



A Call for Discussion About Scope of Competence in Behavior Analysis

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Abstract

The field of behavior analysis has defined its scope of practice through credentialing and licensure efforts. However, scope of competence in behavior analysis has received little discussion. Scope of competence refers to activities that the individual practitioner can perform at a certain criterion level (e.g., the functional analysis is conducted accurately and safely, a skill acquisition program includes critical program components and establishes accurate stimulus control). Given the successful efforts of behavior analysts in growth and recognition of the field, it is time for a robust conversation about scope of competence for the field of behavior analysis. This discussion can clarify how behavior analysts self-evaluate their own scope of competence and how they might expand their scope of competence if the needs of consumers require practitioners to expand into new areas.

Keywords Behavior analysis · Ethics · Scope of competence · Scope of practice

The field of behavior analysis is growing at a rapid pace (Deochand & Fuqua, 2016). According to a recent market analysis conducted by Burning Glass Technologies (2015), consumer demand for behavior analysts doubled between 2012 and 2014 alone. Furthermore, the number of professionals credentialled by the Behavior Analyst Certification Board (BACB) “tracks closely with demand” (Burning Glass Technologies, 2015, p. 2), meaning more and more professionals are pursuing, and subsequently obtaining, a credential that defines the behavior-analytic scope of practice.

The adoption of licensure laws, credentialing efforts of the BACB, and development of the BACB Task List represent decades of focused effort and are well described in the behavior-analytic literature (e.g., Carr & Nosik, 2017; Johnston, Carr, & Mellichamp, 2017; Johnston, Mellichamp, Shook, & Carr, 2014; Moore & Shook, 2001; Shook, 1993, 2005; Shook & Favell, 2008; Shook, Hartsfield, & Hemingway, 1995; Starin, Hemingway, & Hartsfield, 1993).

The BACB Task List and state licensure laws describe the scope of practice in which credentialled and/or licensed behavior analysts *may* engage. Licensure of behavior-analytic practice in 26 states (Johnston et al., 2017; see Green & Johnston, 2009a, 2009b, for more information) not only helps to define scope of practice but also provides legitimacy for behavior analysis as a profession.¹

In contrast to scope of practice, *scope of competence* has received little formal attention in behavior-analytic scholarship. Competence has been discussed in the literature as it relates to the requirements for specific credentials, such as certification and licensure (e.g., Johnston et al., 2014; Moore & Shook, 2001; Shook, 1993; Shook et al., 1995). Competence refers to accomplishing a task with a specific level of performance that is deemed to meet a certain criterion. Given the successful efforts of behavior analysts in affecting growth, policy, and recognition of the field (see Johnston et al., 2017), a discussion about scope of competence, with subsequent action, may be the next step for the rapidly growing and maturing field of behavior analysis.

The purpose of this article is to initiate a discussion of scope of competence. First, scope of competence is defined and differentiated from scope of practice. Second, potential negative outcomes of practicing outside of one’s scope of

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¹ A review of the literature that describes credentialing and/or licensure efforts in behavior analysis is beyond the scope of this article. However, we strongly encourage anyone interested in credentialing and/or licensure efforts in behavior analysis to read the articles cited within this paragraph.

competence are discussed and are followed by a description of professional activities that may improve one's competence or expand the scope of competence. Third, a multidimensional model of scope of competence is introduced and described with a framework for self-evaluation of one's competence given a specific practice opportunity. Ultimately, this article aims to initiate a discussion about scope of competence in behavior analysis and to promote awareness of potential variables that affect competence.

Terms and Definitions

Scope of practice refers to the range of activities in which members of a profession are authorized to engage, by virtue of holding a credential or license. For example, professionals with a Board Certified Behavior Analyst (BCBA) credential can operate in professional activities covered within the scope of practice described by the BACB. As another example, professionals with a Certificate of Clinical Competence for Speech-Language Pathologists can engage in professional activities within the scope of practice described by the American Speech-Language-Hearing Association. Each profession's scope of practice is enforced by the entities that regulate the profession's credentialed or licensed practitioners (e.g., the BACB, state licensure boards). In some cases, a licensure law may further restrict a behavior analyst's scope of practice beyond the scope specified by the professional credentialing organization. For example, New York law currently restricts licensees' practice to serving individuals with autism spectrum disorders (ASD) and related disorders.

Like other credentialing bodies, the BACB *Professional and Ethical Compliance Code for Behavior Analysts* (hereafter referred to as the BACB Code) includes a clause that behavior analysts only operate within their own scope of competence (BACB, 2014). *Scope of competence* refers to the range of professional activities of the individual practitioner that are performed at a level that is deemed proficient. For example, a given BCBA may be competent (i.e., performs at a specific level of accuracy and safety) to assess and treat aggressive behavior of an individual with ASD but may not have had the training (e.g., coursework, knowledge of literature, practical experience) to competently assess and treat aphasia of an adult who has suffered a stroke. In this case, incompetence may result in inadequate services ranging from inaccurate assessment of the presenting concern to a lack of understanding of the relevant treatments and the respective social validity of those treatments with individuals who have suffered a stroke. A different BCBA may have exactly the reversed scope of competence (i.e., competence with stroke rehabilitation but no experience with severe aggression).

Both presenting concerns described previously might fall within the scope of practice of the field of behavior analysis

(e.g., as described by the BACB Task List and licensure boards) but not necessarily within the scope of competence for the individual practitioner. Additionally, an individual practitioner may be able to competently engage in professional activities that are restricted in the scope of practice because he or she developed competence resulting from education and training occurring in other specialties (e.g., psychology, special education, medicine). Thus, the term *scope of practice* is used to refer to the activities of the profession and is determined by external oversight organizations, whereas the term *scope of competence* is used to refer to the activities of a specific individual and is determined by the individual practitioner.

Risks of Practicing Outside the Scope of Competence

The responsibility for determining the scope of competence falls to the individual professional, as no one else will be as informed about the entire learning and experience history of a person across his or her career. Though the BACB Code 1.02 states that behavior analysts only work within their scope of competence, practicing outside of one's scope of competence may occur for several reasons. First, practitioners may be motivated to practice outside of their scope of competence when demand for services is so great that individuals desperately needing treatment would otherwise receive no services or experience a long delay to accessing services. Second, a professional may accept a case because he or she feels more qualified to serve the consumer than other available professionals (e.g., other disciplines, noncertified professionals) even if he or she does not feel optimally qualified. Third, the financial reinforcers for serving consumers may compete with the ones associated with transferring a case to a more qualified provider. In addition, there is significant response effort and cost for obtaining adequate supervision or consultation to be able to adequately serve that consumer. Fourth, many behavior analysts may not have been explicitly taught how to identify their scope of competence and, therefore, have difficulty recognizing situations that are outside of their scope of competence. Fifth, a behavior analyst may confuse the idea of the universal applicability of the principles of behavior with the idea of universal capacity to apply those principles in a competent manner.

Behavior analysts acting outside their scope of competence may produce, or be at risk for, several negative outcomes. First, the assessment and intervention efforts may result in poor outcomes and may increase the risk of harm to consumers (Sellers, Alai-Rosales, & MacDonald, 2016). Second, there may be a deleterious effect on the practitioner (e.g., confidence is shaken) and the field of behavior analysis (e.g., the field is perceived as ineffective). Practicing outside

of one's scope of competence puts the behavior analyst at individual risk for disciplinary action from relevant regulatory bodies (Brodhead, Quigley, & Cox, 2018). Behavior analysts practicing outside their scope of competence may also be engaging in other unethical behavior, which increases the probability of consumer loss, loss of funding, litigation, and damage to the field (Brodhead & Higbee, 2012).

Determining One's Scope of Competence

The responsibility for determining the scope of competence falls to the individual professional. However, most people do not have updated performance metrics (e.g., accuracy, fluency) for every professional task. Instead, the practicing individual typically considers the extent to which he or she has experienced a variety of events that might facilitate competent performance and the degree to which he or she feels confident that success is possible. The most common means by which people develop competence include academic coursework, independent review of the literature, supervised practical experience, and various forms of ongoing professional development. These experiences do not ensure competence, but these are all viable means to establish, maintain, and refine skill sets in a way that increases the likelihood of competent performance.

Coursework and Literature Mastery

Prior to credential Bailey and Burch (2010) noted that a behavior analyst's competence directly relates to the coursework experiences in his or her degree program. Although students of different behavior analysis programs may receive training in the same content areas identified on the BACB Task List, the training differs depending on the context in which training is provided (e.g., lecture, discussion, laboratory), the goals of the program (e.g., producing scientists, producing practitioners), and the expertise areas of the faculty (e.g., teaching procedures, problem behavior, school consultation). As a result, behavior analysts leave different programs with different competencies, and two behavior analysts might leave the same program with different competencies depending on their own choices. For example, many graduate courses offer students an opportunity to select an area of interest to heavily sample the literature and write some type of research paper (e.g., literature review, project proposal, clinically relevant product). Students' choices on these course assignments, along with mentored projects with their advisors (e.g., thesis, capstone project), provide students the opportunity to develop a stronger knowledge base that can facilitate competence in a specific area (e.g., behavioral gerontology, organizational behavior management) or procedural application (e.g., preference assessment, verbal behavior assessment). When graduate

education extends to doctoral study, even greater heterogeneity in course selection and specialization occurs.

In addition to core courses such as concepts and principles, measurement, and research design, faculty members often offer elective coursework in an area of specialty. Those courses are likely to facilitate competence in the subarea that is covered. For example, a faculty member who specializes in interventions in schools may offer an elective in educational systems and positive behavior interventions. Students who take that course may be better prepared for success in any future efforts as consultants in educational settings. Alternately, elective coursework in functional analysis methodology for individuals with self-injurious behavior may facilitate competence in the assessment and treatment of self-injury, and there may be generalization of those skills to other severe problem behavior such as aggression, tantrums, or elopement. Although coursework does not guarantee competence in a specific area, it can provide a foundation of information on which students can build when accessing experiential training.

Ongoing development Engagement with the core content of the field should not stop once graduate training is complete and the credential is obtained. As Carr and Briggs (2010) noted, "behavior analysts are obligated by the conventions of the academic discipline and guidelines of professional conduct to stay in close contact with the scholarly literature" (p. 13). Carr and Briggs suggest subscribing to journals, following free journals and accessing archived articles, contacting journal authors for reprints, and accessing journals through library databases. To stay up-to-date on developments in the field, they suggest consistently accessing journal websites, subscribing to journal tables of contents and e-mail alerts, and joining or creating a journal reading group (see Carr & Briggs for additional suggestions).

Continuing education opportunities, through workshops or stand-alone presentations, are another way to maintain ongoing professional development. Individuals certified by the BACB must obtain a certain number of continuing education units (CEUs) to maintain their certification (BACB, 2018). Behavior analysts might seek CEUs in areas that interest them because they already have significant knowledge and experience in that domain, or they might seek CEUs in domains that represent new content or a relatively weak area. However, attending a training or workshop may be insufficient to expand scope of competence, at least without additional supervision from qualified professionals in that area.

Supervised Practical Experience

Prior to credential Field-based or practicum experience and training are essential tools for developing competence (Bailey & Burch, 2010). This training component often involves directly practicing the procedures that have been covered in

coursework and literature review. For example, one may have the opportunity to practice multiple types of preference assessment procedures with consumers of different ages and with different presenting concerns. As another example, one might have the opportunity to practice conducting descriptive assessments in organizational settings to implement the topics that were covered in an organizational behavior management course. The supervisor plays an important role in this experience by assessing the quality of supervisee performance and providing specific feedback to improve performance to a criterion level (Reid, Parsons, & Green, 2012). Fieldwork provides perhaps the best opportunity for data-based evaluation of competence in the skills that a practicing behavior analyst might independently use every day in his or her ongoing practice.

Field-based experience also provides exposure to the interpersonal (Brodhead, 2015), cultural (Brodhead, Durán, & Bloom, 2014; Fong, Catagnus, Brodhead, Quigley, & Field, 2016; Li, Wallace, Ehrhardt, & Poling, 2017), and legal contingencies that operate in various employment settings, as well as the most commonly used behavioral procedures for that setting. For example, individuals who have field-based experience in public schools will likely learn about individualized education programs (IEPs), the Individuals With Disabilities Education Act (IDEA, 2004), and Section 504 of the Rehabilitation Act of 1973. School-based behavior analysts may observe or actively participate in collaborative IEP meetings, which provides exposure to the dynamics that are often in effect in multidisciplinary team settings (e.g., conflicts between home and school, different views held by professionals representing different disciplines). School-based behavior analysis trainees are likely to encounter situations that are relevant to the BACB Code items that must be uniquely addressed given the context of treatment delivery. For example, educational professionals might view scientific knowledge differently (BACB Code 1.01) and interpret and approach treatment efficacy differently (BACB Code 2.09). Behavior analysts serving individuals with ASD in clinical settings may be more likely to turn to the National Standards Project 2.0 (National Autism Center, 2015), whereas school-based behavior analysts may be more likely to use the National Professional Development Center for Autism Spectrum Disorders (Wong et al., 2015) as their source for identifying efficacious treatments. Similarly, behavior analysts working in schools may approach assessment (BACB Code 3.01) differently as well. For example, school-based behavior analysts may have the teacher serve as the experimenter in a functional analysis (Lambert, Lopano, Noel, & Ritchie, 2017) or a trial-based functional analysis, which is designed specifically for educational settings (e.g., Rispoli et al., 2015), rather than implementing the functional analysis themselves. Finally, school-based behavior analysts may have different expectations and regulations for involving individuals in the planning

and consent process (BACB Code 4.02). The consumers in schools are “students” and the teacher may be required to implement a given treatment to meet the legal requirements outlined in IDEA (2004).

Training opportunities provide a context for observation and guided practice navigating professionalism and ethical scenarios. School-based behavior analysts are also likely to have the opportunity to explain a behavioral procedure, such as a token economy, to a teacher. Describing a treatment in a manner that simultaneously acknowledges the conditions necessary to produce improvements (BACB Code 4.06) and still yields a high degree of treatment acceptability is a skill that requires extensive practice. Without a teacher who is motivated to implement the procedure with a high degree of integrity, the likelihood of a successful outcome approaches null. Similarly, professionals who have field-based experience that is heavily focused on in-home consultation will likely have the opportunity to practice procedures with consumers (e.g., shaping, chaining, discrete trial training, social skills training) and use behavioral skills training to teach parents to implement interventions. While providing parent training, they will potentially encounter ethical dilemmas that are likely to occur in home-based behavioral services (e.g., dual-relationship issues, discussions about evidence-based treatments and alternative treatments).

These examples illustrate the contextual differences in applied training settings that are likely to produce recognizable differences in competence even if two individuals have had the same coursework. Behavior analysts may become comfortable with the practical challenges of one setting during training but may struggle when they later practice in another context that requires different skills (e.g., conducting an experimental functional analysis when prior practice has been with staff training or token economy development) or the same skill applied differently (e.g., shaping consumer motor behavior vs. shaping staff professional behavior in conjunction with development of rule governance; Scheeler, 2008).

Although skills obtained in one setting may generalize to another, the extent to which this readily occurs with practitioners has not been sufficiently explored empirically. Therefore, generalization of skills and competence in new practice settings or with new presenting concerns cannot be assumed. However, like most skills, multiple-exemplar training facilitates generalization and behavioral flexibility so that someone who has had extensive practical training in multiple settings is more likely to be able to operate competently in a new situation. In addition, the quality of the supervision will likely be associated with the level of competence exhibited by the trainee (see Falender & Shafranske, 2012). A trainee with a supervisor who frequently models how to reason through best- and worst-case scenarios and requires the trainee to explain assessment and treatment using both jargon and the common vernacular, as well as to rank order the appropriateness of

different measurement systems based on consumer and contextual variables, is likely to be better prepared to handle future situations, including novel ones.

Ongoing development Practical training should not be considered complete once the credential is obtained. Behavior analysts may obtain supervision and/or consultation from a professional or variety of professionals who specialize in their area(s) of expertise as a means of maintaining or expanding competence (LeBlanc, Heinicke, & Baker, 2012). Peer review can include continued supervision from a boss and/or manager or ongoing consultation with a more experienced professional who can provide advice and help solve difficult problems (Bailey & Burch, 2010). Behavior analysts can continuously improve their own knowledge, skills, and abilities (KSAs) through peer review. Often, the purpose of the supervision and/or consultation would be to generalize skills when atypical symptom presentation occurs, novel environmental conditions emerge, or organizational variables beyond usual factors associated with the supporting environments exist. Thus, peer review may serve as a relevant method for expanding one's scope of competence. For example, a practitioner who has historically provided home-based services to children with ASD may seek peer review by a behavior analyst working in the schools because service delivery is being expanded into educational settings.

Another potential benefit of peer review is that skilled professionals will have the opportunity to review a behavior analyst's work and performance in their shared area of competence. Bailey and Burch (2010) noted that allowing individuals to review programmatic outcomes may improve professional growth in two ways. First, practitioners may more effectively identify and subsequently remove biases in their evaluations of their own professional skills when qualified professionals observe and comment on their work. Second, practitioners may improve skills within an existing competence as a result of receiving helpful feedback. The purpose of this peer review is to further increase professional growth of behavior analysts working within a specific setting. Collectively, continuous supervision and peer review by experienced professionals helps to maintain and improve competence.

To identify a skilled professional to assist with peer review or additional supervision, the behavior analyst may attend meetings (e.g., special interest group meetings) and conferences (e.g., the Association for Behavior Analysis International's annual conference on substance use and addiction) specific to the area of concern or interest (LeBlanc et al., 2012). The behavior analyst may also review relevant published journal articles and find names of professionals who commonly publish those articles. A behavior analyst may also seek out formal training opportunities (e.g., a postdoc) with

skilled professionals in order to further expand his or her competence (see LeBlanc et al. for additional recommendations).

A Multidimensional Model of Competence

There are likely many dimensions that affect a professional's scope of competence. Relative to each behavioral problem that has been identified, a behavior analyst may consider his or her own competence in his or her own KSAs in the domains of applied behavior analysis (ABA) procedures and strategies, populations, and settings. A behavior analyst may also consider his or her own *confidence* in achieving successful behavior change based on past experiences and familiarity with the literature. In addition, the degree to which available resources (e.g., a supervisor, peer review) match those required for success might alter the behavior analyst's confidence. Together, these three domains of competence and the three potential domains that contribute to appropriate confidence constitute important variables in evaluating one's scope of competence. Each domain and variable are described in the following sections, followed by a framework for self-evaluation of scope of competence.

Domains of Competence

Procedures and strategies With each presenting behavioral problem, various procedures and strategies are usually employed (e.g., creating operational definitions and assessment procedures, designing an intervention, designing a measurement system). In some instances, a person may be able to perform procedures and strategies competently with some consumers and presenting concerns but not with others (e.g., the person can successfully treat socially mediated problem behavior but not problem behavior maintained by automatic reinforcement). The areas of functional assessment and feeding highlight examples of such differences.

Generally, a repertoire of functional assessment and treatment of problem behavior involves conducting informant assessments, descriptive assessments, and functional analyses. Ethical considerations directly related to functional assessment are also important, as topography of challenging behavior and safety considerations can vary widely. Finally, identification and implementation of a function-based treatment plan based on each individual consumer's needs are necessary skills as well. One might have an extensive practice history of conducting functional analyses of behaviors such as aggression, noncompliance, and tantrums but little experience with topographies of severe self-injury such as eye gouging and pica or behaviors such as elopement or feeding problems. Though the procedures for functional analyses of these presenting problems are conceptually similar, there are several

safety considerations and practical aspects of the procedures that require special attention and expertise.

Though assessment and treatment of feeding disorders may involve descriptive and functional analyses, they also require strong knowledge of physiological variables (e.g., gastrointestinal problems and food allergies) and topics specific to feeding (e.g., food texture and volume and food selectivity; Piazza et al., 2003). Feeding interventions may involve collaboration with professionals from other disciplines (e.g., speech-language pathologists and/or occupational therapists, dietitians, other medical professionals) to properly determine feeding goals and how to safely implement feeding procedures (see Friman & Piazza, 2011, for further discussion). Thus, one might have general competence with specific procedures and strategies but still feel like the use of that procedure for a certain presenting concern is outside of the scope of competence.

Populations Another important dimension of scope of competence is experience and competence with the population (e.g., children with ASD, adults with substance abuse problems, older adults with dementia) the behavior analyst serves. The same procedure may need to be implemented quite differently across different populations in order to achieve treatment success. The practitioner may also need specific information about the population to be successful in his or her efforts. For example, along with an understanding of core features of ASD, knowledge of human development directly connected to diagnostic and associated features of ASD is likely necessary (e.g., Schlinger, 1995; Schreibman et al., 2015). Interventions may specifically be drawn from the domains of speech and language, social skills, and adaptive functioning (e.g., Brodhead, Higbee, Pollard, Akers, & Gerencser, 2014; Matson, Horovitz, Mahan, & Fodstad, 2012). Finally, knowledge of various forms of treatment models for ASD may also help inform successful treatment (e.g., Eldevik et al., 2010; Kodak & Grow, 2011; Koegel & Koegel, 2012; Ontario Association for Behavior Analysis, 2017). As a second example, the application of radical behaviorism to adult mental health conditions is known as clinical behavior analysis (Kohlenberg, Tsai, & Dougher, 1993). Practice in this area requires training in recognizing the symptom profiles of various mental health conditions (e.g., psychosis, hypomania), as well as knowledge of various models of treatment. For example, Kanter, Callaghan, Landes, Busch, and Brown (2004) discuss a behavior-analytic conceptualization of depression and corresponding treatments (i.e., behavioral activation and functional analytic psychotherapy). Hayes (2004) further discussed acceptance and commitment therapy, as well as many others, as a behavior-analytic treatment for mental health conditions. Although a BCBA may know how to assess preferences for activities and schedule opportunities for positive reinforcement (i.e., important components of behavioral

activation therapy), he or she may lack training in specific strategies for conducting psychotherapy with cognitively intact adults.

Settings Competence in a specific setting may be affected by a professional's ability to independently perform the vast majority of tasks relevant to that setting. The settings of education and business are described next to illustrate how differences in KSAs may affect one's relative level of competence in these settings. Professionals skilled in educational settings likely have knowledge specific to human development, educational law (e.g., IDEA, 2004), instructional practices (e.g., Layng, Sota, & Leon, 2011), educational theory, systems-wide interventions (e.g., Horner & Sugai, 2015), and curriculum development. Dependent on job duties, additional areas of training and experience might be multidisciplinary collaboration and leadership. Behavior analysts working in business settings may receive training in industrial/organizational psychology, organizational behavior management, personnel selection and training (e.g., Brethower & Smalley, 1998), leadership (e.g., Krapfl & Kruja, 2015), supervision practices (Reid et al., 2012), human resources, and business management. Dependent on job duties, additional areas of training and expertise might be industrial safety (e.g., Myers, McSween, Median, Rost, & Alvero, 2010), marketing (Foxall, 2015), or behavioral engineering (e.g., King & Cennamo, 2016).

Domains of Confidence

A behavior analyst may consider his or her confidence in whether previously acquired skills will likely generalize to the presenting situation. Confidence refers to one's estimation of the likelihood of effectiveness based on past experience, knowledge of the literature, and availability of resources. Ideally, confidence is sensitive to a wide range of variables that are unique to each case (e.g., population, client repertoire, setting, resource constraints, available environmental supports), as well as one's own skills. One might consider past experiences with similar behavioral problems, familiarity with the relevant literature, and available resources as different contexts that might increase potential confidence.

As described previously, prior supervised experience and ongoing peer review can increase competence. However, the probability of treatment success likely increases if a BCBA has previous experiences of success with *similar* cases in *similar* contexts. Consider a trainee completing his or her field-based experience in an early intensive behavioral intervention setting. Demonstrating independence in developing and implementing effective discrete-trial training procedures would increase the likelihood of success with similar cases. However, if the same trainee were required to conduct a

functional behavior assessment and implement a function-based treatment without previous successful experiences or a mentor, the probability of success would be much lower.

As indicated previously, knowledge of the published literature can increase competence. With each presenting behavioral problem, the behavior analyst may consider the extent to which he or she is familiar with relevant literature. For example, a behavior analyst who is up-to-date on literature regarding reading interventions for children with learning disabilities may feel comfortable with his or her ability to produce treatment success when confronted with a student with deficits similar to those described in the research literature. However, the same behavior analyst may feel like he or she needs to read additional research articles if confronted with an adult with ASD who struggles with reading. A thorough description of how to systematically review and appraise research literature is beyond the scope of this article; however, readers are recommended to review Slocum, Detrich, and Spencer (2012) and Wilczynski (2017) for more information about systematic reviews of research literature and the process of evidence-based practice in ABA.

The third variable that might increase or decrease confidence is the match between the available resources and the resources required for success. Resources are the means that are necessary to produce a desired outcome. Examples of resources include employees, available knowledge, expert consultation or supervision, and physical materials and equipment (see Malott, 2003). A behavior analyst should consider what resources he or she has available and evaluate if he or she may require other resources to produce successful behavior change. For example, a behavior analyst may be skilled in behavioral consultation through telehealth. Without sufficient infrastructure to transfer electronic data that complies with local, state, and federal law (Cavalari, Gillis, Kruser, & Romanczyk, 2015; Quigley, Blevins, Cox, Brodhead, & Kim, 2018) and environmental supports to ensure staff have the capacity to use the telehealth technology (e.g., training on how to use system, information technology supports for ongoing upgrades), successful treatment through telehealth may not be likely.

Framework for Self-Evaluation: The Competence and Confidence Checklist

Though a behavior analyst is responsible for evaluating his or her own scope of competence, no published resources exist to guide that evaluation. The Competence and Confidence Checklist (CCC; see Table 1) is a systematic framework for identifying one's competence relative to a presenting behavioral problem. Specifically, the CCC prompts analysis of one's *competence* in the aforementioned domains (i.e., procedures and strategies, populations, settings) and *confidence* based on

the aforementioned domains (i.e., prior experience, familiarity with literature, available resources) in treating a presenting behavioral problem. The CCC is designed to mitigate the risks associated with overconfidence by prompting the behavior analyst to consider how similar the current presenting concern and situation are to his or her past experiences and conditions described in relevant research literature. The CCC is a proposed model to evaluate scope of competence; however, the CCC is preliminary and has not been empirically tested.

An analysis of scope of competence is always ongoing, and it simply does not occur once (e.g., after one finishes graduate school or starts a new job). As with any professional skill, identifying scope of competence is a discriminated operant that must be taught to an optimal level of fluency (i.e., speed and accuracy in identifying scope of competence). Just as a professional may often refer to a task analysis of critical steps to perform during a functional assessment, a professional may often refer to the CCC to evaluate his or her scope of competence. As that professional becomes fluent in the skill of assessing his or her competence, the effort associated with self-evaluation will likely decrease. If a professional is faced with a novel or challenging behavioral problem, he or she may require additional time to complete the CCC, as the effort associated with that self-assessment may increase. Ultimately, the CCC is a tool that is designed to help a professional make a decision about whether he or she should take a specific case, receive additional supervision or professional development, or refer that case to a more qualified provider.

The CCC was developed by using a behavioral-systems approach to interpreting the BACB Code (Brodhead, Cox, & Quigley, 2018) and is informed by previous scholarship on evidence-based practice and systematic decision-making models of ethical and professional behavior in behavior analysis (e.g., Brodhead, 2015; Geiger, Carr, & LeBlanc, 2010; Newhouse-Oisten, Peck, Conway, & Frieder, 2017; Rosenberg & Schwartz, *in press*; Slocum et al., 2012, 2014; Wilczynski, 2017). The CCC presents four questions that are designed to guide an objective evaluation of one's scope of competence.

Question 1 asks about a behavior analyst's relative level of *competence* in the domains of the (a) procedures and strategies, (b) populations, and (c) settings involved in the situation that is being considered. Question 2 asks about a behavior analyst's *confidence* relative to the presenting concern in the domains of (a) past experiences, (b) familiarity with literature, and (c) available resources. Question 3 is informed by evidence-based practice in behavior analysis (e.g., Slocum et al., 2012, 2014; Wilczynski, 2017) and asks the behavior analyst to consider the *similarity* between the current behavioral problem, as well as the context in which services are currently being delivered, and (a) his or her past experiences, (b) his or her previously available resources, (c) characteristics of participants in relevant research (e.g., comorbidity,

Table 1 Competence and Confidence Checklist

Questions	Answers				Pursue Additional Supervision or PD?	
	High	Medium	Low	Unknown	Yes	No
Question 1. Given the current behavioral problem, what is my level of competence in						
(a) procedures and strategies?	High	Medium	Low	Unknown	Yes	No
(b) populations?	High	Medium	Low	Unknown	Yes	No
(c) settings?	High	Medium	Low	Unknown	Yes	No
Question 2. What is my level of confidence in treatment success, based on my						
(a) past experiences?	High	Medium	Low	Unknown	Yes	No
(b) familiarity with literature?	High	Medium	Low	Unknown	Yes	No
(c) available resources?	High	Medium	Low	Unknown	Yes	No
Question 3. How similar is the current behavioral problem and the context in which services are delivered to						
(a) my past experiences?	High	Medium	Low	Unknown	Yes	No
(b) my previously available resources?	High	Medium	Low	Unknown	Yes	No
(c) the characteristics of participants in relevant research?	High	Medium	Low	Unknown	Yes	No
(d) the conditions described in relevant research literature?	High	Medium	Low	Unknown	Yes	No
Question 4. What is my overall level of competence, based on my answers to Questions 1, 2, and 3?						
	High	Medium	Low			

Note. PD = professional development. Depending on the presenting problem, questions and scores may be weighed differently. Scores of *low* or *unknown* may warrant additional supervision or PD

prerequisite skills), and (d) the conditions described in relevant research literature (e.g., level of control, similarity of setting, safety precautions).

Answering each of the first three questions requires careful analysis by the behavior analyst. For example, consider a situation in which a behavior analyst is faced with a behavioral problem that involves an individual with Williams syndrome in a school setting. For Question 1b, the behavior analyst is asked to consider his or her level of competence in a specific population relative to the behavioral problem. If the behavior analyst has spent the last decade working exclusively with individuals with Williams syndrome, and is quite familiar with the disorder, then the answer to this question is likely *high*. However, if the behavior analyst is only familiar with the general characteristics of individuals with Williams syndrome and has never had an individual with Williams syndrome in his or her caseload, then the answer to this question will likely be *low*. Despite the behavior analyst's relative competence with the population, if he or she has spent considerable time implementing behavior-change procedures in public school settings, the behavior analyst will likely answer *medium* or *high* to Question 1c, which asks about competence in a specific setting. If the behavior analyst has never worked in a public school, the answer to Question 1c is likely *low*.

In most cases, answering either *high* or *medium* to Questions 1–3 will likely negate the need for additional supervision or professional development. Answering *low* increases the likelihood that the behavior analyst should refer the client to another treatment provider or seek additional supervision or professional development if there is no option

for another treatment provider. If a referral is not possible, the provider may also consider informing his or her client that he or she has not treated this particular situation before.

There are situations where answering *medium*, however, may be cause for professional development or referral. Consider an example of a client who engages in severe self-injurious behavior and the behavior analyst believes his or her competence in procedures and strategies treating this case is *medium*. As the client's health and safety are key variables of consideration, the behavior analyst may pursue additional supervision or training to increase his or her level of competence closer to *high*. However, if the presenting behavioral problem involved a client who engages in vocal aggression, and the same level of competence was scored as *medium*, then there is less of a need for additional supervision or training.

The type of additional supervision or professional development that might prove helpful will vary depending on the circumstances. For example, the behavior analyst may need to make a phone call to a colleague to gain additional information about recommended practices in treating a specific behavioral problem. In another example, a behavior analyst may need to attend a half-day workshop to obtain information that increases competence or confidence in a specific domain. Answering *unknown* may also increase the likelihood of a behavior analyst pursuing additional supervision or professional development by working with qualified professionals to help identify and understand his or her own relative level of competence in that domain. Following that discussion, the behavior analyst should then reevaluate his or her level of competence; score *high*, *medium*, or *low* for that question;

and pursue additional supervision or professional development if necessary.

Question 4 of the CCC asks, “What is my overall level of competence, based on my answers to Questions 1, 2, and 3?” The response to this question should reflect the behavior analyst’s overall competence relative to the presenting behavioral problem, and it should be answered only after Questions 1–3 have been scored with *high*, *medium*, or *low*. Because each presenting behavioral problem is unique and requires analysis, the weight of each answer to domains in Questions 1–3 may vary when determining the answer to Question 4. For example, a behavior analyst may report *medium* and *high* answers in all domains except for Question 2a, past experiences, which is scored *low*. Therefore, the behavior analyst may then consider answering *medium* or *low* to Question 4. In another example, a behavior analyst may score *low* to *medium* in all domains, except for their available resources (Question 2c). In this case, the behavior analyst may have the necessary employees, materials, and physical infrastructure available to successfully carry out the behavior-change procedure, despite low to moderate competence and confidence in the remaining domains. Finally, the behavior analyst may score *medium* or *high* to Questions 1 and 2 but rate *low* on one or more aspects of Question 3. For example, the behavior analyst may report having sufficient competence and generally high confidence but find that the highly controlled experimental conditions differ significantly from the classroom in which services are provided. Similarly, the behavior analyst may realize the current consumer would have been excluded from relevant studies because of a comorbidity or potential side effects from psychotropic medications (Li & Poling, 2018), bringing into question the extent to which the evidence applies in the current case (Slocum et al., 2014). Under these conditions, the answer to Question 4 may be *medium* or *low* because the significant adaptations from the research conditions to the real-world application may require additional consultation or professional development.

If a behavior analyst determines he or she has a low level of competence to treat a specific presenting behavioral problem, and no training opportunities are available, the case should be referred to a more qualified provider (see BACB Code 2.03). If a behavior analyst receives additional training, he or she should identify the potential limitations of that training experience (e.g., didactic workshop but no practical component) and pursue appropriate supervision while providing services. Practitioners or organizations may not always be able to refer consumers to a different provider, especially when providing behavior-analytic services in rural communities where referral opportunities may be limited. The rising demand for behavior-analytic services may further increase the pressure to accept cases outside of an individual’s competence. Given advancements in telehealth (Boisvert, Lang, Andrianopoulos, & Boscardin, 2010), referrals in rural areas may be easier as

more providers gain experience and expertise in delivering services via telehealth. Finally, there are a multitude of continuing education opportunities that are available online. Therefore, behavior analysts should make reasonable attempts to ensure that they are equipped with up-to-date information about cases that may be outside of their area(s) of competence if referral is not an option.

Summary and Conclusions

There are predictable reasons why a behavior analyst may practice outside of his or her scope of competence. Overconfidence, financial incentives, and the moral belief that we need to do all that we can to help those in need may lead to behavior analysts accepting cases they are not fully competent to handle. Also, many behavior analysts do not understand that the BCBA, rather than the organizations that employ them, is responsible for unethical behavior, including working outside of one’s scope of competence (Brodhead, Quigley, & Cox, 2018). Therefore, behavior analysts are recommended to continuously analyze their scope of competence, relative to each behavioral problem, and respond accordingly if they believe additional professional development or referrals are warranted. Also, behavior analysts are recommended to have continued conversations with their employers about their own identified scope of competence and areas of expertise to ethically resolve any requests to serve cases that may be outside of their area of competence. See Rosenberg and Schwartz (in press) for a framework for ethical resolution if problems occur with these conversations. Supervisors and university training programs are also encouraged to emphasize the differences between competency, proficiency, and expert status. This allows newly credentialed behavior analysts to be taught the importance of understanding and practicing within the rather severe constraints of their competence once they enter the workforce, as well as the importance of strategies for increasing growth and professional development post degree.

Behavior analysts are responsible for analyzing their own level of competence and taking reasonable steps to facilitate development of new skills so that they are prepared to handle the unique and exciting challenges this field provides. The multidimensional model of competence and the CCC self-evaluation tool described previously serve as a starting point for how individual practitioners may understand and subsequently evaluate their own scope of competence when facing a practice situation that is new to them. The proposed multidimensional model and CCC are preliminary and have not been empirically evaluated. However, the model and CCC provide a starting point for operationalizing professional behaviors such as practicing within a scope of competence. Once ethical and professional behaviors are operationalized, they

may be measured, evaluated, and modified if needed (Brodhead, Cox, & Quigley, 2018).

Other scholars are encouraged to weigh in on the idea of scope of competence and to propose additional considerations or frameworks for identifying competence. Field-based research on the CCC may be a starting point of such an analysis, along with critiques of the CCC or the ideas proposed herein. For example, researchers may recruit groups of new and experienced BCBA's and have them complete the CCC and compare answers. Then, researchers may have them perform a task or role-play to look at the correspondence of their answers to observed behavior and then identify which scores should be established as cutoff scores for baseline levels of competence.

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Compliance with Ethical Standards

Conflict of interest The authors declare that they have no conflicts of interest.

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