Integrating School Psychology and Applied Behavior Analysis: a Proposed Training Model

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Abstract

It is critical that schools reduce maladaptive behaviors and increase prosocial behavior through the provision of high-quality evidence-based practices (EBP). School psychologists are uniquely positioned to facilitate the delivery of evidence-based applied behavior analytic EBPs, with regard to the foundational training they typically receive in the areas of assessment, intervention, and consultation. However, the lack of comprehensive behavioral training in school psychology graduate programs exposes an existing training gap. Given a substantial content overlap and the significant contributions ABA offers to school-based practice, school psychology training programs should consider providing a stronger behavior analytic component that will enable program graduates to obtain the Board Certified Behavior Analyst (BCBA) certificate and more effectively address behavioral needs in schools. This paper describes the rationale for integrating a BCBA track into school psychology programs and discusses practical considerations that may arise.

Keywords Applied behavior analysis · Integrated training · School psychology

Managing student behavior is a priority for principals, teachers, and other school-based staff (Pas et al. 2010). Recent survey data from the National Center for Education Statistics indicated that disciplinary and safety issues continue to be a stable or increasing concern for schools and districts across the country (Neiman 2011; Robers et al. 2013). As early as preschool, 7–34% of students demonstrate frequent and high-intensity problem behavior (Carter et al. 2004; Furniss et al. 2006; Kupersmidt et al. 2000; Upshur et al. 2009). Research also suggests that this pattern persists across the elementary school years, as direct observations of 533 students in kindergarten through sixth grade indicated that problem behaviors were demonstrated by 25.7% of the sample (Gresham et al. 2013; Snider et al. 2002). In a survey to identify teacher beliefs about student mental health (Walter et al. 2006), 48% of teacher respondents reported disruptive behavior as the greatest problem that they face in their schools.

Students who engage in problem behavior may face several negative consequences in the areas of academic achievement, social interaction, emotional skills, and later adjustment in life. As noted by Harvey et al. (2017), classroom behavioral engagement (e.g., on-task behavior) is positively correlated with increased academic achievement. Thus, academic instruction and curricular programs developed and delivered from a behavior analytic platform could have a beneficial impact across diverse populations (Harvey et al. 2017). Similarly, a large body of research investigating this relationship has established a negative association between externalizing problem behavior and general academic performance (Kremer et al. 2016; Van der Ende et al. 2016). Additionally, the frequency, persistence, and seriousness of delinquent behavior has also been linked with poor academic performance (Maguin and Loeber 1996), suggesting that qualitative aspects of problem behavior may differentially affect student outcomes. In the area of social and emotional well-being, problem behaviors have been linked to adjustment problems, antisocial behavior, and mental health problems later in life (Herrenkohl et al. 2010; Van der Molen et al. 2015).

In addition to reducing disruptive behaviors, schools are also tasked with increasing prosocial behaviors. More recently, the field of education has emphasized the critical importance of weaving social and emotional learning into classroom

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instruction, and teaching appropriate behaviors within a Positive Behavior Interventions and Supports (PBIS) framework (Oberle et al. 2016). Recognizing that exclusionary approaches to managing behavior will not teach replacement behaviors, these positive approaches have become more widely implemented. Positive behavior programs, such as the Electronic Home Note Program implemented by Lopach et al. (2018), can be implemented across whole classrooms and concurrently addresses and improves multiple problems (e.g., off-task behavior and poor academic performance). Research has also demonstrated the benefits of positive behavior supports and social emotional learning with regard to reducing disproportionality in school-based identification and reducing punitive disciplinary approaches (Gregory and Fergus 2017). Beyond these positive outcomes, a growing body of research has also indicated that these proactive practices may be associated with a more positive school climate and reduced later drug use for students (Klapp et al. 2017; Rutledge et al. 2015).

In the area of student behavior, schools face two primary goals: (a) reducing disruptive behavior and (b) increasing appropriate behavior. With regard to the negative consequences associated with problem behavior and its high prevalence rate in schools, it is critical that schools work to improve outcomes for this population by providing high-quality evidence-based practices (EBP). Additionally, the positive outcomes linked with increasing appropriate behavior coupled with the strong relationship between prosocial behavior and academics highlight the important priority of applying EBP to increase desired behaviors. Although the fields of education and behavior analysis have made significant progress related to identifying evidence-based behavioral interventions designed to target these outcomes within and across classrooms, small groups, and with individual students (Grant 2012; Knotek and Hylander 2014; Kratochwill 2007), schools are unfortunately characterized by a significant research-to-practice gap.

The need to give additional empirical attention to EBPs is underscored by recent lines of research investigating teachers' knowledge of EBPs to improve classroom behavior and individual student concerns. For example, a large sample of survey responses revealed that more than 80% of teachers had never heard of nine specific school-based interventions to improve student mental health that meet IES's *What Works Clearinghouse*'s most stringent criteria (Stormont et al. 2011). Additionally, a large number of general and special education teachers have reported that they do not feel adequately prepared to use EBPs to address the needs of students with behavior disorders (Gable et al. 2012). Even more concerning, treatment integrity has been largely ignored in the field of education (Gresham 1989; Noell and Gansle 2006), despite the fact that treatment integrity data are essential to making valid conclusions regarding intervention effects (Shadish et al. 2002).

Across multiple school-based intervention studies, a vast majority of teachers display decreasing or low treatment integrity levels (range 0–65% intervention steps implemented as planned) within 1–10 days after training (Hagermoser Sanetti and Kratochwill 2009; Noell et al. 1997; Witt et al. 1997). The universal and consistent nature of these results is especially of concern in light of research on the relationship between treatment integrity and student outcomes. Assuming an appropriate EBP has been selected, high levels of treatment integrity appear to result in better student outcomes (e.g., Greenwood et al. 1992; Holcombe et al. 1994; McEvoy, Shores et al. 1990; Noell et al. 2002; Vollmer et al. 1999; Wilder et al. 2006), lower levels of treatment integrity may make the intervention less effective (e.g., Wilder et al. 2006), and positive treatment outcomes resulting from initially high levels of treatment integrity may be compromised as treatment integrity decreases over time (e.g., Vollmer et al. 1999).

Across interventions and implementation integrity, this research-to-practice gap has been cited as an enduring barrier to effective service delivery to students in special education as well as the underlying cause of underachievement of students from diverse cultural backgrounds (Klingner and Boardman 2011). Evidence suggests that many current practices are not supported by empirical research and a significant number of teachers are currently not able to independently select, implement with consistent accuracy, and systematically evaluate EBPs that are functionally related to improved student outcomes. Thus, there is a critical need to increase student access to evidence-based behavioral interventions to improve outcomes in the areas of academic performance, social interactions, and long-term adjustment.

School Psychologists as Providers of Behavioral Services

Recognizing this need, school psychology (SP) trainers and researchers have pointed out the potential of their field to bridge the research to practice gap and expand student access to high-quality behavioral EBP. Having a strong current professional emphasis on evidence-based intervention, consultation, and effective collaboration (NASP 2010), SPs should be uniquely positioned as personnel well suited to coordinate the delivery of high-quality, school-based behavioral services for students. Additionally, because SPs may regularly consult and collaborate with related service providers and may work closely with interdisciplinary and school administration teams, they should receive a strong foundation of training in the area of behavior supports. With these skills, they could be well equipped to serve this critical role in adopting and sustaining behavioral EBP in schools to improve outcomes for students (NASP 2015).

Ultimately, these professional focuses and skill sets would enable SPs to ensure that school staff members are trained to consistently deliver behavioral interventions across the school day. The practice model set forth by the National Association of School Psychologists (NASP 2010) further establishes SPs' possible capacity to address student behavior change from this systemic perspective. The official NASP practice model (NASP 2010) is comprised of the following ten broad practice domains: (1) data-based decision making and accountability, (2) consultation and collaboration, (3) interventions and instructional support to develop academic skills, (4) mental health services to develop social and life skills, (5) school-wide practices to promote learning, (6) preventative and responsive services, (7) family-school collaboration services, (8) diversity in learning and development, (9) research and program evaluation, and (10) legal, ethical, and professional practice. Lending additional support to the inextricable link between school psychology and behavioral practices, the services SPs might coordinate and deliver on a school-wide and individual basis, as well as their emphasis on data-based decision making, are consistent with the principles of the larger field of applied behavior analysis.

As noted by Ervin and Ehrhardt (2000), since the formation of the National Association of School Psychologists (NASP) in 1969, and throughout the history of the SP profession, applied behavior analysis has impacted school-based research and practice, becoming increasingly prevalent over the past two decades. Although the field of SP is also largely rooted in school-based psychological assessment to determine appropriate educational placement, federal legislation (IDEIA 2004) and paradigm shifts (Shernoff and Kratochwill 2007) have modified the SP's role to meet new demands and challenges. These various responsibilities have expanded to include the delivery of a variety of behavioral and academic supports on an individual, group, school, and system-wide level. Considering the SP's expanded role, as well the growing need for access to behavioral evidence-based interventions in schools, it is critical that SPs receive comprehensive training with an emphasis in applied behavior analysis (ABA) to provide these services competently (Shapiro 1991).

Training in Behavior Analysis for School Psychologists

Graduate training in behavior analysis is ultimately conceptualized as representing two primary modalities: didactic and experiential (BACB 2017). Although some SP training programs offer explicit didactic training in behavior analysis, course sequences reveal that most programs solely offer a course or two in behavioral methodology as an isolated area of study, focusing more heavily on a wide range of other topics across core courses (Hughes 2015). As of March 2018, an online search of the 198 SP programs listed on the NASP website revealed that only 22 programs offered

behavioral course sequences that were verified by the Behavior Analyst Certification Board.

In programs that offer targeted training in behavior analysis without a verified course sequence (VCS), it is difficult to determine the content of those courses and the competency of program graduates. Common topics of core courses across doctoral, masters level, or specialist-level SP programs (based on accreditation and approval standards) also include but are not limited to human development, history and systems of psychology, research methodology, social aspects of behavior, psychopathology, and theories and methods of assessment and diagnosis. This broad scope of training often may not include additional didactic training or specialization in any one specific area, such as counseling or ABA.

Similarly, experiential practicum training in SP generally consists of school or clinic-based experiences which vary widely across several areas of competence, generally including assessment, intervention, consultation, and data-based decision making and accountability (Merrell et al. 2012). Within these programs' required field experiences, supervised ABA training is typically rare, and may be a training component students would be responsible for seeking out independently. Students may implement behavioral interventions as part of other practicum training experiences, but it is difficult to discern the quality of these training opportunities. Considering the premium ABA places on supervised experience and copious feedback by a qualified professional who has demonstrated expertise in the field of ABA, trainees would need numerous experiential training opportunities to implement behavioral EBP and receive targeted supervision in addition to the practicum provided by the SP program (BACB 2017).

This gap between behavioral training in SP and expected implementation of behavioral interventions in practice has been highlighted by a recent study regarding pre-service EBP training for SPs. Seventy-one percent (71%) of study participants felt that the training they had received on behavior EBPs was inadequate (Hicks et al. 2014). In exploring the literature base in this area, it appears that this has been a pervasive trend in the field despite a growing demand for behavioral expertise in recent years (Kratochwill and Bergan 1978; McCurdy et al. 2016).

Parallels Between Behavior Analysis and School Psychology

Though there is great variability in didactic and experiential training opportunities for SPs across graduate programs that is difficult to assess solely on program materials, we wish to point out the rationale for enhancing the behavioral training provided in SP programs to increase practitioner skills, knowledge, and capacity to adopt leadership roles as behavioral professionals. Researchers and practitioners have long recognized the critical role of behavioral training in SP graduate

programs. As described by Lentz Jr. and Shapiro (1987), a global behavioral approach to applied practice offers several benefits to SP including strong connections between assessment and treatment, ensuring that practices are empirically based, applying research designs during service delivery, and using the principles of behavior to increase consistency across multiple service providers in schools. Ultimately, Lentz and Shapiro suggested that the common language and unifying principles of applied behavioral analysis would significantly improve the profession of SP.

Similarly, Vollmer and Northup (1997) persuasively demonstrated the connection between applied behavior analysis and SP. As they described in their paper,

> "there are at least four features of applied behavior analysis that make it particularly well-suited for assessment and intervention in the schools: the emphasis on analysis, the emphasis on repeated measures of individual behavior, the emphasis on observable behavioral and environmental events, and the reliance on proven principles of behavior to account for behavioral persistence and behavioral change" (p. 1).

Considering this early recognition of the parallels between the two fields, the increased demands in the field to expand access to evidence-based practices (Kutash et al. 2006), and the mounting student need for high-quality behavioral services in schools (Cook and Odom 2013), it is suggested that pre-service SP training programs would benefit from comprehensive coursework and supervised experiences that emphasize behavior analytic principles.

Moreover, with regard to these issues and the professional roles SPs are expected to assume, whether pre-service training programs offer extensive behavioral training and supervision, especially with the significant demand for these behavioral interventions, could raise a serious ethics concern regarding competency for intended practice. Although some programs may provide variable training pertaining to the applications of behavior analysis within SP, fewer programs offer a Behavior Analysis Certification Board (BACB)-approved course sequence and a supervised behavior analytic practicum component for graduate students (Shriver and Watson 1999). Without these training opportunities, SP graduate programs are unable to ensure that their graduates can demonstrate behavioral expertise by becoming eligible to earn Board Certification in Behavior Analysis (BCBA).

The Need for School Psychologists Who Have Received the BCBA Certificate

The BCBA certificate is considered to be a strong external indicator of behavioral expertise and competency (Bethune and Kiser 2017). For school districts that incorporate BCBAs in their cadre of related service providers, hiring a school psychologist who also maintains a BCBA has value added. For example, the state of Florida has specific legislation (http://www.leg.state.fl.us/STATUTES/index.cfm?App_mode=Display_Statute&URL=1000-1099/1003/Sections/1003.572.html) that promotes services by BCBAs in schools. As such, a school psychologist who has also maintained a BCBA in this state would be able to provide services across related service areas, maximizing their impact on students and staff.

Obtaining the BCBA certificate requires a set of nationally approved coursework and training criteria, demonstration of knowledge and skill that indicate a high level of expertise in ABA, and a passing score on a comprehensive exam. Individuals who have obtained the BCBA credential may also train and supervise other professionals interested in pursuing their BCBA (or another certificate offered by the BACB such as the registered behavior technician (RBT) distinction) as well, enabling SPs who have obtained the credential to instruct and supervise other school-based professionals in ABA-based methods and procedures and take on leadership roles in a variety of school-based settings.

Further, this leadership model also facilitates training and empowerment for a variety of individuals, including those not working towards a credential, who interact with the recipient of behavior analytic services frequently such as parents, teachers, community providers, or auxiliary school staff, increasing student access to higher quality behavioral interventions. Although SPs may pursue additional training and obtain a high level of behavioral expertise outside of their training program, the BCBA certificate provides evidence that they have gained behavior analytic skills and are able to serve students and systems in a leadership and training capacity. Additionally, in light of growing demand in schools for support managing challenging behavior, school districts are increasingly hiring BCBAs at the district and individual school level to implement behavior plans, provide training to other staff members, and implement programming at a system level.

The competencies and skill areas necessary to obtain the BCBA credential (i.e., register for and pass the BCBA examination) are outlined in the BACB 5th edition task list (BACB 2017). The BACB task list is divided into two domains: foundations and applications. Each domain is further broken down into different areas, with foundations consisting of (a) philosophical underpinnings, (b) concepts and principles, (c) measurement, data display, and interpretation, and (d) experimental design. The applications domain is broken down into (e) ethics, (f) behavior assessment, (g) behavior-change procedures, (h) selecting and implementing interventions, and (i) personnel supervision and management. These areas are then divided further into several specific skills that those who are qualified to obtain the BCBA credential are proficient in.

ABA in Assessment, Intervention, and Consultation

This paper recognizes the critical need for strong behavioral supports in schools and acknowledges the important role SPs may be able to play in enhancing the quality and dissemination of behavioral services to improve immediate and long-term student outcomes. Under these circumstances, SPs could be positioned to make significantly greater contributions to this end with additional pre-service didactic and experiential training in ABA that renders them eligible to become BCBAs. Recognizing the value of the BCBA certificate as evidence that SPs have the skills and knowledge to promote widespread change, many school districts are hiring BCBAs in increasing numbers to provide and oversee behavioral services for students (Bethune and Kiser 2017; Menendez et al. 2017). This paper provides the rationale for, and describes an integrated training framework for SPs and behavior analysts. Both fields converge in the areas of assessment, intervention, and consultation, with ABA filling in some of the gaps present in SP training. Additionally, the flexibility of credentialing requirements for SP and BCBA programs may lend themselves to a feasible integrated program.

Assessment

The field of SP has traditionally been associated with standardized psychoeducational assessment in areas such as intelligence or achievement to determine appropriate educational placement. However, this early focus on cognitive and academic deficiencies which placed SPs into the role of psychometricians was moderated by subsequent iterations of the *Individuals with Disabilities Act* (IDEA, 1991, 1997; IDEIA 2004). The updated legislation framed childhood learning disorders as complex constellations of academic performance and cognitive functioning, emphasized the role of universal prevention efforts, and favored treatment over identification of the problem. This paradigm shift ushered in a new approach to serving students who are not making adequate progress in a general education setting: *Response to Intervention* (RTI).

RTI is a pragmatic model for early identification and appropriate intervention for a disability that may adversely affect educational performance. In RTI, data-based procedures are utilized to ensure that limited academic progress is not the result of reduced curricular access or other instructional variables that may be manipulated with a high probability of success. Within this model, if students do not respond to these adjustments, increasingly focused assessment and intervention services will be provided (Pyle 2011). Though SPs still regularly administer psychoeducational assessments, the shift to RTI has enabled them to allocate more time to deliver student interventions in individual or group settings, consult with teachers, and facilitate system-level change. This increased

range of service delivery, along with the growing popularity of *Positive Behavioral Interventions and Support* (PBIS), has necessitated a wider range of SP professional skills and has given new importance to the development of competencies in applied behavior analysis during training (Kutash et al. 2006).

Similar to RTI's tiered approach to pre-referral academic interventions, PBIS is a tiered framework for providing behavioral supports of increasing intensity across all school populations to improve social and behavioral functioning for students. Underscoring the need for enhanced behavioral training for SPs, PBIS is based on the principles of ABA, with a focus on scaling up evidence-based assessment and intervention strategies across all school settings, with sustained implementation over time (Office of Special Education Programs [OSEP] Center on PBIS 2010). Modern conceptualizations of school-based academic and behavioral service delivery have combined RTI and PBIS to create a multi-tiered, integrated system for responding to students' needs (MTSS; Freeman et al. 2015).

Within this updated tiered framework, the field of behavior analysis has made significant contributions to school-based behavioral assessment. Behavior analytic measures that have been integrated into school-based practices include systematic direct observations (SDO) for progress monitoring data collection and functional behavior assessments (FBA; Ervin and Ehrhardt 2000). These behavior analytic assessment procedures map on to PBIS, with SDO and progress monitoring data collection occurring across the first two tiers (i.e., addressing the needs of 90–95% of students) and FBA often occurring for students who demonstrate need for additional behavior supports as indicated by an insufficient response to tier 2 interventions. Under specific circumstances, the reauthorization of the Individuals with Disabilities Improvement Act (IDEIA 2004) also mandates an FBA during manifestation determinations as part of deciding on an appropriate educational placement for students who are engaging in severe problem behavior.

However, one issue with IDEIA (2004)'s FBA mandate is that there is no standard protocol used to conduct them (McIntosh and Av-Gay 2007), creating large discrepancies in the procedures implemented in schools. Though FBA is defined as a strategy used to understand the function of a behavior (i.e., in relation to environmental antecedents and consequences in a child's environment), there are several procedures available to conduct them that may be direct, indirect, and experimental. Indirect procedures consist of interviews and checklists with individuals who are familiar with the target student, while descriptive methods involve repeated observation of the student's behaviors to identify patterns that suggest the maintaining consequence of problem behavior (Dufrene et al. 2017). Beyond hypothesized functions, functional analyses (FA) involve the experimental manipulation of environmental conditions to determine the function of behavior (Slaton et al. 2017).

Without a recommended FBA protocol, the heterogeneity in school-based FBA procedures may leave ample room for misidentifying the function of behavior in the assessment process, especially with regard to wide variability in behavioral skillsets across school-based providers (Wilczynski et al. 2002). Under the vague mandate, the assessments could vary in depth between the indirect, descriptive, and experimental assessments described previously (Rooker et al. 2015). While the mandate may be suited to the wide range of FBA conducted in practice in allowing for flexibility, it also invites a large error margin. Considering these limitations, results from any school-based FBA alone may be incorrect and lead to interventions based on an incorrect evaluation of the function of the problem behavior (Rooker et al. 2015). Casting further doubt on the findings of school-based FBAs, researchers have also determined that many of the school providers who are tasked with conducting FBA and using their results to design and implement function-based interventions have not received adequate training to do so.

Even if FBA is carried out accurately, Iwata et al. (2013) found that the function of the problem behavior was only correctly hypothesized in 63.8% of cases using a form of indirect assessment. Similar inaccuracies have been found between hypotheses based on descriptive assessments compared to those based off functional analyses (Pence et al. 2009; Thompson and Iwata 2007). However, because FA requires additional training in ABA, they are less likely to be conducted in a school setting. In order to enhance the quality of FBAs and increase the number of FAs conducted in schools, SPs could benefit from further training in ABA. With increased ABA skills, SPs or other school professionals could conduct assessments themselves or train and supervise other school-based practitioners to do so. This additional skillset will ensure that correct hypotheses of problem behavior function are established and interventions will have an increased probability of success. Explicitly merging the disciplines of SP and behavior analysis would accomplish this goal.

Intervention

A survey conducted by NASP in 2010 reported that about 25% of an SP's time is spent developing and delivering intensive interventions to children in the schools, 9% of their time was focused on individual student counseling or group counseling, and an additional 8% of their time was spent on teams that aimed to create interventions for the general education classrooms (Curtis et al. 2012). On average, this amounts to 42%, suggesting that approximately half of an SP's role is to provide some form of intervention to children in schools, in a variety of settings and contexts. In schools that have implemented a PBIS system, SPs are typically involved with service delivery across each of the three tiers.

During school-wide prevention efforts, SPs might assist with several antecedent interventions, including setting up clear rules across school settings, establishing positive and negative consequences based on those expectations, and ensuring consistency across settings (Jolstead et al. 2017). For tier 2 interventions (i.e., designed for students who do not respond to universal interventions), SPs might conduct small groups for skill-based instruction or facilitate check-in and check-out programs based on positive feedback and reinforcement contingencies (Cheney et al. 2010). To serve students who demonstrate additional need based on tier 2 data, SPs are often involved in conducting an FBA, creating an individualized behavior support plan (BIP), and training teachers on BIP implementation.

With regard to these important intervention activities SPs may perform in a PBIS framework, some researchers and practitioners have argued that SPs are also well equipped to ultimately guide school-wide implementation efforts, helping schools to establish PBIS systems (McGraw and Koonce 2011). However, with limited training in behavior analysis, SPs may need additional instruction in the evidence-based behavioral interventions that are delivered across PBIS. Bolstering this point, Hicks et al. (2014) found that 71% of a sample of 392 practicing SPs felt that they had not been adequately trained in behavioral EBPs during their graduate training programs. Additionally, only 49% of the SPs surveyed reported that their schools regularly collected progress monitoring data and used it to make intervention decisions (i.e., changing the interventions used, modifying the intervention components, or fading interventions as adequate response is demonstrated).

Contributing additional support to an integrated model of training in behavior analysis and SP, multiple areas of the BACB 5th edition task list as well as the BACB-approved course sequence comprehensively cover these areas of weakness in SP graduate training. In fact, three out of the nine areas of the BACB task list directly correspond with these invaluable skillsets for SPs: (1) behavior change procedures, (2) selecting and implementing interventions, and (3) measurement, data display, and interpretation. Within these core areas, the task list specifies that those qualified to obtain the BCBA credential must be proficient in applying a variety of specific behavioral strategies that are supported by a large evidence base, verifying that interventions are based on assessment results, making data-based treatment decisions, considering social validity and acceptability from several perspectives, and using single subject designs to determine the efficacy of interventions implemented. If competent in these areas, SPs will be able to make significant contributions to service delivery under a PBIS framework, especially with regard to imbedding more EBP approaches.

Additionally, SPs with training in behavior analysis might prove to be more effective team members and coaches

throughout the implementation of PBIS within the school. Beyond enhancing SP competence with behavioral methods, proficiency in these behavior analytic training standards would also reduce the level of training SPs would need to implement a vast variety of behavioral EBP. Because the behavior change procedures described in the BACB task list (e.g., punishment, reinforcement, shaping, chaining, and using instructions and rules) make up the underlying framework for every behavioral intervention across the PBIS framework (Putnam and Kincaid 2015; i.e., from establishing expectations in the cafeteria for all students, to implementing an individualized behavior intervention plan), with better knowledge of ABA, SPs would be able to more easily understand, implement, and train other providers on behavioral interventions.

For example, Check-In Check-Out (CICO; Wolfe et al. 2016), a tier 2 intervention with a large evidence base, consists of a morning and afternoon meeting with an adult at school, a daily progress monitoring sheet, and some predetermined reward for meeting an established daily criterion. Rather than orienting to the intervention by learning each of the CICO components and implementing it for students who appear to demonstrate moderate need, an SP who has also received their BCBA would quickly recognize that CICO will be most effective for students who are engaging in problem behavior maintained by access to attention, that both the adult and reward should be highly preferred and available contingent upon appropriate behavior, and that the reinforcers may not be appropriate or the behavior may also be maintained by escape if progress monitoring data does not reflect the desired outcomes. With this understanding, they would more easily be able to train other providers to implement CICO.

Consultation

Gresham and Kendall (1987) argued, "in many ways, consultation is to the school psychologist as therapy/counseling is to the clinical/counseling psychologist" (p. 306). This is becoming more accurate considering the current shortage of personnel in the field of SP. In terms of the limited time and resources SPs have as well as the increased caseload they are expected to serve, it is often more efficient for SPs to provide indirect services to more students through parents and teachers than deliver direct services to a smaller number of students in the schools (Ervin and Ehrhardt 2000). As a model of service delivery, consultation has a large body of research substantiating its efficacy (Frank and Kratochwill 2014), and is listed as one of NASP's ten practice domains (NASP 2010).

Specifically, behavioral consultation (BC) is the most widely used method of consultation within the schools (Sheridan et al. 1996). Based on the principles of ABA, BC is conceptualized as a problem-solving model that is characterized by a collaborative relationship between the consultant and the consultee. Starting with the identification of the problem, BC is organized into four distinct stages (or phases). Following the problem identification, BC will move into the problem analysis phase, treatment plan implementation phase, and problem evaluation phase (Witt et al. 1996). Each stage consists of specified activities that are intended to be carried out systematically. If the data collected indicate that the intervention was not effective, the BC process may revert back to the problem analysis phase to re-evaluate the function of the behavior and determine what changes can be made to improve intervention efficacy. Following these adjustments, the BC process will continue as described.

More specifically, during the problem identification phase, the problem is described in clear, operationalized terms. Once the behavior(s) have been clearly defined, the problem analysis phase consists of conducting an FBA or FA that typically consists of repeated observations, a teacher interview, and other sources of data in order to investigate the function of the problem behavior. The treatment plan implementation phase often consists of training or coaching for teachers (or other school-based personnel) who will be implementing the intervention to increase the quality of service delivery (Schultz et al. 2015). As previously described, this stage of the process may be more efficient when conducted by SPs who understand the underlying behavioral principles within the intervention, and can teach the procedures from this perspective.

Consistent with the advantages ABA offers to SP in the areas of assessment and intervention, Erchul and Sheridan (2014, p. 4) explained why behavioral consultation has been increasingly implemented in school settings:

> "The relative popularity of school-based behavioral consultation has been attributed to
> its well-operationalized interview procedures and reliance on applied behavior-analytical techniques, which have been shown to be effective in intervening with children's academic and adjustment problems."

Because BC has also been implemented to ameliorate academic problems and system-level concerns, some researchers and practitioners have referred to BC as problem-solving consultation (PSC; Frank and Kratochwill 2014). This behavioral problem-solving model has also been applied to improved adult behavior, especially in the case that teachers are not implementing the interventions they have been trained on with the necessary level of integrity (Codding et al. 2008).

During the treatment plan implementation phase, consultants may need to apply additional strategies in order to be sure that teachers or other providers will be able to deliver high-quality behavioral interventions to students. Some of these strategies include performance feedback, positive reinforcement for accurate performance, and supplementary cues or materials to increase the likelihood of accurate

implementation (Hagermoser Sanetti et al. 2013). The specific strategies used will depend on whether the teacher's incorrect performance is the result of a skill or performance deficit, but in both cases, procedures applied will rely heavily upon behavior analytic methodology. Ultimately, SPs who have received the BCBA credential will also be able to use their enhanced behavioral skillset to change adult behavior while delivering problem-solving consultation services.

Integrated Program Framework

In light of the history of ABA within SP, and important contributions that the field of behavior analysis offers to SP in the areas of assessment, intervention, and consultation, SP graduate programs might want to begin providing enhanced behavioral training. Figure 1 provides a visual model of how SP and behavior analytic skillsets and areas of competence may be utilized while meeting school-wide needs. In terms of credentialing standards from both the BACB and NASP (i.e., the governing body for the field of SP), if SP graduate programs are able to provide a BACB-approved course sequence and supervised behavior-analytic practicum experiences, prior or simultaneous to the completion of the programs, students will be eligible to obtain the BCBA credential in addition to a SP graduate degree. However, while the BACB provides content and guidance on the domains and expectations of BCBA programs, execution on each campus will depend largely upon current program structure, faculty flexibility, and the institute of higher education's unique departmental parameters.

The following section will describe the specifics of this proposed integrated training framework, in terms of the approval/accreditation standards established by NASP and the BACB, respectively.

Coursework Although neither NASP nor the BACB require a standardized course sequence across graduate training programs, each professional organization has an established set of core competency standards that must be addressed across didactic training. While NASP is more flexible in terms of how programs choose to address practice domains in course content, the BACB requires an itemized breakdown of how core training areas will be addressed across the coursework sequence (i.e., how hours will be allocated across the topics). Tables 1 and 2 provide samples of how the required set of courses might appear in a program's approval/accreditation application to the professional organization. More information regarding didactic training in both areas may be found in NASP (2010) and BACB (2017).

Because several of the courses that cover core BCBA training areas may also address NASP practice domains, graduate programs will be able to meet both sets of standards in some courses. For example, a school-based intervention course may

target several hours of behavior change considerations and include content on data-based decision making and accountability, consultation and collaboration, intervention, and mental health services to develop social and life skills, system-level services, and research program evaluation. Thus, training programs that wish to offer an integrated training framework may be able to include a large portion of behavior analytic content into SP courses to create a BACB-approved course sequence.

Applied Experience NASP and the BACB require a specified number of practicum hours in order to obtain licensure; however, neither organization provides a strict breakdown of hours based on areas of competency. Additionally, the number of hours for licensure may be different across state credentialing bodies, independent of degree requirements. NASP simply recommends that experiences occur across the domains, and establishes clinics and elementary, middle, or high schools as appropriate settings to complete practicum experiences. Table 3 lists accepted SP practicum sites. However, it is critical to recall that practicum experience is largely organized around the supervision provided to the student, as per BACB guidelines. The BACB breaks acceptable practicum placements into three separate categories: independent fieldwork, practicum, and intensive practicum. Table 3 lists accepted behavior analytic practicum sites. Each category is associated with a different set of rules regarding the ratio between supervision hours and experience hours, and the duration of the supervisory period.

While the BACB Experience Standards specify that exactly half of experience hours must include activities other than direct service and all activities much be behavior analytic in nature, the BACB does not place any additional restrictions on applied experience. This flexibility with regard to the standards put forth by both professional organizations will allow students in an integrated SP and BCBA (SP/BCBA) program to consider BCBA hours to be part of their practicum experience in SP. For example, when engaging in behavioral consultation with teachers, SP/BCBA students are gaining experience in the area of consultation and collaboration while also using ethical and professional conduct, identifying and assessing problems, and working in the areas of behavior change systems. In this way, practicum experiences may be designed to provide experiences in SP and ABA.

Establishing an Integrated Program

Other areas of concern that may emerge for SP programs considering the integration of a BACB-approved course sequence and appropriate BACB practicum experiences include (a) accreditation/approval across credentialing bodies, (b) how much flexibility the program will retain while adhering to these standards, (c) whether new faculty members would need to be hired, (d) whether the enhanced behavioral training
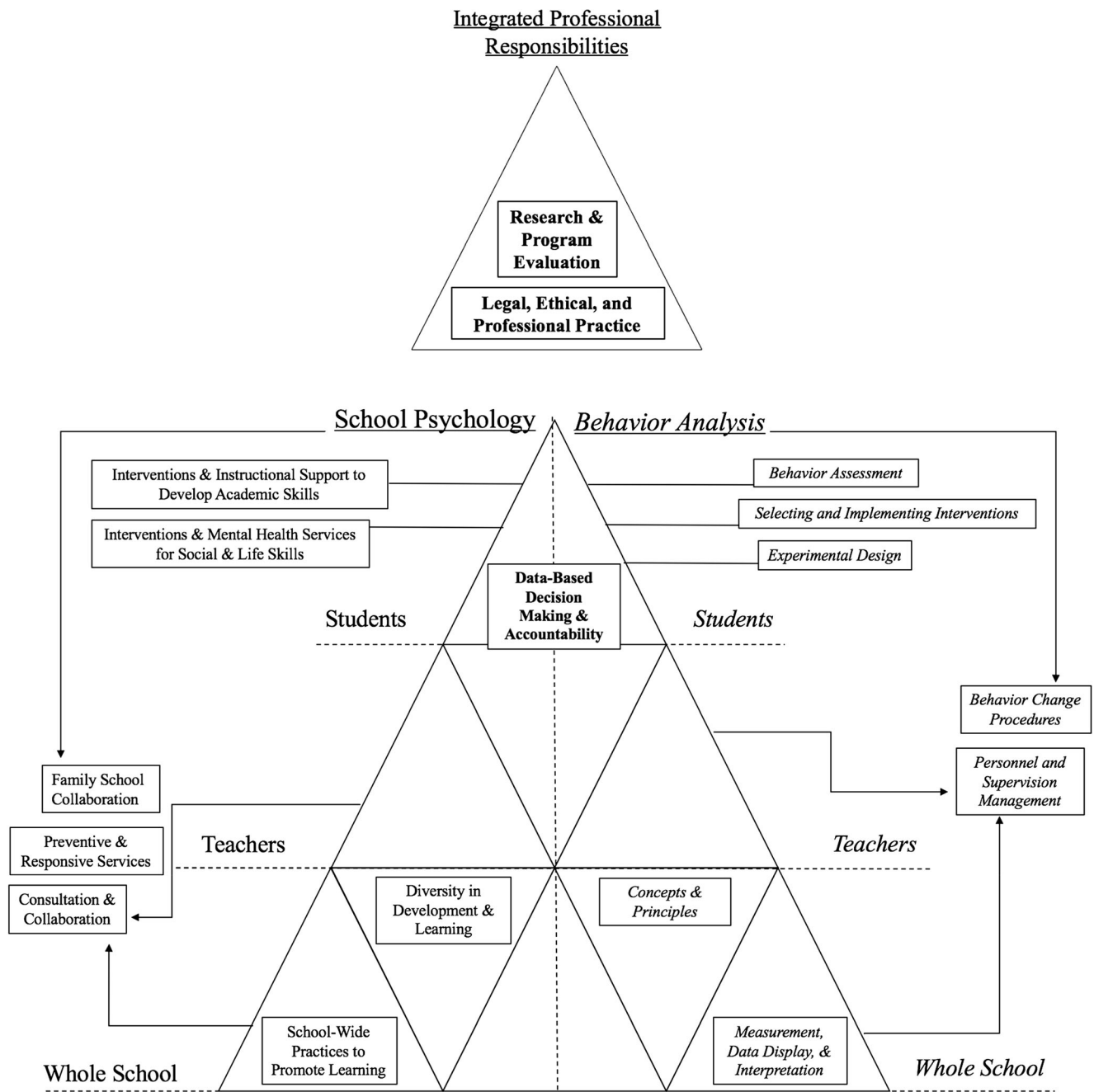
Fig. 1 Integrated model of school-based service delivery for SP/BCBA practitioners based on the BACB 5th edition task list and NASP Practice Model

would reduce the program's appeal for students who wish to purse a more generalized school psychology framework (e.g., as indicated by a balanced representation of the ten NASP practice domains), and (e) whether students may become eligible to earn a BCBA credential after graduating from the SP training program. The following section will address each of these points, in turn.

(a) Establishing a BACB-approved course sequence will not affect NASP approval as long as other program elements remain unchanged. However, the new sequence may adjust how the NASP domain content is covered. For example, a new *Behavioral Interventions* course may satisfy BACB and NASP requirements, eliminating the need for two previous courses, such as *Consultation and Collaboration* and *School Interventions*, if the content from both previous courses is covered in the new offering.

(b) Program flexibility, with regard to course offerings, will depend on several factors including program length, current course sequence, and other program requirements. Because courses may be combined and BCBA practicum opportunities and supervision may be provided over

Table 1 Sample BACB-approved course sequence breakdown

Content area or domain	Sample course title				
Behavior analysis: content area and required hours	Course title	Course title	Course title	Course title	Course title
A 45 h in ethical and professional conduct		45			
B 45 h in concepts and principles of behavior analysis		15	15	15	
C 25 h in measurement (including data analysis)		5	5	10	5
20 h in experimental design	20				
D 30 h in identification of the problem and assessment		12			18
45 h in fundamental elements of behavior change and specific procedures	16		12	10	7
10 h in intervention and behavior change considerations		5	5		
10 h in behavior change systems	7		3		
10 h in implementation, management, and supervision				10	
E 30 h in discretionary					30

Although course titles are flexible, it is critical that areas A-E are adequately covered in compliance with BACB accreditation

summers and/or simultaneous to a full-time course sequence, programs should be able to retain some degree of flexibility.

(c) In order to create a BACB-verified sequence, a program must identify a faculty member to serve as the verified course sequence (VCS) coordinator. The VCS coordinator is responsible for communicating with the BACB regarding changes in the course sequence, and advising students of program requirements. Although this individual must have a BCBA, hold a doctoral degree, and hold full time faculty status, they do not need to be part of the SP faculty if a working relationship is established between the VCS coordinator and the SP program. For example, at the University of Utah, the VCS coordinator for SP/BCBA program is a professor in special education. Thus, if an SP faculty member that meets this

criterion is not available, the program may need to look outside of the department to other departments of their institution or to outside hires (BACB 2017). Requirements for faculty members teaching in the BACB-approved course sequence are as follows: have the BCBA credential, *or* have three cumulative years of experience as a faculty member within a 5-year period, have taught at least five sections of behavior analytic coursework, and have published at least one research article. The full teaching requirements are available at https://www.bacb.com/wp-content/uploads/2017/09/170613-VCS-handbook.pdf. With regard to experiential training opportunities, the department could hire adjunct faculty members to supervise students or partner with community agencies to provide practicum opportunities.

Table 2 Standards for graduate preparation of school psychologists

Content area or domain	Sample course title				
School psychology: content area and required hours	Course title	Course title	Course title	Course title	Course title
1 Data-based decision making and accountability					
2 Consultation and collaboration					
3 Interventions and instructional support to develop academic skills					
4 Interventions and mental health services to develop social and life skills					
5 School-wide practices to promote learning					
6 Preventive and responsive services					
7 Family–school collaboration services					
8 Diversity in development and learning					
9 Research and program evaluation					
10 Legal, ethical, and professional practice					

Although course titles are flexible, it is critical that all ten domains are addressed throughout didactic instruction and applied experience

Table 3 Sample field experience sites for BCBA and school psychology trainees

Concentration area	Sample practicum settings		
School psychology	Elementary, middle, or high school setting	Private or university-based clinic setting	Early intervention setting
Behavior analysis	Private behavior analytic agency	Elementary, middle, or high school setting	Outpatient on inpatient clinic

(d) The BACB-approved course sequence and experiential training may be offered as a track within the SP program. Thus, students who are not interested in receiving advanced behavioral training could simply indicate that they are not interested in that training opportunity upon applying to the SP program.

(e) Although students have the option to become eligible to earn the BCBA credential after graduating the SP program, they may incur additional costs for courses or supervised training opportunities. Additionally, it may be difficult to locate other individuals with the BCBA credential working in the field who are willing to supervise them.

Conclusion

As noted by Hicks et al. (2014), despite the increase in school-aged children and youth with behavior problems, a majority of school-based practitioners feel inadequately trained to effectively treat these difficulties. This training gap was discussed by Anderson et al. (1984) and Shapiro and Lentz (1985) over 30 years ago, but this caveat was not met with a concomitant increase in behavioral training within school psychology graduate programs despite well-documented increases in school-based behavioral problems (U.S. Department of Education 2014), and despite prominent members of the discipline eschewing traditional "test and place" models in favor of those incorporating behavioral interventions (Kratochwill 2006).

There is a problem with advocating for a behavioral problem-solving model in school psychology without also advocating for necessary behavioral training. Despite early researchers such as Shapiro and Lentz (1985) showing clear evidence of a training versus application gap, there has not been follow-up research to track the progression of programs to meet this need. NASP (2010) models established to direct practice clearly advocate data-based decision making (domain 1), consultation and collaboration (domain 2), interventions and supports (domain 3), life skill interventions (domain 4), school-wide practices to promote learning (domain 5), research and evaluation of program implementation (domain 9), and an ethical framework to embrace these practices (domain 10).

The alignment between the NASP practice domains and the BCBA task list, in combination with the current lack of comprehensive behavioral training in school psychology graduate programs, exposes an existing training gap in need of a solution. School psychology training programs should consider providing a stronger behavior analytic component that will enable program graduates to obtain the BCBA credential and more effectively and competently address the growing need for effective behavioral programming in schools. School psychologists who have obtained the BCBA credential will not only be able to improve outcomes for students but they will also be able to empower and train a variety of other school-based professionals, exponentially increasing student access to high-quality supports while keeping with the aspirational goals put forth by NASP.

Compliance with Ethical Standards

Informed Consent   Informed consent was not obtained since this study did not involve human subjects.

Ethical Approval   All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

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

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