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Recollections of Jack Michael and the Application of Skinner's Analysis of Verbal Behavior

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Abstract Jack Michael offered a course on verbal behavior almost every year throughout his teaching career. Jack was also interested in the application of Skinner's work and in 1976 began to offer a graduate course at Western Michigan University titled Verbal Behavior Applications. Jack and his students pursued the application of Skinner's work on verbal behavior with dozens of empirical studies during the 1970s. In honor of the 60th anniversary of the publication of Skinner's book *Verbal Behavior*, the current paper presents some of my recollections of Jack's work on verbal behavior as his student, graduate teaching assistant, and research collaborator during that time period.

Keywords B. F. Skinner · Jack Michael · *Verbal behavior (1957)* · Verbal behavior applications

Jack Michael dedicated his career to teaching behavior analysis. One of his goals was to impart to students the verbal repertoires necessary to use the concepts and principles of behavior analysis to precisely analyze behavior in any context (Michael, 1995, 2004). In the process of teaching others, he was constantly working on furthering his own understanding of Skinner's writings and refining various aspects along the way (e.g., establishing operations, positive and negative reinforcement, automatic reinforcement). Jack was especially interested in Skinner's (1957) analysis of verbal behavior (VB). He argued, like Skinner, that an analysis of VB was essential for a complete account of complex human behavior. However, in the early days of our discipline, very little use was made of Skinner's analysis of VB—an issue that was a constant source of irritation to Jack (e.g., Michael, 1984).

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I was one of Jack's MA and PhD students at Western Michigan University (WMU) between 1975 and 1980, and I was his teaching assistant for a number of courses. I also worked full time at the Kalamazoo Valley Multihandicap Center (KVMC), a WMU psychology department practicum site, where Jack, his students, and others collaborated on dozens of VB research projects during the 1970s. In honor of the 60th anniversary of the publication of Skinner's book *Verbal Behavior* (1957), I offer some of my recollections of Jack's efforts to teach and advance Skinner's analysis of VB and its applications during that period. First, I would like to briefly describe the two primary settings where the work took place: WMU and KVMC.

The WMU Psychology Department

In the mid-1960s, the psychology department at WMU established an undergraduate and graduate program in behavior analysis. The newly appointed department chair, Roger Ulrich, assembled a faculty consisting of Jack Michael, Dick Malott, Don Whaley, Neil Kent, Rob Hawkins, Ron Hutchinson, and others (see Michael, 1993, for a complete listing of the faculty and a brief history of the department). The WMU psychology department attracted national attention following a *Psychology Today* article on the rise of Skinnerian psychology at American universities (Goodall, 1972). In looking to the future, Goodall noted that "the University of Kansas and Western Michigan University in Kalamazoo now lead the field" (p. 58). I transferred to WMU like many other behaviorally oriented students in my generation. The WMU academic environment was rigorous but exciting. The hallways between classes were ablaze with behavioral chatter. Students were carrying rats or pigeons to or from experiments. And no topic was left unanalyzed. This verbal community provided an incredible environment for learning behavior analysis and its applications.

KVMC

In the late 1960s, Jim Kaye, a WMU graduate student (and later one of Jack's first PhD students at WMU), wrote a grant and obtained funding to start a new special education program under the auspices of the Kalamazoo Valley Intermediate School District. The KVMC program provided intensive one-on-one behavioral and educational services to children and young adults with multiple impairments (e.g., autism and deafness, cerebral palsy, and intellectual disabilities). Jim hired several WMU psychology students to staff the program, including Jerry Shook, who Jim later hired as the program director. A practicum of 10 h/week was required for WMU psychology majors, and KVMC was an approved site. By the early 1970s, the school served approximately 60 children and young adults, and the program had provided employment or practicum credit for hundreds of WMU students.

Jack's VB Course

Jack taught a VB course at WMU nearly every year between 1967 and his retirement in 2003. Initially, Jack's VB course was required for WMU sophomore psychology majors. I took his course in 1974, the same semester I began working at KVMC for practicum credit. Norm Peterson was Jack's graduate teaching assistant. It was widely recognized by students that Jack's VB course was the hardest class in the undergraduate curriculum. Many students put it off as long as possible. Jack used a modified personalized system of instruction (Michael, 1991) that involved weekly reading assignments, dozens of detailed objectives, a lengthy essay exam, and an equally lengthy remedial exam, if necessary (see Esch & Esch, 2016, and Mabry, 2016, for more detail on Jack and his approach to teaching). All of Jack's classes were demanding, but his VB class was especially so because of the complexity of the content. Michael (1984) described the problem as follows:

> The students' main difficulty is not with the "behavioralizing," but rather with what is being behavioralized. For example, the following are included in the first 20 entries listed in the index: abstraction; acrostics; agglutinated languages; agnosia; agrammatism; alexia; allegory; alliteration; allusion; amanuensis; and ambiguity. (p. 369)

However, the end result of Jack's course was that a student could talk precisely about VB, analyze its role in complex human behavior, and behaviorally define and exemplify these terms, as well as many others.

Jack's Interest in Sign Language and Deafness

There were several specific topics related to VB that were of special interest to Jack. One topic was the various types of nonvocal VB, such as sign language, Braille, and icon selection. Jack's first exposure to sign language came through his association with his University of Houston and Arizona State University colleague, Lee Meyerson, who was deaf (although Lee did not use sign language; he used lip reading and had understandable speech). Jack and Lee coauthored several papers in the 1960s on the applications of behavior analysis to deafness and rehabilitation (e.g., Meyerson, Kerr, & Michael, 1967; Meyerson & Michael, 1964; Meyerson, Michael, Mowrer, Osgood, & Staats, 1961).

Jack frequently discussed sign language in his VB course. He was especially interested in the conceptual aspects of sign language and its correspondence to Skinner's analysis of VB (e.g., autoclitic behavior and multiple control in sign language). I had acquired sign language while working at KVMC, and I became a registered interpreter for the deaf. In 1975, I started teaching a sign language class at Kalamazoo Valley Community College. Upon receiving my class roster, I saw that Jack Michael was listed as one of my students. I was 21 years old, and this was my first time (independently) teaching a college course. Jack was a difficult student to manage. He frequently hijacked the discussions and practice sessions, and he ultimately rearranged my entire teaching format and content into a VB

platform. Jack was on sabbatical that year and ended up taking two sign language courses from me, earning an "A" both times.

Jack's VB Applications Course

In 1976, in addition to his regular VB course, Jack started offering a graduate course titled "Verbal Behavior Applications." Norm Peterson and I were Jack's teaching assistants. In that course, Jack covered a wide variety of topics, including autism, intellectual disabilities, aphasia, dementia, social behavior, literacy, academics, deafness, sign language, nonhuman language acquisition, poetry, literature, music, comedy, memory, problem solving, emergent relations, and more (Esch & Esch, 2016; Sundberg & Michael, 2001; Sundberg, Michael, & Peterson, 1977). Each topic was discussed in terms of how a VB analysis could contribute to that area of study. Clinical applications were often generated among the students in classroom discussions, exercises, and data shares. It was exciting to confirm Skinner's (1957) prediction that "the formulation is inherently practical and suggests immediate technological applications at almost every step" (p. 12).

Jack, Norm, and I submitted a workshop on Skinner's analysis of VB and sign language to the 1977 Midwestern Association for Behavior Analysis (MABA) convention. We each agreed to take the lead on certain topics. We assembled a handout that contained eight short papers, all of which involved topics related to VB and sign language that we had covered in Jack's VB applications class (Sundberg et al., 1977). Among the papers were Jack and Norm's paper on the basic elements of Skinner's analysis of VB—the topic of Norm's doctoral dissertation and his book *An Introduction to Verbal Behavior* (Peterson, 1978)—and my first version of the application of VB to language assessment and intervention, which became the topic of my dissertation (Sundberg, 1980).

Jack's Interest in Selection-Based Language Systems

At KVMC, we worked with a variety of nonvocal children who could not benefit from sign language (e.g., children with cerebral palsy) but who benefited from other types of augmentative communication systems (e.g., Blissymbolics, rebus, picture selection, icon selection, word selection, electronic switches, eye gaze). Teaching a nonvocal child VB with these different systems presented several challenges, but the goal to establish functional verbal relations was clear. Jack was quite interested in these different types of response forms and how they could be accounted for and taught within a VB framework. At the time, language researchers with nonhuman primates were making use of similar stimulus selection systems (as well as sign language) with a good deal of success. In 1977, Jack took Norm, Mike Minnervini, and me to see Duane Rumbaugh present his work with Lana, a chimpanzee, at Hope College in Holland, Michigan. Rumbaugh (1977) had developed an icon selection system that Lana and other chimps used to respond in various linguistic tasks. We were all very impressed with Rumbaugh's work, and of course being with Jack, we focused on providing

behavioral interpretations of Rumbaugh's data and the videos of Lana successfully responding to the tasks.

Upon our return to Kalamazoo, Jack frequently discussed Rumbaugh's work in his classes. Jack began to include more objectives on teaching VB to nonvocal children, nonhuman primates, and other species (e.g., dogs, rats, pigeons). These discussions provided the early foundation for Jack's distinction between topography-based and selection-based VB (Michael, 1985). Jack and his students pursued this distinction with pigeons (Michael, Whitley, & Hesse, 1983; Sundberg, 1985) and with individuals with intellectual disabilities (Sundberg, 1993; Sundberg & Sundberg, 1990; Wraikat, Sundberg, & Michael, 1991).

Research at KVMC

From the mid to late 1970s, Jack Michael and Brian Iwata served as our research advisors at KVMC, and they usually attended our weekly research meetings. I was the research coordinator at KVMC during the late 1970s under the direction of Jerry Shook. Many of the WMU graduate students conducted their theses or dissertations at KVMC, and students typically presented their research at the MABA or the Association for Behavior Analysis (ABA) conventions. Our research group helped to facilitate these activities. A number of the studies conducted at KVMC were published. Brian Iwata commented that 10 of his first 20 publications were conducted at KVMC (personal communication, October 22, 2011). Jack's main focus at KVMC was on VB research. The students at KVMC provided an endless supply of behavioral and linguistic challenges, and many staff members (especially Jack's graduate students) were eager to explore the experimental and applied potential of Skinner's analysis of VB.

Jack's VB Lab at KVMC

Our initial focus with Jack was on applying Skinner's analysis of VB to the daily one-on-one instructional needs of children with autism or other types of disabilities (e.g., assessing VB or conducting mand, tact, and intraverbal training). Jack would observe teaching sessions, make comments, and participate in meetings, where he would provide more detailed suggestions (e.g., how to contrive establishing operations [EOs] or establish verbal stimulus control). Assessment and training procedures were developed for each of the verbal operants and listener behaviors and implemented across the classrooms at KVMC (Sundberg, 1983; Sundberg et al., 1979). These early applications of Skinner's analysis of VB provided the foundation for our later work on language assessment (Partington & Sundberg, 1998; Sundberg, 2014) and language intervention (Sundberg & Michael, 2001; Sundberg & Partington, 1998).

Our first thematic line of research at KVMC was on the distinction between the elementary verbal operants. Several of Jack's master's students conducted their theses or special projects on this topic. For example, Genae Hall examined conditioned EOs and the functional independence of the mand and tact (Hall & Sundberg, 1987); Mark Stafford examined the different types of consequences that defined the mand and tact

(Stafford, Sundberg, & Braam, 1988); Steve Braam examined the functional independence of the tact and intraverbal (Braam & Poling, 1983); and Cassandra Braam examined mediated transfer (Sidman, 1971) and textual behavior (Braam, Daeschlein, & Braam, 1979). We pursued several other topics under Jack's direction. For example, our initial research on stimulus–stimulus pairing and automatic reinforcement was conducted at KVMC, fulfilling one of my PhD competency requirements (Sundberg, 1978b). (For a listing of several other studies conducted at KVMC and other WMU practicum sites, as well as other early VB presentations and publications, see Sundberg & Partington, 1982, 1983.)

Conducting VB Workshops

Jack enjoyed teaching, and conducting VB workshops around the country provided him an opportunity to further disseminate behavior analysis and VB. In 1977, Jack and I were invited to Helena, Montana, where a few WMU students had acquired jobs. We presented a 2-day workshop on VB and its application to language training for individuals with disabilities. Jack presented the conceptual content, and I presented the applied content. I went on to conduct variations of this basic workshop more than 500 times over the next 40 years, many times with Jack.

Traveling with Jack was always an educational experience. His analysis of behavior was constant. We were in a restaurant in Helena once when the waitress gave us our food and said, "There ya go," and walked away. Jack said to me, "There ya go. Now, what's the source of control for that behavior?" He quickly classified it as a mand to leave her alone and don't ask for anything else (although Jack's exact words were a little more colorful). Jack continued to analyze that brief verbal episode and the related variables throughout breakfast, such as speculating on the relevant EOs, reinforcement history, contextual variables, extensions, and so on.

Starting *The Analysis of Verbal Behavior* (*TAVB*)

There were very few publication outlets for VB content in the 1970s, or even methods to disseminate instructional material. This problem was discussed at the first Verbal Behavior Special Interest Group (VBSIG) meeting at the 1977 MABA convention. That meeting, chaired by W. Scott Wood with Jack serving as wingman, focused on actions that needed to be taken by members of the group. Among them was a need for a vehicle to make VB instructional materials, research, and applications more readily available to the VB community. (Remember: We didn't have the Internet, PDFs, or desktop computers back then.) Jack assigned me to this task, and over the next 8 years we progressed through three different outlets for VB content.

Our first effort was the creation of the *Western Michigan University Behavioral Monograph Series*. This series was started and maintained by a group of WMU students (Patty Cherpas, Stephen Fath, Mitch Picker, and Mark Sundberg) and supervised by faculty members David Lyon (the department chair), Jack Michael, Kay Malott, and Alan Poling. The printing and mailing of the monographs were

initially funded by KVMC, thanks to Jerry Shook. Sixteen monographs were published. Many of them contained early versions of our VB assessment and intervention programs, our preliminary VB research, and other VB instructional material (e.g., Sundberg, 1978a; Sundberg et al., 1979). We were also able to obtain permission to reprint and distribute as WMU monographs Ralph Hefferline's notes from Skinner's 1947 VB course (Hefferline, 1947/1979), and Skinner's *William James Lectures* (1947/1979). Other papers in the monograph series included the Sundberg et al. (1977) workshop handout and early versions of our work on automatic reinforcement that included Marge (Peterson) Vaughan's conceptual article (Peterson, 1979, published later as part of Vaughan & Michael, 1982) and my empirical study (Sundberg, 1978b, published later as part of Sundberg, Michael, Partington, & Sundberg, 1996). In addition, several of the monographs contained basic animal research not directly related to VB.

The second method of disseminating information on VB, beginning in 1982, was the VBSIG's newsletter, the *VB-NEWS*. This newsletter served the VB community by presenting short VB articles, conference information, resources, and other standard newsletter content. I was the co-editor of *VB-NEWS* along with Kent Johnson for Volume 1 and the sole editor for Volume 2. We began to get submissions that were lengthy and important contributions to the analysis of VB, and these submissions were generally of little interest to other publication outlets. The members of the VBSIG decided to transition the *VB-NEWS* into a journal format, including establishing a Board of Editors and a formal peer review process. In 1985, the name and format of our newsletter was changed from *VB-NEWS* to *The Analysis of Verbal Behavior*, and a new behavioral journal was launched as our third effort to provide an outlet for VB material (for a more detailed history of *TAVB*, see Sundberg, 1997).

Summary

In 1978, Skinner wrote, "*Verbal Behavior*. .. will, I believe, prove to be my most important work" (p. 122). His words *prove to be* suggest that Skinner felt that after 21 years the book had not achieved the impact he thought it should have. However, Schlinger (2007) reported that after 50 years, the book had not only survived years of attack but was also thriving. Schlinger (2007) suggested that "*Verbal Behavior* and behaviorism remain vital partly because they have generated successful practical applications" (p. 329). The early applications of Skinner's analysis of VB at WMU and KVMC were largely due to Jack Michael and his relentless dedication to understanding, teaching, advancing, and applying Skinner's analysis. Jack's work (and that of Skinner) continues on at a number of university-based VB research labs, clinics, schools, and in-home programs around the world. Many of these programs are operated by Jack's former students or by students of Jack's former students (Esch & Esch, 2016). On the 60th anniversary of the publication of *Verbal Behavior*, Skinner would have been very pleased to see the impact that his analysis of VB is now having and to see that his book is currently selling at an all-time high (J. Vargas, personal communication, May 25, 2017).

References

Braam, C. A., Daeschlein, M., & Braam, S. J. (1979). *Mediated transfer in reading instruction with special populations.* Paper presented at the 5th Annual Convention of the Association for Behavior Analysis, Dearborn, MI.

Braam, S. J., & Poling, A. (1983). Development of intraverbal behavior in mentally retarded individuals through transfer of stimulus control procedures: Classification of verbal responses. *Applied Research in Mental Retardation, 4*, 279–302. https://doi.org/10.1016/0270-3092(83)90030-9

Esch, B. E., & Esch, J. W. (2016). A bibliographic tribute to Jack Michael. *The Analysis of Verbal Behavior, 32*, 275–323. https://doi.org/10.1007/s40616-016-0073-3

Goodall, K. (1972). Shapers at work. *Psychology Today, 6*(53–62), 132–138.

Hall, G. A., & Sundberg, M. L. (1987). Teaching mands by manipulating conditioned establishing operations. *The Analysis of Verbal Behavior, 5*, 41–53. https://doi.org/10.1007/BF03392819

Hefferline, R. (1979). *Class notes on a course on verbal behavior from B. F. Skinner* [Western Michigan University Behavioral Monograph No. 11]. Kalamazoo, MI: Western Michigan University. Original work published 1947.

Mabry, J. H. (2016). Jack Michael's appointments at the University of Houston and Arizona State University: Reflections from a former student. *The Analysis of Verbal Behavior, 32*, 324–335. https://doi.org/10.1007/s40616-016-0054-6

Meyerson, L., Kerr, N., & Michael, J. (1967). Behavior modification in rehabilitation. In S. Bijou & D. Baer (Eds.), *Child development: Readings in experimental analysis* (pp. 214–239). New York, NY: Appleton-Century-Crofts.

Meyerson, L., & Michael, J. (1964). Assessment of hearing by operant conditioning. In Report of the Proceedings of the International Congress on Education of the Deaf (pp. 237–242). Washington, DC: U.S. Government Printing Office.

Meyerson, L., Michael, J., Mowrer, O. H., Osgood, C. E., & Staats, A. W. (1961). Learning, behavior, and rehabilitation. In L. H. Lofquist (Ed.), Psychological research and rehabilitation (pp. 68–111). Washington, DC: American Psychological Association.

Michael, J. (1984). Verbal behavior. *Journal of the Experimental Analysis of Behavior, 42*, 363–376.

Michael, J. (1985). Two kinds of verbal behavior plus a possible third. *The Analysis of Verbal Behavior, 3*, 1–4. https://doi.org/10.1007/BF03392802

Michael, J. (1991). A behavioral perspective on college teaching. *The Behavior Analyst, 14*, 229–239. https://doi.org/10.1007/BF03392578

Michael, J. (1993). A brief overview of the history of Western Michigan University's behavioral programs. *Journal of Applied Behavior Analysis, 26*, 587–588.

Michael, J. (1995). What every student of behavior analysis ought to learn: A system for classifying the multiple effects of behavioral variables. *The Behavior Analyst, 18*, 273–284. https://doi.org/10.1007/BF03392714

Michael, J. (2004). *Concepts and principles of behavior analysis* (2nd ed.). Portage, MI: Association for Behavior Analysis International.

Michael, J., Whitley, P., & Hesse, B. (1983). The pigeon parlance project. *The Analysis of Verbal Behavior, 2*, 5–8. https://doi.org/10.1007/BF03392797

Partington, J. W., & Sundberg, M. L. (1998). *The assessment of basic language and learning skills (the ABLLS)*. Pleasant Hill, CA: Behavior Analysts.

Peterson, M. E. (1979). *Automatic Reinforcement: An Important Concept in the Analysis of Verbal Behavior* [Western Michigan University Behavioral Monograph No. 13]. Kalamazoo, MI: Western Michigan University.

Peterson, N. (1978). *An introduction to verbal behavior*. Grand Rapids, MI: Behavior Associates.

Rumbaugh, D. M. (1977). *Language learning by a chimpanzee: The Lana project*. New York, NY: Academic Press.

Schlinger Jr., H. D. (2007). The long goodbye: Why B. F. Skinner's *Verbal Behavior* is alive and well on the 50th anniversary of its publication. *The Psychological Record, 58*, 329–337. https://doi.org/10.1007/BF03395622

Sidman, M. (1971). Reading and auditory-visual equivalences. *Journal of Speech and Hearing Research, 14*, 5–13. https://doi.org/10.1044/jshr.1401.05

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

Skinner, B. F. (1978). *Reflections on behaviorism and society*. Englewood Cliffs, NJ: Prentice Hall.

Skinner, B. F. (1979). *William James Lectures* [Western Michigan University Behavioral Monograph No. 12]. Kalamazoo, MI: Western Michigan University. Original work published 1947.

Stafford, M. W., Sundberg, M. L., & Braam, S. J. (1988). A preliminary investigation of the consequences that define the mand and the tact. *The Analysis of Verbal Behavior, 6*, 61–71.

Sundberg, C. T., & Sundberg, M. L. (1990). Comparing topography-based verbal behavior with stimulus selection-based verbal behavior. *The Analysis of Verbal Behavior, 8*, 83–99.

Sundberg, M. L. (1978a). *A Program for Teaching a Verbal Repertoire to Persons in Whom Language is Absent or Defective* [Western Michigan University Behavioral Monograph No. 6]. Kalamazoo, MI: Western Michigan University. Retrieved from http://www.marksundberg.com/files/6-WMU_Monograph_6.pdf

Sundberg, M. L. (1978b). *The Role of Automatic Reinforcement in Early Language Development* [Western Michigan University Behavioral Monograph No. 2]. Kalamazoo, MI: Western Michigan University.

Sundberg, M. L. (1980). Developing a verbal repertoire using sign language and Skinner's analysis of verbal behavior. Unpublished doctoral dissertation, Western Michigan University, Kalamazoo, MI.

Sundberg, M. L. (1983). Language. In J. L. Matson & S. E. Breuning (Eds.), *Assessing the mentally retarded* (pp. 285–310). New York, NY: Grune & Stratton.

Sundberg, M. L. (1985). Teaching verbal behavior to pigeons. *The Analysis of Verbal Behavior, 3*, 11–17. https://doi.org/10.1007/BF03392804

Sundberg, M. L. (1993). Selecting a response form for nonverbal persons: Facilitated communication, pointing systems, or sign language? *The Analysis of Verbal Behavior, 11*, 99–116. https://doi.org/10.1007/BF03392891

Sundberg, M. L. (1997). Editorial. *The Analysis of Verbal Behavior, 14*, 1–3. https://doi.org/10.1007/BF03392912

Sundberg, M. L. (2014). *The verbal behavior milestones assessment and placement program: The VB-MAPP* (2nd ed.). Concord, CA: AVB Press.

Sundberg, M. L., & Michael, J. (2001). The benefits of Skinner's analysis of verbal behavior for teaching children with autism. *Behavior Modification, 25*, 698–724. https://doi.org/10.1177/0145445501255003

Sundberg, M. L., Michael, J., Partington, J. W., & Sundberg, C. A. (1996). The role of automatic reinforcement in early language acquisition. *The Analysis of Verbal Behavior, 13*, 21–37. https://doi.org/10.1007/BF03392904

Sundberg, M. L., Michael, J., & Peterson, N. (1977). *Sign Language: A Behavioral Analysis and Applications* [Western Michigan University Behavioral Monograph No. 1]. Kalamazoo, MI: Western Michigan University. Retrieved from http://www.marksundberg.com/files/4-WMU_Monograph_1.pdf

Sundberg, M. L., & Partington, J. W. (1982). Skinner's *Verbal Behavior*: A reference list. *The Analysis of Verbal Behavior, 1*, 9–13. https://doi.org/10.1007/BF03392793

Sundberg, M. L., & Partington, J. W. (1983). Skinner's *Verbal Behavior*: An update on the 1982 reference list. *The Analysis of Verbal Behavior, 2*, 9–10. https://doi.org/10.1007/BF03392798

Sundberg, M. L., & Partington, J. W. (1998). *Teaching language to children with autism or other developmental disabilities*. Concord, CA: AVB Press.

Sundberg, M. L., Ray, D. A., Braam, S. J., Stafford, M. W., Rueber, T. M., & Braam, C. (1979). *A manual for the use of B. F. Skinner's analysis of verbal behavior for language assessment and programming* [Western Michigan University Behavioral Monograph No. 9]. Kalamazoo, MI: Western Michigan University. Retrieved from http://www.marksundberg.com/files/8-WMU_Monograph_9.pdf

Vaughan, M. E., & Michael, J. L. (1982). Automatic reinforcement: An important but ignored concept. *Behavior, 10*, 217–227.

Wraikat, R., Sundberg, C. T., & Michael, J. (1991). Topography-based and selection-based verbal behavior: A further comparison. *The Analysis of Verbal Behavior, 9*, 1–17. https://doi.org/10.1007/BF03392856