Mark Dixon’s (2014) manual, *PEAK Relational Training System: Direct Training Module*, proposes a novel approach to manualized evaluation and curriculum development. Dixon’s PEAK system, introduced in the book as the first of four modules, translates derived relational responding methodology into a new verbal-behavior approach. The PEAK system is firmly rooted in the basic, conceptual, and applied behavior-analytic tradition; however, it differs substantially from the competition in its unique application of relational frame theory to produce efficient learning. The manual’s accessible nature renders it a viable product for many users and readers. The growing empirical support for PEAK’s efficacy, usability, and psychometrics is impressive and provides a robust empirical basis for the system that is not described within the pages of the manual. Behavior analysts may shy away from a manualized system that explicitly omits discussion of scholarship and empirical bases but would be remiss in doing so, given the potential of PEAK to revolutionize the way clinicians and parents apply the verbal behavior approach.

**Key words:** autism, derived relational responding, relational frame theory, stimulus equivalence, verbal behavior

Since the publication of Skinner’s *Verbal Behavior* in 1957, behavior analysts have been able to conduct functional analyses of complex behavior that enable a radical behaviorist conceptualization of language, communication, and covert behavior. Early experimental analyses of verbal behavior illuminated the potential applied implications of acquiring verbal operant repertoires in humans (e.g., Lane & Schneider, 1963; Wenrich, 1964). As basic evidence of the translational utility of verbal behavior mounted in the mid- to late 1960s, applied research began to incorporate verbal operants into treatment evaluations (Ayllon & Kelly, 1974; Reynolds & Risley, 1968).

Behavior analysts began to incorporate verbal operant terms in the titles of peer-reviewed publications in the early 1980s, providing scholarly evidence that this approach to understanding complex human behavior was establishing roots as an independent line of research in the scientific literature (Rogers-Warren & Warren, 1980; Simic & Bucher, 1980). By 1982, behavior analysts were publishing language-acquisition efforts in the *VB News*, which became *The Analysis of Verbal Behavior* in 1985.

The application of the verbal behavior approach to improving language has surged over the last 30 years (see Dymond, O’Hara, Whelan, & O’Donovan, 2006; Reed, DiGennaro Reed, Jenkins, & Hirst, 2014) due, in no small part, to the booming success of this approach in children with autism spectrum disorder (ASD) (Sundberg & Michael, 2001).
Carr and Firth (2005) have also provided a comprehensive historical account of verbal behavior’s rise in autism service delivery. This verbal behavior approach to early intervention for autism became more widespread after publication of Sundberg and Partington’s *Teaching Language to Children with Autism or Other Developmental Disabilities* (1998) and the accompanying manualized assessment, *The Assessment of Basic Language and Learning Skills: An Assessment, Curriculum Guide, and Tracking System for Children with Autism or Other Developmental Disabilities* (ABLLS; Partington & Sundberg, 1998).

The manualized nature of ABLLS empowered parents and clinicians alike to implement language-acquisition programs to help learners with autism acquire communication skills. The market for other, similar assessment programs continues to boom, with products such as *Shaping Knowledge through Individual Life Learning Systems* (SKILLS: D. R. Dixon, Tarbox, Najdowski, Wilke, & Granpeesheh, 2011), the revised ABLLS (ABLLS-R; Partington, 2008), and the *Verbal Behavior Milestones Assessment and Placement Program* (VB-MAPP; Sundberg, 2008). A simple web search for any of these programs will yield thousands of blogs, testimonials, and practitioner sites devoted to discussing and marketing these products. As an example, a Google (Boolean) search of the phrase “ABLLS-R OR VB-MAPP” (“SKILLS” excluded due to the commonality of that word) returned 43,400 results on June 18, 2015. The demand for manualized assessments of language grounded in behaviorism is obviously high.

**Derived Relational Responding and Verbal Behavior**

Notwithstanding the immense success of Skinner’s (1957) verbal operants for both conceptual and practical accounts of language, there is growing debate whether this account is complete (see summary of this debate by Gross & Fox, 2009). The completeness of Skinner’s account of verbal behavior is in question due to (a) the inability to explain derived relational responding involving arbitrary stimuli and (b) the reliance on socially mediated learning (see Hayes, 1994). To address these deficits, Hayes proposed relational frame theory (RFT) as a more comprehensive approach to understanding verbal behavior.

Hayes’s (1994) RFT is an account of human language and cognition that proposes that operand learning of relations paired with contextual cues derive arbitrary stimulus relations. The term *relational framing* describes the process in which stimuli are coordinated into different relational frames through operand learning under contextual control. Stimulus equivalence, popularized by Sidman (1994) and routinely used today (see review by Rehfeldt, 2011), is one example of a frame of coordination; in this case, the stimuli are coordinated based on equivalence relations. Frames of coordination may also include relations such as greater than, less than, opposite, and so on.

Derived relational responding, such as stimulus equivalence, has begun to illuminate ways in which RFT complements Skinner’s (1957) account of verbal behavior (Barnes-Holmes, Barnes-Holmes, & Cullinan, 2000). The rationale behind the inclusion of derived relational responding is that a complete account of verbal behavior must include arbitrary stimulus relations such as symbolic language and communication (Chase & Danforth, 1991). To acquire a generalized repertoire of derived relational responding, a human first begins to relate stimuli through direct training (i.e., operand learning). After direct training produces fluent conditional discriminations, other stimuli are directly trained into the response class, which results in derived relational responses that do not require explicit or direct training (e.g., learning A → B results in a derived relation of B → A). The emergent derived relations are advantageous to skill acquisition because
they are a time- and resource-efficient means of teaching. Because these relations can potentially explain verbal behavior phenomena that are unaccounted for by Skinner’s verbal operants, derived relational responding seems to be the most comprehensive approach to understanding language and cognition while it remains conceptually systematic with behaviorism.

**PEAK Relational Training System: Direct Training Module**

Dixon’s *PEAK Relational Training System: Direct Training Module* (PEAK-DTM) is “an evaluation and curriculum guide for teaching basic and advanced language skills from a contemporary behavior analytic approach” (http://www.peakaba.com/about-peak/). The word *PEAK* in the title is an acronym for “promoting the emergence of advanced knowledge,” a phrase that tacts the reliance on derived relational responding in the PEAK system. The PEAK system capitalizes on the advances of RFT in understanding and promoting complex human behavior (i.e., language and cognition) as well as the efficiency of training due to derived relational responding.

Our review focuses exclusively on the Direct Training Module (DTM) of the PEAK system. As noted above, derived relational responding begins with direct training, which thereby constitutes the first of four phrases of the PEAK system. Subsequent phases entail a Generalization Module, Equivalence Learning Module, and a Transformation of Functions Module, in accordance with how learning progresses in any derived relational responding paradigm.

The PEAK-DTM manual looks and feels like other manualized approaches to evaluation and curriculum development. The manual contains writing that is both engaging and instructional for any audience. Clinicians, practicum students, therapists, caregivers, and parents are all suitable audiences for this manual. Readers of the *Journal of Applied Behavior Analysis*, however, may overlook the manual due to the intentional lack of scholarship in its introductory portion. There is no discussion of Murray Sidman, Steve Hayes, or the basic and applied research on derived relational responding that informed the design of the PEAK system. However, if we have learned anything from effective marketing of our science, jargon-laced and data-heavy reviews are not likely to be appreciated by, or accessible to, the diverse range of audiences for which this manual was written (e.g., Bailey, 1991). Dixon should be commended, rather than criticized, for rendering a product that is so accessible to so many readers. Readers who are piqued (pun intended) by the omission of peer-reviewed research discussions in the manual are encouraged to read the growing literature base on PEAK (see Research Support below) to gain a better understanding of the scholarship behind the system as well as the foundational (both conceptual and empirical) literature from which the system was informed.

**Practical Application**

At the conclusion of the brief introductory section to the PEAK-DTM, Dixon writes, “As you venture out into the world attempting to change the lives of persons with disabilities, we believe you will find PEAK very useful” (p. 30). We conceive utility in the context of the following questions: Can a reasonably trained and experienced practitioner independently implement the PEAK-DTM with fidelity? Furthermore, what limitations, if any, does the PEAK-DTM pose for practical implementation?

As an initial nod to practicality, we once again commend Dixon for writing clearly, with user-friendly prose and minimal technical jargon that would alienate less behaviorally sophisticated readers. For example, he writes, “Contingency-based learning occurs when correct responses to questions are increased by
feedback following the response” (p. 6). Another example is, “It is often necessary to identify preferred items or activities that will serve as the consequence for getting responses correct” (p. 8). And finally, “As you present each trial, record the level of prompting that was required to achieve a correct response by circling the corresponding score” (p. 23). This quality of writing is not the norm with most instructional manuals, distinguishing the PEAK-DTM as a model of clarity and research-to-practice translation. Indeed, practitioners are better able to understand and implement behavioral procedures when intervention plans are written in conversational, nontechnical language (Jarmolowicz et al., 2008; Rolider & Axelrod, 2005).

Dixon also introduces key components of the PEAK-DTM in small segments, laying the groundwork for practitioners as they prepare to implement the first steps of the relational training system. Chief among these components are arranging a functional learning environment, selecting relevant instructional materials, conducting preference assessments, programming reinforcement, presenting discriminative stimuli, and prompting learners along a least-to-most prompt hierarchy. Beyond these general guidelines, Dixon does an exemplary job of describing the Direct Training Assessment phase of the PEAK-DTM, matching assessment results to the PEAK curriculum, and selecting instructional programs according to a clever planning device called the Performance Matrix Triangle. After a single reading, we were able to follow the directions for each of these primary components and suggest that most practitioners can do the same without complication.

The PEAK-DTM includes several data sheets and recording forms for properly formulating learning trials and monitoring performance along a format that “incorporates a specialized scoring method that allows for the detection of increases in independent responding and subtle changes in prompts required” (p. 22). The forms themselves are easy to grasp, as are the data-recording procedures and proposed methods of visual data analysis by creating simple time-series tables and graphs. Although not an arduous task, readers will have to photocopy the data sheets and recording forms directly from the PEAK-DTM. One suggestion in this regard is for the publisher to provide an Internet website link that permits direct downloading of the requisite materials.

Although the PEAK-DTM is a regimented instructional protocol, there is a good deal of autonomy built into the system. For example, Dixon encourages practitioners “to develop and implement strategies for determining mastery criteria and data analysis that best fit the particulars of their learner and learning environment” (p. 24). He then advises about some of the factors that influence mastery criteria, such as the level of prompting, a learner’s consistency of responding, and frequency of instructional sessions. Likewise, the PEAK-DTM affords the practitioner different options for correcting common conditions that lead to lack of progress, namely selecting less complex stimuli, eliminating stimuli that are consistently associated with response errors, interspersing trials of previously mastered skills, and reassessing reinforcer effectiveness. We believe that these and other choice options are noteworthy because they enable practitioners to sample applicable strategies without being locked in to an all-or-none approach.

Our high praise for the practicality of the PEAK-DTM notwithstanding, some practitioners may require periodic guidance from a more behaviorally trained professional. Dixon recognizes this possibility when he recommends “that the instructor contact a Board Certified Behavior Analyst (BCBA)” (p. 20) if a learner’s problem behaviors disrupt instruction and decrease skill acquisition. We also see the role of an external consultant in monitoring implementation integrity (Hagermoser Sanetti & Kratochwill, 2014) of the PEAK-DTM. Of
course, copractitioners and in-house supervisors at an educational setting could also function as integrity assessors, something we suggest as routine practice to maximize intervention success with the PEAK-DTM.

Research Support

There is substantive research to support the PEAK-DTM and the relational training system’s underlying constructs, psychometric properties, and intervention effectiveness. We review here some of the relevant confirmatory evidence.

Rowsey, Belisle, and Dixon (2015) conducted a principal component analysis after administering the PEAK-DTM to 98 children who had autism and other developmental disabilities. The results indicated that the PEAK-DTM represents four factors related to language and learning abilities: foundational learning skills; perceptual learning skills; verbal comprehensive skills; and verbal reasoning, memory, and mathematical skills. Rowsey et al. viewed these findings as further empirical validation of an ABA-based instructional protocol, which also “deviate[s] from a purely operational definition approach to human behavior embraced by the ABA community” (p. 21).

The interobserver reliability of the PEAK-DTM has ranged from 85% to 90% when scores between practitioners and a highly skilled behavior analyst (Dixon, Carman, et al., 2014) and between two trained implementers (Dixon, Whiting, Rowsey, & Belisle, 2014; Rowsey et al., 2015) are compared. In studies of convergent validity, Dixon, Carman, et al. (2014) and Dixon et al. (2015) showed that the PEAK-DTM correlated significantly with the Peabody Picture Vocabulary Test (Dunn & Dunn, 2007), the Illinois Early Learning Standards Test (Illinois State Board of Education, 2013), and the VB-MAPP (Sundberg, 2008). Additional research by Dixon, Whiting, et al. (2014) indicated a strong, significant correlation between scores on the PEAK-DTM and scores on standardized intelligence tests among 50 students with autism and other developmental disabilities.

In a two-phase study, Dixon, Belisle, Whiting, and Rowsey (2014) first administered the PEAK-DTM to 206 regular education students to acquire normative data by which “specific cognitive and language deficits experienced by individuals with autism can be identified as they deviate from typical cognitive and language development” (p. 1598). There was a strong positive relation between the PEAK-DTM total score and age; as age increased, the PEAK-DTM total score rose equivalently until the age of approximately 8 years. In the second phase of the study, 94 students with autism and developmental disabilities received PEAK-DTM testing. These results did not find a significant correlation between the PEAK-DTM total scores and age; also, PEAK-DTM total scores were significantly lower than the normative group. One pertinent implication from this research is that typical developmental age norms can serve as benchmarks for targeted performances in children with autism and other developmental disabilities. Furthermore, the data suggest that the PEAK-DTM can be applied with learners based on their language and cognitive functioning, independent of chronological age.

As the first intervention-outcome evaluation of the PEAK-DTM, McKeel, Dixon, Daar, Rowsey, and Szekely (2015) included 27 students with autism and other developmental disabilities in a 1-month, randomized experimental-control group design. The control group participants (n = 13) received treatment as usual through special education services at their schools. Participants in the experimental group (n = 14) were exposed to five programs from the PEAK-DTM curriculum that were selected based on their prestudy assessment scores. Two discrete-trial training sessions were implemented each week. Preintervention and
postintervention comparison scores indicated that participants in the experimental group had significantly more gains in language skills than the control group cohorts. Although these findings were promising, we acknowledge that the statistically significant difference between groups should be interpreted relative to the small sample size and do not necessarily translate to clinically reasonable outcomes.

Dixon and his colleagues have devoted extensive time and resources to PEAK research, producing sound preliminary findings that should promote additional studies. In particular, there need to be more demonstrations of intervention effectiveness (McKeel et al., 2015) and analyses that compare the PEAK-DTM with other ABA-based instructional methodologies. With the evidence to date, we are strongly convinced that the PEAK Relational Training System and the PEAK-DTM are conceptually sound, psychometrically robust, and an innovative advancement of conventional ABA tactics for teaching children and youth who have autism and other developmental disabilities.

Summary

We are optimistic that Dixon’s PEAK-DTM and its subsequent modules will continue to gain empirical support. As the evidence base continues to build, we believe that the PEAK system will emerge as a viable contender to other manualized solutions to the verbal behavior approach. Clinicians and caregivers stymied by stagnation in skill acquisition in their learners may benefit from trying the novel approach offered by the PEAK system. The PEAK-DTM will resonate well with other verbal behavior approaches, given the reliance on direct training. However, as learners accelerate through the PEAK-DTM, users should advance to the next module in the system to determine whether the proposed efficiency of derived relational responding will yield greater treatment gains. If there is any criticism we can offer, it is that the reader-friendly nature of the manual may dissuade seasoned behavior analysts from giving the PEAK system a fair evaluation; this outcome would be unfortunate, however, given how much potential PEAK possesses to advance the verbal behavior approach.

REFERENCES


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