

Is Psychology Really ‘The Study of Behavior’?

A Conceptual Analysis of ‘Behavior’ and Some Recommendations on the Use of ‘Behavior’ in Psychology

Stephen Hibbard
UNIVERSITY OF MICHIGAN

Tracy Henley
MISSISSIPPI STATE UNIVERSITY

ABSTRACT. In this paper, we examine the concept ‘behavior’ within the context of the development of American psychology. After explicating the term’s meaning within ordinary usage, we argue that ‘behavior’ is a theoretical construct within behavior analysis, and that its privileged status in psychology outside behavior analysis is really just a residuum from the days of the hegemony of behaviorism. The claim ‘psychology is the study of behavior’ falters within psychology more generally on the grounds that ‘behavior’ is simply too confused and ambiguous a construct on which to found psychology. On the other hand, within behaviorism itself, it is still possible to vindicate the claim that psychology is the study of behavior, since ‘behavior’ has a technical sense within behavior analysis. However, to establish that psychology is the study of behavior in this technical sense would require that behaviorism succeed in explaining all of the phenomena of interest to psychologists, since otherwise some psychological phenomena would be left outside this domain.

Introduction

The notion of ‘behavior’ has a deceptively innocent, self-evident appeal in psychology. One standard textbook defines it as ‘those activities of an organism that can be observed’ (Atkinson, Atkinson, & Hilgard, 1983), while psychology’s foremost behaviorist (Skinner, 1974)¹ ultimately allowed that such phenomena as ‘imaging Venice with eyes closed’ counted as behavior, and a philosopher such as Searle describes ‘understanding sentences’ and ‘intuitions of grammaticality’ as instances of ‘what we are referring to by the use of the short-hand term “behavior” (1990, p. 593). Efforts at conceptual clarification of this term have previously been made

by many in philosophy and psychology (e.g. Dennett, 1978), but perhaps the time is right for a reconsideration of the construct 'behavior' and its place in psychology.

We contend that the concept 'behavior' was bestowed an artificially privileged status during the days of the hegemony of behaviorism. 'Behavior' was supposed originally to refer to basic observable events, in reference to which constructs were operationalized. Constructs were supposed to be built up from 'observation statements' about 'behavior'. However, as we argue, within behavior analysis (i.e. behaviorism proper), 'behavior' is today a theoretical construct embedded within a nomological network² of other theoretical constructs. Here, 'behavior' is as much a theoretical term as are 'ego' and 'schema'. Within psychology at large, however, it usually functions much as Atkinson et al. described, i.e. as a placeholder for 'observable data', but often is used even more broadly, to refer to the functioning or activity of non-physical systems.

We argue that with the exception of another relatively technicalized use—to describe action sequences which constitute 'behavioral systems' and 'action patterns' within biology and ethology—the general use of 'behavior' outside of behavior analysis is mostly overused jargon, the result of predictable effects of scientific evolution (Kuhn, 1979), such as how textbooks get written and how journal articles are selected by editors. In most non-technical contexts (i.e. outside of the experimental or applied analysis of behavior and of ethological and biological uses), other ordinary-language terms can generally be substituted for 'behavior' and its cognates, often with less peculiarity, and less pretension. Hence, the argument may be construed as a propaedeutic for behaviorism, rather than an attack on it: the argument sets out theoretical, semantic, syntactic and pragmatic constraints for the use of the term 'behavior'.³ Thus, the article is a set of recommendations to psychologists concerning the use of 'behavior', given the current confusion surrounding the term.

In what follows, we first explicate various uses of the term 'behavior' in ordinary language.⁴ We next look at the quasi-technical use of the term in biology, and then take up the ways in which psychologists have used the term, beginning with an explication of its use by behaviorists.

We distinguish two general contributions of behaviorism, the first being a strong empirical commitment to the public adjudicability of psychological issues, the second being the contribution of a number of laws and principles of learning. We argue that all psychologists have a similar empirical commitment to data, and that in this sense the view that psychology ought to study behavior is trivial, amounting to the claim that psychology ought to be an empirical discipline. We then proceed to demonstrate that within behavior analysis 'behavior' is a theoretical construct.

We then explicate the use of the construct outside of behavior analysis

and within the broad domain of psychology. We argue that here the term is used in odd, ambiguous and confused ways that are primarily the result of these psychologists wishing to seem 'scientific'.

'Behavior' in Pre-psychological and Ordinary Use

'Behavior' as deportment. In ordinary language, 'behave' and 'behavior' typically bear two rather straightforward senses. One of these is roughly equivalent to 'comportment'. 'Now, Junior, behave yourself' implies that Junior is near violating rules of conduct. Leahey (1993) has presented a full and scholarly etymology of the term, tracing this use of 'behavior' as 'dignified expression, applied to the bearing, deportment, and public conduct of persons of distinction' clear to the 15th century. The contemporary sense of the term still bears this connotation as the primary sense. Hence, Webster (Webster's Editors, 1962) defines 'behave' as 'conduct oneself, act in a specified way; conduct oneself well, do the right things', and 'behavior' as 'manners, conduct'. Webster also lists synonyms for 'behave': 'conduct, deport, demean, comport, acquit'. Catania (1984) also discusses this etymological connection between proper conduct and 'behavior'.

'Behavior' as functioning or activity. In a second use which occurs in ordinary language, 'behavior' often means something like 'functioning', without the moral or social connotation. The OED (Simpson & Weiner, 1989) mentions this sense, and notes that it is a transferred use, from the deportment of humans to the deportment of machines, chemical substances, natural phenomena and the like: 'the manner in which a thing acts under specified conditions or circumstances, or in relation to other things.' Thus, we may sensibly wonder how the economy will behave if the Federal Reserve Board raises interest rates. Similarly, Anderson says 'trying to explain the overall behavior of the machine by studying the behavior of its components is hopeless' (1990, p. 11). 'Behavior' in this sense is not necessarily an activity of a physical entity which can be observed, though the attribution of behavior to mental entities strikes us as analogical. 'How does the unconscious behave in implicit memory experiments?' 'Does memory behave differently in recognition than in recall?' It seems to have been this analogical use of the term which Searle recently invoked: " 'Behavior' is not at issue. Understanding sentences, intuitions of grammaticality . . . are what we are referring to by use of the short-hand term "behavior" ' (1990, p. 593).

Hence, there are these two basic senses of 'behave' in ordinary language: the sense of right conduct, manners, comportment, etc., and the sense of functioning or activity, usually observable. The latter seems to have derived from the former, as Leahey (1993) traces at length.

Biological and Ethological Usages

The pragmatics of 'behave' and its cognates are somewhat different within biology and ethology. This seems to be for two related reasons. The first is that 'behavior' is a technical term recognized as such by the dictionary within this domain: 'an organism's muscular or glandular responses to stimulation, especially those that can be observed'. The second reason is that ethologists are often motivated to maintain a descriptive, behavioral approach to work in animal psychology in order to avoid anthropomorphization (Angell, 1913; Burghardt, 1985; Watson, 1913). Ethologists have been especially cautious of anthropomorphization in studying animal social systems and animal cognition. At least since Descartes it has been clear that the pragmatics of the language of animal psychology are considerably different from those of human psychology (Kenny, 1968). There is nothing objectionable to such quasi-technical uses of 'behavior' so long as we remember that to refer to glandular and muscular responses, or to be judicious in our inferences about the cognitive states of animals, does not privilege behavior in psychology generally.

'Behavior' as Epistemically Privileged

While recognizing that behaviorism embraces many different types of views, it can be said that behaviorism in general has made two major forms of contribution to psychology. The first was its insistence that psychological claims and hypotheses be publicly adjudicable. The second has been behaviorism's development of a set of laws, principles and/or constructs that serve as behaviorist theory as well as much of the bases of learning theory. We have in mind such laws and principles as those of classical conditioning, Thorndike's Law of Effect and its auxiliaries, Skinner's principles of operant conditioning, contemporary theories of operant classes, and so forth. We refer to these collectively as the 'Principles of Behavior Analysis'.

Now obviously, these two major contributions of behaviorism are independent of each other. That is, one can hold the view that psychology ought to be empirically anchored, but not appeal to the Principles of Behavior Analysis. Moreover, one might believe in behaviorist principles and simultaneously believe in mental entities. That is, the Principles of Behavior Analysis can be seen as operating over the domain of our mental as well as our physical lives. For example, Westen (1986) pointed out that conditioning principles can be applied to explain the repression which psychodynamicists regard as mental.

Now since these two main contributions are relatively independent, we must inquire about the construct 'behavior' independently in these two contexts. Does psychology's need for public adjudicability accord

'behavior' a privilege within psychology? Does the progress made by behaviorism in its *Principles of Behavior Analysis* accord such a privilege to behavior? Our responses to the first question follows immediately in this section. Our response to the second question depends on our demonstrating the extent to which behavior analysts have made 'behavior' a technical term, and we address that issue later.

We are tempted to reply affirmatively to the first question on the grounds that behavior is all that counts as evidence in psychology. Such a position is sometimes still advanced as 'epistemological' or 'methodological' behaviorism, even by psychologists who are not at all behaviorist (e.g. Jenkins, 1993). We have no disagreement with those who hold such a position regarding substantive epistemological issues. That is, the work of Cronbach and Meehl (1955), combined with other fundamental contributions (e.g. Campbell & Fiske, 1959; Loevinger, 1957), defined a position on the validation of theoretical constructs in terms of which validation has come to be regarded as a continuous, ongoing assembling of convergent and divergent evidence within an empirically anchored network of conceptually related constructs (Angoff, 1988). Our objection to the position centers rather on the notion that behavior as a construct has a special place in the explication of such validation.

As we argue later, there are special instances in which one wants to give epistemological distinction to what people actually do in a given situation rather than what they say they do by 'mere self-report'. But here the distinction regards not 'behavior' and . . . (and what?), but levels of risk and degrees of the opportunity to dissimulate. One can dissimulate behaviorally as well as verbally, depending upon intention. And as we argue later, to claim that self-report is 'really' just a type of 'verbal behavior' (clearly a bit of tortured terminology in its own right) is simply to beg the question regarding the privileged evidentiary status of 'behavior' by stipulatively assimilating all evidence to behavior. The point is that in psychology we use multiple methods of bringing evidence to bear: self-report on the subject's experience, self-report to questionnaires, observations of interactions through one-way mirrors, physiological measures, ratings by significant others—one could go on and on without even using the term 'behavior'. 'Behavior' as a distinct category of evidence only comes up in those special instances in which we want to distinguish different forms of evidence such as 'self-report' from observations of subjects' activities. The profligate assimilation of 'everything that humans do' to the category of behavior (e.g. Reynolds, 1968; Skinner, 1989) renders meaningless important distinctions between these different kinds of evidence. To suggest that valid empirical methods are confined to the observation of the activities and functions of the subjects, and on this basis to extol 'methodological behaviorism', is simply to invoke an idiosyncratic stipulative use of 'behavior'.

'Behavior' as a Theoretical Construct Within Behavior Analysis

Decades ago, behaviorism was at least flirting with a philosophical view known as operationism, a position advanced by logical positivists (Green, 1992; Langfeld et al., 1945). One of the tenets of this set of views was that behavior served as the raw, primitive, observable data for psychology, and that theory provided the linkage for behavioral observations. Far from this being the case,⁵ we contend that the term 'behavior' is a theoretical construct within the Principles of Behavior Analysis. What follows are a number of independent arguments in support of this claim.

Categorially Dubious Uses of 'Behave' in Psychology

The assimilation of all psychology to behavior seems to demand that we use the language in a specific counter-intuitive way that was described by the philosopher Ryle (1938, 1949) as making a 'category mistake'. We have in mind, for example, calling 'behavior' such ordinary psychological phenomena as grammatical intuitions, recognizing a word as old or new in a recognition memory task, feeling sexual attraction or imagining an inviting scene. These are not the sorts of things that could be reasonably called 'behavior' without significantly altering the concept.

For Ryle, 'category mistakes' were a logico-semantic phenomenon in natural language which he believed to be a sort of logical contradiction. They were attributions of properties to something in cases where, by the nature of the items referred to, the thing and the attribute couldn't possibly be coupled because they belong to different 'logical categories'. To complain about a film that it is not in technicolor at least makes sense, even if the film was better in black and white. To complain about the lack of technicolor in a new symphony is either to invoke metaphor, or to commit a category mistake: musical compositions are not the sort of thing that can be either technicolor or black and white. To consider Ryle's standard example (1949), if a foreigner visiting Oxford sees all the buildings, offices, playing fields and libraries, and then asks, 'But where is the University?', he or she shows evidence of category confusion. 'Oxford' and 'university' are not at the same level of analysis as the constituent buildings, etc.

The same considerations explain why we have such a hard time conceptually assimilating introspection, perceiving, feeling, grammatical intuitions, etc. to the category of 'behavior'. In ordinary usage, such assimilation is a category mistake. 'Introspecting behavior', 'perceiving behavior' and so on don't make sense because competent speakers of English would be disinclined to include introspecting, perceiving and so on as the kinds of things that would count as behavior. Such categorial confusion makes it sound odd when psychologists talk like this.

Since science often uses terms for its own purposes, it might be objected

that neither psychology nor any natural or social science need concern itself with the opinions or intuitions of competent speakers regarding category mistakes or odd uses of expressions. This is true, provided that the science is adapting a technical sense of the term in question, and embedding it within a set of theories (e.g. the term 'atom' either in ancient Greek or in contemporary physics). Within the Principles of Behavior Analysis, this is just the situation with 'behavior'. The fact that 'perceiving behavior' and so on are categorially dubious for competent speakers is evidence that the term is being used in a technical sense in behavior analysis. Within psychology in general, however, we suggest that the term is not technical, but is more often used simply to try to look 'scientific'.

Atypical Uses of 'Behave'

We recently found empirical evidence that these odd uses of 'behave' and its cognates are categorially atypical. We asked upper division undergraduate and beginning graduate psychology students ($N = 142$) to rate the typicality of 11 instances of 'behavior'. Typicality ratings were gathered for the items listed in Table 1.

We had dichotomized the instances into two broad groups on the basis of *a priori* expectations regarding typicality. 1, 4, 5, 9 and 10 were expected to be Typical because they are examples of conventionally polite conduct (compartment), and hence conform to the central dictionary sense of 'behave' and 'behavior'. Item 11 was expected to be rated as Typical because of the 'Pavlov effect', i.e. the extent to which the behaviorist paradigm has become entrenched in educated people's thinking about the construct 'behavior'. By and large, our expectations were substantiated. Every item rated Typical was significantly ($p < .001$) different by *t*-test from every Atypical. Moreover, we computed an index of the degree of atypicality of the Atypicals. The unit of measurement used for this computation was the standard deviation of the whole Typical group from the grand mean of the Typicals ($M = 2.211$, $SD = .411$). The distance of each Atypical's mean from the grand mean of the Typicals was computed in terms of this standard deviation.

Some interesting points emerged that lend strong empirical support to the claim that the anomalous uses of 'behave' and its cognates we have been discussing are actually categorially questionable. First, the verbal, introspecting, imaging and thinking 'behaviors' were each at least 3 standard deviations away from the Typical cases. It appears categorially atypical to call these human activities 'behavior' in a sense of the term readily accessible to 'the educated public', even those educated in psychology.

Second, factor analysis (principal components, varimax [orthogonal] rotation) revealed a factor structure that grouped our *a priori* rated

TABLE 1. Mean Typicality ratings, distance of Atypical instances from Typical, and factor loadings for instances of behavior

Instance ^a	M	Distance ^b	Factor loadings		
			1	2	3
1. A gentleman opening a door for a lady	2.5		.73	—	—
4. A sergeant saluting a senior officer	1.5		.64	—	—
5. Eating with the proper fork and spoon at a formal dinner	2.3		.56	—	—
9. Listening to a lecture	2.5		.51	—	—
10. A school child's minding her teacher	2.6		.43	—	—
11. A dog salivating	1.8		—	—	—
3. Saying out loud the sentence 'the cat is on the mat'	6.1	10.0	—	.80	—
2. A registered voter casting a vote	3.3	2.6	—	.62	—
7. Imaging Venice with closed eyes	5.8	8.7	—	.60	.49
6. Introspecting on one's motives for an intended action	3.5	3.0	—	—	.75
8. Thinking '2 + 2 = 4'	3.8	3.9	—	—	.50
		Eigenvalue:	2.03	1.72	1.44
		Percentage variance accounted:	18.5%	15.6%	13.1%

Notes: Factor 1 = 'Conduct, manners and activity'; factor 2 = 'expressive behavior'; factor 3 = 'Mental behavior'. Loadings below .35 are not listed.

Items are numbered according to order of listing on sheet in experiment. Item 11 loaded .32 on factor 1 and .31 on factor 3.

^a Each instance was categorized by the authors prior to analysis as Typical (T) or Atypical (A). All instances which were categorized as Typical had highest loadings on factor 1. Atypicals loaded highest on factor 2 or factor 3. Each T is significantly different from each A, $p < .001$.

^b Distance = A measure of Atypicality, computed as how far the mean of each A is from the mean of the Ts as a group. Units of distance are computed as SDs of the T group (SD = .411). Since all items loading on factor 1 are Ts and hence have no Atypicality, their distance values are not listed.

Typicals on the first and strongest factor. This factor seems to be simply a conduct, manners and activity factor, grouping the most central senses of the term mentioned in dictionaries. The second factor seemed to index expressive 'behavior', and the third mental 'behavior'. This factor structure was supported by the usual criteria, including eigenvalues in excess of 1, the scree and cumulative percentage of variance accounted.

The Pavlov item was anomalous in splitting its loadings between the first and third factors, and in failing to load highly on any particular factor. This peculiarity persisted when it was attempted to extract four or even five factors. The Pavlov paradigm, though broadly known to the subjects, is apparently anomalous when considered in the context of the construct 'behavior' outside of behavior analysis.

Factor 2 was not entirely clear, but seemed to capture the notion of expression of cognition in that each item loading on this factor seemed to be the expression of some cognitive activity, i.e. linguistic expression, expression of choice or imagistic expression. Factor 3 seemed clearly to be a mental 'behavior' factor, and this is consistent with the imagery item's (instance 7's) strong loading there.

Both the *t*-tests and factor analysis suggest that the Atypical instances truly are anomalies in ordinary language. The attempt to assimilate these odd instances to 'behavior' by psychologists strikes us as peculiar use of the language. Many of the uses of 'behavior' within psychology make the concept at best an extremely fuzzy, eccentric category, except when it is used in its proper technical context, within behavior analysis.

The Pluralization of 'Behavior' and the Unit of Analysis Problem

Yet another indicator of the technicalization of the term can be seen in its pluralization in the context of the 'unit of analysis' problem. In ordinary language, 'behavior' is what philosophers call a 'mass term'. It is a type of term that resists pluralization. But in order to deal with units of analysis, behaviorism forced the term into pluralization. Let us look at this in detail.

Mid-century Anglo-American philosophy distinguishes between two different kinds of nouns, though different philosophers have made out this distinction in different terminology (Quine, 1960; Strawson, 1959). Let us call these two different kinds of nouns 'count' nouns and 'mass' nouns. The characteristic feature of count nouns is that they function to identify items in the world in a way in which different instances of the same type of entity in experience may be enumerated: if 'x' is a count noun, then *x*s are the kind of entity that can be counted. This is not the case for 'mass' nouns. Some examples will help. 'Man', 'dog', 'briefcase', 'atom', 'pedophile' and 'quark' are all count nouns. They differ from the mass terms 'oxygen', 'water', 'gold', 'libido', 'divinity', 'unconditional positive regard' and 'wood' in that instances of the former class, but not of the latter (in their use as mass nouns), may be enumerated just in virtue of their conceptual properties. Now, of course, *bunches* of wood, *bodies* of water, *atoms* of oxygen, etc. may be counted, but this is because 'bunch', 'body' and 'atom' are count nouns, i.e. because bunches, bodies and atoms can be counted. It makes sense to ask 'How many dogs are in the kennel?' or 'How many pedophiles are in the prison?' where it does not make straightforward sense to ask 'How many oxygens are in the ozone?' or 'How many libidos are in the pedophile?' Mass terms refer indiscriminately to homogeneous bunches of stuff out of which different items might be composed. But they have no criteria for individuation attached to them. Their individuation is borrowed from count nouns. Of the items referred to by mass terms it makes sense to ask 'How much?'; of those by count terms, to ask 'How many?'

For these reasons, mass nouns are said to resist pluralization. It is harder to make sense of the plurals of 'oxygen', 'divinity', 'libido', 'wood', etc. unless some covert means is made of appealing to a count term, or dividing the homogeneous 'mass stuff' (oxygen-stuff, divinity-stuff, wood-stuff, etc.) into heterogeneous bunches or types (e.g. oxygens with different electron valences, loving vs malevolent divinity, woods of different kinds, and so on).

Well, what kind of term is 'behavior'? Obviously, in its ordinary use, 'behavior' is a mass term. Behavior is not the sort of thing of which we go out and count instances unless we have means of individuating them. It makes no sense in ordinary use to ask 'How many behaviors did you do ('emit') today?' any more than it makes sense to ask 'How many airs did you breathe?' To be sure, we can go out and take *samples* of behavior just as we may go out and take samples of air. But the countability of our samples is a conceptual feature of 'sample', not of 'air' or 'behavior'.

The point is that, within ordinary usage, as in the ecological study of behavior (Barker & Wright, 1966), there are no criteria for the individuation of a 'behavioral unit', because the concept of a behavioral unit only arises within a specific theoretical orientation. 'Behaviors' is just senseless unless one has taken a psychology class or two. Dictionaries do not recognize the use of the term as a count noun, and if you cannot remember a time when you did not use this bit of psychological 'odd talk', i.e. 'behavior' in the plural, you might consult McDougal (1912) or Angell (1913) or Watson (1913), himself. None of these authors uses the plural, presumably because it was contrary to their grammatical intuitions, which were untortured by the subsequent corruption of this unpluralized mass term.

How did the semantics of 'behavior' begin to get changed so that psychologists started to 'talk funny' by pluralizing the noun? How did we end up talking about pigeons and humans emitting behaviors? This pluralization in the face of syntactic resistance to pluralization is a clear marker of a theoretical and specialized use of the term. The need for pluralization arose within behaviorist theory only when such theoreticians began to need to identify entities that would be the actual terms of the Principles of Behavior Analysis, i.e. the stimuli, responses, operants, reinforcers, punishers, etc. Only within a theoretically individuated field of behaviors could such concepts as reinforcement, extinction, stimulus generalization, autoshaping, etc. be made out. This whole effort depends on cutting up human 'deportment' and 'activity' into 'behaviors'. Within ordinary usage and within our ordinary construction of experience, behavior simply has no units.⁶

Again, we are not objecting to the fact that behaviorism has developed this specialized use of the term. It is important to see that identifying behavioral units within behavior analysis is no simple task (Malone, 1987; Meehl, 1978; Skinner, 1953, 1985). Our point is rather that the unit

problem required behaviorism to make 'behavior' a highly technical term within behavior analysis. No such technicalization is required for psychology more generally.⁷ Most of the rest of psychology's use of the term bears very little relationship to that of the behavior analyst, and the former cannot gain much by simply using the term.

'Behavior' in Psychology Generally

We wish next to turn our attention to the pragmatics of the concept outside of these technical uses, within the remainder of psychology. By examining these pragmatics, we hope to show that behavior has no privileged status in this domain and that the view that psychology is the study of behavior is largely an outmoded residuum from the golden days of behaviorism.

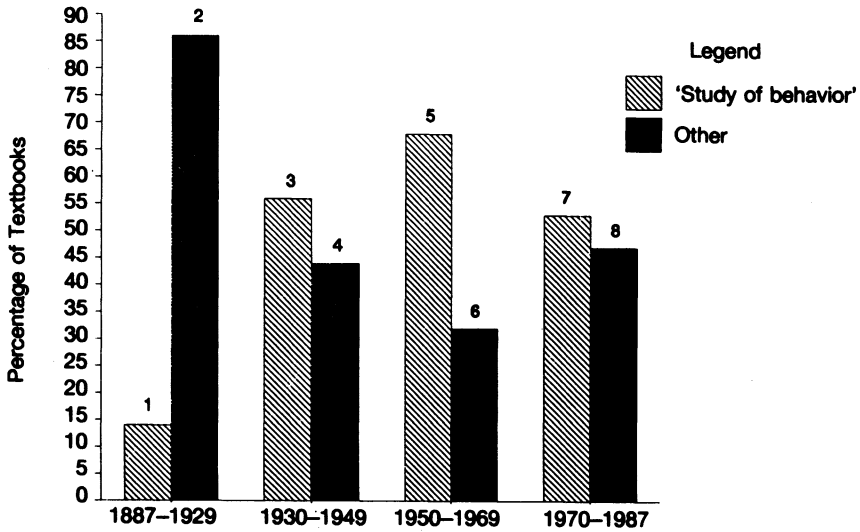
Odd Talk and the Politics of Knowledge

Psychologists sometimes use the term 'behavior' in ways and in contexts that, in ordinary usage, would sound strange and unusual. A social psychology anthology (Peplau, Sears, Taylor, & Freedman, 1988) introduces the classic Darley and Latane bystander apathy study by speaking of 'helping behavior'. Milgram (1963) entitled his classic study 'The Behavioral Study of Obedience'. Sternberg (1986) talks about 'planning behavior' when he means nothing different from 'planning' or 'making plans'. Sarason and Sarason (1989) discuss Freud's views on 'maladaptive behavior' without apology. But the *Standard Edition's* index of terms (Richards, 1974) contains no entry under 'behavior'. How could Freud have held any views on behavior when he never discussed behavior?

Some of these linguistic habits are simply odd-sounding, e.g. 'voting behavior', 'smoking behavior' or 'helping behavior'. Skinner himself probably best explained the ubiquity of these odd-sounding uses of 'behave' and its cognates in some remarks about the term 'cognitive':

A curve showing the appearance of the word 'cognitive' in the psychological literature would be interesting. A first rise could probably be seen around 1960; the subsequent acceleration would be exponential. Is there any field of psychology today in which something does not seem to be gained by adding that charming adjective to the occasional noun? The popularity may not be hard to explain. When we became psychologists, we learned new ways of talking about human behavior. If they were 'behavioristic', they were not very much like the old ways. The old terms were taboo, and eyebrows were raised when we used them. (1987, p. 783)

Skinner described here the predictable concomitants and constituents of the ascendancy of a paradigm (Kuhn, 1970), to the extent that psychology has paradigms. This includes assimilating phenomena of interest to the



- ¹ 14% = Intelligent Behavior, Mind and Behavior
² 86% = Experience, Mind, Mind and Nervous System, Consciousness, Mental Life, Mental States, Reaction to Environment, Phenomena of Self, Soul
³ 56% = Behavior, Experience and Behavior, Behavior in Environment
⁴ 44% = Physical and Mental Activities in Environment, Activity, People, Human Conduct, Human Nature, Other
⁵ 68% = Behavior, Behavior and Experience, Behavior in Environment
⁶ 32% = People, Human Conduct, Human Nature, Mind, Other
⁷ 53% = Behavior, Behavior and its Causes and Applications, Behavior and Experience
⁸ 47% = Behavior and Mental Processes, Mental Activity, Mind and Behavior, People, Human Conduct, Human Nature, Other

FIGURE 1. Chronology and percentage of the occurrence of 'study of behavior' in textbook definitions of psychology. (Adapted from Henley, Johnson, Jones, & Herzog, 1989.)

jargon and theories of the new paradigm. 'Cognition' is in this respect no more sacred than 'behavior'. In a previous study, one of us (TH: Henley, Johnson, Jones, & Herzog, 1989) documented changing trends in textbook definitions of 'psychology'. Figure 1 shows the results of that analysis.

Prior to 1930, only 14 percent of the textbooks which defined the term 'psychology' included references to behavior as part of the definition, while 86 percent of the definitions included references to mentalistic concepts. This trend rapidly reversed in the mid-1930s. In the two decades from 1930 to 1949, the term 'behavior' was used in 56 percent of the textbook definitions of psychology, increasing to 68 percent of definitions in the following two decades. For the period from the 1970s to the present, Henley et al. (1989) needed to create a new classification, because textbook writers began using the formula 'behavior and mental processes'. For the period 1980 to 1987, only 52 percent of the texts defined psychology as 'behavior' or 'behavior and its causes', while a burgeoning 27

percent of the definitions were some combination of mentalistic terminology along with 'behavior'.

This ebb and flow of definitions corresponds to the rise, hegemony and now decline of behaviorism as the dominant paradigm in psychology. Indeed, as Skinner called to our attention in the passage just quoted, the rising use of 'cognition' and its derivatives marks the other side of the coin in this mini-paradigm shift. As Kuhn (1970) pointed out, during the ascendancy and prominence of any such paradigm, proponents of the paradigm generally control those positions which publish the field's literature and profess the discipline in the academies. Hence, those whose language use and conceptual categories do not conform to the paradigmatic conceptual system find it difficult to have their work accepted by textbook and journal editors and referees (see also Matlin, 1989). Skinner's account of the frequency of the use of the term 'cognition' and Henley et al.'s chronology of textbook definitions describe the politics of paradigm fluctuation, a significant symptom of which is the appropriation of special positions for the paradigm's characteristic terminology or jargon.

We submit that references to 'behavior' in areas of psychology such as the ones we have described are largely residual from the days of the hegemony of behaviorism. Behaviorism showed great promise of making good on psychology's aspiration to be a science, and psychologists in every part of the field hoped to ride its coat-tails to 'scientific respectability'. Behavior was thought to be primitive, because 'directly' observable. Unfortunately, for many reasons beyond the scope of this paper to explore, behavior analysis has not yet delivered on its original promise to adequately explain all the broad phenomena of interest to psychology. In this regard, behaviorism is no more a failure than any other theoretical orientation. The problem is not with behaviorism, but with the psychologists who still feel the need to speak in such odd, eccentric ways. The hope of riding behaviorism's coat-tails by using ordinary language in odd ways, such as talking about 'voting behavior', 'maladaptive behavior' or 'planning behavior', is misplaced, and just bad. We recommend that psychologists simply speak about voting, psychopathology and planning.

*Special Cases Prove the General Rule: When Actions (Behavior)
Speak(s) Louder Than Words*

Much of behaviorism's early appeal to psychology lay in its promise to make psychology dependent on 'the familiar facts of observation' (McDougal, 1912, p. 38). There is an important methodological aspect of the public adjudicability matter besides the issue of operationalizability. There are times when it is important to note that the source of one's data is free from subjective elements of self-report or conscious processing. These are contexts in which there is good reason to suspect that sources of data

other than the 'behavioral' may be less than trustworthy. The judicious suffixing of 'behavior' etc. may be used to mark these occasions.

Such uses of 'behavior' are much like 'trouser words' as explained by the philosopher Austin (1964). The expression 'indirect perception' in ordinary language, Austin argued, makes sense only against cases of regular uses of the term. Thus, seeing something in a mirror can be called 'indirect perception'. The term 'real' has similar pragmatics, as do 'implicit memory' and 'indirect measure'.

The title to Milgram's previously mentioned study (1963) may demonstrate such an instance. Had Milgram used other than 'behavioral' data, the outcomes may have been different. Similarly, a product label on a new anti-depressant under the section concerning addiction and dependency notes the absence of drug-seeking behavior upon discontinuance of the medicine during field trials. This is a highly relevant use of the term in a context in which self-report of intention and purpose, i.e. subjectively and consciously mediated data, can be intentionally deceptive. Better to attend to drug-seeking behavior than self-report of drug-seeking intentions. But let's not be misled into thinking that this privileges behavior: we could, after all, use the phrase 'actual drug-seeking' in such contexts and not even use 'behavior'.

We suggest that 'behavioral . . .' and its cognates often have this use in psychology. The oddity of expressions like 'voting behavior', 'smoking behavior', 'helping behavior', 'drug-seeking behavior' or 'behavioral study of . . . (e.g. obedience)' can be redeemed if the suffix is explained by reference to the point that action is somehow more reliable than talk or intention. Hence, in Milgram's (1963) study 'behavioral' gets its punch from the 'non-behavioral' alternatives that might otherwise have been used, e.g. verbal reports. These other alternatives that are necessarily non-behavior in these contexts 'wear the trousers', giving 'behavior' its sense. The exceptional case makes sense against the standard.

We suggest that these are important features of 'behavioral measures' (Lloyd, 1980). But they do not depend on any canonical sense of 'behave', and they have nothing to do with behaviorism in any of its forms as a particular theoretical orientation. Rather, they depend on distinguishing between what people say (write, sing, communicate about themselves in some way) and what they actually do, between intention and performance. Moreover, there is nothing especially 'scientific' about the term 'behavior' in making this distinction. Similar distinctions are observed in expressions like 'Actions speak louder than words', 'Do what I do, not what I say' or 'Talk is cheap'.

Two important features of 'behavioral measures' are their relative freedom from dissimulation (particularly when the observations are made surreptitiously) and, unlike introspective reports of feelings, sensations or dreams, their public accessibility. Calling them 'behavioral measures' is an

accident of the trends of the time when behaviorism was dominant. They could as easily be called 'performance' measures. There is nothing 'behavioristic' about them, i.e. they have no necessary connection with the Principles of Behavior Analysis or the prominent theories and researchers who have spawned them.

Let's not make the mistake of thinking that because *sometimes* behavioral measures are appropriate, they are therefore always important, or that because sometimes there is good reason to be suspicious of self-report, therefore this is always true. It is often said that the best predictor of future behavior is past behavior. Meehl's (1954) remarks about 'broken leg arguments', however, suggest that in some contexts the best indicator of *immediately* future behavior is *immediately* present intention. (See also Harré & Secord, 1973.)

Moreover, the fact that 'behavior' and its cognates are sometimes legitimately used in 'trouser' word contexts does not justify the assimilation of all data to the category of behavioral data. To regard self-report as 'verbal behavior' is a case in point. Some would like to have it both ways. In one context, they call self-report 'verbal behavior', but in the context of behavioral measures they distinguish behavior from self-report. This is simply further evidence that 'behavior' is an arbitrary and confused concept, hardly fit to be definitional of psychology.

The Profligacy of 'Behavior'

Some behaviorists themselves have wanted to assimilate all of human activity, including those domains typically studied outside of behavior analysis by psychology more generally, to 'behavior'. Skinner talked not only about 'verbal behavior', 'voting behavior', 'the behavior of seeing' (Skinner, 1964), but also about 'the behavior of seeing Venice—even when there is little in the immediate vicinity which bears a resemblance to the city' (i.e. imagining Venice; Skinner, 1974), and 'the behavior called introspecting' (Skinner, 1987). Some behaviorists have tried to define all human activity of any kind as behavior in order to win the 'psychology is behavior' battle by definition:

'Behavior' in this formulation refers to everything that organisms do. Most behavior, such as the dog's running into the kitchen, can be seen. Some behavior, such as speaking, may only be heard. Other behavior, such as thinking, is ordinarily accessible only to the organism that does the behaving. (Reynolds, 1968, p. 5)

Skinner (1989) similarly claimed that 'do' is a synonym for 'behave'. But this profligate use deprives 'behavior' of substantive meaning and rides roughshod over distinctions in general psychology between 'behavior' and other terms that are important to maintain. These are generally cases in

which, as we have explained, types of phenomena other than behavior 'wear the pants' (Austin, 1964), e.g. when contrasting self-report to behavioral methods, or when talking about mental phenomena that only analogically can be called 'behavior'.

'Behavior Disorders', 'Behavioral Medicine', 'Behavioral Science'

In the interests of completeness, we should explicitly mention the expressions 'the behavior disorders' (Hunt, 1944), 'behavioral medicine' and 'behavioral sciences'. We would categorize these along with such expressions as 'smoking behavior', 'planning behavior', etc. in the respect that they are primarily psychological jargon, dressed up to look like 'science'. It is somewhat amusing to thumb through Hunt and see psychodynamic theories of 'behavior', e.g. 'Behavior always includes conflict or ambivalence' (p. 69). A contemporary example of this phenomenon is 'behavioral medicine' to describe the medical applications of such techniques as biofeedback to stress reduction, assertiveness training to inflammatory bowel disease, and so on. Hilgard (1988, pp. 222ff.) attests to the history of the canonization of the expression 'behavioral science'. To call a group of disciplines with a certain family resemblance 'behavioral sciences' at a certain point in time seems to have been more a sociological and political decision than it was an epistemologically valid determination: 'This was congenial to the behaviorists and non-behaviorists alike' (p. 223). Congeniality is hardly a criterion of epistemological validity.

Conclusions

'Behavior' is too muddled a term to carry the claim that psychology is the study of behavior. We are suggesting that outside behavior analysis and ethology, the notion that psychology is the study of behavior suffers from confusion. 'Behavior' is too confused a construct, outside of its technical use within behavior analysis, to define our field. In the era of operationism, 'behavior' was thought to refer to what was observable, as opposed to theory, but we have already argued on several grounds that 'behavior' is a theoretical term within behavior analysis. Within and outside of behavior analysis, others even extend the term 'behavior' to the activities of mental entities: thinking, imaging, etc. Some psychologists talk about 'verbal behavior', but many of these very same psychologists would deny that self-report is a 'behavioral measure'. 'Behavior' is simply too fuzzy to encompass the business of psychology. 'Behavior' in any more general sense simply comes down to 'activity' or 'function'. But 'behavior' in this general sense is simply too vacuous and empty a concept to be informative. Under these conditions, what possible sense can be made of the claim that psychology is the study of behavior?

Behavior is at best one among many other topics considered in the subdomains of psychology. If we take up any textbook from the various academic domains of psychology (learning, cognition, development, personality, social, organizational, psychopathology, etc.), 'behavior', considered either as conduct or as observable activity (the senses of the term recognized as ordinary, non-technical use in the dictionary), is at best one among many other aspects of human or animal experience considered. Psychology in these domains frequently studies dispositions, traits, mental structures, mental activities and so on. Arguably, these notions have their own philosophical confusions. But we would suggest that any preference psychologists have for staking psychology on the construct 'behavior' is more a desire for psychology to be put on an empirical basis than it is for psychology to be based on 'behavior'. In other words, researchers are more concerned to found psychology on publicly adjudicable data than they are with the priority of behavior as such. Behavior in the sense of observable activity is at best one among many other interests of psychologists.

The claim that psychology is the study of behavior awaits vindication from behavior analysis. In spite of the confusion of the construct within ordinary psychology, 'behavior' and its cognates are fairly well defined within the nomological network of behavior analysis. Hence, the challenge to behaviorism in vindicating the claim that psychology is the study of behavior lies not in clarification of the construct, but in completing the task. Behaviorism has yet to demonstrate that it can explain, predict, systematize and provide an adequate theoretical basis for the majority of the phenomena which are of interest to psychology. If behaviorism could provide an adequate account of most of the phenomena generally recognized as within the domain of psychology, then we should certainly be content to agree that psychology is the study of behavior, since then, *ex hypothesi*, behaviorism would be sufficiently complete to provide sufficient theory for the phenomena of interest.

Currently, there simply are no schools of psychology that can do a complete job with the phenomena of interest to psychologists generally. The implication of this for behaviorism, however, is that it is yet short of vindicating the claim that psychology is the study of behavior in the technical sense that term has assumed within behavior analysis. Until this happens, we must conclude that, to a large extent, the stream of human experience of interest to psychology in general is not best described as 'behavior'.

Notes

1. This article was already well under preparation when the news was announced that psychology had lost its great and distinguished scientist.
2. Cronbach and Meehl (1955) first used this expression. In their explication, they referred to 'a system of interlocking laws'. They subsequently used the word

'laws' in quotes, suggesting that they, like us, were not clear on what 'laws' are in psychology. What we mean when we say that constructs in psychology are validated by a nomological net is nothing stronger—but nothing weaker—than what psychometricians commonly mean when they say that constructs need to demonstrate convergency, divergency, reliability, internal consistency, etc. (See Angoff, 1988.)

3. Many very different theorists, such as Watson, Gibson, Kantor, Hull, Tolman and Skinner, could be and have been called 'behaviorists'. Where it has seemed relevant, we have specified to which 'behaviorists' or to which behaviorist orientation we are referring.
4. Formally, much of what we have to say about 'behavior' is phrased in terms of the meaning, use and pragmatics of the term. Morris described this approach.

Another place where pragmatics is relevant to contemporary philosophy is in its growing concern with the choice of 'conceptual frameworks' in the sciences and in philosophy. It is now widely admitted that the acceptance or rejection of such linguistic frameworks involves pragmatical considerations (simplicity, fruitfulness in carrying out inquiry, accordance with the ideology of the time or of a given thinker, and the like). Thus the investigation of the acceptance and transformation of linguistic frameworks (scientific and philosophical) is a semiotical investigation that involves the area of pragmatics. (1964, pp. 45–46)

5. Meehl (1992) apparently still wants to hold on to the view that there are observation statements in contrast to the view that all language is theory-laden. We support some version of this latter claim, though for purposes of the present paper we need only the weaker claim that 'behavior' in behavior analysis is theory-laden. The issue is too large to go into detail here, but it is easy to see that Meehl's own example of an allegedly straightforward observation statement, 'The rat turned left', is context-dependent. Within the context of political intrigue, it could be a remark about a breach in loyalty of a trusted comrade.
6. Every year, in his graduate personality seminar, Bob Wahler puts a brief narrative vignette on the blackboard concerning a mother ironing in a room, a child providing some distraction, and the mother going in to take care of the distraction. Wahler asks his students to count the number of 'behaviors'. Interrater reliabilities are typically less than .25. Many years ago, Wahler and Howard Pollio videotaped a few minutes of activity on the student quad at the University of Tennessee, and asked student raters to count the 'behaviors'. The results were similar. (Robert Wahler and Howard Pollio, personal communication, spring 1990.) The point, of course, is that in order to get any reliability one needs to provide a few rules as criteria for what counts as a unit of behavior, 'a behavior', i.e. one needs to provide a bit of theory for 'behavior'.
7. For some contemporary behavior analysts, the behavioral unit is a class or set of activities, which usually are spatio-temporally disconnected, defined by their consequences. Ontologically, this conception of the behavioral unit represents a shift from a spatio-temporally continuous entity to classes of entities (Strawson, 1959).

We seek eliciting stimuli or consequences that influence a behavior and then refine our definition of stimulation and behavior until we discover the classes that covary in an orderly way. In practice, the discovery of response classes may reveal some behaviors as members that we could not have foreseen. For

example, training a child to keep a room neat may influence an operant class including punctuality, personal cleanliness, and so on. (Malone, 1987, p. 197)

The entity that gets selected is quicksilverish; it is never present all at once; although it is patterned, it is pattern in activity rather than structure in stuff. This core concept of behavior analysis has a subtlety and abstractness that often goes unrecognized. The operant (or more precisely, the operant class) is impalpable through its dispersion. . . . To identify a particular operant class, one specifies its effects on a set of environmental events—that is, its consequences. . . . [T]his specification either consist[s] of all the behaviors that could effect a particular environmental change or the . . . movements of the organism that fall within certain physical limits. (Hineline & Wanchisen, 1989, pp. 228–229)

References

- Anderson, J.R. (1990). *Cognitive psychology and its implications* (3rd ed.). New York: Freeman.
- Angell, J.R. (1913). Behavior as a category of psychology. *Psychological Review*, 20, 255–270.
- Angoff, W.H. (1988). Validity: An evolving concept. In H. Wainer and H.I. Braun (Eds.), *Test validity* (pp. 19–32). Hillsdale, NJ: Erlbaum.
- Atkinson, R.L., Atkinson, R.C., & Hilgard, E.R. (1983). *Introduction to psychology* (8th ed.). New York: Harcourt Brace Jovanovich.
- Austin, J.L. (1964). *Sense and sensibilia*. New York: Oxford University Press.
- Barker, R., & Wright, H. (1966). *One boy's day*. New York: Harper & Row.
- Burghardt, G. (1985). Animal awareness: Current perceptions and historical perspective. *American Psychologist*, 40, 905–919.
- Campbell, D.T., & Fiske, D.W. (1959). Convergent and discriminant validation by the multitrait–multimethod matrix. *Psychological Bulletin*, 56, 81–105.
- Catania, A.C. (1984). *Learning* (2nd ed.). Englewood Cliffs, NJ: Prentice Hall.
- Cronbach, L.J., & Meehl, P. (1955). Construct validity in psychological tests. *Psychological Bulletin*, 52, 281–302.
- Dennett, D.C. (1978). *Brainstorms: Philosophical essays on mind and psychology*. Cambridge, MA: MIT.
- Green, C.D. (1992). Of immortal mythological beasts: Operationism in psychology. *Theory and Psychology*, 2(3), 291–320.
- Harré, R., & Secord, P. (1973). *The explanation of social behavior*. Totowa, NJ: Littlefield, Adams.
- Henley, T.B., Johnson, M.G., Jones, E.M., & Herzog, H.A. (1989). Definitions of psychology. *The Psychological Record*, 39, 143–152.
- Hilgard, E.R. (1987). *Psychology in America: A historical survey*. San Diego: Harcourt, Brace, Jovanovich.
- Hineline, P.N., & Wanchisen, B.A. (1989). Correlated hypothesizing and the distinctions between contingency-shaped and rule-governed behavior. In S.C. Hayes (Ed.), *Rule-governed behavior: Cognition, contingencies, and instructional control* (pp. 221–268). New York: Plenum.
- Hunt, J.McV. (1944). *Personality and the behavior disorders*. New York: Ronald Press.

- Jenkins, J.J. (in press). What counts as 'behavior'? *Journal of Mind and Behavior*.
- Kenny, A. (1968). *Descartes: A study of his philosophy*. New York: Random House.
- Kuhn, T.S. (1970). *The structure of scientific revolutions* (2nd ed.). Chicago, IL: University of Chicago Press.
- Langfeld, H.S., Bridgeman, P.W., Boring, E.G., Israel, H.E., Feigl, H., Pratt, C.C., & Skinner, B.F. (1945). Symposium on operationism. *The Psychological Review*, 52, 241–242.
- Leahey, T.H. (1993). An historical-critical analysis of 'behavior'. *Journal of Mind and Behavior*, 14, 345–354.
- Lloyd, K.E. (1980). Do as I say, not as I do. *New Zealand Psychologist*, 9, 1–8.
- Loevinger, J. (1957). Objective tests as instruments of psychological theory. *Psychological Reports*, 3, 635–694.
- Malone, J.C., Jr. (1987). Skinner, the behavioral unit, and current psychology. In S. Modgil & C. Modgil (Eds.), *B.F. Skinner: Consensus and controversy* (pp. 193–206). London: Falmer Press.
- Matlin, M.W. (1989). *Cognition* (2nd ed.). New York: Holt, Rinehart, & Winston.
- McDougall, W. (1912). *Psychology, the study of behavior*. New York: Henry Holt.
- Meehl, P. (1954). *Clinical versus statistical prediction*. Minneapolis: University of Minneapolis Press.
- Meehl, P. (1978). Theoretical risks and tabular asterisks: Sir Karl, Sir Ronald, and the slow progress of soft psychology. *Journal of Consulting and Clinical Psychology*, 46, 806–834.
- Meehl, P. (1992). Appraising and amending theories: The strategy of Lakatosian defense and two principles that warrant it. *Psychological Inquiry*, 1, 108–141.
- Milgram, S. (1963). The behavioral study of obedience. *Journal of Abnormal and Social Psychology*, 67, 371–378.
- Morris, C. (1964). *Signification and significance*. Cambridge, MA: MIT Press.
- Peplau, L.A., Sears, D.O., Taylor, S.E., & Freedman, J.L. (1989). *Readings in social psychology* (2nd ed.). Hemel Hempstead: Prentice Hall.
- Quine, W.V.O. (1960). *Word and object*. Cambridge, MA: MIT Press.
- Reynolds, G.S. (1968). *A primer of operant conditioning*. Glenview, IL: Scott, Foresman.
- Richards, A. (1974). General subject index. In J. Strachey (Ed.), *The standard edition of the complete psychological works of Sigmund Freud* (Vol. 24, pp. 227–404). London: Hogarth.
- Ryle, G. (1938). Categories. *Proceedings of the Aristotelian Society*, 38, 189–206.
- Ryle, G. (1949). *The concept of mind*. London: Oxford University Press.
- Sarason, I.G., & Sarason, B.R. (1989). *Abnormal psychology: The problem of maladaptive behavior* (6th ed.). Englewood Cliffs, NJ: Prentice Hall.
- Searle, J. (1990). Consciousness, explanatory inversion, and cognitive science. *Behavioral and Brain Sciences*, 13, 585–642.
- Simpson, J.A., & Weiner, E.S.C. (Eds.). (1989). *The Oxford English dictionary* (2nd ed.). Oxford: Clarendon Press.
- Skinner, B.F. (1953). *Science and human behavior*. Toronto: Collier-Macmillan.
- Skinner, B.F. (1964). Behaviorism at 50. In T.W. Wann (Ed.), *Behaviorism and phenomenology*. Chicago, IL: University of Chicago Press.
- Skinner, B.F. (1974). *About behaviorism*. New York: Random House.

- Skinner, B.F. (1985). Cognitive science and behaviorism. *British Journal of Psychology*, *76*, 291–301.
- Skinner, B.F. (1987). Whatever happened to psychology as the science of behavior? *American Psychologist*, *42*, 780–786.
- Skinner, B.F. (1989). The origins of cognitive thought. *American Psychologist*, *44*, 13–18.
- Sternberg, R.J. (1986). *Intelligence applied*. Orlando, FL: Harcourt Brace Jovanovich.
- Strawson, P.F. (1959). *Individuals*. London: Methuen.
- Watson, J.B. (1913). Psychology as the behaviorist views it. *Psychological Review*, *20*, 158–177.
- Webster's Editors (1962). *Webster's collegiate dictionary*. Cleveland, OH: World.
- Westen, O. (1986). What changes in short-term psychodynamic psychotherapy? *Psychotherapy*, *23*, 501–512.

STEPHEN HIBBARD is a Post-Doctoral Fellow in the Department of Psychiatry, University of Michigan. The present paper was written at the University of Tennessee as a member of the Cognitive Psychology lab. His research interests include unconscious processes, categorization, problem-solving, expertise, clinical inference, self and object representations, narcissism, masochism and shame. ADDRESS: University Hospital—River-view Building, 900 Wall Street, Ann Arbor, MI 48109-0722, USA.

TRACY HENLEY is Assistant Professor of Psychology at Mississippi State University. Recent works in history and theory have included the co-edited anthology *Reflections on the Principles of Psychology: William James After a Century* (Erlbaum, 1990), and the co-authored text *Connections: The History of Psychology* (Houghton Mifflin, forthcoming). ADDRESS: Department of Psychology, 203 Magruder Hall, Mississippi State University, Mississippi State, MS 39762-6161, USA.