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IS JUSTIFIED TRUE BEHAVIOR KNOWLEDGE?

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ABSTRACT: Edmund Gettier (1963) argued against defining knowledge as justified true belief. Using two examples, he demonstrated that (a) believing a proposition to be true, (b) having justification for that belief, and (c) the proposition in fact being true, do not constitute sufficient conditions for one to be said to know the proposition. The purpose of this paper is to investigate the utility of a behavioral definition of justified true belief. I will define "justified," "true," and "belief" in behavioral terms. Then I will present examples of justified true belief that are consistent with these definitions and discuss whether the examples may be said to represent sufficient conditions for knowledge. I make the claim that if the justification is of the right type, justified true belief does equal knowledge to the extent that the behavior results in effective interaction with the environment. Looking at justified true belief behaviorally is useful in that it clears up potential confusion associated with the misuse of the terms. However, behavioral justified true belief is still vulnerable to Gettier cases.
Key words: Gettier, epistemology, behaviorism, justified, true, belief

Gettier (1963) introduced a now-famous challenge to the notion of knowledge as justified true belief. In the years since Gettier's paper, many arguments and counterarguments have been offered. In this paper I will discuss how justified true belief and Gettier's argument may be viewed in behavioral terms. I will offer behavioral definitions of "justified," "true," and "belief" in an attempt to further this ongoing discussion on the nature of knowledge.

Gettier challenged the position that justified true belief is sufficient for knowledge through the use of two examples. In each example, justified true belief may be said to exist without knowledge. In the first example, Smith and Jones are applying for a job. Smith has strong evidence for believing that Jones will get the job and that Jones has 10 coins in his pocket. Based on this, Smith reaches the conclusion that the man who will get the job has 10 coins in his pocket. As it turns out, Smith gets the job and, although he did not know it, Smith has 10 coins in his pocket. His belief that the man who will get the job has 10 coins in his pocket was true and was justified by the strong evidence, but this does not appear to be a case of knowledge since Smith believed that Jones would get the job. In Gettier's second example, Smith has strong evidence that Jones owns a Ford. Based on that,

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Smith constructs three disjunctive propositions, one of which is "Jones owns a Ford or Brown is in Barcelona." Smith has no knowledge of Brown's whereabouts and simply chose the location at random. As it turns out, Jones does not own a Ford, but Brown is, in fact, in Barcelona. So, the proposition "Jones owns a Ford or Brown is in Barcelona" was believed by Smith, was justified by the strong evidence that Jones owned a Ford, and was true. However, this example also seems not to demonstrate any knowledge on Smith's part since he actually thought Jones owned a Ford and had no reason to think Brown was in Barcelona.

As part of the debate that resulted from Gettier's paper, many authors have published their own examples. These have come to be known as Gettier cases. One famous Gettier case was introduced by Chisholm (1966). In this example, S believes he sees a sheep in a field. The truth is that the animal he was looking at was actually a dog that he had mistaken for a sheep. However, there was a sheep in the field that S did not see. Here, the belief that there was a sheep in the field was both true (there was a sheep in the field) and justified (S had visual evidence) but in spite of this justified true belief, S did not possess knowledge (Chisholm, 1966, p. 23). Finally, I offer a personal example. Once, while an undergraduate student, I was folding towels. I looked down at the stack of towels I was holding and saw what appeared to be a brown towel on top with a blue towel underneath. Actually, what I was seeing was a brown towel with a blue border. Upon lifting up the towel, I found that there was a blue one underneath. So, the statement, "There is a blue towel under this brown one," if made prior to lifting the brown towel, would have been a justified true belief, but I would not say that I knew it. I realized then that one can easily generate any number of Gettier cases and that probably many such cases occur in everyday experience. Zagzebski (1994) provides a simple recipe for constructing Gettier cases.

Weinberg, Nichols, and Stich (2001) demonstrated that individuals from different cultural and educational backgrounds may disagree about whether a given Gettier case involves knowledge. I am working from the assumption that Gettier's examples as well as similar examples published by other authors are, in fact, cases of justified true belief that are not knowledge.

Gettier's analysis of knowledge and justified true belief has resulted in the presentation of related arguments by many authors. Some of these will be discussed later in this paper. The diversity of the arguments and the creativity of the authors have not resulted in a universally accepted solution to the dilemma introduced by Gettier. I wondered whether defining justified true belief in terms of behavior would help to further the discussion. To that end, I defined "justified," "true," and "belief" as follows. I will limit my discussion to operant behaviors, although a similar account of respondent behaviors is possible depending on one's view of how such behaviors are related to concepts like knowledge and truth. I begin with belief since the nature of the definition of belief greatly affects discussion of the other two terms.

Belief. Belief can only be usefully defined as engaging in a behavior in response to discriminative stimuli. The only sense in which a rat can be said to believe that lever pressing will produce food is that it does, in fact, press the lever.

Skinner provides a similar account of beliefs with his example of going to the icebox when hungry for cheese (Skinner, 1957/1992, pp. 159-160). Beliefs are the result of prior contingencies. The rat is more likely to press the lever in the presence of stimuli that were present when lever pressing was reinforced. The rat may, of course, press the lever in the absence of a given stimulus that was associated with reinforcement. We would refer to this as stimulus generalization or as a lack of stimulus control. The degree of generalization or stimulus control present may influence whether observers would refer to a given behavior as belief.

In this example, lever pressing is not evidence of a belief; lever pressing is belief. Belief is not something that precedes or causes behavior, nor does it refer to unobservable "mental" events. Individuals could be said to believe that the last digit of my phone number is 8 if, and only if, they dial 8 as the last digit or engage in some related behavior such as the verbal behavior of saying "eight" at an appropriate time such as when relaying the phone number to someone else.

However, not all behaviors are beliefs. Behaviors that are examples of belief can be distinguished from those that are not by referring to the controlling discriminative stimuli. Dialing 8 while calling me equals belief that 8 is the last number, but accidently hitting 7 instead does not mean that the caller believes 7 is the last number. The difference is that dialing 8 is under appropriate stimulus control. Correctly dialing 8 happens because the person has been told the number, has seen it written, dialed, etc., or has previously been successful in reaching me after dialing 8. Accidentally dialing 7 is not under such control and would not occur reliably in the described situation. In this case, dialing 7 would not count as belief. Of course, one might be said to believe that dialing 7 was correct. This would likely depend on whether the actor appeared to be attending to relevant stimuli and to their own behavior. So, if one is carefully dialing, one would be more likely to be said to believe that the numbers dialed are correct. We are also more likely to refer to behaviors as beliefs if a given behavior occurs repeatedly. In Skinner's icebox example, if the individual was hungry for cheese and opened the stove, we would be unlikely to say that they believed the cheese was in the stove unless they opened the stove on several occasions and while appearing to pay attention to what they were doing.

Justified. A behavior is justified if (a) the behavior has previously resulted in reinforcing consequences following the presentation of, or in the presence of, a discriminative stimulus, and (b) a discriminative stimulus is present or has recently been present. That is, justification for any behavior results from the individual's reinforcement history and the presence of discriminative stimuli. The reinforcement history will include cases of generalized imitation and the discriminative stimuli will include stimuli other than the original discriminative stimuli to which the behavior may generalize. Put simply, to say that a behavior is justified is to say that it is produced by the environment. Specific behaviors occur because the environment operates on the individual so that certain behaviors become more likely. For example, saying "Obama" would be justified by appropriate questions such as "Who was the U.S. president in 2010?" and by experiences such as being told that "Obama" was the answer to such questions,

reading about Obama in books, and receiving both academic and social consequences for answering related questions.

Some of the arguments against justified true belief accounts of knowledge focus on how beliefs are connected to the conditions which led to them. Some authors insist that the right kinds of connections must exist between beliefs and the circumstances which led the individual to have those beliefs. This often means that the justification for beliefs must be strong enough and/or of the correct type. For example, Unger (1968) holds that knowledge is true belief that is not accidental. "Accidental" includes, for example, believing lies that later turn out to be true. Clark (1963) says that knowledge is justified true belief which is fully grounded. Goldman (1967) requires a causal connection between truth and belief (the fact that *p* is true has to be what causes the belief in *p*). When I refer to justification, I am referring to the reinforcement history of the behavior in question and to the current discriminative stimuli. It is well established that behavior is affected by consequences and that certain consequences result in the behaviors which preceded them being more likely to recur. To say that a behavior was not justified, or was less than fully justified, would be to argue against the basic principles of operant conditioning. Since every behavior is produced by reinforcement and the present environment, every behavior is justified. Frazier said in *Walden Two* "Eventually I realized that the subjects were always right. They always behaved as they should have behaved" (Skinner, 1948/1962, p. 289). The subjects were always right in that they always, and necessarily, behaved as their histories and the current environment dictated. Gettier (1963) and others make the point that one can be justified in believing something that is false. This is clearly the case since every behavior is justified and, as we shall see, not every behavior is true.

Although all behaviors are justified (produced by environmental contingencies), only certain kinds of justification (contingencies) will do if the behavior in question is to be said to be a case of knowledge. For example, the emitting of an echoic would not always be a case of knowledge due to the particular type of reinforcement history producing those responses. Echoic behavior involves cases where the speaker produces verbalizations that are similar to those produced by another speaker. Echoics are the result of prior reinforcement for imitating verbal behavior. Individuals learn from a young age to repeat sounds made by others. Occasionally, repeating those sounds produces reinforcement. In this way, a speaker's verbalizations come to exert stimulus control over a listener's verbal behavior such that the listener reproduces what the speaker has said. Simply repeating what another has said would not typically be considered knowledge. If I am asked "What is the square root of 1,764?" and I answer only after being told "forty-two," I would not be said to know the square root of 1,764. However, I still may be said to know the answer to "forty-two." That is, I may be said to know that responding with the echoic "forty-two" is correct.

Tacts, on the other hand, are the result of different reinforcement histories. Tacts involve naming something or answering questions. With tacts, a question or the presence of an object to be named may serve as a discriminative stimulus and the tact would be reinforced if it was considered correct by another person.

Reinforcement depends on correctly answering the question or naming the object. In fact, answering questions is among the most common cases of knowledge. A tact may be knowledge because of the stimulus control and reinforcement history involved. The individual responds appropriately to questions because similar answers to similar questions have been reinforced. I could be said to know that forty-two is the square root of 1,764 if I give that answer in response to the question.

As stated above, justification may involve stimuli other than those present when the behavior was previously reinforced (i.e., stimulus generalization). The degree of stimulus generalization will impact the likelihood that the behavior involved would be considered knowledge. If the current stimuli are sufficiently different from those present during the acquisition and maintenance of the behavior, we are unlikely to say that knowledge is present. For example, I have learned to answer the door when someone rings the bell. If I answer the door when the phone rings, we would not say that I knew someone was at the door, even if someone did happen to be there at the time.

This behavioral account of justification is in disagreement with the position that justification is not necessary for knowledge (e.g., in Unger, 1968 and Sartwell, 1992). Justification is not only necessary; it always exists for a given behavior. Since justification refers to reinforcement histories and current stimuli, there can be no cases of behaviors for which justification is lacking. Unger (1968, pp. 163-164) considers the case of a gypsy who receives messages from a crystal ball. These messages are always correct. The gypsy's parents knew the crystal ball would always be correct, so they raised him to believe its messages. The gypsy has no other evidence supporting the crystal ball's accuracy, but, as a result of his upbringing, he always believes the messages in spite of his general belief that the crystal ball will almost never be right. In Unger's view, since the messages are correct and it is not accidental that the gypsy is right about matters communicated by the crystal ball, the gypsy has knowledge even though believing the messages is not justified. If justification is defined behaviorally, the gypsy's beliefs *are* justified. The justification is whatever his parents did in raising him that led him to believe the crystal ball's messages. Goldman (1967) is among those authors who require a causal connection between the facts that make something true and one believing that something. This is correct in the sense that behaviors are causally connected to the events which produced them. It is just that there are no behaviors that do not meet this requirement.

True. True behavior is that which fits the current environment. This means that the behavior results in reinforcing consequences. For example, a rat in an operant chamber has, at times in the past, received food when pressing a lever in the presence of a tone. This reinforcement history, along with the presentation of the tone, provides justification for lever pressing, and delivery of food now establishes the truth of the behavior. In this case, lever pressing fits the current environment in that it produces food. If the rat presses the lever and does not receive food, we have a case of justified belief, but not truth. As further illustration of this notion of truth, consider two possible beliefs. First, believing that the last

digit of my phone number is 8, and second, believing the last digit is 4. Dialing 8 results in reaching me and thus is true. Dialing 4 is false. The consequences determine the truth. Put another way, true behavior is that which is effective. One cannot know something that is false, so only behaviors which lead to reinforcement and effective interaction with the environment can be part of knowledge.

Since true behavior is that which fits the current environment, it is clearly possible for a given behavior to be true in one situation and false in another. Dialing 8 when calling me is true, but when calling someone else it may be false. Behaviors are not true or false in and of themselves; rather, they are true or false in different circumstances. It is also the case that some behaviors will be more true than others. That is, some behaviors will be effective more often and in a wider variety of situations than other behaviors. The effectiveness of various behaviors will necessarily vary along a continuum. Some behaviors will be effective very rarely and in only the narrowest of circumstances. Other behaviors will be effective and result in reinforcing consequences quite often. Some behaviors will be effective on nearly every occasion. The more effective the behavior and the greater the number of situations in which it is effective, the more true the behavior. For example, Newtonian physics will allow one to make quite accurate predictions in a wide variety of situations. Newton's statements were, thus, true to a greater degree than many statements made previously. Einstein was able to improve on Newton. Einstein's equations have a greater degree of truth in that they are more widely applicable and result in even more effective interaction with the environment. For example, navigation systems that account for relativity are more accurate.

Under this analysis, justified true belief is behavior that is produced by a given reinforcement history, occurs in the context of a given set of environmental circumstances, and is appropriate for the current environment in that the behavior results in reinforcement. This is true for both verbal and nonverbal behaviors, although the physical relationships between behavior and reinforcer will differ. Schnaitter (1987) makes a similar point with his discussion of unsupported, directed, conventional, and speech acts; different categories of consequences are relevant depending on the type of act in question. Unsupported acts result in a change in the state of the individual performing the act. Directed acts have effects on the individual's environment. Conventional acts are evaluated in terms of whether they satisfy rules or laws. Finally, speech acts are judged by their effects on the listener and the relationship between the listener and the speaker (Schnaitter, 1987, pp. 61-62). Thus, the truth of a behavior may be determined by various kinds of consequences.

My definitions for "justified," "true," and "belief" are consistent with Skinner's views. In *Science and Human Behavior*, Skinner (1953) wrote ". . . knowledge is a repertoire of behavior" and "We need not regard such repertoires as 'signs' of knowledge but rather as knowledge itself. Knowledge enables the individual to react successfully to the world about him just because it is the very behavior with which he does so" (p. 409). In another passage, Skinner gives an

example that I interpret as being consistent with viewing knowledge as true belief. Skinner writes, "He 'knows the capital of Peru' in the sense that he will correctly answer when asked what the capital is or will make statements about the capital in discussing Peru, and so on" (Skinner, 1953, p. 408). Although Skinner is emphasizing the importance of stimulus control in knowledge (the student answers in response to the question), this passage does not explicitly refer to the role of past reinforcement in justification. However, Skinner addresses that issue earlier in the chapter with the following statements on education:

> Education emphasizes the acquisition of behavior rather than its maintenance. . . .In preparing the individual for situations which have not yet arisen, discriminative operants are brought under the control of stimuli which will probably occur in these situations. (Skinner, 1953, p. 402)

In Skinner's view, certain behaviors occur because education has prepared the individual to respond in particular ways to specific stimuli. Put another way, behaviors are justified by the education that produced them. Moore (2008) and Schnaitter (1987) include and have discussed other relevant quotations from several of Skinner's works.

Having presented a behavioral interpretation of justified true belief or, as I shall refer to it, justified true behavior, I can now address some of the arguments philosophers have offered in response to Gettier's demonstration that justified true belief is not sufficient for knowledge. These arguments have included the following features:

Attempts to find a fourth condition to add to justified true belief (e.g., knowledge as *undefeated* justified true belief as in Lehrer & Paxson, 1969). In addition to justified true behavior it may be necessary to require certain types of justification or connections between the stimuli and responses. For example, one might require sufficiently reliable stimulus–behavior–consequence contingencies. This issue is further addressed below.

Statements that only true belief is required (e.g., Sartwell, 1992). Here, requiring only true belief means that justification is not necessary for knowledge. Justification is required by many authors in order to exclude cases of guessing or being right about something through coincidence. In terms of behavior, justification refers to reinforcement histories and discriminative stimuli. These are necessarily relevant and are always present. According to Skinner (1953), "Usually, however, knowledge refers to a controlling relation between behavior and discriminative stimuli" (p. 408).

Statements that only justified belief is required (e.g., Paul, 2003). Here, defining knowledge as justified belief means that truth is not required. Truth is typically required because of the view that one cannot know something that is false. In a behavioral analysis, truth refers to consequences. Consequences of behavior are clearly part of what we mean by knowledge. If I type the password incorrectly, I will not be able to access my email. Typing the password incorrectly is not effective (i.e., true) behavior. If I continue to type the password incorrectly and never provide the correct version, I cannot be said to know the password.

Arguments that the justification in Gettier cases is insufficient (e.g., Meeker, 2004, argues that some Gettier cases do not represent knowledge due to a lack of justification arising from social contexts). In a behavioral analysis, justification refers to experience with the consequences of the behavior as well as the presence of a discriminative stimulus. As stated earlier, one result of such an analysis is that every behavior is fully justified. Frazier's subjects always behaved as they should have behaved.

Rejections based on false evidence (e.g., Clark, 1963, requires beliefs to be fully grounded and those grounds to be true). In behavioral terms, false evidence means prior adventitious reinforcement or irrelevant stimuli present when the behavior was reinforced. In such cases, although the behavior was reinforced in the presence of certain stimuli, that association is not likely to be repeated. Behavior that is the result of adventitious reinforcement is relatively unlikely to continue to result in reinforcing consequences. Thus, the behavior would not be true and would therefore not constitute knowledge. If the behavior actually does produce reinforcement in the future, this will be the result of a contingency that was not present with the previous adventitious reinforcement. The fact that the contingencies differ prevents us from referring to the current behavior as knowledge. This feature will be discussed further later.

Rejections based on being right about something accidentally or coincidentally (e.g., Unger, 1968); and **Requirements for a causal connection between the facts that make something true and one believing that something is true** (e.g., Goldman, 1967). Whereas false evidence refers to prior adventitious reinforcement, being right accidently or coincidentally involves cases of current adventitious reinforcement or irrelevant stimuli. In these cases there is no causal relation between the discriminative stimuli and the reinforcer and/or between the behavior and the reinforcer. Again, the contingencies currently in effect differ from those in the reinforcement history.

My discussion here differs from some other accounts of Gettier cases in that some authors have been concerned with the reasoning or cognitive processes assumed to be involved in getting from evidence to knowledge. For example, Zagzebski (1994) wrote "The notion of knowledge requires success, both in reaching the goal of truth, and in reaching it via the right cognitive path" (p. 73). With justified true behavior, this issue is clearly irrelevant. Behaviors are produced by histories of reinforcement, not by one following a "cognitive path."

The concept of justified true behavior, or at least one quite similar to it, will be appealing to many behaviorists. However, the question remains as to whether justified true behavior is susceptible to Gettier cases. To address this issue, I present the following examples.

Consider the above case of a rat pressing a lever in an operant chamber. Justified true behavior exists in that the rat has previously received food for pressing the lever in the presence of a certain tone, and now, while the tone is present, the rat presses the lever and receives food. The behavior of lever pressing is justified by the past instances of reinforcement and by the presence of the discriminative stimulus, the tone, involved in those instances. The truth of the

behavior is established by the delivery of food contingent on the lever pressing. So, the rat has performed a behavior, that behavior was justified by a reinforcement history and by the presence of a discriminative stimulus, and the behavior was true in that it resulted in a particular reinforcing consequence as it had in the past. We clearly have a case of justified true behavior. However, in this example the tone was coincidentally triggered by Skyrms' (1967, p. 383) Q radiation and the food delivery mechanism was malfunctioning and delivered food even though it was set not to do so. In this case, justified true behavior does not equal knowledge. The tone–lever press–food contingency was different here than it had been in the rat's previous experiences.

A similar example involves a person entering a store. This behavior might be justified by the presence of an "open" sign and by the fact that the individual has previously found doors with "open" signs on them to be unlocked. Suppose the person sees the "open" sign, attempts to open the door, and successfully enters the store. Again, we have justified true behavior. However, in this example, the door is unlocked, but only because the owner did not turn the key far enough when attempting to lock the door. Further, the owner turned the sign around so that the "closed" side was facing outward, but a few minutes later a gust of wind flipped it over. So, a discriminative stimulus usually associated with unlocked doors was present and the behavior of pushing on the door was reinforced by access to the store. As above, this is a case of justified true behavior that does not equal knowledge. Considering the coincidental nature of this situation, it would be strange to say that the person "knew" the door would be unlocked. The sign–push door–enter store contingency that operated in the person's history was not in effect here.

It is clear that justified true belief, when defined behaviorally, is still vulnerable to Gettier cases. Just as Gettier determined that justified true belief was not equivalent with knowledge, I must conclude the same for justified true behavior. Why is this the case? First, as discussed above, in some cases the justification will not be of the right type. Second, depending on the circumstances surrounding their performance, some behaviors will not count as beliefs. Third, a given behavior may be true in one instance but not in another. Truth is effective interaction with the environment. Some behaviors are more true than others. That is, some behaviors are more effective in a wider variety of situations. In Gettier cases, one is said not to have knowledge because the behaviors, although true in the given situation, would not be true under different circumstances. It is inevitable that behaviors will be true in some situations and not true in others, but the ways in which the situations are different in Gettier cases are important. In Gettier's original example, Smith does not know that "the man who will get the job has 10 coins in his pocket" because that statement would not have been true except for the coincidental fact that Smith had 10 coins in his pocket. In Gettier's second example, Smith's statement is true due to the coincidence of Brown's being in Barcelona. Similarly, the rat's pressing of the lever and the person's pushing of the door were true only because of coincidental circumstances.

As mentioned above, one attempt to address Gettier cases has been to require undefeated justified true belief. That is, justified true belief is sufficient for knowledge if and only if there is no additional information or circumstance that would defeat the justification. In Gettier's first example, Smith's knowledge that "The man who will get the job has 10 coins in his pocket" is defeated by the true statement "Jones will not get the job." In my above example of the rat pressing the lever, the defeaters would be the facts that the tone was triggered in an unusual way and that the mechanism had been set not to deliver food. A detailed discussion of defeasibility is beyond the scope of this paper, but Lehrer and Paxson (1969) provide an account of defeasibility as it relates to Gettier cases. As for justified true behavior, defeaters may be conceptualized as contingencies that are different from those under which the behavior in question was acquired or maintained. Such defeating contingencies would necessarily mean that the behavior would not always result in reinforcement. That is, the behavior would not be true consistently.

For one to correctly refer to behavior as knowledge, the behavior must be true and the contingencies between the discriminative stimuli and the consequences that make the behavior true must be sufficiently similar to those present in the behavior's reinforcement history. One implication of this analysis for a broader behaviorist view of knowledge is that knowledge exists only to the degree that those contingencies are similar and the behavior in question is true. Since similarity and truth are relative terms, so is knowledge.

References

Chisholm, R. M. (1966). *Theory of knowledge.* Englewood Cliffs, NJ: Prentice Hall.

Clark, M. (1963). Knowledge and grounds: A comment on Mr. Gettier's paper. *Analysis*, *24*, 46-48.

Gettier, E. L. (1963). Is justified true belief knowledge? *Analysis*, *23*, 121-123.

Goldman, A. (1967). A causal theory of knowing. *The Journal of Philosophy*, *64*, 357-372.

Lehrer, K., & Paxson, T. (1969). Knowledge: Undefeated justified true belief. *The Journal of Philosophy*, *66*, 225-237.

Meeker, K. (2004). Justification and the social nature of knowledge. *Philosophy and Phenomenological Research*, *69*, 156-172.

Moore, J. (2008). *Conceptual foundations of radical behaviorism.* Cornwall-on-Hudson, NY: Sloan.

Paul (2003). Relative knowledge. *Philosophy forums.* Retrieved from http://articles.philosophyforums.com/link.php?action=detail&id=10

Sartwell, C. (1992). Why knowledge is merely true belief. *The Journal of Philosophy*, *89*, 167-180.

Schnaitter, R. (1987). Knowledge as action: The epistemology of radical behaviorism. In S. Modgil & C. Modgil (Eds.), *B. F. Skinner: Consensus and controversy* (pp. 57-68). New York: Falmer Press.

Skinner, B. F. (1948/1962). *Walden two*. New York: Macmillan.

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

Skinner, B. F. (1957/1992). *Verbal behavior*. Acton, MA: Copley.

Skyrms, B. (1967). The explication of "x knows that p". *The Journal of Philosophy*, *64*, 373-389.

Unger, P. (1968). An analysis of factual knowledge. *The Journal of Philosophy*, *65*, 157-170.

Weinberg, J., Nichols, S., & Stich, S. (2001). Normativity and epistemic intuitions. *Philosophical Topics*, *29*, 429-460.

Zagzebski, L. (1994, January). The inescapability of Gettier problems. *Philosophical Quarterly*, *44*, 65.