An Annotated Bibliography of Verbal Behavior Scholarship Published Outside of *The Analysis of Verbal Behavior*: 2014

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Abstract This annotated bibliography summarizes journal articles on verbal behavior published outside of *The Analysis of Verbal Behavior*, the primary journal for scholarship in this area. Seventeen such articles were published in 2014 and are annotated as a resource for practitioners, researchers, and educators.

Keywords Annotated bibliography · Language · Verbal behavior

An annotated bibliography is a list of references to publications such as journal articles and books, each of which is followed by a brief summary (the annotation). Annotated bibliographies represent a useful method for highlighting and organizing related work on a subject apart from traditional literature reviews because their focus can be broader than a specific empirical topic (e.g., mand training). For example, annotated bibliographies have been used in behavior analysis to organize articles on behavior-analytic terminology (e.g., Carr and Briggs 2011) and college teaching topics (e.g., Karsten and Carr 2008) for instructors, to organize articles on the treatment of problem behavior for practitioners and researchers (e.g., Lennox et al. 1988), and to highlight emerging practice areas (e.g., Rapp et al. 1983).

In 1974, the journal *Teaching of Psychology (ToP)* began publishing an annual annotated bibliography that organized publications relevant to teaching psychology that appeared outside of the journal (Jones et al. 1974), a practice that continued for over three decades (Johnson et al. 2008). Each year, the annotated bibliography along with the content published within the journal itself constituted an overview of the entire

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teaching of psychology literature for that year. Because verbal behavior research, although primarily published in *The Analysis of Verbal Behavior (TAVB)*, appears in multiple outlets, the annual annotated bibliography pioneered by *ToP* represents a potentially useful way to bring together in *TAVB* (via publication or annotation) all of the year's scholarship on verbal behavior. Thus, the purpose of the present article was to identify and annotate journal articles on verbal behavior that were published outside of *TAVB* in 2014.

Three procedures were used to identify articles for the annotated bibliography. First, the authors individually reviewed article titles and abstracts in every 2014 issue of a behavioral journal likely to publish applied, basic, or conceptual articles on verbal behavior (adapted from Carr and Briggs 2010). The following journals were reviewed: *Behavior Analysis in Practice*, *Behavioral Interventions*, *Behavior Modification*, *Child and Family Behavior Therapy*, *Education and Treatment of Children*, *Journal of Applied Behavior Analysis*, *Journal of Behavioral Education*, *Journal of Organizational Behavior Management*, *Journal of Positive Behavior Interventions*, *Journal of the Experimental Analysis of Behavior*, *Research in Autism Spectrum Disorders*, *Research in Developmental Disabilities*, *The Behavior Analyst*, and *The Psychological Record*. Second, the authors searched the ERIC® and PsycINFO® databases for journal articles published in 2014 that included any of the following terms in their title, abstract, or keywords: verbal behavior, tact, mand, intraverbal, echoic, and autoclitic. Finally, a Google Scholar search was used to identify all journal articles published in 2014 that cited Skinner's (1957) *Verbal Behavior*. The three searches described above produced a list of articles for potential inclusion in the bibliography. The authors then used a consensus approach to determine the relevance of each article for inclusion in the final bibliography.

The aforementioned search process resulted in 17 journal articles for inclusion in the annotated bibliography. The most common source of these articles was *Journal of Applied Behavior Analysis* (9 articles, 52.9 %), followed by *The Psychological Record* (3 articles, 17.6 %). The most common verbal operant investigated in these articles was the tact relation (11 articles, 64.7 %), followed by the mand relation (8 articles, 47.1 %). In addition, the majority of articles (10, 58.8 %) included multiple verbal operants in their independent or dependent variables. The predominance of the tact and mand relations in this body of research is consistent with what has been reported in earlier literature reviews (e.g., Sautter and LeBlanc 2006), although the greater contemporary focus on the tact relation compared to the mand relation appears to be a recent development, at least in this sample.

The annotated bibliography for 2014 appears below and represents the first of many possible annual annotated bibliographies on verbal behavior.

Annotated Bibliography

1. Cengher, M., Jones, E. A., & Fienup, D. M. (2014). The effects of pre-session attention on tacting. *Journal of Applied Behavior Analysis*, 47, 176–180.

According to Skinner's taxonomy and advancements in research related to motivation, tacts are influenced by nonverbal stimuli and maintained by social reinforcers, and

mands are influenced by motivating operations (MOs) and specify their reinforcer. In this study, the experimenters examined the effects of attention on tact training by comparing attention deprivation and attention satiation conditions. A progressive ratio-schedule was employed to examine the reinforcing value of attention. The authors found that for two out of three participants, pre-session deprivation of attention produced a higher break point for tacting, suggesting the importance of manipulation of the MO in tact training. The authors discuss the conceptual and applied implications of these findings.

2. Darrow, S. M., & Follette, W. C. (2014). A behavior analytic interpretation of alexithymia. *Journal of Contextual Behavioral Science*, 3(2), 98–108.

The authors provide a radical behavioristic interpretation of alexithymia, defined as an individual's inability to experience or label emotions. The radical behaviorist perspective presented by the authors emphasizes a functional approach to the analysis of alexithymia, which suggests inappropriate stimulus control and consequences (especially in the tact and mand relations) as being significant to its presentation. The authors also describe approaches for the assessment and treatment of alexithymia.

3. Delfs, C. H., & Frampton S. E. (2014). Practical implications of evaluating the efficiency of listener and tact instruction for children with autism. *Journal of Applied Behavior Analysis*, 47, 810–813.

Advances in research on the relation between speaker and listener behavior are warranted and are significant to the teaching of verbal behavior to individuals with autism and other developmental disabilities. The authors identify multiple variables that merit consideration when probing for the emergence of certain verbal operants as a function of teaching other verbal operants during clinical practice.

4. Delfs, C. H., Conine D. E., Frampton, S. E., Shillingsburg, M. A., & Robinson, H.C. (2014). Evaluation of the efficiency of listener and tact instruction for children with autism. *Journal of Applied Behavior Analysis*, 47, 793–809.

Research on the relation between speaker and listener behavior is of interest from both a theoretical and applied perspective. Most research on this topic to date suggests greater efficiency in teaching the speaker behavior prior to listener behavior. The authors of this study examined the emergence between tacts and listener responses and found that for all four participants, tact training produced equal or greater emergence of listener behavior than listener training did in generating tacts. Collateral verbal behavior did not predict patterns of emergence. The authors emphasize the importance of ongoing probes of emergent relations as part of clinical practice.

5. Dounavi, K. (2014). Tact training versus bidirectional intraverbal training in teaching a foreign language. *Journal of Applied Behavior Analysis*, 47, 165–170.

The author highlights the dearth of behavior-analytic research on foreign language training in typically developing individuals. This investigation on the role of emergent

verbal behavior in designing an efficient and effective foreign language-training program demonstrated that tact training and native-to-foreign (NF) intraverbal training produced greater emergence of verbal behavior as compared to foreign-to-native (FN) intraverbal training with the NF intraverbal training being the most efficient. The authors discuss potential reasons for these outcomes while highlighting the age of the participants, prompting strategies, and the sensory modalities of the probed responses.

6. Greenberg, J. H., Tsang, W., & Yip, T. (2014). The effects of intensive tact instruction with young children having speech delays on pure tacts and mands in non-instructional settings: a partial replication. *Behavioral Development Bulletin*, 19, 35–39.

Intensive tact training was defined as delivering an extra 100 tact-training trials (for dozens of targets) throughout a 6-h school day, in addition to the ongoing curriculum. This investigation extends the research literature on intensive tact training by including an older group of participants (6–9 years old) with autism and by assessing the effects of the procedure on collateral mand responses in three noninstructional settings. Intensive tact training produced significant acquisition of tacts for all three participants and emergence of mands in two out of the three participants.

7. Groskreutz, N. C., Groskreutz, M. P., Bloom S. E., & Slocum T. A. (2014). Generalization of negatively reinforced mands in children with autism. *Journal of Applied Behavior Analysis*, 47, 560–579.

Manding for the removal of aversive stimuli is a critical skill. Functional communication training is typically used to teach individuals to mand for escape from instructional demands in the context of problem-behavior treatment, but there is a dearth of research on teaching individuals to mand for the removal or termination of aversive stimuli that are not demands. In this investigation, a negative reinforcer assessment was administered to participants to identify noninstructional aversive stimuli. General mands that resulted in the termination of those aversive stimuli were successfully taught to both participants. In addition, generalization of the mands across settings and stimuli was observed.

8. Hoffman K., & Falcomata, T. S. (2014). An evaluation of resurgence of appropriate communication in individuals with autism who exhibit severe problem behavior. *Journal of Applied Behavior Analysis*, 47, 651–656.

This investigation extends the basic research literature on resurgence of operant behavior, specifically, the resurgence of a previously extinguished mand after a different mand was placed under extinction. This preparation was used to examine tactics for preventing or delaying the resurgence of problem behavior. The authors suggest training multiple mands as a way to prevent the resurgence of problem behavior resulting from treatment infidelity in the form of extinction of a functional mand form.

9. Kobari-Wright V. V., & Miguel, C. F. (2014). The effects of listener training on the emergence of categorization and speaker behavior in children with autism. *Journal of Applied Behavior Analysis*, 47, 431–436.

Naming is defined as responding as both a listener and speaker in relation to a given stimulus. In this investigation, after listener training, three out of four participants were able to tact and categorize stimuli without direct training. Following direct tact training, the fourth participant tacted and categorized the stimuli. The authors discuss the outcomes in terms of the naming theory and provide suggestions for categorization training.

10. Lee, G. T., Luke, N., & Hye-Suk, L. (2014). Using mand training to increase vocalization rates in infants. *The Psychological Record*, 64, 415–421.

This investigation evaluated the effects of mand training on the development of early language in the form of vocalizations in two young infants. The results demonstrated successful mand training with both infants. The authors discuss the outcomes in terms of lending further credence to Skinner's analysis of verbal behavior and the clinical implications of these procedures in facilitating early language training.

11. Leepark, H., & Mallory, R. (2014). Effects of echoic-to-tact prompt on reducing palilalia in a child with autism spectrum disorder. *The Journal of Special Education: Theory and Practice*, 15, 29–45.

Palilalia is a form of vocal stereotypy characterized by the repetition of words or sounds. The authors examined the efficacy of providing the learner with an echoic prompt to tact items during instances of palilalia in an effort to reduce palilalia and increase tacting and manding. The outcomes suggest that the procedure was ineffective for reducing palilalia, but effective for increasing both manding and tacting. This study was conducted with one 9-year-old boy diagnosed with autism and replication is warranted.

12. Lorah, E. R., Gilroy, S. P., & Himeline, P. N. (2014). Acquisition of peer manding and listener responding in young children with autism. *Research in Autism Spectrum Disorders*, 8, 61–67.

Peer-mediated instruction has proven to be an effective method for teaching verbal behavior and social skills to children diagnosed with autism. This investigation extends prior research because it included matched peers diagnosed with autism. Three children were taught to participate as effective listeners for the three peers with autism who were learning how to mand. An interrupted-behavior chain procedure was used to contrive the MO for training mands.

13. Majdalany, L. M., Wilder, D. A., Greif, A., Mathisen, D., & Saini, V. (2014). Comparing massed-trial instruction, distributed-trial instruction, and task interspersal to teach tacts to children with autism spectrum disorders. *Journal of Applied Behavior Analysis*, 47, 657–662.

Early intensive behavioral intervention programs are resource and time intensive. Thus, developing treatment programs that are effective and efficient is paramount. In this investigation, the effects of massed trials, distributed trials, and task interspersal on the acquisition of tacts and duration of instructional were evaluated. Results show that for five of six participants, the massed-trial format was superior and for one participant, who had the most advanced verbal behavior skills, the distributed-trial format was the most effective.

14. Mason, L. L., & Andrews, A. (2014). Referent-based verbal behavior instruction for children with autism. *Behavior Analysis in Practice*, 7, 107–111.

The authors assert that traditional behavior-analytic methods for teaching verbal behavior may hinder generalization and produce uneven responding across verbal operants. In this study, the authors assessed the efficacy of referent-based instruction (RBI), the goal of which was the generalization of responding across the operant classes. RBI includes a pairing procedure, a high-p command sequence, antecedent manipulations, various reinforcers and schedules of reinforcement, and the use of multiple exemplars. The authors specifically targeted echoic, mands, tacts, and sequels in 13 children diagnosed with autism. Preliminary outcomes suggest the efficacy of this procedure in producing even responding across the verbal operants and more naturalistic responding. The authors provide a prescriptive outline for implementing RBI.

15. Perez-Gonzalez, L. A., Belloso-Diaz, C., Carames-Mendez, M., & Alonso-Alvarez, B. (2014). Emergence of complex intraverbals determined by simpler intraverbals. *The Psychological Record*, 64, 509–526.

Identifying the variables that result in emergent verbal behavior is of conceptual and practical importance. The authors of this study investigated the emergence of more complex intraverbal behavior after directly training simple intraverbal relations in 11 typically developing adults. Three experiments were conducted to assess the emergence of A-B-C intraverbal relations after teaching the A-B and B-C relations. In the first experiment, four adults showed emergence of the ABC intraverbal while two adults did not. If there was no emergence of complex intraverbal relations after teaching the A-B and B-A relations, the authors investigated the effects of teaching the categories in a second experiment. In experiment 2, the two adults who first learned the A-B and B-C relations and then the categories showed emergence of the ABC intraverbal. The two adults who learned the categories before the A-B and B-C relations failed to demonstrate emergence of the ABC intraverbal. In a third experiment, the authors explicitly taught the exemplars. In experiment 3, all four participants demonstrated emergence of the ABC intraverbal whether they learned the exemplar names before the A-B and B-A relations or vice versa. The authors discuss potential reasons for emergence observed across different training preparations.

16. Petursdottir, A. I., Lepper, T. L., & Peterson, S. P. (2014). Effects of collateral response requirements and exemplar training on listener training outcomes in children. *The Psychological Record*, 64, 703–717.

The authors conducted two experiments examining the effects of collateral response training (CRT) on emergent foreign-language tacts and intraverbals in four typically developing preschool children. CRT did not enhance performance as compared to standard listener training in producing emergent tacts and intraverbals. The point of introduction of CRT during training (after mastery of the listener responses or from the start of listener training) did not appear to make a difference. The authors conceptualize the outcomes using naming theory and suggest different approaches to teaching typically developing children and children with developmental disabilities.

17. Shillingsburg, M. A., Bowen C. N., Valentino, A. L., & Pierce L. E. (2014). Mands for information using “who?” and “which?” in the presence of establishing and abolishing operations. *Journal of Applied Behavior Analysis*, 47, 136–150.

Consideration of the relevant MO is paramount to effective training of mands for information. The authors compared the effects of abolishing and establishing operations while teaching “Who?” and “Which?” mands to three children with developmental disabilities. MO manipulation, differential reinforcement, and verification of acquisition of the information through listener responses were effective in teaching the mands. There was differentiated responding between the EO and AO conditions. During AO conditions (information about the location of items was provided), the participants accessed the items without manding for their location. During EO conditions (information about the location of items was withheld), the participants manded for their location. Generalization of the mand was observed for two of the three participants, while one participant required additional programming to produce generalization.

Conflict of Interest The authors declare that they have no conflict of interest.

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