SPEAKING THE SAME LANGUAGE: TRANSLATIONAL ADVANCES IN VERBAL BEHAVIOR RESEARCH

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Skinner's functional analysis of verbal behavior (VB; 1957) laid a conceptual foundation for understanding language as operant behavior. For many years, VB remained largely conceptual with limited experimental exploration. More recently, however, there has been a marked increase in empirical investigations about the acquisition and development of verbal responses or response classes (e.g., Jennings et al., 2021; Raaymakers et al., 2019; Petursdottir et al., 2017), with studies often drawing from and adapting principles rooted in basic behavior analytic research.

The increased interest in empirically investigating Skinner's conceptualization of language has led to studies adopting methodologies traditionally associated with the experimental analysis of behavior. Where VB research involves functional analysis of verbal repertoires specifically, experimental analysis of human behavior (EAHB) involves functional analyses broadly applied to all human behavior. Specifically, VB and EAHB approaches both include the use of tightly controlled laboratory settings, systematic manipulations of antecedent and consequence variables, and data-driven analyses of functional relations between stimuli and responses (Dymond & Alonso-Alvarez, 2010).

The shared methodological and conceptual features of the VB and EAHB subfields in behavior analysis highlight their overlap. While researchers acknowledge the benefits of collaboration across subfields, for one reason or another, this may not happen due to practical and logistical constraints. However, behavior analysts do not have to go far to find researchers who use shared methodologies that could be mutually beneficial to answer bigger questions, despite different research interests. For example, VB research benefits from incorporating rigorous experimental procedures from EAHB, which strengthens its empirical foundation. EAHB research benefits from the conceptual sophistication of VB to better understand complex human behavior, such as language.

This special issue showcases papers that exemplify the intersection of EAHB and VB research. These papers reflect shared procedural tactics and address topics that remain understudied within the broader behavior analytic literature. Notably, many of the contributions represent translational research, drawing from basic behavioral principles to inform applied practices while preserving the analytic rigor and experimental control of the experimental analysis of behavior (Critchfield & Reed, 2009).

We organized this special issue following the flow of how VB develops functionally (Sundberg, 2008) and the natural progression of language acquisition, starting with one of the earliest forms of VB—initial vocalizations. Vocalizations function as the foundation for more complex verbal operants such as mands, tacts, and intraverbals. Spontaneous sounds or words serve as a starting point for building more sophisticated verbal repertoires. Eberhardt et al. examined how varying inter-trial interval (ITI) and inter-stimulus interval (ISI) affect the success of stimulus-stimulus pairing procedures (SSP). Specifically, they investigated how a variety of timing arrangements (20, 30, or 60 s) impact the development of vocalizations in typically developing toddlers. In general, shorter ITIs produced more immediate vocalizations, while longer ITIs encouraged more conditioned approach responses. Initially, when infants and toddlers acquire vocalizations, adjusting the timing of stimulus presentations may contribute to the success of SSP in teaching early vocalizations.

Building on early vocalizations, researchers often focus on shaping more advanced verbal operants such as intraverbals, with particular emphasis on promoting variable and generative

responding. Glodowski and Rodriguez focused on variability in responses, which is crucial in teaching intraverbals to avoid rote responding and to promote spontaneous language. The authors demonstrated that varied-order vocal models could promote and sustain response variability in children with autism spectrum disorder (ASD) during intraverbal categorization. Initial variability in intraverbal categorization occurred for all participants; however, intraverbal categorization ultimately became invariant. The findings suggest that merely using varied prompts may not be sufficient, and explicit reinforcement contingencies may be necessary to maintain long-term response variability.

Once early vocalizations are established, VB repertoires expand and increase in complexity. VB may serve to facilitate learning, more specifically, Skorge Olaff et al. evaluated the effects of intraverbal bidirectional naming (I-BiN) on the formation of equivalence classes. While previous evaluations of I-BiN training to establish equivalence classes have primarily employed a linear series training structure (e.g., Chastain et al., 2022; Jennings & Miguel, 2017; Ma et al., 2016), Skorge Olaff et al. evaluated a one-to-many training structure. Results demonstrate I-BiN is an effective training strategy to produce equivalence classes. Furthermore, the results support previous findings that the intervention is effective, regardless of the training structure and sequence.

The paper by Burren and Dickson examined how the physical properties of instructional stimuli, such as visual similarity, affect the acquisition of symbolic relations. Specifically, the authors investigated whether the form of visual stimuli (i.e., photos, line drawings, and arbitrary symbols) impacts the acquisition of object-to-picture matching and the emergence of untrained relations in young men with ASD. The findings suggest that visual similarity matters for some individuals with ASD. Further, photos, which have high similarity with an object, may produce faster, more accurate responding compared to line drawings, which have lower similarity compared to photos.

This issue closes with an article that takes our understanding of learning about VB to the next level. Otero et al. present a novel quantitative measurement of VB, adopting measures used in ecology referred to as diversity indices. Diversity indices can be applied to VB to measure unique responses of each verbal operant, to show the percentage of response allocation across verbal operants, and how verbal repertoires are interconnected. Visual analyses of diversity indices via Venn diagrams can be useful for behavior analysts to evaluate strengths and weaknesses of an entire verbal repertoire. Furthermore, visual analyses of these measures can be used to see the growth of verbal operants over time and in relation to other verbal operants, which can further guide where intervention is most needed. The authors provide a case example of these measures to illustrate the utility of diversity measures for readers.

As the adoption of Skinner's analysis (1957) has become a more standard approach for behavior analytic researchers investigating VB, more strategies employed by experimental analysis of behavior (EAB) researchers are leveraged to enhance our understanding of the underlying mechanisms. The studies showcased in this special issue demonstrate that combining the two subfields of EAHB and VB can offer numerous benefits to our behavior analytic community. The integration allows for more complex and nuanced investigations, better refinement of our conceptual understanding of VB, and increased practical impact of our research in applied settings.

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