designados como construtos teóricos que eram definidos operacionalmente por meio de sua relação com os eventos observáveis. Essa visão posterior permanece proeminente na psicologia tradicional. O behaviorismo radical da análise do comportamento de B. F. Skinner oferece uma alternativa baseada em uma análise crítica das fontes comportamentais de controle sobre um determinado termo. Em particular, o conceito behaviorista radical de eventos comportamentais privados fornece uma explicação unificada da natureza em termos comportamentais.

Palavras-chave: comportamento verbal, behaviorismo metodológico, behaviorismo radical, operacionalismo, previsão e controle, eventos comportamentais encobertos, lei de cobertura, método científico.

ABSTRACT

Early approaches to psychology assumed that mental life was the appropriate subject matter of the new science, and that introspective verbal reports and reaction times were the appropriate methods to support inferences about that subject matter. The problem was that these early approaches were vague, unreliable, and generally ineffective. Methodological behaviorism arose as an attempt to deal with this problem by asserting that theories and explanations in psychology, as well as the concepts they deployed, should be agreed upon. The key to agreement was that psychologists should talk only about observables, although talk of mental unobservables was later permitted if they were designated as theoretical constructs that were operationally defined through their relation to observables. This later view remains prominent in traditional psychology. The radical behaviorism of B. F. Skinner's behavior analysis offers an alternative based on a critical analysis of the behavioral sources of control over a given term. In particular, the radical behaviorist concept of private behavioral events provides a unified account of nature in behavioral terms.

Key words: verbal behavior, methodological behaviorism, radical behaviorism, operationism, prediction and control, private behavioral events, covering law, scientific method

This article is taken from material I developed over the years to help in my own teaching on the topic of methodological behaviorism. I offer it here in the hope others will find it useful. In keeping with the instructional goal of the article, references are at a minimum. In addition, both the language and the arguments are more informal than in other articles. If I have fallen short in the execution, I apologize and ask for the reader's tolerance. I can only say the contingencies haven't finished with me yet. Correspondence concerning the article should be addressed to the author at jcm@uwm.edu, or at his home address: 1861 E. Fox Lane; Fox Point, WI 53217; USA.

METHODOLOGICAL BEHAVIORISM

Methodological behaviorism is a prescriptive thesis for how to do psychology. Underlying the thesis is the assertion that science requires agreement. Then, given that observables can be agreed upon and unobservables cannot, the thesis holds that psychological theories and explanations, as well as the concepts they deploy, should be expressed in terms of publicly observable events, variables, and relations, rather than unobservable mental phenomena. This thesis emerged during the first quarter of the 20th century. However, the thesis has been interpreted in at least two different ways over the last 100 years.

INTERPRETATION #1 OF METHODOLOGICAL BEHAVIORISM

The first and original interpretation of methodological behaviorism was that psychological theories and explanations should only describe relations between publicly observable stimuli and responses, for example, in an S-R model, and should remain silent on everything else. Psychologists could even assume that mental causes existed. However, such causes should not be directly included in psychological theories and explanations. Anything about the mental should be dealt with by another discipline, such as philosophy or religion, but not science, which needed agreement through observability. Psychologists could further assume that explanations developed under Interpretation #1 would be scientifically satisfactory. This early interpretation still has some advocates, but it began to lose favor around 1930. Since 1950 a second interpretation has largely replaced the first.

INTERPRETATION #2 OF METHODOLOGICAL BEHAVIORISM

The second interpretation is that psychologists can include unobservables in their theories and explanations after all, but only if those unobservables are designated as theoretical constructs (e.g., logical constructs, theoretical terms) and operationally defined. The operational definition specifies the publicly observable factors entailed in the measurement of the construct. A construct might well be held to refer to some unobservable mental or cognitive phenomenon, but the operational definition in terms of observables makes the construct scientifically respectable because the evidence for the mental phenomenon can then be agreed upon. For example, the construct could be operationally defined in terms of (a) behavioral measures (e.g., taking reaction time to indicate the speed at which some mental process is said to operate) or (b) physiological measures (e.g., with a more contemporary technology, taking fMRI to reveal neural correlates of mental processes). In this way unobservables are included only indirectly, not directly. As a result, the approach is taken to satisfy scientific concerns.

The common method associated with Interpretation #2 is to infer an O variable ("organismic") inside the organism in some sense as a theoretical construct. The function of this construct is to mediate the relation between S and R. By mediate is meant that observable external stimuli activate or trigger one or more unobservable intervening or mediating entities that are causally connected in some complex but systematic way to an ensuing observable response. The result is that the subject is held to be in contact with only the mediating entity, not the observable external environment. A generic name for this approach is mediational S – O – R neobehaviorism. Learning theories, such as those of Tolman or Hull-Spence, are suitable examples. A mediational approach with operationally defined theoretical constructs is currently the most popular because it allows researchers and theorists to have their cake of mental causes and eat it, too.

EXHAUSTIVE OR PARTIAL OPERATIONAL DEFINITIONS?

From the mid-1930s to the late 1940s psychologists debated a further matter in connection with Interpretation #2 (MacCorquodale & Meehl, 1948). This debate concerned whether the operational definition of the theoretical construct should be regarded as exhaustive (i.e., the intervening variable interpretation) or partial (i.e., the hypothetical construct interpretation). As MacCorquodale and Meehl cast this distinction, if the theoretical construct is used or applied in no other situation, then its operational definition in terms of the current use or application provides the total meaning for the construct, and its meaning as expressed in terms of the current use or application is regarded as exhaustive. In simple terms, the construct has no surplus meaning. Additionally, because an exhaustive definition provides only a summary or labor-saving device in a single, selected application, the construct is not assumed to refer to some variable that actually exists.

Alternatively, as MacCorquodale and Meehl (1948) also wrote, if the construct is used or applied in other situations, then its definition in terms of the current use or application provides only one of its several possible meanings. These other uses or applications provide their own meanings, and further unexamined uses or applications suggest even further, to-be-discovered meanings. If so, then its meaning as expressed in terms of the current use or application is regarded as only partial. In simple terms, the construct does have surplus meaning. In any event, because a partial definition admits multiple uses or applications, the construct may be assumed to refer to some variable that actually exists. If it did not, how could it have multiple uses or applications? Since the late 1940s, psychologists have favored the hypothetical construct interpretation because it yields greater generality and flexibility in theory development, system building, and

explanatory application. Some writers may even label the hypothetical construct interpretation as a third interpretation, rather than a variation on the second.

INFLUENCE OF METHODOLOGICAL BEHAVIORISM ON SCIENTIFIC METHOD

Finally, a particular set of research and explanatory practices also developed in concert with Interpretation #2 of methodological behaviorism. According to these practices, the appropriate form of research was to formulate S – O – R theories about mediating organismic variables (the "O" above). Predictions (i.e., deductions) of those theories are then tested under controlled conditions using various experimental groups according to a conventionally approved experimental design, with publicly observable independent and dependent variables, operationally defined theoretical terms, and so forth. The resulting data are evaluated using null-hypothesis inferential statistics to determine the probability that any observed differences are attributable to chance. Outcomes consistent with the predictions of the theories are taken to validate the theory that appeals to the mediating O variable. Once validated, the theory is elevated to the status of a law, and the whole approach, called the "covering law" approach, is taken to explain the event in question. Taken together, these practices are codified in courses in statistics and experimental design in most college textbooks and curricula.

WHY SO SOME PSYCHOLOGISTS ADVOCATE METHODOLOGICAL BEHAVIORISM?

During the first quarter of the 20th century, the classic introspective approaches to psychology (e.g., structuralism, functionalism) talked of events, variables, and relations that were unobservable and couldn't be agreed upon. For example, what did it mean to say a psychologist was investigating the "texture" of the "sensation of green"? Methodological behaviorism as represented in Interpretation #1 above—remaining silent on anything that wasn't observable and speaking only of observable S-R relations—arose in an attempt to resolve these concerns, by emphasizing events, variables, and relations that could be agreed upon. After a few years, most psychologists came to think that the first interpretation was far too restrictive and not scientifically satisfactory after all—it had considerable difficulty accommodating the richness and flexibility of behavior. Something more epistemologically sophisticated than the observables of an S–R model seemed to be necessary. After all, other sciences—notably theoretical physics— seemed to have advanced by postulating unobservables in the form of theoretical constructs, so why shouldn't psychology be allowed the same techniques?

Interpretation #2 came into favor when psychologists realized that new ideas about theory development based on operationism didn't actually require the psychologists to remain silent on the mental. Including unobservable mental causes as operationally defined theoretical constructs was judged to be scientifically legitimate and not to conflict with the thesis of methodological behaviorism. Again, this indirect approach allowed psychologists to agree upon the meaning of unobservables, and allowed for the entire enterprise to be considered scientific.

WHY DO RADICAL BEHAVIORISTS OPPOSE METHODOLOGICAL BEHAVIORISM?

Radical behaviorists agree that classical introspective approaches to psychology are a problem. Radical behaviorists also agree that attempts to reduce all forms of behavior to an S–R model with only observable factors are a problem. Nevertheless, radical behaviorists reject methodological behaviorism as a solution for either or usually both of two reasons. First, by denying or ignoring certain events inside the skin, Interpretations #1 and #2 of methodological behaviorism fail to address an important aspect of human behavior, by failing to accept that those events can be understood as fundamentally behavioral in nature and functionally related to antecedents and consequences in the environment. To be sure, at present many of these events inside the skin have to be dealt with inferentially. Nevertheless, until our technology advances to the point that they may be dealt with directly, there seems to be no good reason to rule these events out of consideration just because they are not accessible from the vantage point of an observer.

Second, Interpretation #2 of methodological behaviorism implicitly accepts a mentalistic view of the behavior of both (a) the subject or participant and (b) the scientist. As we have seen, methodological behaviorists commonly attribute the behavior of a subject to the mediating O variables. The origin of the O variables lies in mentalism, which makes the entire enterprise little more than an institutionally disguised form of mentalism. Moreover, the behavior of a scientist is similarly conceived of in mentalistic terms, in virtue of the assertion that treating mental causes of behavior as operationally defined theoretical constructs makes the approach the scientifically respectable. A theoretical construct is not the same as a discriminative stimulus in operant verbal contingencies. Rather, it is held to be a logical device that is part of mentalistic, nonbehavioral account of verbal behavior. Fundamental in the account is an assumption that words are symbols that have entities called "meanings" that are attached to them. In contrast, for radical behaviorists engaging in science is operant behavior—typically verbal. Accordingly, scientific behavior—both verbal and nonverbal—may be analyzed in terms of contingencies. Arguing in terms of constructs moves the analysis of scientific behavior from the domain of behavioral relations and verbal contingencies into the domain of a mentalistic metaphysics and a mentalistic epistemology about both subjects and scientists.

Ultimately, radical behaviorists argue methodological behaviorism is troublesome on pragmatic grounds, just as is any other form of mentalism: It doesn't lead to effective prediction and control, despite any claims that operationism guarantees the scientific integrity of the unobservable concepts. Radical behaviorists argue that unfortunately, methodological behaviorism is the orthodox position in contemporary psychological theorizing.

To be sure, operational definitions are very important for science, but in a different sense than in methodological behaviorism. That is, they don't make talk of the mental scientifically legitimate, as methodological behaviorists assume they do. Rather, operational definitions help identify the extent to which scientific operations and the resulting data, rather than social-cultural traditions, linguistic practices, and faulty metaphors, participate in the contingencies that govern our analytic and explanatory terms. Traditional operationism and methodological behaviorism adopt a mentalistic, referential view of verbal behavior, and institutionalize mentalism about both the behavior of subjects or participants, on the one hand, and the scientist who theorizes about and seeks to explain that behavior, on the other. In particular, the epistemological stance of the latter may be designated an epistemological dualism, in that it unselfconsciously advocates mentalistic strategies for dealing with what it accepts as mental causes of the behavior of subjects or participants.

PRIVATE BEHAVIORAL EVENTS

Of concern to many researchers and theorists throughout the developments reviewed above was how to incorporate events that are accessible only to the individual who was behaving. Skinner (1945, 1953) wrote extensively about this matter when he wrote of private behavioral events. The two types of private events were (a) verbal reports about felt conditions and sensations of the body, and (b) covert operant behavior. The first type included how we come to talk about our aches and pains. The second type included the time-honored topics of consciousness, as a repertoire of self-descriptive behavior that had discriminative value, and thinking, as covert behavior taking various forms, from daydreaming to self-analytical behavior that also contributed to discriminative control.

To use the second type of private events as an example, these events were not from a mediating mental domain, as in S-O-R neobehaviorism. Rather, these events were in the behavioral domain, and there seemed no good reason to exclude them simply because they were not observable to others. They were carried out by the same response systems as overt forms of behavior, just reduced in scale. They were probably even acquired in overt form, then receded to the covert level because the overt forms were punished, or because the covert forms were expedient. Skinner offered an interpretation of such events in terms of operant behavior and contingencies of reinforcement in which the verbal community played a significant role. Although private events of others might be inferential for observers, they are not inferential for actors. Rather, they are a function of the same types of variables and relations that participate in publicly observable events.

BEHAVIOR ANALYSIS AND MENTAL TERMS

Behavior analysts argue that mentalism is the dominant explanatory orientation in psychology. In simple language, mentalism consists in the appeal to unobservable structures from a nonbehavioral domain in causal explanations of behavior. Typically, the domain is that of "mind." Further, behavior analysts are opposed to mentalism. To be sure, some psychological theories and explanations do contain terms and concepts that at first glance appear to be mental. Nonetheless, for behavior analysts, some of those terms and concepts aren't actually mentalistic because they do not appeal to causal entities from a nonbehavioral domain. Rather, they reflect genuine events, variables, and relations worthy of study in their own right.

The five categories in the table below suggest a way to understand terms commonly thought to be mental terms. The terms in columns 1-4 of the table reflect observations and extensions in the same domain that behavior takes place. As such, these terms help us to understand how behavior is related to environmental circumstances. However, the terms do not tact causes of behavior. The causes of behavior are in the contingencies. In general, the terms reflect various features or aspects of the behavioral events that the contingencies generate. Let us now review these terms.

Table 1. Five category events that provide ways to understand terms commonly thought to be mental terms.

Private behavioral events	Physiology	Behavioral dispositions	Behavioral relations	Explanatory fictions
Verbal reports	Gap within	Propositional attitudes	Attention	Folk psychology
Covert operants	Gap between	Intentional idiom	Discrimination	Language practices
			Generalization	Inappropriate metaphors

- Terms in column 1 have a source of control in private behavioral events. These terms tact verbal reports about internal sensations and feelings (e.g., statements about personal experiences involving pain, pleasure, anxiety) or covert operants (e.g., thinking, problem solving).
- Terms in column 2 have a source of control in physiology. These terms tact physiological processes in the gaps either within a behavioral event (e.g., recruitment) or between behavioral events (e.g., consolidation).
- Terms in column 3 have a source of control in behavioral dispositions. These terms tact the probability of a particular form of behavior in particular circumstances (e.g., propositional attitudes, the intentional idiom: belief, desire, intention).
- Terms in column 4 have a source of control in stimulus control relations. These terms tact the influence of antecedent environmental circumstances on behavior (e.g., attention, discrimination, generalization).

Terms related to column 5 may be traced more to irrelevant and extraneous social factors, such as conforming to authority or uncritically accepting social conventions and culturally conditioned practices, than to the tact relation. When cited as causes, terms with these sources of control are simply explanatory fictions: supposed acts, states, mechanisms, processes, entities, and structures (e.g., encoding, representations, storage-retrieval) in a supposed domain (e.g., hypothetical, cognitive, mental, spiritual, psychic, or subjective) that differs from the behavioral domain. These terms come about largely through spurious echoic, textual, and intraverbal processes. These supposed acts, states, etc. are evident in folk psychology, our appeals to inappropriate metaphors, and follow from our linguistic practices, such as when we convert adjectives and adverbs into nouns and then assume the nouns then stand for causal acts, states, etc. that really exist in a nonbehavioral, mental domain. Terms with these sources of control are troublesome because they ultimately lead to the counterproductive practices of mentalism and methodological behaviorism. In much of contemporary psychology this mentalistic verbal behavior ironically takes the form of a mediational, S - O - R model of neobehaviorism. Rather than using some observable measure as a proxy for an unobservable mental structure, as in traditional operationism and methodological behaviorism, Skinner's concept of the operational analysis of psychological terms is concerned with identifying the sources of control over the verbal behavior in question, so that we may assess whether the verbal behavior in question can contribute to an effective science of behavior.

Key terms and concepts: verbal behavior, methodological behaviorism, radical behaviorism, operationism, prediction and control, private behavioral events

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