

Realizing the Potential of Skinner's Analysis of Verbal Behavior

Mark L. Sundberg
Behavior Analysts, Inc.

The most significant aspects of human behavior involve verbal behavior (e.g., language, thinking, understanding, memory). Perhaps this significance is why Skinner frequently stated that his analysis of verbal behavior would prove to be his most important work (e.g., 1978, p. 122). The topics analyzed in Skinner's book *Verbal Behavior* (1957) are complex, but these are many of the same topics that are focused on extensively in mainstream psychology and linguistics. If behavior analysts are to participate in the analysis of these complex behaviors, then they will need the conceptual tools from *Verbal Behavior* in order to maintain the integrity of a behavioral analysis. Although much has been accomplished in the 41 years since the publication of *Verbal Behavior*, there are still several major challenges that face behavior analysts if the book is to have the impact that Skinner felt it could. The current paper will briefly review some of these accomplishments and then suggest some future directions for the analysis of verbal behavior.

Current Status of an Operant Analysis of Verbal Behavior

Following the publication of *Verbal Behavior* (1957), Skinner received a wave of negative reactions from both outside and inside the field of behavior analysis. Criticism of the book was anticipated from outside the field (Skinner, 1978), but the strong reaction from within the field was probably not expected by Skinner. A number of behavior-

ists have examined this issue, and have collectively provided a list of reasons why *Verbal Behavior* was not immediately embraced by the behavioral community (e.g., Eshleman, 1991; McPherson, Bonem, Green, & Osborne, 1984; Michael, 1984; Oah & Dickinson, 1989; Vargas, 1986). Perhaps most troublesome to the behavior analysts of the time was that the book was speculative and did not contain any data (Michael, 1984). The lack of empirical research on verbal behavior continued to trouble behavior analysts well into the 1980s (McPherson et al., 1984). However, it now appears that this situation has changed, and a number of advances in empirical research and applications directly related to *Verbal Behavior* can be identified. These advances are classified into six different areas, each of which will be briefly reviewed below.

Empirical research. In a citation analysis of *Verbal Behavior* (1957), McPherson et al. (1984) found that of the 836 papers that met their citation criteria, only 19 constituted empirical research. These authors concluded that "*Verbal Behavior* has not provided a conception that has led to the empirical examination and explanation of verbal behavior. If the past is a predictor of the future there is no reason to expect that it will eventually do so" (p. 165). However, there has been a steady increase in verbal behavior research since the late 1970s (if convention presentations are considered), and published empirical research has been increasing at a celeration rate of $\times 3$ since the mid 1980s (Eshleman, 1991).

A review of the 126 papers published in the first 14 volumes of *The Analysis of Verbal Behavior* (TAVB) showed that 46 papers con-

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stituted experimental analyses. Also, a number of other empirical papers have been published in the *Journal of the Experimental Analysis of Behavior* and the *Journal of Applied Behavior Analysis* (e.g., Lamarre & Holland, 1985; Lodhi & Greer, 1989; Partington, Sundberg, Newhouse, & Spengler, 1994; Yamamoto & Mochizuki, 1988), as well as other journals and books (e.g., Fushimi, 1994; Luciano, 1986; Sato & Sugiyama, 1994; Sigafos, Doss, & Reichle, 1989). In addition, several reviews of verbal behavior research have been published (e.g., Brady, Saunders, & Spradlin, 1994-1995; Oah & Dickinson, 1989; Potter & Brown, 1997; Shafer, 1994-1995). Given these data, it seems reasonable to speculate that a citation analysis conducted today would show that Skinner's analysis of verbal behavior has finally led to a productive line of empirical investigation.

Availability of teaching materials. Prior to the mid 1970s there were very few teaching materials on verbal behavior available to college instructors. However, during the past 20 years materials have become more available due to a number of factors, but perhaps most significant is the availability of the papers published in *TAVB* and other journals and books. In addition, updated objectives, exams, and study materials for Skinner's book are available (Michael, 1997), as are a number of books and book chapters on verbal behavior (e.g., Chase & Parrott, 1986; Donahoe & Palmer, 1994; Hayes, Hayes, Sato, & Ono, 1994; Pierce & Epling, 1995).

Applications. Perhaps the most obvious value of the research on verbal behavior thus far has been the role it has played in guiding language assessment and training programs for individuals who have language deficits (Michael, 1998). Examples of these applications can be found throughout *TAVB* and the other publications mentioned above. In addition, a number of schools with curricula based on *Verbal Behavior* (1957) have been established for children with autism and other developmental disabilities (e.g., ABC School, Sacramento, California; F. S. Keller School, New York, New York; Institute for Effective Education, San Diego, California; STARS School/Behavior Analysts,

Inc., Danville, California). There have also been a number of other applications of *Verbal Behavior*. For example, Skinner's work has been used to analyze the acquisition of language by children (e.g., Bijou & Baer, 1965), the acquisition of language by apes (e.g., Savage-Rumbaugh, 1984; Sundberg, 1996), schizophrenic hallucinations (e.g., Burns, Heiby, & Tharp, 1983; Layng & Andronis, 1984), facilitated communication (e.g., Hall, 1993; Sundberg, 1993), and stimulus equivalence (e.g., Hall & Chase, 1991).

Conference presentations. The number of conference presentations relevant to verbal behavior has also been substantial over the past 20 years. The verbal behavior area has always been a key part of the Association for Behavior Analysis (ABA) program, and in fact was the first specialty area tracked separately by the Midwestern ABA program committee (1977). The frequency of presenters using the terms from *Verbal Behavior* (1957) also appears to be increasing. In an awards ceremony at a recent regional conference on behavior analysis, Julie Vargas stated that she was impressed with the number of different presenters at the conference who made accurate use of the terms from Skinner's analysis of verbal behavior.

The Verbal Behavior Special Interest Group (VBSIG) and TAVB. The VBSIG has been one of the largest SIGs in ABA for the past 20 years. Its membership has reached approximately 500, and it has successfully started and maintained a professional journal (*TAVB*). The SIG continues to meet each year at the annual ABA convention, and 15 volumes of the journal have been published.

Signs of acceptance from outside the field. In a recent publication in *Historiographia Linguistica* (1990), a historian of linguistics, J. T. Andresen, suggested that *Verbal Behavior* (1957) could be of value to those interested in pragmatics. Andresen provided a reexamination of several aspects of the Skinner-Chomsky debate and concluded that Skinner was inappropriately excluded from the field of linguistics. Andresen asserted that "writing Skinner into the record changes the history of what we think our discipline to be and thereby reconfigures the disciplinary boundaries" (1990, p. 155). Andresen was invited to the 1991 ABA con-

vention for the President's Invited Symposium and provided further encouragement to those interested in advancing Skinner's analysis of verbal behavior. Another example of acceptance from outside the field has come from the work of Moerk (1992), who has also suggested that Skinner's analysis of verbal behavior has much to offer the field of linguistics. Moerk has attended several ABA and ABA-affiliate conventions.

Future Directions for the Operant Analysis of Verbal Behavior

The advancements in these six areas seem to collectively suggest that Skinner's analysis of verbal behavior is alive and well. However, despite these advances, there remains an obvious neglect of verbal behavior in mainstream behavior analysis and behavioral language research. In addition, there is a marked absence of college instruction on verbal behavior, and much of the current instructional material on behavior analysis in general does not include a treatment of verbal behavior. These issues are discussed in more detail below.

The need to include verbal behavior in behavioral analyses. The analysis of verbal behavior has never been well incorporated into mainstream behavior analysis. This failure to analyze verbal behavior creates a gap in the analysis of human behavior and leaves behavior analysis open to criticism. This situation must change if behavior analysts are to participate in the analysis of the topics most frequently discussed in psychology and linguistics (e.g., language, intelligence, perception, memory, thinking, creativity, problem solving). In addition, a number of applied topics involve verbal behavior (e.g., language acquisition and training, academic skills, social interaction, inappropriate behaviors), and the failure to analyze these topics appropriately may mask important distinctions and independent variables, thereby potentially reducing the effectiveness of the intervention procedures.

The need for more college instruction on verbal behavior. Currently, there are only a few behavioral programs that offer a course on verbal behavior. The solution to this problem is complicated because the supply of professors willing or able to teach verbal

behavior is limited, and often there is no room for additional courses in established degree programs (Michael, 1980). However, if students do not receive training on verbal behavior while in college, the probability is quite low that they will ever receive the training that is necessary and sufficient to understand and use the analysis. New behavior analysts must be given this training, because those who have had formal training and have contributed to this area during the past 41 years are becoming fewer each year.

The need to include verbal behavior in behavioral textbooks. Many of the current textbooks on behavior modification and behavior analysis contain little or no mention of verbal behavior. Those that do often fail to incorporate the analysis into other sections of the book, as if it is something aside from a behavioral analysis that should only be considered separately.

The need to incorporate verbal behavior into applied and basic research. The analysis of verbal behavior is rarely used in the language research published in the behavioral literature (Knapp, 1980). However, Skinner's analysis of verbal behavior has tremendous potential for advancing several aspects of language research. Perhaps the most significant advancements in applied research can occur in those areas that directly involve language assessment, language acquisition, language disorders, and behavior problems. Skinner stated in the first chapter of the book that "The formulation is inherently practical and suggests immediate technological applications at almost every step" (1957, p. 12). There are several human populations that could benefit from the analysis of verbal behavior (e.g., those with autism, developmental disabilities, deafness, traumatic brain injuries), and there are a number of additional topics in need of research (Sundberg, 1991). Basic researchers could also benefit from the inclusion of verbal behavior into their analyses and research, especially those who work with highly verbal organisms. For example, much of the research examining stimulus equivalence, matching to sample, and verbal instructions probably involves verbal behavior, yet rarely is Skinner's analysis of verbal behavior

incorporated into the research. However, an analysis of verbal behavior may help identify important independent variables relevant to the results obtained (e.g., Hall & Chase, 1991; Potter, Huber, & Michael, 1997).

Conclusions

There have been many significant advances in the analysis of verbal behavior over the past 20 years. Perhaps most important is the emergence of an empirical foundation that supports Skinner's conceptual analysis. However, realizing the potential of *Verbal Behavior* (1957) will require changes in the behavior of behavior analysts. Changes are needed in analysis and research practices, and especially in the education of current and future behavior analysts. A thorough understanding of Skinner's verbal behavior will not only improve our impact on human problems but may make it clear to behavior analysts why Skinner felt that *Verbal Behavior* was his most important work.

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