

Introduction to the Special Section on the Intraverbal Relation

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In his seminal book, *Verbal Behavior*, Skinner (1957) introduced a behavioral account of language and a taxonomy for categorizing and analyzing types of language. The intraverbal is one of the elementary verbal operants in his taxonomy. The intraverbal operant includes verbal responses that are evoked by verbal stimuli with no point-to-point correspondence. That is, the evoking stimulus differs from the response but controls its emission. Such stimulus control occurs due to a history of generalized conditioned reinforcement and, often, prior temporal proximity between stimulus and response. For example, the initial words in a line of a song often exert strong stimulus control for completing the remainder of the line. Additionally, a long history with the specific arrangement of the letters in the alphabet leads to a person answering the question “Which letter comes after ‘q’?” by listing a subset of the letters in order to generate the answer (e.g., “l, m, n, o, p, q, r...the letter r comes after q”). In some instances, common conversational interchanges (e.g., “How are you? Fine and you?”) are intraverbals rather than explicit descriptions of personal state (i.e., a tact).

In recent years, the literature on the intraverbal has grown substantially (Aguirre, Valentino, & LeBlanc, 2016). The newer literature on the intraverbal has included operant performances that appear to be somewhat beyond Skinner’s original conceptualization of the intraverbal (Sundberg, 2016). In these performances, there is still a verbal stimulus as the evoking antecedent to a verbal response; however, there are likely other sources of stimulus control that are also controlling responding (Palmer, 2016; Sundberg, 2016) and other covert responses that may be simultaneously

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occurring. The expansion, or elaboration, of the intraverbal concept has led to many interesting and active discussions between the authors of the first four papers in this special issue on the intraverbal relation.

The first three articles explore the boundaries of the definition of the intraverbal with potential distinctions between the types of language that have begun to be included in the broad definition of the intraverbal. Palmer advocates for a narrowing of the definition of the intraverbal and a distinction between the intraverbal as a verbal operant category and as a source of stimulus control, potentially among other sources of stimulus control over a particular unit of behavior. Sundberg describes four types of increasingly complex verbal discriminations as a taxonomy that may assist in our understanding of the sources of verbal stimulus control. Miguel provides an analysis of naming theory (Horne & Lowe, 1996) that includes an elaboration of its role in intraverbal acquisition, as well as a new taxonomy for organizing naming phenomena.

The remaining articles summarize and expand the experimental literature on the more broadly defined intraverbal. Aguirre and colleagues review the experimental literature on the intraverbal, illustrating the dramatic increase in the number of experiments examining the intraverbal from 2005–2015. The review identified three primary areas of this literature: direct training of the intraverbal, emergence (i.e., intraverbals emerging as a function of other taught operants and vice versa), and problem-solving. The special section includes experimental evaluations that fall into two of those categories: emergence and direct training.

Three of the articles in the special issue examine emergence. For example, Devine and colleagues examine the effects of teaching tacts with compound stimuli on the emergence of intraverbal repertoires. Carp et al. examined the effects of two different training structures in equivalence-based instruction (i.e., linear series, one to many) with college students on the emergence of intraverbals about statistical hypothesis testing (e.g., rejecting the null hypothesis). O'Neill and Rehfeldt extend their work on teaching adults with learning disabilities job-interviewing skills (e.g., O'Neill & Rehfeldt, 2014) by examining whether teaching selection responses would result in the emergence of a variety of intraverbal responses.

The final three articles are examples of studies that examine procedures for directly teaching intraverbal responding. These articles each extend the prior work of Ingvarsson and Hollobaugh (2010; 2011). Ingvarsson et al. examined whether a blocked-trials procedure could be used to establish complex stimulus control when other procedures had proven ineffective. The next two studies incorporate technology into intraverbal training. Wallace et al. compared different strategies for prompting (i.e., tact, echoic) during intraverbal training with all prompts presented via an iPad. Carnett and Ingvarsson incorporated technology into the response generated by the child with autism, who used a speech generating device to emit the “I don't know, please tell me” response to unknown questions versus an answer to known questions.

Taken together, the discussion and review articles in the special section may lead to a change in how we think and talk about the intraverbal and the various sources of stimulus control that may be involved when we respond to the verbal behavior of others or ourselves. The experimental studies certainly enhance our ability to apply our understanding of stimulus control to establish new repertoires either through direct teaching procedures or by programming for emergence when we teach related repertoires. The area where we have seen relatively little exploration continues to be the area

of problem solving. As we consider the excellent points made by Palmer and Sundberg, the discipline might evolve to consider problem solving as a worthwhile area of investigation that should be separate from the intraverbal as an operant. Regardless of whether research on problem solving is considered part of the literature on the intraverbal in the future, it still remains an understudied area with the potential for significant applied and conceptual impact.

Compliance with Ethical Standards The author declares that she has no conflict of interest.

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