Thinking as the Behaviorist Views It

Hayne W. Reese
Western Virginia University

The title of my paper is a paraphrase of the title of Watson's 1913 article, "Psychology as the Behaviorist Views It," but unlike Watson, I intend "the Behaviorist" to refer to Watson. My paper is based largely on a paper Watson was invited to present in a symposium to be conducted in September 1920 at an international conference at Oxford University. The topic of the symposium was Watson's theory of thinking and speech, which he had presented a year before in his 1919 Psychology from the Standpoint of a Behaviorist. Watson accepted the invitation and wrote his presentation, but he was unable to attend the conference because of events that began in April 1920 when his wife Mary Ickes discovered Watson's affair with Rosalie Rayner and ended with Mary and John B. Watson's divorce in December 1920. The paper Watson would have presented was "Is Thinking Merely the Action of Language Mechanisms?" It was published with the proceedings of the symposium in the October 1920 issue of the British Journal of Psychology.

Watson's View of Thinking

The first question I will address is whether Watson acknowledged the existence of thinking. He did. For example, he said in the 1920 article that if a person is given a problem to solve alone in a room and emerges after a while with the problem solved, we are justified in inferring that the person did something in the room that solved the problem. We could not observe what the person did, but we are justified in trying to infer what the person did. Watson went on to say that if the person sits motionless before us and then writes down the solution, we are justified in inferring that the person did something to solve the problem and in trying to infer what that something was. The generic name for what the person is inferred to have done is *thinking*.

Watson's View of Introspection

My second question is about the kind of evidence a behaviorist could use to infer thinking. Watson recommended introspective reports. Edwin A. Locke said that "basic premises of behaviorism" are determinism, epiphenomenalism, and rejection of introspection as a scientific method. The first two premises are correctly identified as basic; but the third premise is correct only in a limited sense. Locke said that in behaviorism, introspective reports "may not be used to make inferences regarding the subjects's mental states or processes." Woodworth said in 1921 that behaviorists tried "to exclude introspection altogether, and on principle" and he said in 1932 that Watson "announced that introspection must not be employed, and that only motor (and glandular) activities must be discovered."

Neither Locke nor Woodworth cited any documentation, and none exists. Watson gave as examples of activities to be studied by behaviorists not only simple behaviors but also brick laying and house building, which by no stretch of antibehaviorist imagination can be classified as "motor (and glandular) activities." More to the present point, Watson said that behaviorists can and should use introspective reports, but must interpret them as what they really are--verbal, behavior that can provide data for inferences about thinking. Behaviorists reject the classical view that introspective reports provide direct, factual evidence about thinking.

One kind of verbal-report is the "thinking aloud" procedure. A standard reference is Ericsson and Simon's book *Protocol Analysis,* but as Ericsson and Simon (1984) pointed out, Watson had recommended in the 1920 article the same procedure for the same purpose. The research participant is given instruction in making cognitive behaviors overt by expressing them aloud verbally, but this procedure is not intended to be a version of the classical method of introspection. In introspection, the participant attempts to observe thinking as it occurs and then to describe it; in thinking aloud, the participant attempts to make covert thinking overt. However, "thinking aloud" probably reflects inner speech rather than thinking. This point leads to my third question, about the relation between thinking and speech.

Inner Speech

The Soviet psychologist Lev Vygotsky conceptualized inner speech as an abbreviated form of external speech. This view is also held by others, including Watson, Max Muller, and according to Muller, Leibniz. Vygotsky's position was that even though inner speech originates in external social speech, inner speech does not have the same form, or syntax as external speech because inner speech tends to preserve the predicate of a sentence and to omit the rest. Inner speech also does not have the same lexicon as external speech; external speech is vocalized in words and depends on denotative meanings, and inner speech is expressed in general senses of words, including denotation and also connotation. Watson's position was virtually the same: "In salient talking or thinking...the implicit processes...would be so abbreviated, short-circuited and economized that they would be unrecognizable unless their formation had been watched from the transition point where they are complete and social in character, to their final stage where they will serve for individual but not for social adjustments."

The Soviet formulation of the relation of speech to thinking seems very much like the formulations of Watson and Skinner, but most of the apparent similarities are actually not close. One real similarity is that Watson, Skinner, and the Soviet theorists did not limit thinking to verbal behavior but also included nonverbal behavior *and* all but ignored nonverbal thinking. One difference between the Soviet and behavioral views is that in the Soviet view, thinking and speech were said to be separate, and thinking was said to shape speech rather than to be speech. As Sokolov said, "The same thought can be expressed in different words and different grammatical forms." However, the Soviet theorists did not explain what nonverbal thinking actually is.

Watson's View of Thinking and Speech

Watson's position on the relation of speech to thinking has been misrepresented or at least oversimplified by most writers who have mentioned it. The misrepresentation or oversimplification is that he believed that thinking is subvocal talking; it appears in books by, for example, Roback in 1923, Roback and Kiernan in 1969, Hergenhagen in 1976, Leahey in 1992, and Schultz and Schultz in 1992, and in Skinner's 1959 obituary of Watson. Actually, Watson believed that the whole body is involved in thinking--he said, "We think with our whole body." Many others have held this view. For example, Alexander Bain wrote in 1855, "Then brain is only a part of the machinery of mind; for although a large part of all the circles of mental action lie within the head, other parts equally indispensable extend throughout the body." Watson said that thinking involves "internal speech," or "subvocal talking," but "substitutions take place--for example, where the shrug of the shoulders of the movement of any other bodily part becomes substituted for a word. Soon *any, and every bodily response may become a word substitute.*" If these substitutions are overt, Watson said that they constitute behaving rather than thinking because thinking is covert. He ended his discussion in the 1930 edition of Behaviorism with "We thus think and plan with the whole body. But since, as I pointed out above word organization is, when present, probably usually dominant over visceral and manual organization, we can say that '*thinking' is largely subvocal talking*--provided we hasten to explain that it can occur without words."

However, Watson also said that conscious means verbalized and that people have little if any memory for events that occur before the age of 3 years because they did not verbalize the events. Watson also argued that language hinders treatment of problem behaviors because the client brings the old environment along in the form of words and gestures. The same point has been noted by Steve Hayes and Elizabeth Gifford, among others.

The use of gestures in thinking is illustrated by an anecdote Don Baer reported. He said that he wanted to describe the extraction of square-roots by hand to illustrate a point in a paper he was writing, but he could not remember what number was doubled in the algorithm. He said that he solved the problem by writing a number and beginning to go through the steps, and that his hand automatically wrote the doubled number at the appropriate step. He said, "My hand still knew the algorithm, but 'I' did not...I induced what doubled from what my hand wrote in extracting the root."

I have used a similar technique to "remember" my nine-digit identification code for making long-distance telephone calls from my office and my seven-digit code for entering my voicemail box. I punch what I believe is the first number and my hand automatically punches the rest. William James made the same point about other habitual acts: "Few men can tell off-hand which sock, shoe, or trousers-leg they put on first. They must first mentally rehearse the act; and even that is often insufficient--the act must be *performed*." Many children--and adults--remember which direction is "to the right" by moving the writing hand as though writing, and I have often remembered the locations of typewriter keys by simulating in the air how to type a familiar word. I classify such gestures as thinking even though they are overt. In this respect I disagree with Watson and agree with Skinner's statement in *Verbal Behavior* that thinking can be verbal or motoric and can be covert or overt.

REFERENCES

Baer, D. M. (1982). Applied behavior analysis. In G. T. Wilson & C. M. Franks (Eds.), *Contemporary Behavior therapy* (pp. 277-309). New York: Guilford.

Bain, A. (1977). *The senses and the intellect.* In D. N. Robinson, Ed., *Significant contributions to the history of psychology 1750-1920, Series A: Orientations: Vol. IV. A. Bain.* Washington, D.C.: University Publications of America. (Original work published 1855)

Bartlett, F. C., & Smith, E. M. (1920). Is thinking merely the action of language mechanisms? (I). *British Journal of Psychology, 11,* 55-62.

Bergmann, G. (1956). The contribution of John B. Watson. *Psychological Review, 63,* 265-276.

Cohen, D. (1979). *J. B. Watson: The founder of behaviorism. A Biography.* London: Routlege & Keagan Paul.

Dewey, J. (1891). *Psychology* (3rd ed.). New York: American Book Co.

Duncker, K. (1945). On problem-solving (L. S. Lees, Trans.). *Psychological Monographs, 58*(5, Whole No. 270).

Ericsson, K. A., & Simon, H. A. (1984, 1993). *Protocol analysis: Verbal reports as data.* Cambridge, MA: MIT Press. (1st ed. 1984; rev. ed. 1993)

Hayes, S. C., & Gifford, E. V. (1997). The trouble with language: Experiential avoidance, rules, and the nature of verbal events. *Psychological Science, 8,* 170-173.

Hergenhagen, B. R. (1976). *An introduction to theories of learning.* Englewood Cliffs, NJ: Prentice-Hall.

James, W. (1890). *The principles of psychology* (Vol. 1). New York: Holt.

Leahey, T. H. (1992). *A history of psychology: Main currents in psychological thought* (3rd ed.). Englewood Cliffs, NJ: Prentice Hall.

Locke, E. A. (1971). Is "behavior therapy" behavioristic? (An analysis of Wolpe's psychotherapeutic methods). *Psychological Bulletin, 76,* 318-327.

Minutes of the proceedings of the Congress of Philosophy at Oxford, September 24TH-27TH, 1920. (1920). *Proceedings of the Aristotelian Society, 20* (New Series), 304-306.

Müller, F. M. (1887). *Three introductory lectures on the science of thought.* Chicago: Open Court.

Notes. (1920). *Mind, 29,* 383-384.

Roback, A. A. (1923). *Behaviorism and psychology.* Cambridge, MA: University Bookstore.

Roback, A. A., & Kiernan, T. (1969). *Pictorial history of psychology and psychiatry.* New York: Philosophical Library.

Schultz, D. P., & Schultz, S. E. (1992). *A history of modern psychology* (3rd. ed.). Fort Worth, TX: Harcourt Brace Javanovich.

Skinner, B. F. (1938). *The behavior of organisms: An experimental analysis.* New York: Appleton-Century-Crofts.

Skinner, B. F. (1957). *Verbal behavior.* New York: Appleton-Century-Crofts.

Skinner, B. F. (1959). John Broadus Watson, behaviorist. *Science, 129,* 197-198.

Skinner, B. F. (1974). *About behaviorism.* New York: Knopf.

Skinner, B. F. (1989). The behavior of the listener. In S. C. Hayes (Ed.), *Rule-governed behavior: Cognition, contingencies, and instructional control* (pp. 85-96). New York: Plenum.

Sokolov, A. N. (1972). *Inner speech and thought* (D. B. Lindsley, Ed.; G. T. Onischenko, Trans.). New York: Plenum.

Spence, K. W. (1956). *Behavior theory and conditioning.* New Haven: Yale University Press.

Spence, K. W. (1960). The postulates and methods of "behaviorism." In K. W. Spence, *Behavior theory and learning: Selected papers* (pp. 39-56). Englewood Cliffs, NJ: Prentice-Hall. (Based on address given in November 1946).

Spiker, C. C. (1989). Cognitive psychology: Mentalistic or behavioristic? In H. W. Reese (Ed.), *Advances in child development and behavior* (Vol. 21, pp. 73-90). New York: Academic Press.

Uznadze, D. N. (1966). *The psychology of set* (B. Haigh, Trans.). New York: Consultants Bureau.

Vygotsky, L. S. (1986). *Thought and language* (A. Kozulin, Ed. and Trans.). Cambridge: MIT Press. (Original work published 1934)

Watson, J. B. (1913). Psychology as the behaviorist views it. *Psychological Review, 20,* 158-177.

Watson, J. B. (1919). *Psychology from the standpoint of a behaviorist.* Philadelphia: Lippincott.

Watson, J. B. (1920). Is thinking merely the action of language mechanisms? *British Journal of Psychology, 11,* 87-104.

Watson, J. B. (1924). The unverbalized in human behavior. *Psychological Review, 31,* 273-280.

Watson, J. B. (1928). *The ways of behaviorism.* New York: Harper.

Watson, J. B. (1930). *Behaviorism* (rev. ed.). New York: Norton.

Westsch, J. V. (1985). *Vygotsky and the social formation of mind.* Cambridge, MA: Harvard University Press.

Woodworth, R. S. (1921). *Psychology: Study of mental life.* New York: Holt.

Woodworth, R. S. (1932). Robert S. Woodworth. In C. Murchison (Ed.), *A history of psychology in autobiography* (Vol. 2, pp. 359-380). Worcester, MA: Clark University Press.