Skinner's *Verbal Behavior*

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ABSTRACT

The author reviews the book that B. F. Skinner considered to be his most important work, namely *Verbal Behavior* in terms of its content and effect on the field. He considers such elements as the paucity of experiments, the host of allusions to literature and the masterful behavior analysis directed at elucidating verbal behavior, the latter constituting an admirable example of how behavior analysis can be applied to other forms of behavior as well.
Keywords: Skinner, verbal behavior, conditioning of verbal behavior, tact, mand, autoclitic, Chomsky.

RESUMEN

El autor revisa el libro que B.F. Skinner consideraba su obra más importante, *Conducta Verbal*, con respecto a su contenido y a su efecto sobre el campo de estudio. En ello toma en consideración elementos del libro tales como la escasez de experimentos, la multitud de alusiones a la literatura, y el magistral análisis conductual dirigido a elucidar el comportamiento verbal. Este último elemento constituye un ejemplo admirable de cómo el análisis conductual puede ser también aplicado a otras formas de comportamiento.
Palabras clave: Skinner, conducta verbal, condicionamiento de la conducta verbal, tacto, mando, autoclítico, Chomsky.

The book that B. F. Skinner considered to be his most important work (Salzinger, 1990), namely *Verbal Behavior* continues to be both unexamined and much maligned and therefore basically misunderstood. It was also, ironically enough, an important stimulus for the so called cognitive psychology revolution, the antithesis of Skinner's approach. It became that through Chomsky's (1959) review, usually associated with the adjective "devastating." In a sense, it provided a rallying cry for those psychologists who hated behavior analysis and who felt the review freed them to use their vocabulary of vague terms of inference, about subjects' mental states and mental way stations to explain how people understood language rather than what controlled their emission of verbal behavior. Thus, the controversy between Skinner and Chomsky is really one in which ships pass one another in the night rather than constituting a disagreement about the same phenomena. In the case of Chomsky it is also vituperative; in the case of Skinner it is simply a matter of ignoring the criticism. Chomsky's much vaunted review

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was in some ways even more an attack on what he took to be behavior analysis in general than on the book on verbal behavior. His long review mentioned many psychologists (neobehaviorists, partial behaviorists and nonbehaviorists) many of whom conformed to his idea of what Skinner's system was all about but which did not reflect it. That that review was unfair and offered a false impression of what the book dealt with was unfortunate, as was the much delayed response to the review, not by Skinner, who claimed never to have actually read it all (Skinner, 1983), but by MacCorquodale in 1970. If that were not enough, behavior analysts lamented the lack of experiments that the book engendered or contained, although now psychologists use the book's nomenclature to describe the instatement of verbal behavior in children who have none as well as construct experiments to test the nature of the concepts.

Skinner's book on verbal behavior had another effect (at least on me) besides that of explicating his ideas of how to explain the emission of verbal behavior. It showed how one can take rather complicated behavior and explain it in terms of behavior analytic terms and principles. Finally, it should have served to eliminate the bias that many behavior analysts suffered from, that is, from believing that behavior was restricted to doing to the exclusion of saying. For years, many behavior analysts viewed verbal behavior as essentially an epiphenomenon that would come along as long as we worked on nonverbal behavior. Yet even a little bit of thought makes clear, that particularly in complex civilizations, it is talk that produces the most important reinforcers and it is talk that allows one to avoid the most egregious consequences. Skinner was challenged to show how behavior analysis could explain this most important of all classes of behavior, thus making the act of convincing his fellow behaviorists to include verbal behavior in their research most important. In addition, of course, he was equally interested in responding to the challenge of making anti-behaviorists aware that behavior analysis was up to this very complicated task.

It is also noteworthy that Skinner's interest in verbal behavior even while he had done such important and original work with nonverbal behavior comes at least in part from his early interest in creative writing. What makes the book so difficult to understand are his many literary references, references that appeal to those of us who, like him, enjoy literature as opposed to some current students who simply find those references difficult. Indeed, it is possible that the rise of cognitive therapy stems from the stereotype that behaviorists do not deal with verbal behavior; they simply want to see action and when they modify behavior which is the most important thing one can do, they are referring to doing not talking. Had Skinner's book been more accepted by both behaviorists and cognitive psychologists, perhaps they would not have believed that behavior analysis does not allow one to talk to patients (Salzinger, 1992) but that one can only reinforce their nonverbal behavior.

But now it is 50 years since the book first appeared. Why do we not pay more attention to it now? To begin with, behavior analysts did see the need to explore the most basic relations between verbal behavior and its controlling variables. Indeed many of us spent a good deal of time investigating simply how to increase the frequency of various response classes. Even more basically, we spent time and effort demonstrating that it is reinforcement that can control verbal behavior. It is fair to say that this phase

of the study of verbal behavior began with Greenspoon's (1955) study of plural nouns. I still recall coming across a colleague of mine who knowing of my interest in verbal behavior asked me what I thought of the Greenspoon "effect" as if a completely unheard of phenomenon was discovered. There was great excitement among behavior analysts having shown empirically that one can successfully modify verbal behavior in a systematic manner by the administration of reinforcers. A few years later, we (Salzinger, Portnoy, Zlotogura, & Keisner, 1963) replicated that experiment and extended it to continuous verbal behavior, i.e., speaking in sentences rather than in a word association manner. We found that what had been conditioned was not just the class of plural nouns but certain subclasses, that is, plural nouns ending in the sound *z* or *s*. We showed that the response class that is conditioned may not always be what the experimenter intended; it depends in part on the strength of the response class impinged upon (its history) before the experiment takes place. At the same time as Greenspoon's experiment, Verplanck (1955) published an article on the control of the content of conversation. He showed that one could increase the expression of opinion statements by the mere application of verbal statements of agreement. My group did research on the clinical interview (e.g., Salzinger & Pisoni, 1958) showing that with the appropriate use of verbal reinforcers one could increase or decrease the occurrence of verbal affect statements in both schizophrenia patients as well as in normal subjects, that one could increase or decrease the amount of speech in general as well as that of self description (Salzinger, Portnoy, & Feldman, 1964). Indeed, we found that when you make the reinforcement contingent on a specific response class such as we did in these experiments, changes take place first in the broadest class, in this case speech in general, then a change in self-referred statements and finally statements of self referred affect which reflected the specific contingency on the basis of which we reinforced the verbal behavior. We (Portnoy and Salzinger, 1965) were also able to demonstrate that the reinforcement of one type of verbal statement (positive affect) was more likely to generalize to the emission of negative affect statements (and vice versa) than to neutral ones. Not enough studies of this nature took place, perhaps because such studies are difficult to do and take a lot of time. Nevertheless, interest in these effects resulted in a surge of studies of a more mechanical nature; these studies required less time to do. For example, subjects were shown slides that contained three pronouns and a common verb and asked to choose one of the pronouns to complete the sentence. The experimenter then reinforced sentences with one of the pronouns. The obvious nature of these experiments resulted in a controversy of whether verbal conditioning could only occur with awareness and therefore did not demonstrate much about conditioning; some psychologists maintained these experiments showed that the conditioning effect was a pseudo-effect in that subjects who increased in the use of reinforced verbal statements were simply cooperating with the experimenter, an experimental artifact. What many of those experiments demonstrated was rule governed behavior. According to that, subjects simply instructed themselves to emit one pronoun or another after a few trials in which the use of one or another of them resulted in the experimenter saying "right" or words of that kind. This was not conditioning but the acquisition of a rule that the subject then enthusiastically followed. Still the more complex experiments which included continuous verbal behavior showed conditioning

in the absence of awareness (Krasner, 1958; 1967; Salzinger, 1959; 1978; Salzinger & Pisoni, 1958; Salzinger *et al.*, 1964). More recently, Kohlenberg and Tsai (1991) have been using verbal conditioning of particular response classes as their therapy. But in a sense, these experiments largely ignored Skinner's book; they emphasized Skinner's "rodential" behavior analysis, asking questions about verbal behavior that he had asked about his rats and pigeons. We all felt the need to do the more basic experiments about the various effects of reinforcement on verbal behavior (on the nature of response classes and response units, on response generalization and the like).

Experiments also sprang up to teach verbal behavior to children without speech (Salzinger, Feldman, Cowan, & Salzinger, 1965). Confronted by a medical student who had heard me lecture on the value of behavior analysis, I was challenged to do something about a child on the ward of a hospital who had no speech. And we accepted that challenge by engaging in a marathon of conditioning, working with that child seven days a week for many weeks. At that time (early 60's), we knew of no work on conditioning speech in children who had none and so we tried various food items as reinforcers. We began with salty peanuts and soda figuring that the former would induce the need for the latter but the four-year old in question, produced such a mess that we resorted to M&M's. The result was that we were able to condition speech in this child and subsequently in another, reinforcing tacts at first and eventually having him ask for the M&M's and thus reinforcing mands. We were interested in the generalization of the responses that he emitted to other verbal responses and the generalization of the discriminative stimuli that occasioned his responses. We found that our subject developed other mands after we instructed him to say "give me candy" so that eventually he constructed mands rather clumsy in terms of grammar but understandable nevertheless; he would say such things as "give me no more rain again" when rain occasioned our not taking him out of the hospital for a walk which he much enjoyed. We taught him tacts by pointing to pictures in a book but also to objects in the room in which we worked with him so that he learned to utter such unusual words for a 4-year old as air conditioner quite early in his acquisition of speech.

Nowadays, the large number of autistic children that are diagnosed has produced an entire industry of reinforcing verbal behavior in such children, although the conditioning of mands and tacts is perhaps the most frequent application of the ideas in Skinner's book, not much being done with other parts. To provide some more exact data on the use of Skinner's concepts, Sautter and LeBlanc (2006) reviewed the literature to see how much Skinner's concepts (tacts, mands, echoic responses, autoclitic responses and intraverbal responses) had been empirically investigated. The result was the use was limited. For example, monitoring the concept of mand, in the period of 1963 to 1988 (a period of twenty five years) they found eight articles in the *Journal of Applied Behavior Analysis* investigating the mand; that was the most frequently investigated concept in 11 different journals, including the most behaviorally oriented ones. This increased so that in the period of 1989-2004, a period of some 15 years, there were now some 34 articles on that concept. The lowest frequency of investigating a verbal behavior concept was the autoclitic which occurred once in the first period and twice in the second period. Clearly none of these figures demonstrate a surge of research studies

into Skinner's verbal operant responses. In my own search for studies in the journal The Analysis of Verbal Behavior from 1990 to 2007, I found a total of 198 verbal behavior papers, including both theoretical and empirical ones, with mention of mands in 18 papers (9% of all the studies of verbal behavior). The autoclitic, the least often investigated concept was mentioned in this exclusively verbal behavior journal, published by behavior analysts, four times, one being in a very short editorial by Jack Michael (2007) and one by Sautter and LeBlanc (2006) whose paper (just mentioned above) consisted of counting the frequency of investigations of various of Skinner's verbal response concepts. Clearly, Skinner's major concepts of verbal behavior have not resulted in many empirical studies even by behavior analysts.

Let us examine next just how useful the concepts in the book, *Verbal Behavior* are. Perhaps the most important point to be made about this book is that if more people had read it, they would not have continued to think of behavior analysis as consisting of the mere administration of M&M's or the working with an organism as requiring an artificial environment such as a Skinner box. I might just add here that Skinner himself never liked that eponymy. Furthermore, the lack of experiments in the book provided the space for Skinner's ingenious interpretations and especially the literary references that he indulged in. I say "indulged" because I believe it also gave him the opportunity to refer to a literature far removed from the dull recitation that we call professional writing, no matter how exciting the experimental results might be. As I reviewed once again the contents of this book, I could not help but rejoice in the erudition of Skinner's writing. What's more, the aptness of his examples of the application of behavior analytic concepts to literary works has to be admired. In fact, given that the primary appeal of the book should have been to behavior analysts, it is ironically the very references to literature that have been off-putting to those who expected a recitation of experiments that might supply evidence for the statements made by Skinner. On the other hand, although one might have expected linguists and philosophers of language to be enticed by literary references, it turned out that they were put off by the strangeness to them of his statements regarding such concepts as reinforcement contingencies, stimulus control, conditioned reinforcers and more basic concepts of conditioning, extinction, generalization, discrimination and the like.

But let us examine his concepts: first his definition of verbal behavior. It is critical to note that it comes in two parts in his book so that for those who read only the first part of the book they will have only one half of the definition. The first half of the definition is simply that verbal behavior requires the mediation of another individual in order to be reinforced; in other words, verbal behavior's consequences must be mediated through other persons. In the second half of his definition, Skinner adds that the behavior of this other individual or individuals has been conditioned "precisely in order to reinforce the behavior of the speaker." (p. 225). In other words, verbal behavior requires conditioning for both the speaker and the listener. Of course, when Skinner talks about thinking (which is a surprise to many who criticize behavior analysis) speaker and listener are contained in one person.

Perhaps the most intuitively obvious example of one of Skinner's concepts is the mand. Here we know that making a request, or a demand for that matter, often results

in its satisfaction. A mand, as defined by Skinner is a verbal operant that essentially specifies its reinforcement. Thus ask for salt and salt constitutes the reinforcer. Provide salt in the form of salt sticks and you can show that asking for water, or in the case of an environment of a bar, "beer" is a likely verbal response. In other words, one can control mands by modifying the establishing operation (e.g., how thirsty one is in the case of asking for a drink to quench one's thirst). Another well known operant response is a tact. The latter can be defined as a verbal response under the control of a discriminative stimulus (i.e., a tact is more probable under certain circumstances). Thus a child learns that in the presence of a bird, his or her utterance of the word "bird" is likely to be reinforced by a parent or other caretaker. An interesting question to be asked then is, are mands and tacts independent of one another, that is, will the conditioning of say uttering the word "milk" as a mand transfer to uttering the word "milk" in the presence of a bottle of milk? For that matter, will the learning of the utterance of the word as a tact transfer to its utterance in the presence of say thirst to result in a mand? Wallace, Iwata and Hanley (2006) examined such a question and found that transfer occurred from tact learning to mand learning but only for the more desirable reinforcers. Other investigators found no transfer from one class to the other. Twyman (1995) found it necessary to train each mand anew after having trained the same form as a tact. More research is necessary to find out exactly what the relation is between these two forms of verbal behavior, the critical point being that these response classes do lend themselves to experimental investigation.

Other response classes are suggested by Skinner, namely echoic responses, textual responses (both being essentially repetition of verbal responses in the form of saying what one hears or reading what one sees, respectively). Perhaps the most interesting response class is the autoclitic which essentially alters the effect of other verbal responses such as, "I think it's going to rain" in which case the "I think" phrase reduces the strength of the main response "it's going to rain." This class of responses is surely one of the most interesting ones but it is also one of the most difficult to deal with or to explain because the autoclitic is also supposed to deal with the problem of grammatical utterance. In some sense there is consideration of controlling the utterance of a verbal response before it is uttered and there is of course the problem of grammatical utterances not being simply a matter of responses occurring in a particular order.

But let us return to consideration of the book as a whole. What is most interesting about it is that Skinner sat down and using only the principles of behavior analysis which he had done so much to elaborate, he tried to explain all about the conditions of emitting verbal behavior (a form of behavior that he conceded was different from other forms but which still could profit much from applying to it the principles developed by the analysis of nonverbal behavior in animals under precise experimental conditions). Given that not much had been done by way of empirical analysis of language at least in terms that lent themselves to a behavioral analysis, he resorted to using examples that he gleaned from examining literature. Surely an unusual approach at least in psychology. Nevertheless, it led to interpreting behavior in a way that experiments never could. Skinner accepted the challenge of starting from scratch, asking himself what it would take to examine the stimuli that control verbal behavior. He also set the

task for himself not to do this piecemeal but to attack all of verbal behavior whether uttered or written, whether self talk or other talk, whether problem solving or stray thoughts. In doing this, he set a new standard of interpretation of behavior in general that should definitely be copied when we try to explain behavior in other circumstances. The situation that comes immediately to mind, of course, is the interpretation that is required when clinicians try to help patients who have psychological problems to solve. As I re-examined this book, it occurred to me that this book ought to be required reading in clinical programs after the student has learned the basic principles of behavior analysis. From that point of view as well as from the point of view of gaining an understanding of language, this book was truly as Osgood said in a review some fifty years ago "a remarkable book" (Osgood, 1958; p. 209).

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