ORIGINAL RESEARCH

Did John B. Watson Really “Found” Behaviorism?

John C. Malone

Published online: 15 March 2014
© Association for Behavior Analysis International 2014

Abstract Developments culminating in the nineteenth century, along with the predictable collapse of introspective psychology, meant that the rise of behavioral psychology was inevitable. In 1913, John B. Watson was an established scientist with impeccable credentials who acted as a strong and combative promoter of a natural science approach to psychology when just such an advocate was needed. He never claimed to have founded “behavior psychology” and, despite the acclaim and criticism attending his portrayal as the original behaviorist, he was more an exemplar of a movement than a founder. Many influential writers had already characterized psychology, including so-called mental activity, as behavior, offered many applications, and rejected metaphysical dualism. Among others, William Carpenter, Alexander Bain, and (early) Sigmund Freud held views compatible with twentieth-century behaviorism. Thus, though Watson was the first to argue specifically for psychology as a natural science, behaviorism in both theory and practice had clear roots long before 1913. If behaviorism really needs a “founder,” Edward Thorndike might seem more deserving, because of his great influence and promotion of an objective psychology, but he was not a true behaviorist for several important reasons. Watson deserves the fame he has received, since he first made a strong case for a natural

science (behaviorist) approach and, importantly, he made people pay attention to it.

Keywords John B. Watson · Behaviorism · History · William B. Carpenter · Alexander Bain · Sigmund S. Freud · Edward L. Thorndike

John B. Watson’s Contribution: Was Behaviorism Really “Founded”?

The origin of behaviorism has long been linked to John B. Watson, about whom much has been written and many talks given, especially during 2013, the centennial of his well-known Columbia lecture, “Psychology as the Behaviorist Views It.” I want to commemorate that event and argue that Watson provided an important impetus to behaviorism, but that many others had prepared the way. Todd’s (1994) report suggests that recent textbook presentations lead the reader to assume that Watson actually created behaviorism and one might further conclude that his absence would have meant that psychology during the rest of the twentieth century would have been far different. In fact, Watson might well have taken a different path in life. For example, he could have gone into medicine and devoted his energies to the study of endocrinology or otorhinolaryngology. What if Watson *had* gone to medical school after graduating with a master’s degree from Furman University at the age of 21? In 1916, he hinted that it had been a possibility, perhaps later regretted, when he gave an example of a “Freudian slip” in an article praising Freud’s findings and therapy:

J. C. Malone (✉)
Department of Psychology, University of Tennessee,
Knoxville, TN 37996-0900, USA
e-mail: jcmalone@utk.edu

J. C. Malone
e-mail: malonejc2002@gmail.com

Only a moment ago it was necessary for me to call a man on the telephone. I said: "This is Dr. John B. Watson, of the Johns Hopkins Hospital," instead of Johns Hopkins University. One skilled in analysis could easily read in this slight slip the wish that I had gone into medicine instead of into psychology (even this analysis, though, would be far from complete). (p. 479)

Many decades later, his son, James, testified that his dad was embarrassed because he lacked a medical degree (Hannush 1987, p. 146), while Watson himself wrote, "I think the only fly in the ointment was my inability, for financial reasons, to finish with my medical education" (1936, p. 275). He wrote as if he would have continued on the behavioral course that he had taken and that a medical degree would have enabled him to work with medical people and avoid some of the "insolence of some of the youthful and inferior members of the profession" (1936, p. 275). Skinner (1959) also supposed that Watson would have become a psychologist in any event. But in the 1916 quotation, Watson did write, "medicine instead of psychology," suggesting that he might have drastically changed the course of his life and his work. That could have meant no 1913 epochal lecture and a different future for psychology. Or would John B. Watson's absence from twentieth-century psychology really have made a difference? Did he really "found" behaviorism or would history have played out essentially as it did?

Why Is John B. Watson Considered the Founder of Behaviorism?

Given the many past and present tributes to John B. Watson, we might fairly ask why he is uniquely revered as the father of behavior analysis. He was so honored at the 2013 conference of the Association of Behavior Analysis International, but why was that? Why, for example, was Edward Thorndike not the honoree? Watson's real academic career as a psychologist dealing with *human* behavior lasted only 12 years, from 1908 to 1920, coinciding with his time at Johns Hopkins University. He gave talks and wrote popular books and articles after that, but his autobiography in 1936 pretty much ended his scholarly career, although he did continue to contribute to current practices in business: marketing, management, and (maybe) advertising (Coon 1994; DiClemente and Hantula 2000, 2003). But he

clearly viewed that as business, and Watson said that being in business was very different from having an academic job (Buckley 1989, p. 177).

As for behavioral research with humans, though he published little other than the "Little Albert" study that Todd (1994, p. 102) contends has become the "baby-frightening experiment," that serves mainly as introductory textbook lore. We might also count some data on "handedness" included informally in *Behaviorism* (Watson 1930, pp. 131–133), as well as similar brief data presentations on other topics appearing here and there in his other reports (e.g., his 1920 work with Karl Lashley on venereal disease education). Mary Cover Jones (1924) did publish results of her work carried out under his direction but, like "Albert's" data, that also dealt with acquired fears in children, this time their removal. Altogether, that seems an unimpressive record of research involving humans and certainly one reason that the *Journal of Applied Behavior Analysis* shows almost no references to Watson! We might ask again, "Why is Watson celebrated as the founder of behaviorism?"

The answer may be simple. Watson was an attractive, strong, scientifically accomplished, and forceful speaker and an engaging writer at a time when anyone who could be called a proto-behaviorist was anxious to get along with the few other psychologists in the world. So such people, like Knight Dunlap (e.g., 1912), seemed weak, tentative, mealy mouthed, and ineffectual. On the other hand, Watson was articulate and combative, a real fighter who publicly dismissed the accumulated psychology of his time as rubbish. And he was a full professor at Johns Hopkins University at the age of 29, editor of *Psychological Review*, and the object of universal scholarly respect, if not adoration (e.g., Jastrow 1929).¹ Further, Watson had a message that seemed easy to understand, and that called for *action*, rather than quiet discussion and polite debate.

Not many paid attention in 1913 and for several years thereafter (Samelson 1994), but as 1920 approached, behaviorism was taking hold, partly because authoritative people like future Nobel laureate Bertrand Russell² and Harvard neorealist philosopher Ralph Barton Perry generally supported Watson's program. Others, like

¹ Jastrow was a bitter critic who nonetheless wrote that "Watson's standing is unchallenged, his ability exceptional, his contributions notable." (1929, p. 456)

² Russell specifically asked for Watson as one of the two reviewers of his (1921) *The Analysis of Mind*. Watson's review appeared in 1922.

Walter Hunter at Brown, welcomed Watson's revolution and tried to explain behaviorism to many uncomprehending readers (Hunter 1922). A few years later, Woodworth referred to "the outbreak of behaviorism in 1912–14" (1931, p. 45) and described it as a "youth movement" (p. 59). But he quoted the *New York Times* opinion, that *Behaviorism* "marks an epoch in the intellectual history of man," as well as the *Tribune*, which hailed it "as the most important book ever written" (1931, p. 92).

Watson the teacher directly inspired one future APA president who never took a traditional psychology course. Karl Lashley, who many consider the greatest neuropsychologist of our time, took a seminar with Watson and became a lifelong correspondent and ally. As Lashley put it in 1958, "Anyone who knows American psychology today knows that its value derives from biology and from Watson" (Beach 1961, p. 171). Watson's career has been discussed many times and it need not be repeated here. But what if the story of his promotion of behaviorism were only a dream—what if Watson *had* chosen a different career? Would behaviorism have never arisen?

Would Watson's Absence Have Made a Real Difference?

If he had gone to medical school and followed a path not directly relevant to psychology, there would have been no 1913 behavioral "manifesto." Would it follow that there would then be no Bertrand Russell's (1921) report on Watson's behaviorism for Skinner to read³ and thus *The Behavior of Organisms* might never have been written? Perhaps applied behavior analysis would not exist and therapy would be wholly based on "Positive Psychology" or "Self-Actualization." Worse, could the advertising industry possibly have shriveled to the point that we are merely informed of the virtues of products, rather than persuaded that we want them?⁴ If this scenario seems plausible to us, then we do believe that Watson did possess the "superman-ic" power that Joseph Jastrow (1929, p. 457) accused him of thinking that he had. But it is almost certain that such a scenario would not have occurred and that behaviorism would

have emerged pretty much as it did. That is because Watson probably did not really alter history very much. He did what he wrote a nervous system does: It just "speeds up" the message, but the message still gets through without it (1930, p. 50).

Watson Was an Exemplar, Not a Founder

Morris (2014) documented Watson's contribution to modern applied behavior analysis in an interesting and thorough way. He relied on an article by Baer, Wolf, and Risley published in 1968, the first year of publication of *The Journal of Applied Behavior Analysis*, titled "Some Current Dimensions of Applied Behavior Analysis." Those dimensions were "application," "behavioral basis," "analysis," and several others,⁵ each of which Morris showed to be compatible with Watson's behaviorism as he presented it in 1913 and as he developed it later. This is not to say that Watson directly influenced applied behavior analysis, but his fundamental argument for a natural science approach influenced the neobehaviorisms, including those of Hull and Skinner, that followed and those eventually led to applied behavior analysis. But Watson's was not the only voice arguing for an applied behavioral approach.

His work presaged both basic behavioral research and applied behavior analysis largely because his own views reflected those of his predecessors, some existing long before he was born. It is true that Watson was the strongest and most vocal possible advocate for applied behavioral methods and that he wrote "there was never a worse misnomer" than "practical" or "applied" psychology, since that is the only kind there is (1914, p. 12). This despite the fact that actual *examples* of human application were absent from *Behavior* (1914) and pretty scarce in the rest of his writings, unless anecdotal illustrations count. No matter, because Watson was not alone and given the contributions of others, especially during the late nineteenth century, he was dispensable, serving not as an originator, but as a "crystallizer," the label he used to describe himself (Burnham 1968, p. 150; Watson 1919, p. vii).

³ Bjork 1993, p. 60

⁴ Of course, Watson's contribution appears not to have been in advertising as much as it was in management and training (Coon 1994; DiClemente and Hantula 2000, 2003).

⁵ The others were technological basis, conceptually systematic, effective, and general. It goes without saying that these seven labels are each subject to much interpretation and so serve only as rough guides. But explanations based on underlying mechanisms, cognitive or other, are excluded.

What Does it Mean to be a “Predecessor” of Behaviorism?

“Behaviorism” long ago lost whatever simple and specific definition it had. Watson coined the term in 1913, referred to “behavior psychology” in 1919 (p. viii), and titled his 1924 popular book *Behaviorism*. There are many adjectives that have been attached since, from “applied” to “cognitive” to “metaphysical” to “neo” to name only a few, so that “behavioral” is almost as vague a descriptor as is “cognitive.” These classificatory schemes are not relevant here, so I leave “behavioral” operationally defined in much the way that Watson used it.⁶

By behaviorism, I mean the general philosophy and practice advocated by Watson after 1924, adopted by Skinner (1945), and often classified as “radical” behaviorism (Malone 2009; Moore 2008; Morris et al. 2013). As a philosophy, radical behaviorism is independent of any particular learning theory, so that habit, operant, respondent, reinforcement, and other terms specific to particular learning theories are irrelevant. What characteristics define such a behaviorist? First, such behaviorists do not explain behavior by means of (usually vacuous) underlying biological mechanisms as in, “The fMRI shows that impulse control depends on supraorbital frontal cortex suppressing limbic cortex.”⁷ Such behaviorists also do not explain by means of trait names, as in “The ability to recall long sequences of numbers is due to exceptional memory.” Such intervening variables and hypothetical constructs are not acceptable because they merely name the activities to be explained. Real explanations depend on showing relations between past and present environments and behavior. Mathematical applications are often helpful, and descriptive vocabulary can include words like “habit,” as well as mental terms as long as they are recognized as verbs, like “seeing,” meaning that they are behavior. Given these simple criteria, which reduce to the single criterion of sticking to relations between environment and behavior, we need only add the proviso that the explanation can usefully be applied, if only in principle. For example, Herrnstein’s (1958) matching law has many applications, but decades

passed after its introduction before this was widely recognized.

Given these criteria, a host of historical figures proposed what are clear behavior analytic applications, though we must forgive them for their failure to use modern jargon. As a single ancient example, Aristotle’s *Nicomachean Ethics* provides specific advice on living one’s life and on raising one’s children, a pretty behavioral doctrine recently advocated by writers as different as J. R. Kantor (e.g., 1963), Ayn Rand (1982), and Howard Rachlin (e.g., 1994). For example, Aristotle stressed the importance of establishing habits in children and that doing so requires coercion, since a child is not initially affected by the consequences of virtuous action (i.e., natural consequences). Habit change always requires action, not just verbal commitments, and intelligence, honesty, ambition, and other trait names are meaningful only as patterns of action extended over time. Many readers would be surprised at just how behavioral Aristotle’s writings can be, especially evident in the *Nicomachean Ethics* (e.g., in Loomis, 1943). Watson may well have read it, given his years studying Greek at Furman.

Many other proto-applied behavior analytic figures could be mentioned, but I will comment on four who are salient and relatively recent. These are William Carpenter, Alexander Bain, Sigmund Freud (perhaps surprisingly), and especially, the relentless enemy of mentalism, Edward Thorndike. They and too many others to include provided more than enough behavioral impetus to inspire Skinner, and through him, the behavior analysts who followed, whether Watson had played a part or not. Consider the case for these relatively recent progenitors of behaviorism and for their specific contributions. First, consider the writings of William Carpenter and Alexander Bain, which appeared in many editions, were known to most educated people, and were very influential.

Nineteenth-Century Anticipations of Behavior Analysis

William Carpenter’s Mental Physiology

Carpenter, an English physician, had authored a popular text on human physiology with a final chapter “outlining” psychology. Due to popular acclaim, that chapter was expanded to a 737-page book, *Principles*

⁶ Or at least the way he used it in the 1920s. In 1919, p. vii, he was referring to natural science psychology when he wrote that “what name it is given will not be a matter of much consequence.”

⁷ This is not to question the fact that we are biological entities; see Skinner (1966), for example.

of *Mental Physiology*, first published in 1874. William James frequently cited Carpenter, for instance, in his (1890) classic, *Principles of Psychology*, particularly in Chapter IV, where James included very long excerpts. Here is a sample of what Carpenter taught, with my italicized comments enclosed within brackets. Each of these points was elaborated and illustrated at great length, so the following is not just a recounting of isolated aphorisms (from the 1875 edition):

- Habit is all-important and habits grow with exercise—we are “bundles” of habits (Ch. VIII). [*Learning, as habit formation, is basic.*] “The present is the result of the past, so whatever we learn, think, or do in our youth will come again in later life either as a Nemesis or as an Angel’s visit” (p. 351) [*The effects of learning in childhood are or may be long lasting.*]
- Carpenter advised that “Even the infant must not be brought out of its bed simply because it is crying” and he recommended what a century later would be called the “extinguishing” of crying in an infant that demands to be held before its nap (p. 354) [*The infant’s crying is sensitive to consequences.*]
- Following Aristotle, Carpenter taught that discipline must be established in infancy so that self-discipline may later develop. Initial external coercion leads to the forming of the personal habit of duty or obligation (p. 356). [*External control is used to prepare for the development of self-control.*]
- Modeling by older siblings is very important, because the parents are so different from the child as to be unemulated (pp. 357–358).
- Carpenter began Chapter IX with “I am, I ought, I can, I will,” but then explained that will power is really behavior (habit) and it can be explicitly developed (pp. 376–377). [*Even the most exalted “mental power” can be trained.*]

Alexander Bain

Bain was a self-educated Scot, born into poverty, and credited with many accomplishments, including writing massive works in psychology published in many editions beginning in 1855. He also founded the journal *Mind*. One of his major works was *The Senses and the Intellect*, published in four editions between 1855 and 1879. It is easy to see the foreshadowing of the bases for twentieth-century behaviorism in this sample of

Bain’s principles, each of which was elaborated at length. Examples are from the third and fourth (1868, 1879) editions:

- Activity is fundamental and organisms are typically active, not passive. This is shown in muscle tonus, awakening from sleep, and movements of infants when warm and fed (1868, pp. 57–100). [*Behavior was clearly recognized as the subject matter of psychology even in 1868.*]
- According to Bain’s “Law of Diffusion,” stimulation always affects the whole body, as the strings of a harp resonate to ambient vibrations (1868, p. 258). James (1890, Ch. 21) gave many examples, including reactions of the iris and of the anal sphincter in judgments of beauty. [*Watson must have read Bain or at least James’s (1890) summary. The Law of Diffusion, without that name, is a theme that runs through all of Watson’s writings.*]
- Bain proposed that body responses are involved in “recollection as suppressed articulation” (1879, pp. 338–339), that the child acts out while describing, and that our eyes move when we dream. [*Also in agreement with Watson – memory and imagination are closely bound to muscular activity.*]
- The law of effect appeared as “Trial & Error Learning” in 1859. Bain found that human babies remove needles that prick them and the lamb learns to better find the ewe’s nipple (in Boakes 1984, p. 9). In 1868, Bain gave the example of a baby feeling “chillness” and moving until it contacts the warm nurse (pp. 304–305). This leads to learning as a “process of acquirement.” However, this version of the law, developed with Herbert Spencer, relied on pleasures and pains to promote learning. [*The Law of Effect, as Thorndike pointed out, was not new when he promoted it in arguments written after his groundbreaking work published in 1898, but the hedonist interpretation he briefly held cannot withstand criticism and was soon not held by him or by any behaviorist, though critics often supposed it was.*]
- It is “notorious” that the nurse imitates the child and not the other way around. Bain believed that imitation of all kinds is common, but entirely the product of learning (1868, p. 416). [*It took a long time for this view to be accepted. But Watson (e.g., Watson 1924, p. 40) thought that imitation was important and by no means instinctive.*]

- Changing habits was a primary concern of Bain and he gave advice that was not appreciated until a few decades ago. James described Bain's method as *the* way to change behavior, ranging from the time that you get up in the morning to breaking a troublesome "opium habit." You should (a) go cold turkey if you can stand it – don't taper off; (b) arrange circumstances to re-enforce the actions you want and avoid circumstances that oppose them; (c) take a public pledge; (d) never allow an exception to occur; and (e) seize the first opportunity to act because action is absolutely essential (James 1890, vol. 1, pp. 122–125). [*This approximates good behavioral advice and James's summary precedes Watson's (1913) manifesto by more than 20 years.*]

Behaviorism Was Inevitable Given Nineteenth-Century Developments

Imagine the psychology that results from the applications of the principles promoted by Carpenter and Bain. For example, suppose that you met someone on an unfamiliar campus and asked for her basic assumptions about the way we work. Further, suppose that she answered that we are continually active and that what we do depends on habits formed by repetition and/or the consequences of actions. Explanations based on metaphysical assumptions of mind/body dualism she dismissed as useless. She further believed that experiences in childhood could have enduring effects and that children should be trained to form beneficial habits, including self-control. She argued that even infants are sensitive to the consequences of their actions and should not be allowed to control us with their cries. Modeling by peers is important in the development of all children, as is coercion, which we must employ initially, since external control is prerequisite to self-control. She interpreted thinking, remembering, and imagining also as activities, often reflected in muscular action and subject to modification by experience. To change our habits, we should start at once, she advised, and arrange conditions to reinforce our actions. We should "do it now and don't allow yourself to slip back."

If that were all that we knew about her views on psychology, we would assume that she was a behaviorist. Yet, that summary simply echoes the doctrines of a host of writers in England, Scotland, Germany, and America many decades before Watson's 1913

manifesto. Given that background and the predictable sterility of the introspective psychology of Edward Titchener and his Structuralism, behaviorism was bound to emerge, if not triumph, soon. But other influences contemporary with and following Watson's 1913 announcement were forthcoming, and these further ensured that behaviorism would appear. Sigmund Freud and psychoanalysis was one of the most important of them.

Freud Also Prepared the Way for Behaviorism

Freud and Psychoanalysis

We should put aside common prejudices against Freud and what the post-1920 Watson and many other critics treated as mentalistic mumbo jumbo and "intrapsychic forces" and consider what really constituted the bases of Freud's contribution. Remember that Freud appeared in America in 1909 (see below), a time when American psychology was obsessed with the study of consciousness. Freud's findings seemed fatal to that view and Watson agreed.

If the followers of the Freudian school of psychologists can be believed - and there are many reasons for believing them...we are daily betraying the presence of unfulfilled wishes. Many of these wishes are of such a character that we ourselves cannot put them into words. Indeed if they were put into words for us we should straightway deny that such a wish is or was ever harbored by us in our waking moments. But the stretch of time indicated by "waking moments" is only a minor part of the twenty-four hours. Even during the time we are not asleep we are often abstracted, day-dreaming, letting moments go by in reverie. (Watson 1916, p. 479)

Gustav Bergmann's famous (and mixed) review of Watson's contribution praised him for his courageous support of Freud's work: "The first to build an elaborate structure on this ground was Freud. As far as I know, the first experimental psychologist who understood him and had the courage to speak up for him was Watson." (1956, p. 274). This should not be surprising, because Freud really was instrumental in preparing the way for Watson and for behaviorism in general. After all, what was a major criticism of Watson's behaviorism? It was

the denial of fictional entities like “mind” and “consciousness.” What was Freud’s main contribution? It was the demonstration that the important determinants of behavior are not conscious! Consciousness is no more than the foam on the ocean wave, and for pre-1923 Freud, the causes of our current psychological health or pathology depend on factors in the distant past.

Early Freud Was Not Really a “Freudian”

What is commonly supposed to be “Freudian Psychology” is the version he reluctantly created in 1923, with the famous three-member “intrapsychic” apparatus, which was unlike his theory prior to that time. His medical condition in the 1920s—oral cancer—was almost intolerable and he yielded to the pressures of some of his followers and abandoned his earlier position in favor of one more suited to popular tastes (see his autobiography in Gay 1989, especially pp. 33, 37). The earlier Freud, whose work was known to Watson, had shown that current behavior may depend upon events that occurred decades ago so that childhood trauma is manifested in adult life as neurotic behavior. No current conflict among homunculi was necessary, but “repression” was always part of Freud’s theory. The memory of the childhood trauma was repressed because it was too unpleasant to endure. This makes good behavioral sense and here is how Watson (1916) described the process:

These sometime grim specters both of the present and of the past cannot break through the barriers of our staid and sober waking moments, so they exhibit themselves, at least to the initiated, in shadowy form in reverie, and in more substantial form in the slips we make in conversation and in writing, and in the things we laugh at; but clearest of all in dreams. (p. 480)

Neither Watson nor Freud believed in the unconscious as a “place”; Watson (1916) wrote that

Many of us do not believe in a world of the unconscious... We believe that one group of habits can “down” another group of habits—or instincts. In this case our ordinary system of habits - those which we call expressive of our ‘real selves’ inhibit or quench (keep inactive or partially inactive) those habits and instinctive tendencies which belong largely in the past. (p. 483)

Freud and Watson Agreed: Unconscious Means Unverbalized

In 1915, Freud concluded that he had found the unconscious and that it consisted of a conglomerate of effects of our past that we had not transcribed into words: “Now, too, we are in a position to state precisely what it is that repression denies to the rejected idea...namely, the translation of the idea into words which are to remain attached to the object” (Freud 1915, pp. 201–202; Gay 1989, pp. 562–568). Watson (1930) reached the same conclusion in his behavioral assessment of the unconscious: “We have no names, no words with which to describe these reactions. They remain unverbalized...The theory of the unverbalized in human behavior gives us a natural science way of explaining many things that the Freudians now call ‘unconscious complexes,’ ‘suppressed wishes,’ and the like” (p. 166).

Freud’s work was not widely known in America until his visit to celebrate the twentieth anniversary of the founding of Clark University in 1909. His honorarium was the modern equivalent of US\$20,000 for five lectures in German, a language familiar to the psychological elite of the time (Jacoby 2009). In his preparing the way for Watson and for behavior analysis, it is fair to say that (early) Freud contributed the following:

- The Freud we knew in America showed an exclusive emphasis on *application*. Freud, like Watson, had been a biological researcher, but once his efforts had shifted toward the understanding of psychopathology, his work was wholly applied.⁸ Psychology in America, at least under Titchener, was irrelevant to and dead set against application. (*Freud thus contributed to paving of the way for applied psychology in general.*)
- Freud’s chief contribution was the demonstration that conscious awareness was not very important in psychology; our species history and previous life history have effects on us that are not available to consciousness. As Freud’s popularity rose, the standing of the introspective psychology of the day

⁸ And quite behavioral, at least in the beginning before 1923 when he reluctantly introduced the three-part collection of intrapsychic forces. However, these were imagined to operate unconsciously, so conscious awareness was still irrelevant.

was diminished and its relevance questioned. (*Watson's call to eliminate mind and consciousness from our vocabulary would have been much less convincing had Freud not prepared the way.*)

- Freud believed that therapy (re-education) could be effective but it could require years. Watson concurred, pointing out that you do not learn chemistry or the violin in a few days and your personality cannot be changed overnight (e.g., 1930, p. 301). (*The fact that personality can be changed as a function of therapy/training over long periods is a basic tenet of Watson's and of subsequent behavioral treatments.*)

After he left academics in 1920, Watson seemed solely concerned with promoting his specific view of psychology so that in both the 1924 and 1930 editions of *Behaviorism*, he attacked all other views, including Freud's. Incredibly, he lumped psychoanalysis with introspectionism and charged both with origins in religion and "voodooism" (1924, p. 18). An attentive reader notes that despite this disingenuous polemic, Watson expressed his respect for Freud's findings and therapy throughout all of these later writings.

The Real Father of Behavior Analysis?

This essay concerns the identification of the appropriate *founder* of behaviorism, both as philosophy and as practice at its birth in the early twentieth century. If we assume that behaviorism was "founded," the individual responsible is surely John B. Watson. I already tentatively questioned that assignment and showed a few examples of trends that made the founding of behaviorism inevitable with or without Watson. Given that, another pioneer might be more deserving of that honor. Edward Thorndike was an energetic promoter of the natural science approach to psychology and had an impressive list of accomplishments by the time of Watson's (1913) announcement. Should he be considered the founder of behaviorism? It is certain that Watson did not think so.⁹

⁹ For example, 1914, Ch. VII, especially p. 262, where Watson (perhaps unfairly) criticized Thorndike's "satisfiers."

But perhaps a case could be made for Thorndike, whose accomplishments were impressive.

Edward L. Thorndike: First to Battle Mentalism?

Thorndike posed a stark contrast to Watson's handsome, smooth, strong, and articulate persona. Watson was a charming man who preferred handmade shirts and shoes and who may well have been one of the great lovers in history, according to Burnham (1994) and James Watson (Hannush 1987). Thorndike was a much more ordinary and modest person. His personal characteristics and career are well covered in the biography by Joncich (1968).

After working under William James at Harvard, Thorndike's doctorate came at age 24 at Columbia with his renowned observations of cats and dogs learning to escape from "problem boxes" and chicks learning mazes. This led to evidence that the old and common law of effect—Bain's "trial and error," which Thorndike called "trial and success" in 1901a—could explain learning better than could mentalist explanations. He should receive credit for this and he has. Most recently, a very sympathetic review of his (1898) dissertation was published by Lattal (1998) that led to a series of six articles discussing Thorndike's contributions to behaviorism published in the *Journal of the Experimental Analysis of Behavior* the following year. Since Thorndike's seminal work was published 15 years before Watson's 1913 lecture, could it be that he is more deserving of being called "founder?"

Behaviorism is largely an alternative to mentalism, the doctrine that our observable behavior is dependent on mental causes. This was a popular belief in psychology in 1898 when Thorndike first published, and it is the view of folk psychology today. Mental sadness makes us cry, mental anger makes us attack, and mental thoughts make us move. Thorndike showed that mental activity is itself behavior and, like overt behavior, it can be trained. This was shown in his brilliant 1898 *Animal Intelligence* and in countless other items among his 500 plus publications.

By the time Watson launched his 1913 campaign, Thorndike was 39 years old and had published 61 items, including 8 books and many articles in the top journals, almost always as sole author. He had served as head of the Department of Comparative Psychology at the Woods Hole Marine Biology Laboratory from 1900 to 1902, chaired the Army Commission on Classification

of Personnel from 1917 to 1918, and served as American Psychological Association president in 1912. Through the rest of his long career, he dealt with the application of largely behavioral methods, usually in education, but extending to all areas of psychology. His name is forever linked to the law of effect, keystone of behavioral applications. Given that, and the limitations of Watson's empirical contribution to human research, why has not Thorndike been hailed as the father of behaviorism and especially of behavior analysis? There are two really good reasons. The first gives us a bit of pause, but the second is striking.

Thorndike Was a Mind–Body Dualist

If he was not a dualist, he certainly wrote like one. Watson and Skinner, later definers of behaviorism, both argued strongly and consistently against mind–body dualism. The clearest arguments appear in the first pages of both editions of Watson's *Behaviorism* (e.g., 1924, pp. 3–10), and Skinner (1945) made the most convincing case. No real behaviorist can believe in an “unnatural” mind or write so as to give that impression, but Thorndike's writings are “shot through,” as Watson would say, with such references. Despite his argument against mental causes, he was still a mind/body dualist; Skinner (1959) referred to him as a “mentalist.” The first sentence of Thorndike's *Notes on Child Study* (1901a) published when he was 27 years old and head of the Department of Comparative Psychology at Woods Hole, reads, “A child, like an adult human being, is both a body and a mind, and the study of children includes the study of both their bodies and their minds” (p. 1). On page 86, he wrote, “The mental stuff involved in human thinking is not only percepts and images.”

Thorndike was also a lifelong believer in the necessity of referring to underlying quasi-biological processes. As Malone (1990) and Catania (1999) have pointed out, Thorndike was also an associationist¹⁰ for whom learning depended on the formation of stimulus–response “bonds” construed as connections among neurons in the brain. He assumed that these connections were stored and that “Memory involves the retention and the recall of ideas” (p. 78). This is a doctrine that neither Watson nor Skinner would ever endorse. Thorndike's frequent reference to associations,

underlying hypothetical brain mechanisms, and recall of stored “ideas” are all disqualifiers for the “founder of behaviorism” title. But the other disqualifier is even more important.

Thorndike's Emphasis on Heredity and Eugenics

Skinner's (1959) appreciation of the importance of heredity is clear in his claim that there are three important names in the history of the study of behavior: Darwin, Lloyd-Morgan, and Watson. For Watson and for Skinner, evolution provides the “shaping” of innate behaviors (see Watson 1914; Skinner 1966).¹¹ But neither promoted eugenics or argued for the inheritance of traits such as intelligence, morality, or artistic ability, as Thorndike did.

I need not present a long argument attesting to Thorndike's well-known and extreme hereditarian bias, I just point out that his first book, *The Human Nature Club* (1901b), was dedicated to the ultimate hereditarian and coiner of the word “eugenics,” Sir Francis Galton (e.g., 1876). A few quotations from Thorndike's writings, both early and late in his career, suffice to make the rest of the case:

Grammar school, high school, and college all eliminate certain sorts of minds, and we may be sure beforehand that what the average college students are, that the average of high school students never become; that what the average of high school students are, never represents the future of the average of grammar school boys and girls. (1901a, p. 96)

Watson may have overstated his case when he famously claimed that he could make an infant into any type of adult if he had complete control over the growing child's environment, but Thorndike *always* believed that the newborn's future was already cast by heredity. Consider a quotation from late in his career: “One sure service of the able and good is to beget and rear offspring. One sure service (about the only one) which the inferior and vicious can perform is to prevent their genes from survival” (1940, p. 957).

Thorndike was a believer in instinct, defined as personality characteristics, and offered a list in his 1910 *Educational Psychology* that was longer than William

¹⁰ He called himself a “connectionist,” as illustrated in a collection of his writings (1949).

¹¹ Watson actually used the word “shaping” repeatedly in Chapters VI and VII; for example, pp. 185–187, 251.

James's famous long list in 1890. Earlier, Thorndike had shown how instinct easily "explained" many things: "A boy born with the instinct of pugnacity in great intensity will be more likely to be a brawler...The child who lacks general mental vigor...will be more likely to be a lawbreaker" (1901a, p. 119).

As Watson's last year at Johns Hopkins loomed, Thorndike (1919) was expressing opinions on nature, nurture, and society. For instance, democracy is good since it allows opportunity for the more able, kind, and intelligent to govern:

But in the long run, it has paid the "masses" to be ruled by intelligence...What is true in science and government seems to hold good in general for manufacturing, trade, art, law, education, and religion. It seems entirely safe to predict that the world will get better treatment by trusting its fortunes to its 95- or 99-percentile intelligences than it would get by itself. The argument for democracy is not that it gives power to all men without distinction, but that it gives greater freedom for ability and character to attain power. (p. 235)

We need not wonder how such an extreme nativist outlook applies to education, especially important since Thorndike trained an army of teachers and school administrators during his career at Teachers College, Columbia University. A critical assessment by Tomlinson (1997) summed up his attitude and strategy:

Thorndike, combining a strongly hereditarian behavioural psychology with the newly developed techniques of statistical analysis, showed how schooling could be structured around the methods of industrial management...Thorndike...stressed inherited powers and the need to conform behavior to fixed standards...social evil is constrained by the benevolent stewardship of the biologically elect. (pp. 365–367)

We do not usually envision "strongly hereditarian behaviorists," so Thorndike was never really a behaviorist. How different from the usual textbook treatment, including Malone (1990, p. 50), which only briefly touches on Thorndike's belief in the overwhelming effect of heredity on intelligence and personality. The fact is that the last sentence of his Chapter 17, "General Mental Development,"

in his *Notes on Child Study* (1901a, p. 139) referred his readers to Francis Galton's (1901) article, "The History of Twins," just published in *Teachers College Record*. That was actually a reprint of an 1876 piece in which Galton cited questionnaire reports to show that nature decisively influences the physical, moral, and mental development of children. Further, apparently identical nurture can lead to great differences in behavior, so that one twin may seem the complement of the other. But according to Galton, this only shows that "innate tendencies" dominate, whether the behavior of twins is similar or very different. No findings could shake Galton's beliefs and no one would accept his data or take his argument seriously today. But Thorndike accepted both Galton's data and his argument.

Should we still nonetheless support Thorndike as founder of behaviorism? His great contribution was the battle he waged against mentalism, that is, the belief that "causes in the mind" account for our behavior. In showing that mental life is also behavior, not the cause of overt behavior, he helped prepare an audience for Watson. But the mind/body dualism that appears in his works cannot be excused simply because he was writing for teachers. His constant and casual reference to hypothetical connections among neurons, creating S–R bonds, is likewise incompatible with radical behaviorism, as construed by Watson and by Skinner. Finally, though we all grant that species history plays a part in a behavioral account, Thorndike's insistence that heredity is decisive and that deference should be accorded the "biological elite" places him in league with Francis Galton and the eugenicists. Considering these aspects of Thorndike's writings—his mind–body dualism, quasi-biological associationism, and his extreme hereditarianism—leads to the conclusion that he was not really a behaviorist, to say nothing of a being a founder.

A very thorough examination of the credentials of other possible "founders," including Jennings, Dunlap, Loeb, and many others shows that Watson best deserves the credit as founder (Burnham 1968) if, again, behaviorism can be considered to have been "founded." Founder or not, Watson was at least the agent announcing the arrival of a true natural science approach to psychology that had been latent for centuries. Whether it will ever be the dominant approach to psychology is another matter.

Conclusion

Watson's behaviorism had many precursors, particularly during the nineteenth century, and many examples in addition to Carpenter and Bain could have served. They were two of the most influential advocates of proto-behavioral methods; their books went through multiple editions and were widely read, both in Europe and America. It may seem strange to think of Freud as also paving the way for behaviorism, but by 1913, he had shown that consciousness was really not that important, a stupendous achievement that gave Watson a definite advantage in his argument for behaviorism. Watson was well aware of this and readers of his work can easily see Freud's influence. The time for behaviorism had come and Watson was just the advocate to announce its arrival and to defend it.

References

- Bain, A. (1879). *The senses and the intellect* (3rd ed.). New York: Appleton. 1st & 2nd eds. 1855, 1868.
- Beach, F. A. (1961). *Karl Spencer Lashley: biographical memoir*. New York: National Academy of Sciences.
- Bergmann, G. (1956). The contribution of John B. Watson. *Psychological Review*, 63, 265–276.
- Bjork, D. W. (1993). *B. F. Skinner: a life*. New York: Harper-Collins.
- Boakes, R. A. (1984). *From Darwin to behaviourism: psychology and the minds of animals*. New York: Cambridge University Press.
- Buckley, K. W. (1989). *Mechanical man: John Broadus Watson and the beginnings of behaviorism*. New York: Guilford.
- Burnham, J. C. (1968). On the origins of behaviorism. *Journal of the History of the Behavioral Sciences*, 4, 143–151.
- Burnham, J. C. (1994). John B. Watson: interviewee, professional figure, symbol. In J. T. Todd & E. K. Morris (Eds.), *Modern perspectives on John B. Watson and classical behaviorism* (pp. 65–73). Westport: Greenwood.
- Carpenter, W. B. (1875). *Principles of mental physiology*. New York: Appleton, 2nd ed.
- Catania, A. C. (1999). Thorndike's legacy: learning, selection, and the law of effect. *Journal of the Experimental Analysis of Behavior*, 72, 425–428.
- Coon, D. J. (1994). "Not a creature of reason": the alleged impact of Watsonian behaviorism on advertising in the 1920s. In J. T. Todd & E. K. Morris (Eds.), *Modern perspectives on John B. Watson and classical behaviorism* (pp. 37–63). Westport: Greenwood.
- DiClemente, D., & Hantula, D. A. (2000). John Broadus Watson: I/O psychologist. *The Industrial Psychologist*, 37(4), 47–55.
- DiClemente, D., & Hantula, D. A. (2003). Applied behavioral economics and consumer choice. *Journal of Economic Psychology*, 24, 589–602.
- Dunlap, K. (1912). The case against introspection. *Psychological Review*, 19, 404–413.
- Freud, S. (1915). The unconscious. In W. Russell (Ed.), (1970) *Milestones in motivation*. New York: Appleton-Century-Crofts. (Original work published 1915).
- Freud, S. (1923). The ego and the id. In *Standard Edition* (Vol. 23).
- Galton, F. (1876). The history of twins, as criterion of the relative powers of nature and nurture. *Journal of the Anthropological Institute*, 5, 391–406.
- Galton, F. (1901). The history of twins. *Teachers College Record*, 2(3), 260–274.
- Gay, P. (1989). *The Freud reader*. New York: Norton.
- Hannush, M. J. (1987). Journal of the history of the behavioral sciences. xxx, 137–152.
- Herrnstein, R. J. (1958). Some factors influencing behavior in a two-response situation. *Transactions of the New York Academy of Sciences*, 21, 35–45.
- Hunter, W. S. (1922). An open letter to the anti-behaviorists. *Journal of Philosophy*, 19, 307–308.
- Jacoby, R. (2009). Freud's visit to Clark U. *The Chronicle of Higher Education: The Chronicle Review*, 9/29.
- James, W. (1890). *Principles of psychology*. New York: Holt.
- Jastrow, J. (1929). Review of Watson, J. B., *The Ways of Behaviorism*, Harper Bros., 1928; *Psychological Care of Infant and Child*, Norton, 1928; J. B. Watson and W. McDougall, *The Battle of Behaviorism*, Norton, 1929. *Science*, LXIX, 455–457.
- Joncich, G. (1968). *The sane positivist*. Middletown: Wesleyan University Press.
- Jones, M. C. (1924). A laboratory study of fear: the case of Peter. *Pedagogical Seminary*, 31, 308–315.
- Kantor, J. R. (1963). *The scientific evolution of psychology* (Vol. 1). Bloomington: Principia Press.
- Lashley, K. S., & Watson, J. B. (1920). A psychological study of motion pictures in relation to venereal disease campaigns. *Social Hygiene*, 7, 181–219.
- Lattal, K. A. (1998). A century of effect: legacies of E. L. Thorndike's Animal Intelligence monograph. *Journal of the Experimental Analysis of Behavior*, 30, 325–336.
- Loomis, L. R. (1943). *Aristotle: on man in the universe*. Roslyn, NY: Walter J. Black, Inc.
- Malone, J. C. (1990). *Theories of learning: a historical view*. (paperback ed. 2002). Belmont: Wadsworth.
- Malone, J. C. (2009). *Psychology: Pythagoras to present*. (paperback ed. 2011). Cambridge: MIT Press.
- Moore, J. C. (2008). *Conceptual foundations of radical behaviorism*. Cornwall-on-Hudson: Sloan.
- Morris, E. K. (2014). The legacy of John B. Watson's behaviorist manifesto for applied behavior analysis. *Mexican Journal of Behavior Analysis*, in press.
- Morris, E. K., Altus, D. E., & Smith, N. G. (2013). A study in the founding of applied behavior analysis through its publications. *The Behavior Analyst*, 36, 73–107.
- Rachlin, H. (1994). *Behavior and mind: the roots of modern psychology*. Cambridge: Cambridge University Press.
- Rand, A. (1982). *Philosophy: who needs it?* Indianapolis: Bobbs-Merrill Co.
- Russell, B. (1921). *The analysis of mind*. London: Allen & Unwin.
- Samelson, F. (1994). John B. Watson in 1913: rhetoric and practice. In J. T. Todd & E. K. Morris (Eds.), *Modern perspectives on John B. Watson and classical behaviorism* (pp. 3–18). Westport: Greenwood.
- Skinner, B. F. (1945). The operational analysis of psychological terms. *Psychological Review*, 52, 270–277.

- Skinner, B. F. (1959). John Broadus Watson, behaviorist. *Science*, 129, 198–199.
- Skinner, B. F. (1966). The phylogeny and ontogeny of behavior. *Science*, 153, 1205–1213.
- Thorndike, E. L. (1898). Animal intelligence: an experimental study of the associative processes in animals. *Psychological Review, Monograph Supplements*, 2(Serial No. 8).
- Thorndike, E. L. (1901a). *Notes on child study*. New York: Macmillan. Vol. 8, Nos. 3–4.
- Thorndike, E. L. (1901b). *The human nature club*. New York: Longmans, Green & Co.
- Thorndike, E. L. (1919). Intelligence and its uses. *Harpers, CXV*, December 1919–May 1920, 235.
- Thorndike, E. L. (1940). *Human nature and the social order*. New York: Macmillan.
- Thorndike, E. L. (1949). *Selected writings from a connectionist's psychology*. New York: Appleton.
- Todd, J. T. (1994). What psychology has to say about John B. Watson: classical behaviorism in psychology textbooks, 1920–1989. In J. T. Todd & E. K. Morris (Eds.), *Modern perspectives on John B. Watson and classical behaviorism* (pp. 76–107). Westport: Greenwood.
- Tomlinson, S. (1997). Edward Lee Thorndike and John Dewey on the science of education. *Oxford Review of Education*, 23, 365–383.
- Watson, J. B. (1913). Psychology as the behaviorist views it. *Psychological Review*, 20, 158–177.
- Watson, J. B. (1914). *Behavior: an introduction to comparative psychology*. New York: Holt.
- Watson, J. B. (1916). The psychology of wish fulfillment. *Scientific Monthly*, 3, 479–487.
- Watson, J. B. (1919). *Psychology from the standpoint of a behaviorist*. Philadelphia: Lippincott.
- Watson, J. B. (1922). “The analysis of mind,” *Dial*, vol. 72, pp. 97–102. (Review of Russell, Bertrand (1921). *The Analysis of Mind*. London: George Allen & Unwin).
- Watson, J. B. (1924). *Behaviorism*. New York: People's Institute.
- Watson, J. B. (1930). *Behaviorism (rev. ed.)*. Chicago: University of Chicago Press.
- Watson, J. B. (1936). John B. Watson. In C. Murchison (Ed.), *A history of psychology in autobiography*. Worcester: Clark University Press.
- Woodworth, R. S. (1931). *Contemporary schools of psychology*. New York: Ronald Press.