The Life and Theories of B. F. Skinner

Michael J. Crowley

Longwood University

Abstract

B. F. Skinner is a fundamental part of the behaviorist movement in psychology and contributed to the growth of the science and its social applications within his field. This paper will examine his life to detail the different aspects of his life that lead to him joining the field of psychology. Examining the influence of his parents, early life, a failed career as a writer, and eventually his first works as a psychologist to show how these things and the zeitgeist of the time led to his theories. This paper will also detail his early work within behaviorism as well as some of the criticisms of his work.

*Keywords*: B. F. Skinner, Behaviorism, language

The Life and Theories of B. F. Skinner

**Early B. F. Skinner**

Sigmund Freud was born in Freiberg Moravia in 1856 to a merchant family. Freud had ambition and drive and soon found himself at the University of Vienna studying medicine. After some failed attempts at establishing himself in the medical field he set up a practice studying brain disorders, where he soon formed his famous theories of the mind. Freud’s theories galvanized the field of psychology but his attitude and mistrust towards others, and their theories, drove many away from his inner circle. Freud’s work in psychoanalysis is little touched on in modern psychology classes and is hardly ever used in practice. Nearly 100 years after his death however, in a small bookshop in Utica, New York a young college student named B. F. Skinner would, for the first time, stumble upon the ideas of Freud (Skinner, 1976, p. 204). B. F. Skinner would soon, in much the same fashion of Freud begin a psychological movement. Many comparisons to Freud can be found in B. F. Skinner, his ideas and theories went against the norm of the science, he formed his own inner circle of trusted colleagues and fought, while not physically, strongly against opposing theories during his life, and could be considered as a martyr for his causes (Bjork, 1993, p.112). But in contemporary psychology B. F. Skinner holds true as one of psychology’s greats. The distinction between the prestigious and the preposterous must lie in the theories of B. F. Skinner, which unlike Freud, are still upheld today. B. F. Skinner’s life has many parallels to Freud’s, and had the zeitgeist of the time been reversed there is a very good chance that Freud could have pedestal that is held by B. F. Skinner.

**Product of His Parents**

Burrhus Frederic Skinner was born in Susquehanna, PA, to parents William and Grace. A town of the Protestant culture of behaving well, being kind to others, and most importantly, being liked (Bjork, 1993, p.16). The latter of the three was something that plagued the Skinner Family for time to come. His father had gained infamy through his career as a lawyer, defending an Italian line-breaker in a machinists’ unions strike in 1907, after he killed a striker in a scuffle outside the plant. After the trial and the man’s acquittal William Skinner was given all the credit for the man’s release; credit that, in the eyes of the townspeople was nothing good (Skinner, 1976, p. 37). However William Skinner is not described as one worried with his view in the societal ladder and is described by B.F. Skinner in *Particulars of My Life* as a socially awkward many, preferring to spectate the behaviors of others, instead of joining in (Skinner, 1976, p. 293). Grace Skinner was admired throughout the township for her compassion but the majority of excerpts about her describe her as the proud and dominant partner in the marriage . While B. F. Skinner’s father found no need for sociability, this was not the case for Grace, who relished a place among the social elite. She took up a system of social policing and B.F. Skinner can trace many of his fears of the devil, lying, and even sexuality back to threats made by his mother (Bjork, 1993, p.4). His father is not innocent of this type of establishing ethical behavior through fear as he took young B.F. Skinner on tours of the local jail and Sing Sing. which left him afraid of the police for some time. I would like to mention here that B.F. Skinner finds it important to mention that while his family conditioned him to act in an acceptable behavior through fear, so do most parents, and that the never physically punished him for anything (Skinner, 1976, p. 61).

**The Importance of Tinkering**

The vast openness of Susquehanna was perhaps one of the most important influences on B.F. Skinner’s future life as a famous researcher and inventor. It provided him with the perfect environment in which to explore and investigate his world. B.F. Skinner was, as a child, and possibly even more so as an adult, known for his tinkering, a trait instilled in him by his reading of *The Mysterious Island* by Jules Verne. Young B.F. Skinner built catapults, scooters, and even a cannon (Bjork, 1993, p.18). His first toy sets consisted of chemistry and engineering equipment, child sized of course and after a submarine had beached itself off the coast, killing all those inside before help could arrive; B. F. Skinner developed a system of drawing oxygen out of the ocean for use in a submarine (Skinner, 1976, p. 61). B. F. Skinner seemed driven to use his keen problem solving and tinkering skills to tackle all levels of problems he had faced. However the most metaphorical toy, in regards to his behaviorist theories, B. F. Skinner recalls receiving a toy theatre in which the actors were controlled by strings pulled by young B.F Skinner. Even during high school B. F. Skinner showed the signs of a prolific writer, starting work on *Nova Principia Orbis Terrarum*, an epic undertaking for any level of education (Skinner, 1976).

 It was in these unkempt fields in Pennsylvania where B.F. Skinner first came into contact with caged animals through a mouse trap where he attempted to train the animals (Skinner, 1976, p. 32). It seems too perfect that years later B. F. Skinner would, in the Harvard psychology lab, which he considered “B. F. Skinner Heaven” that his love of tinkering would bring about the breakthrough which would eventually make him a household name (Bjork, 1993, p.97).

**Writing, Death, and Sex**

In 1922 B. F. Skinner began his freshman year at Hamilton College. Moving into his freshman year dorm, he wrote a letter home to his parents that he felt at home, however this would not be a common theme through his time at Hamilton. His freshman courses consisted of the of lower level science and public speaking courses along with French as his foreign language, which caused B. F. Skinner many troubles do to the inefficiencies of his pronunciations. While B. F. Skinner does explain his displeasure with the majority of his classes this is where he would be exposed to writing courses, which he thoroughly enjoyed. Through the strict regimen of classes and other responsibilities of being a freshman he joined Phi Beta Kappa. During his time as a freshman B. F. Skinner began to establish himself as a poet, utilizing the same bookstore where he first heard the name of Sigmund Freud as an outlet for his poetic endeavors. While B. F. Skinner harshly criticizes his first writing due to their unoriginality, he believes his worst work, while also his most meaningful, came after the death of his grandmother. The poem was one of his first publications, featured in the *Hamilton Literary Magazine*. It was during these years that his work began to display the psychological nature of his writing that would be pointed out to him later on by Robert Frost (Skinner, 1976, p. 258).

Before returning to school as a freshman tragedy again and unexpectedly, struck the Skinner family. Where the Skinners could easily be described as socially troubled, B. F. Skinner’s younger brother Ebbie was seemingly excluded from this familial trait. He did not inherit his Father’s difficulties socializing with others, and seemed immune from his mother’s fear of appearing unsocialized. Ebb was the center of B. F. Skinner’s parent’s attention, something B. F. Skinner actually liked; his ability to mesh well with others and fit in in almost any situation was something that his parents watched with envious eyes. While the elder Skinners were away attending a church service, B. F. Skinner and his brother were out and about when Ebb complained of feeling ill. When the brothers made it home Ebb fainted and a doctor was called immediately. B. F. Skinner rushed to get his parents as Ebb’s condition worsened but by the time all three had made it back home Ebb had passed on. Ebb’s passing hit his parents the hardest and turned their attention to B. F. Skinner, as he inherited the mantle of attention from his brother, something B. F. Skinner was eager to escape (Bjork, 1993, p. 38)

 On his return to Hamilton College in the fall to begin his sophomore year his misfortunes took a turn. The Saunders family, an influential family at Hamilton, who had lost their son almost as unexpectedly as the Skinners, took an interest in B. F. Skinner. The social and intellectual scene provided by his adopted family allowed B. F. Skinner to be introduced to a number of important life changing events. The Saunders encouraged the intellectual pursuits of the youth and their library held a vast array of literature adorned the library and intellectuals such as Alexander Woollcott and Robert Frost were known to be guests of the family. Their social life also introduced B. F. Skinner to his first love, of many. Cynthia Ann, whom B. F. Skinner met while tutoring the Saunders daughter, was an intellectual and social protégé, something the B. F. Skinner found appealing. However B. F. Skinner’s lack of sexual intelligence, a problem that had been apparent since his freshman year mixers with his fraternity (Skinner, 1976, p. 201), led to the relationships end. This was the first of many scorned loves that became something of a facet in B. F. Skinner’s life. While the dismay B. F. Skinner experienced from his failed relationship was nothing new or even surprising, it is important in the fact that it spurred his literary interest (Bjork, 1993, p. 45)

B. F. Skinner began to steer his college education in the direction of literature, and on the recommendation of a college alumni he applied and was accepted to the Bread Load in their summer program for their School of English. It was here that B. F. Skinner was first introduced formally to Robert Frost, a struggling writer associated with the Bread Loaf School (Skinner, 1976, p. 201). After a rather embarrassing first encounter involving a piano and an interrupted poetry session Frost agreed to look over some of B. F. Skinner’s work. The Bread Loaf School was also the home of another one of B. F. Skinner’s love interests. A beautiful southern woman named Ellen who reminded B.F. Skinner in a Freudian way of his mother, she was also married. While they shared a largely emotional affair B. F. Skinner remarks that she often did not reciprocate feelings. B. F. Skinner was insatiably in love with Ellen and her lack of similar feelings would again cause him inconsiderable pain, however he again turned to writing as a manner to express his pain. As their time together at the Bread Loaf School came to an end they managed to consummate their relationship, even through B. F. Skinner’s bumbling sexual knowledge (Skinner, 1976, p. 231).

His choice in a literary career was finally verbalized by his parents to the many guests of their house party on B. F. Skinner’s return from the Bread Loaf School. On his return to school B. F. Skinner worked with the *Royal Gaboon* as its co-editor. The college paper which was normally a humorous publication took a more intellectual turn under the work of B. F. Skinner and his friend Hutch. It is here that B. F. Skinner begins to show a bit of his future prolificacy by publishing a number of book reviews, notes on local business, and stories of Hamilton alumni (Skinner, 1976, p. 235). Writing first became a source of income for B. F. Skinner when he and Hutch entered a creative writing competition for a grand prize of $200, a prize that the two agreed to split (Bjork, 1993, p. 49). It was during this time that Charlie Chaplin, the famous silent movie star visited Hamilton, or so it was printed. B. F. Skinner and Hutch, in an attempt to criticize a name-dropping teacher, had created and posted up flyers all around the campus and town excitedly announcing the stars visit. The spectacle caused by the pair had the university up in arms, threatening to expel those responsible. Thankfully they were never found out. B. F. Skinner continued his writing for the *Royal Gaboon* and even wrote several articles in a column titled carpe diem to keep himself busy until graduation (Skinner, 1976, p. 238).

Hutch and B. F. Skinner would come together in his later days at Hamilton to visit Utica and the pair explored the red light district often. This would not be the last time that B. F. Skinner would encounter a lady of the night but it was his first sexual encounter seemingly free of social inabilities. All his tiring attempts thus far had culminated into an event that B. F. Skinner described as uneventful in his autobiography *Particulars of my Life*. This would not be their last trip to the district (Skinner, 1976, p. 244).

While his parents had at the beginning of the term announced his career as a writer it was not until graduation neared that B. F. Skinner accepted it. He wrote to his parents explaining his plans to take a year and write a novel, an idea that his father expressly and kindly rejected; rejection that could likely be traced back to their youngest son’s death and his mother’s fear of the social repercussions of having an unemployed son (Bjork, 1993, p. 51). It was in this moment that B. F. Skinner remembered back to his time at the Bread Loaf School and sent a parcel of his work to Robert Frost for him to critique (Skinner, 1976, p. 248). It was in this letter that Frost and B. F. Skinner also noted the psychological nature of the latter’s writings. As his time at Hamilton ended and B. F. Skinner crossed the stage, receiving his degree with a comical bow, that he would enter some of the most trying times of his intellectual career, eventually placing him at the helm of behavioristic psychology.

**The Dark Year**

B. F. Skinner returned to his family home, now located in Scranton, PA to establish himself as a man of literature. Much like he did as a child he approached his problem with tinkering, building himself an office on the third floor by the maid’s quarters. However the creation of his study was only one small step in his plans and the only one he could solve through tried and tested methods. As he wrote, rewrote, and read, and reread his collegiate works and any book he could get his hands on he fell into an alarming rut. The stories he began writing went nowhere, and soon he realized something alarming, he had no motivation to write (Skinner, 1976, p. 268). As the summer ended B. F. Skinner was no closer to calling himself a writer than when he had first sent his works to Robert Frost. While writing his own novel became a dream B. F. Skinner then turned his work towards the analysis of other people’s writing. He began criticizing and expounding on the ideas of the local writers of the area with his style of cynical writing that had gotten him through all those tough relationship moments in college. As his prowess as a writer began to fade he turned back to tinkering with models and crafts and even indulging a family friend by spectating a surgical procedure. As the year went on and little progress was made in his work B. F. Skinner did begin to find interest in what would eventually cause him to turn to psychology. Working with philosophy and criticizing works such as *Creative Evolution* he began to observe himself and his own actions (Skinner, 1976, p. 281). However this was not enough to propel him out of his rut and began to look into alternate paths ranging from chicken farming to landscape architecture. These dreams were put to rest after only one day of yard work and an acute allergic reaction (Bjork, 1993, p. 71). He returned home, beaten and downtrodden, his father suggested writing a digest on a local board decision involving a coal strike. How far this must have been from what B. F. Skinner imagined as his literary legacy, the digest would become a historical writing accomplishment, not because of any particular aspect of the writing itself, but for what the proceeds from its selling would allow B. F. Skinner to do (Nye, 1992, p. 5)

**From Poet to Prodigy**

As he was touching up on his philosophy during the Dark Year B. F. Skinner began to be particularly interested in the works on behaviorism, especially those by Watson, Kant, and Russell (Skinner, 1976, p. 298). As Frost had mentioned to him earlier, B. F. Skinner began to see the behaviorist themes within his own writing and life as such, took up an interest in the science of behavior, psychology. Writing to B. F. Skinner had become outdated. Its form and style did not fit him as an outlet for his ideas and much like Freud years before him the failure of his first intellectual endeavors turned towards the mental sciences. With the money he made from the digest at the end of his dark year he decided to enter graduate school, but had no idea where to begin. Remembering the intellectual stronghold that was the Saunders household from his undergraduate years in college he returned to Hamilton to seek advice on a proper program for him apply to. Hamilton had provided him with his first psychology course under Dr. Squires whom had received his degree under Wundt. His contacts at Hamilton, Saunders, the president of the university, and his biology professor all pointed him in the direction of Harvard where many of them had sent students or had dealings with the university. As he made up his mind on attending Harvard he was given a gift as he left Hamilton, a copy of Pavlov’s *Conditioned Reflexes* (Skinner, 1976, p. 301).

In the fall of 1928 B. F. Skinner was accepted into the graduate psychology program at Harvard University. He had chosen to do his doctoral thesis on the study of reflex behavior. Much like his days in Susquehanna and the mouse trap he chose to work with rats. Also reminiscent of his younger days and the mouse trap, B. F. Skinner had significant difficulties working with the creatures and in an effort to better regulate their behavior and movement so that he could get more consistent results he turned to the one thing that had consistently gotten him through tough times; tinkering. He began to build complex apparati to better control he experiments on the study of rat reflexes. Deep in his Harvard workroom he designed his now famous operant conditioning “Skinner box” which he used to study the conditioned responses and reactions of rats to external stimuli. This is where his theory began, in the same manner of most of his accomplishments a near exhaustive amount of trial, error, and tinkering had once again given B.F. Skinner the means to solve his problems.

B. F. Skinner was not content with simply making a name for himself, he wanted to completely change the field of psychology to fit his method of science (Bjork, 1993, p. 81). This would not be an easy task, as many other camps of psychology with drastically different views on the mechanics of the mind and behavior were numerous. Early in his graduate school work he took on the Gestalts, specifically the concept of insight learning proposed by Kohler, by seemingly disproving his ideas by working with squirrels, although his work was abandoned for other endeavors. He criticized the theories and works of E.G. Boring, whose perception class he rather disgusted (Bjork, 1993, p. 84). Even going so far as to attack those within his own camp like Hull and Tollman, much like Freud; who refused to accept any theory but his own. The only difference between B. F. Skinner and Freud? B. F. Skinner had the numbers. The concepts he created through his studies with the operant conditioning chamber and rats led to a massive amount of data that supported his work on his first groundbreaking book, The *Behavior of Organisms*.

**B.F. Skinner’s Behaviorism**

*The Behavior of Organisms* provided the methodology and theory that B. F. Skinner took from his work with the operant conditioning chambers. It laid out groundwork for a new camp of behaviorism and its potential social applications (Bjork, 1993, p. 110). It’s descriptions of behavior had basis in the earlier work of Ivan Pavlov but expanded to include many other factors that contribute to it. B. F. Skinner’s early work on reflex’s helped him craft the idea of conditional reflexes that were attributed to specific operations performed upon the organism. These reflexes were not present at birth and instead came about through the process of reinforcement in which a stimulus and a response shared a temporal relationship with one another and became associated. Two types of these reflexes were outline by B. F. Skinner, type S, which resulted from correlated interactions between the organism and a stimulus. This is the example showed by Pavlov and his dogs, salivation from the dogs occurred when food was presented, but when the food and a bell were both presented to elicit the salivation enough times the dogs would salivate when only the bell was used. This meant that a physiological function could be altered by manipulating the situation in which the behavior occurred. This could also be brought out to another level called secondary conditioning; where salivation occurred when presented with a box that was paired with the bell that was ultimately paired with the food. This meant that there were many variations in which physical responses by an organism could be attributed to complex interactions with stimuli in the environment. Type S reflexes could also disappear through the process of extinction. In the example of the salivation in dogs; every time the bell was produced and the salivation response occurred without the food ever being present it will weaken the organism’s correlation of the bell being attributed to food. Given enough pairings of the bell without the food and the salivation response would soon go as well. (Skinner, 1938, p. 63)

 The other type, R, relied on random behaviors by the organism that increased or decreased the likelihood of a stimulus. This is what Skinner would become known for, his rats could be learned to press levers based on positive stimulus response as they got closer to the desired action. These two types of reinforcement could also occur on different schedules that could influence the correlation of the stimulus and the response of the organism. B.F. Skinner outlines two styles, continuous and partial reinforcement schedules through his studies with rats. Continuous schedules of reinforcement could be used to create a strong correlation between the organism’s action and the stimulus response since it paired the two with every trial. An easy example of this is that every time one of B. F. Skinner’s rats pressed the bar inside the operant conditioning box they would be rewarded with a food pellet. The second type, partial reinforcement, has several different forms: fixed ratio, variable ratio, fixed interval, and variable interval. When the form was fixed it means that the stimulus and the response were paired in set cycles and when it was variable there was no set space between the pairs. Ratio forms relied on the number of actions by the organism and interval forms relied on the time between the actions of the organism. So in a fixed ratio schedule a rat would be rewarded with a food pellet on every third press and in a variable interval schedule the rat would only be rewarded with a food pellet when it pressed the bar after a random time interval had passed since the last food pellet had been given out. These different schedules had different effects on the intensity of the reinforcement correlation between the actions of the organism and the response of the environment (Skinner, 1938, p. 74) His theory on the mechanism of behavior were met with a largely negative response but did draw B. F. Skinner into the for front of the psychological community but did not give enough information on the acquisition of more complex human behavior; which left many like Tollman and Hull intrigued, but not enough so as to merge into the camp of B. F. Skinner (Bjork, 1993, p. 94).

B. F. Skinner’s next step was to detail how human mental complexities could be attributed to his two types of reinforcement. He bases much of his work on the James-Lange theory of emotion, where emotion is simply a result of the interpretation of our physiological functions. B. F. Skinner taught that these emotional states were simply made up attributions to bodily states, where a child may learn through the process of negative conditioning that a certain physical discomfort can be removed by eating or by taking aspirin. The child then learns how to describe their internal states in a similar fashion. If the child had not eaten in a while and their parents notice they could say to the child that they are hungry and need a snack. If the snack then removes the unpleasant internal state they will learn that specific mental state as hunger and learn how to remove it. It is through this process that all mental states are learned (Skinner, 1974, p. 22).

The acquisitions of linguistics were something that B. F. Skinner needed to tackle for his theories to be widely accepted as appropriate for humans. In 1957 he published *Verbal Behavior* to theorize the how and why of verbal communication. B. F. Skinner applies his reinforcement principles in a simple way to language; when a child, who has been listening to their parents talk to them for some time, says “mama” or “dada” this behavior is reinforced by the positive reaction from this parents and soon meaning for objects and feelings is derived in similar fashion (Skinner, 1957). He met a fierce reaction from the cognitive camp of psychology and leading the charge was Noam Chomsky, a prominent linguist. Chomsky criticized these ideas as being far too simplistic with no ability to accurately describe the complexities of the syntax of human speech. He argued that B. F. Skinner’s theory was based too much on the behaviors of rats and had lacked generalizability to the human population. Chomsky pointed out the lack of empirical research to back up B. F. Skinners claims and hounded the vagueness of stimulus response psychology as a method to describe the infiniteness of human speech capabilities (Chomsky, 1980). However, Chomsky seems to have a skewed version of B. F. Skinner’s theories and the power of stimulus response on affecting human speech. The concept that humans acquire language skills through can be hard to grasp if it is thought as tedious as the first steps, like saying “mama” and “dada”. When it is taken into account however that through education and general social situations that develop as one grows the sheer magnitude of different reinforcing moments could be argued as the method through which the complexity that Chomsky speaks of is developed. In the educational setting people are drilled on the agreed upon syntax of their language and are rewarded when they speak correctly and negatively when they fail. This can also be applied to almost and social situation one encounters throughout their life. As a child grows and is socialized any conversation or use of speech is a chance for it to be altered by the reactions of those they are speaking with. They can be rewarded with positive reactions by their listener and are again rewarded when what they are trying to communicate is received and understood by the same person. This, over time and innumerous trials builds a vocabulary and syntax of acceptable methods in which they can express their internal states. It builds as one grows and the complexity of others speech presents an opportunity for them to advance their own faculties. A child who learns to say “milk” and is rewarded by milk can expand through their other encounters with language to further the complexity of their statement to better describer how their wants and needs. Chomsky misunderstands the complexity in which stimulus response psychology has its roots; a simple concept that builds on itself in every interaction to create a complex and truly individual person. Like atoms interacting to create the reality around us, one cannot rule out a factor that appears to operate on an insignificant level when really it is the magnitude of the repetition of the factor that truly shows how large of an impact it has on everything.

The importance of language is a fundamental attribute of many of B. F. Skinner’s theories regarding mental functions. B. F. Skinner theorized that introspection was simply looking at the activities of the brain and that verbal behavior arises as a necessity to describe to others our own internal states (Skinner, 1974, p. 11). We describe these states through the same process we report external stimuli to one another which is a reinforced process that starts in our childhood. Even the process of remembering is governed by our language abilities as B. F. Skinner believes that humans do not remember their infant period because our speech faculties are not developed enough for us to remember how we felt (Skinner, 1974, p. 25). While this concept seems strange it is important to note that childhood amnesia, the period of life in infancy that is not remembered, usually ends around two years of age (Usher, J., & Neisser, 1993) when the child starts to hold a vocabulary of around 20 to 50 words.

B. F. Skinner would apply many of the principles of his camp of behaviorism to the social setting through various methods. His ambitions to become a novelist were fulfilled when he published *Walden Two* a story of a utopian society that operated based on his principles of reinforcement to create and maintain the ideal community. He would take this idea one step further with the introduction of his baby tender which he hoped would replace the crib as the ideal environment for an infant to be raised, even going so far as to build one for his daughter Deborah (Bjork, 1993, p. 130).

When B. F. Skinner died in 1990 he left behind a legacy of intellectual problem solving in the field of psychology, where the simplest and strongest explanation for human behavior was not only a science, but a lifestyle. He wanted to change the world for the better, he had a vision of his theories being implemented for the betterment of mankind. This application of his science is what separates B. F. Skinner’s legacy from Sigmund Freud. Both changed psychology and brought about a huge social impact with the rise of their different ideologies. Both criticized opponents of their theories and kept a tight inner circle of colleagues while pushing away anyone who sought to change the fundamentals of their ideas. The difference lies in their intent, Freud was selfish, but B. F. Skinner was hopelessly collectivistic in his nature, he was able to see the simplicity of man and wanted to exploit that to create a society in which all could thrive.

References

Bjork, D. (1993). *B.F. Skinner: A life*. New York: Basic Books.

Chomsky, N. (1980). 4. A Review of B. F. Skinner’s Verbal Behavior. *The Language and Thought Series*.

Nye, R. (1992). *The legacy of B.F. Skinner: Concepts and perspectives, controversies and misunderstandings*. Pacific Grove, Calif.: Brooks/Cole Pub.

Skinner, B. (1938). *The behavior of organisms; an experimental analysis,*. New York, London: D. Appleton-Century Company, Incorporated.

Skinner, B. (1953). *Science and human behavior*. New York: Macmillan.

Skinner, B. (1974). *About behaviorism*. New York, NY: Knopf; [distributed by Random House]. (Skinner, 1974, p. )

Skinner, B. (1976). *Particulars of my life*. New York, NY: Knopf.

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

Usher, J., & Neisser, U. (1993). Childhood amnesia and the beginnings of memory for four early life events. *Journal of Experimental Psychology: General,* 155-165. doi:10.1037/0096-3445.122.2.155