A·B·A·I
Association for Behavior Analysis International

RESEARCH ARTICLE

Overcoming Barriers to Applied Research: A Guide for Practitioners

Amber L. Valentino[1] · Jessica F. Juanico[1]

Abstract

The research-to-practice gap is evident in many disciplines. This gap can be seen through practitioners failing to integrate the latest research findings into their work, and through the implementation of procedures that do not have empirical support. As the number of behavior-analytic practitioners grows, this gap is likely to become more salient. One solution to closing the gap is for practitioners to conduct applied research. This survey study aimed to identify specific barriers that practitioners face when conducting research, to identify how valuable conducting research is to practitioners, and to make recommendations to support research productivity in practice. We report results from survey questions about applied research and provide practical recommendations for practitioners to overcome barriers and to begin conducting research during their clinical work.

Keywords Applied research · Research barriers · Research productivity · Research review committee · Research-to-practice gap

Many professions have long acknowledged a gap between research and practice, including education (McIntyre, 2006), human resources (HR; Rynes, Colbert, & Brown, 2002), and psychology (Wandersman et al., 2008). This research-to-practice gap can be bidirectional, consisting of practitioners failing to implement the latest research findings into their practice, or practitioners implementing treatments that lack empirical backing. The former is most commonly acknowledged. For example, HR research suggests that the field should rely on intelligence and personality tests as predictors of employee performance; however, Rynes et al. (2002) found that HR practitioners do not rely on these tests, suggesting a gap between research and practice. The field of behavior analysis is no exception. This gap can be problematic, resulting in outdated practices and irrelevant research, and can consist of many components. These components may include practitioners failing to read the latest research articles or researchers failing to examine applied issues that will allow them to conduct research relevant to clinical practice. Kelley et al. (2015) attributed this gap to a large increase in the demand for services, resulting in an increase in the number of practitioners certified as Board Certified Behavior Analysts (BCBAs), whereas the

number of researchers in academic settings who are producing studies has remained very low. In the past 2 years, the number of BCBAs has grown exponentially. As of July 1, 2019, there were 34,471 BCBAs and 3,631 Board Certified Assistant Behavior Analysts (BCaBAs; Behavior Analyst Certification Board [BACB], bacb.com, retrieved July 1, 2019).

Most studies on the research-to-practice gap have focused on how to encourage practitioners to more readily consume the research literature and implement findings. For example, Goodfellow (2004) proposed a structured journal club designed to reduce barriers to utilizing research in clinical settings to improve nursing students' reliance on evidence-based practice. As an example, in the field of behavior analysis, Carr and Briggs (2010) proposed several resources in order for practitioners to make regular contact with the scholarly literature (e.g., organizing the bookmark panel on their web browser to minimize the effort associated with accessing important websites, creating a supportive social community). Efforts to support practitioners in consuming the literature should continue. However, another way to address the research-to-practice gap is to encourage practitioners to conduct research in the context of their clinical practice.

Kelley et al. (2015) proposed that for research to keep up with the issues faced in clinical practice, practitioners should readily conduct research during their daily clinical activities. To facilitate this productivity, Kelley et al. identified prolific practitioner-researchers in the field and interviewed them to create a list of recommendations. These recommendations included (a) arranging as much face-to-face contact with your peer

✉ Amber L. Valentino
avalentino@tbh.com

1   Trumpet Behavioral Health, 6475 Sierra Lane, Dublin, CA 94568, USA

researchers, collaborators, and research supervisees as possible; (b) using an economical, reliable, and safe method of data collection and, if possible, having staff members assist in data collection; (c) writing the results of your research collaboratively; (d) dedicating time to plan, conduct, or write the results of research on a regular basis (ideally each week); and (e) staying close to your project from the initial planning stage through article submission. The recommendations to practitioners by these authors are significant and represent the first of their kind in the field of behavior analysis; however, Kelley et al. noted that practitioners may still encounter barriers to conducting research, including limited resources, competing contingencies, the lack of a formal institutional review board, and rigorous methodology requirements that may not be feasible in clinical practice. Kelley et al. recommended that a next step in supporting practitioners to conduct research might be to survey practitioners "in a variety of applied organizations to inquire about the variables preventing research among employees and what could be done to increase research productivity among practitioners" (p. 206).

Therefore, the purposes of this study were to (a) identify specific barriers through a survey of practitioners in a wide variety of applied settings, (b) identify the value that practitioners place on conducting research, and (c) extend Kelley et al. (2015) by making additional recommendations for overcoming identified barriers and supporting research productivity among practitioners.

Method

Participants

This study included BCaBAs, BCBAs, and doctoral-level BCBAs (BCBA-Ds) presently employed in a clinical setting. Participants were recruited through voluntary sampling (Remler & Van Ryzin, 2011, p. 153). We recruited participants through the BACB's e-mail service, which is an e-mail contact list of all registered certificants. The e-mail was sent directly through the BACB.

The number of individuals who received the invitation to participate is unknown, as data tracking was not available. Therefore, a corresponding response rate was not calculated. Only those responses that were fully completed were included in the data analysis. A total of 834 (99.88%) participants agreed to participate in the study. One (0.12%) individual chose not to participate. Of those who participated, 824 (99.52%) were board certified, 4 (0.48%) were not board certified and ended the survey, and 10 skipped this question. Of those certified, 46 (5.58%) were BCaBAs, 658 (79.85%) were BCBAs, and 120 (14.56%) were BCBA-Ds. The majority of practitioners reported being certified for 5 years or less (i.e.,

31.50% between 0 and 2 years, and 35.16% between 3 and 5 years).

Nearly all practitioners (90.7%) reported that they serve individuals with autism spectrum disorder (ASD). A little over 85% of practitioners reported working with children 0–9 years old, and 71.9% reported working with adolescents 10–19 years old. Other practitioners reported working with individuals with intellectual and other developmental disabilities (62.3%), adults (19+ years old; 34.4%), and other (8.5%). Finally, most practitioners indicated that they worked for an organization with less than 100 employees (i.e., 43.93% between 0 and 50, and 14.39% with 51–100 employees); however, many respondents also reported working for an organization with more than 100 employees (i.e., 16.34% between 101 and 250, 10.34% between 251 and 500, and 14.99% greater than 500).

Instrumentation

A survey was developed by the two authors, both with experience conducting research in applied settings. This survey was designed within SurveyMonkey™ and consisted of 18 questions. The first five questions were demographic or focused on practitioners' work settings. We asked practitioners if they worked for a clinical organization. Those who responded yes moved on to complete the remainder of the survey. The survey stopped for those who responded no. The remaining 13 questions focused on experience with, motivation for, and barriers to conducting research. See Appendix 1 for the full survey.

Procedure

Invitations with the web address link for the survey were distributed via e-mail listserv through the BACB™. We opened the survey on October 8, 2018, and closed it on December 19, 2018. The last response we received was on December 7, 2018. Thus, the survey was open for 73 days.

Results

Characteristics of Organizations

Participants reported how their clinical organizations were organized, the research opportunities available to them, and how those opportunities influenced their job choice and commitment. These data are summarized in narrative form in what follows and are included in Table 1.

Opportunities provided by employers Participants reported the specific types of opportunities for research provided by their employers. Many practitioners (79.28%) indicated their clinical organization provided them the opportunity to present at a conference. Other opportunities included research mentoring and

Table 1 Summary of Responses to Questions About Clinical Organizations

Question Category	*n*	Percentage
1. Opportunities provided		
Present at conferences	241	79.28
Mentoring/supervision	216	71.05
Active research projects	165	54.28
Opportunities to write	153	50.33
Opportunities to publish	130	42.76
Regular research groups	85	27.96
Writing projects	71	23.36
Other	22	7.24
2. Time provided		
Yes	88	13.81
Yes, 0–10 hr/month	33	37.50
Yes, 11–20 hr/month	13	14.78
Yes, 20+ hr/month	15	17.05
Yes, other	27	30.68
No	549	86.19
3. IRB/RRC		
Yes	179	28.41
No	451	71.59
4. Long-term commitment		
Yes	383	62.38
No	95	15.47
Indifferent	136	22.15
5. Job choice		
Yes	213	34.80
No	399	65.20

supervision (71.05%), active research projects (54.28%), opportunities to write (50.33%), opportunities to publish (42.76%), regular research groups (27.96%), and writing projects (23.36%).

Research time provided by employers We surveyed whether practitioners' employers provided time for research outside of their clinical practice. A very high percentage (86.19%) of practitioners replied no. Of those who replied yes (13.81%), the number of hours their employers provided for research ranged from 0 to 10 (37.50%) to 20 or more hours (17.05%).

Institutional review boards / research review committees We hypothesized that one barrier to conducting research outside of a university setting might be the absence of a structured institutional review board (IRB) or research review committee (RRC). Thus, practitioners reported whether their organization had an internal structure to support the ethical review of research projects. The majority of practitioners (71.59%)

indicated they did not have this resource, and 28.41% indicated they did.

Research impact on long-term commitment to clinical organizations One survey question examined the extent to which the opportunity to conduct research influenced a practitioner's long-term commitment to an organization. The majority (62.83%) indicated that the opportunity did influence their long-term commitment, and 15.47% indicated it did not; 22.15% responded that they were indifferent about research opportunities.

Research impact on job choice Another question asked whether the opportunity to conduct research had influenced practitioners to accept a position. Some practitioners indicated the opportunity to conduct research did influence their job choice (34.80%), whereas 65.20% indicated that the opportunity to conduct research had never influenced their job choice.

Characteristics of Respondents (Practitioners)

Participants also answered questions related to the interests, values, and barriers of practitioners. These data are summarized in narrative form in what follows and are included in Table 2.

Respondents' involvement in research To obtain data on practitioners' current involvement in research, participants reported whether they had conducted research in their clinical organization and the type of research they conducted. The majority (68.17%) indicated they had not participated in research, and 31.83% indicated they had. Practitioners who indicated they had not conducted research moved on to the next main question (Question 12). Practitioners who indicated they had conducted research were asked four additional questions about the type of research they conducted. Of the practitioners who participated in research, most had presented at a conference (71.03%). About one third of practitioners had published research (30.95%), some had time provided for research (34.95%), and some had compensation for conducting research (34.63%).

Respondents' interest in research opportunities Practitioners reported their interest in research—that is, if they were interested in participating in research, and if so, in what way. The majority of practitioners indicated they were interested in conducting research, with 69.63% stating they would like to present at a conference, and 71.86% stating they would like to publish articles.

Barriers preventing research Our next question inquired about the primary barrier that kept practitioners from conducting research. Nearly half of all practitioners (47.58%) indicated a lack of time as the primary barrier. This barrier was followed by a lack of research mentorship available (12.58%) and a lack of opportunity (11.94%). Other barriers were noted by less than 10% of practitioners and included lack of interest

Table 2 Summary of Responses to Questions About Practitioners

Question Category	n	Percentage
1. Current involvement		
Yes, presented research	152	71.03
No, have not presented research	62	28.97
Yes, published research	65	30.95
No, have not published research	145	69.05
Yes, given time to conduct	72	34.95
No, not given time to conduct	134	65.05
Yes, given compensation to conduct	71	34.63
No, not given compensation to conduct	134	65.37
2. Interest		
Yes, interested in presenting at conferences	438	69.63
No, not interested in presenting at conferences	191	30.37
Yes, interested in publishing	452	71.86
No, not interested in publishing	177	28.14
3. Primary barriers (top 3)		
Lack of time	295	47.58
Lack of research mentorship	78	12.58
Lack of opportunity	74	11.94
4. Would conduct if no barriers existed		
Yes	520	83.87
No	49	7.90
N/A (I already conduct research.)	51	8.23
5. Importance		
Very important	120	19.58
Important	223	36.38
Somewhat important	210	34.26
Not at all important	60	9.79

(6.13%), lack of research community (5.32%), lack of knowledge (3.71%), lack of appropriate protections such as an IRB (3.39%), fear of making a mistake (1.29%), lack of research ideas (1.29%), and other (6.77%).

Practitioners identified the second barrier, and they also identified a lack of time (17.24%), followed by a lack of research community (15.93%) and a lack of opportunity (15.93%). The remaining secondary barriers included the same barriers identified as primary (e.g., fear of making a mistake), with approximately the same percentage of people identifying those as secondary barriers (i.e., 7.55%). Practitioners also had the opportunity to identify any other remaining barriers. These included competing contingencies (26.79%), lack of a research leader (13.21%), lack of support (12.14%), funding (7.86%), setting constraints (7.50%), trained staff/knowledge (5.71%), population constraints (4.64%), parent consent (3.57%), lack of appropriate protections (3.21%), lack of opportunities (1.79%), lack of access to a literature database (1.07%), personal barriers (1.07%), and new organizations (0.71%), and some noted no other barriers existed (10.71%). We also asked practitioners a simple question: Would you conduct research if no barriers existed? Most

(83.87%) responded yes, and 7.90% responded no. The remaining practitioners (8.23%) indicated that no barriers existed.

Importance of conducting research To gauge the overall value practitioners placed on conducting research, we asked one final question: How important is conducting research to you? Response options were along a 5-point Likert scale. The highest percentage of practitioners indicated it was important (36.38%), followed by somewhat important (34.26%), then very important (19.58%), and, finally, not at all important (9.79%).

Discussion

Most practitioners indicated that conducting research is important on some level, and they reported interest in publishing and presenting at conferences. Yet the majority had never conducted research in their work settings, and 14% of employers offered time to participate in research activities. Of the percentage that had participated in research, presenting at a conference was the most common experience. Possibly, many practitioners presented a study conducted at their place of employment that they may have had a small role or no role in, or presented generally about their organization at conferences, as a lower number of practitioners indicated they had actually participated in active research projects. These data suggest that our practitioner workforce is eager to participate and contribute, but despite this motivation, they have been unable to do so, and when they do, those experiences are limited.

There are many barriers that keep practitioners from conducting research, such as competing contingencies. If these barriers did not exist, an overwhelming majority of practitioners would conduct research in their clinical settings. The profile of individuals sampled in this survey is representative of the primary workforce within the field of applied behavior analysis: early career, certified individuals working for small organizations, specializing in the treatment of young children with ASD. This profile lends itself well to the integration of research into practice for several reasons. First, there are several research questions within the ASD population, across a variety of areas, that remain unanswered. Second, individuals with ASD have a variety of presenting symptoms, and as such, a variety of research questions are likely to be applicable. Third, early career behavior analysts, having just completed degree requirements, will be freshly familiar with experimental design, research processes, and unanswered questions in the literature. An early career behavior analyst might, for example, decide to extend his or her capstone project or master's thesis in an applied setting within the first year or two of graduation. In the following sections, we discuss the primary barriers that practitioners identified and propose recommendations to overcome them. All recommendations provided in this article can be found in Appendix 2.

Barrier 1: Lack of Access to an IRB/RRC

One large barrier that we hypothesized would prevent research in applied settings was a lack of access to an IRB or RRC. Indeed, 71.59% of practitioners noted this as a barrier. Luckily, our field has offered recent guidance on this topic. The present article offered concrete guidelines for establishing and maintaining an RRC within a human-services organization. Practitioners wishing to conduct research at their place of employment can follow the guidance in this article and successfully set up their own RRC. Some of these recommendations include recruiting external members to fulfill various roles and clear communication from the RRC chair to the organization about its purpose and the research process. The authors in the LeBlanc study also offer several resources for organizations to establish operational procedures and maintain day-to-day operations.

Barrier 2: Lack of Time

In addition to a lack of an IRB or RRC, practitioners noted several barriers they would need to overcome to conduct research in their work settings. The first and most common barrier was a lack of time. A lack of time can be a major barrier for any initiative, especially for BCBAs working in the ASD industry, as there are many competing contingencies. Some of these competing contingencies include a lack of compensation for research, necessary clinical activities (e.g., report writing), supervision responsibilities (e.g., overlapping sessions and providing feedback to a Registered Behavior Technician), and leadership responsibilities (e.g., meetings, responding to e-mail). However, a lack of time as a barrier can be overcome, even with these competing contingencies.

Paul Silvia, in his book *How to Write a Lot* (2017), dedicated an entire chapter to barriers that academics face to writing and publishing. Interestingly, the first he identified is a lack of time. His recommendations are ones that the authors of this article have followed over the years, which has resulted in research productivity within a clinical setting. Silvia recommended allotting time to write, instead of "finding" it, and creating a writing schedule and sticking to it (*really* sticking to it). Writing time should be treated like a meeting that cannot and does not get canceled. The primary author of this article began implementing an early morning waking schedule and wrote from 4:30 a.m. to at least 6:00 a.m., 5 days per week, for approximately 18 months. Although it took some initial training to transition to this schedule, the schedule resulted in a much higher level of productivity than her previous schedule of specifying "writing days" a few times per month. Although this schedule may not be feasible for everyone, the idea of setting aside time, regardless of what time, is of utmost importance. As Silvia noted, the key to this type of productivity is regularity, choosing small goals

that can be accomplished during the writing time, and maintaining a master task analysis of tasks that need to be completed on various projects. The second author of this article breaks down all writing tasks into small, manageable goals and graphs the cumulative number of tasks completed weekly. For example, when writing a manuscript, she divides the manuscript into different tasks (e.g., completing data analysis, formatting graphs, writing results for Participant 1). When breaking the manuscript into smaller tasks, the goal of writing and completing a manuscript seems more feasible. Finally, Silvia asserted that it is also imperative to remove distractions—if an individual carves out writing time and then gets engrossed in managing their e-mail account or reviewing social media content, the writing time will not be productive.

Another time-related barrier that practitioners likely face is when to physically collect data with participants. Students may be accustomed to collecting data during very discrete times—participants may come into a center or research facility on a regular schedule for the allotted time to participate. This is unlikely in applied work. Thus, we recommend that applied research questions be integrated into clinical practice. If the question is truly applied, then data collection can easily be integrated into existing clinical activities, such as overlaps and observations. This minimizes the need to carve out extra time, other than organizing, writing, and editing, which can be accomplished with the aforementioned strategies. Having an RRC is of utmost importance to ensure projects are truly applied and can be conducted during clinical service delivery. This arrangement is indeed possible and is how the authors of this article have conducted most of their research involving human participants within a large clinical organization.

Barrier 3: Lack of Research Mentorship and Lack of Opportunity

The next primary barriers reported were a lack of research mentorship and a lack of opportunity. It is quite possible that a BCBA might find him- or herself as the most senior or experienced individual in the organization but may not feel equipped to conduct research independently.

If no internal mentor can be identified, we recommend reaching out to mentors in the field. First, conduct literature searches on topics of interest and find out who are well published in that area. Next, send them an e-mail and ask if they would be willing to meet with you at a conference or schedule a call for guidance. Most researchers in our field will be excited to respond and provide that guidance and their expertise. You can also consider reaching out to academics to ask if they have any research opportunities available. Many researchers in academic settings may have a very small participant pool from which to collect data. Thus, they may be willing to mentor you in exchange for collecting data on participants at your organization.

Finally, the project would need to be approved by your organization's RRC and the university's IRB, but this arrangement is quite feasible. In fact, we have had several of these partnerships over the years, which has resulted in great learning opportunities and research publications (e.g., Heinicke et al., 2016). Access to participants and your willingness to collect data are often very appealing motivators in exchange for some research guidance, mentoring, and support. This may also increase the number of research opportunities available.

Barrier 4: Lack of a Research Community

This is a very legitimate barrier that practitioners may face. Particularly in a small organization, it may be difficult to identify others who are interested in or supportive of research efforts.

The main way to overcome this barrier is by creating your own community. You may start small with a collaborative project with a university and begin to integrate people into the project. The results of this study suggest that you are highly likely to have a community of practitioners interested in research that may experience the same barriers you do, even if they are not directly employed by the same organization. Thus, beginning to create a group of people who are supportive of research efforts and interested in learning could create a research culture where there had been none before. If your organization can support it, arrange for a volunteer research lab. It will be important, in most organizations, for individuals to fully understand the volunteer nature of the activity and to manage these extra tasks outside of their normal work responsibilities. However, many individuals might be willing to meet during off-hours to learn and contribute to the literature. Finally, if it is not possible to create this culture given your current work arrangement, explore other work settings that have an existing research culture and support.

Overcoming these barriers is clearly important, because nearly all practitioners indicated that they would conduct research if no barriers existed. Our research literature would grow significantly if even half of the practitioners currently not publishing would begin to publish. This increase in contributions to the literature would accelerate our knowledge at a rapid pace and help answer the many unanswered applied questions that currently exist and perhaps inform more basic and translational or bridge research (Carr, Coriaty, & Dozier, 2000).

With the strong desire to conduct research, we wondered how much this desire would impact practitioners' long-term commitment to an organization, and most practitioners indicated it did influence their commitment. This type of response may mean that practitioners will transition to a new company if their organization does not afford them opportunities to conduct research, if they can find another organization that does. If the opportunity to conduct research has a strong influence over this decision, practitioners may wish to try to create opportunities at

their organization or locate places of employment that do offer research opportunities. Employers may creatively seek ways to provide research opportunities to their workforce to positively impact recruitment and long-term retention. Although at first glance, it may seem to be a cost to employers in the form of nonbillable time, as outlined in this article, research can be integrated into clinical activities, and the other infrastructure (e.g., RRC) is of little to no cost to the organization. Interestingly, fewer individuals in our survey indicated that the opportunity to conduct research did not historically influence their decision whether to accept a position. This response could be indicative of the small number of organizations that offer research opportunities. Thus, the opportunity may not have influenced most because it likely did not exist among the organizations individuals were deciding among.

To conclude, we would like to make some other recommendations that we believe will help practitioners become productive researchers in applied settings. These recommendations are based on the authors' own experiences and observations of others who have been productive research practitioners.

Expand Your Research Opportunities

Thus far, we have primarily discussed collecting data in the context of clinical work and conducting data-based research studies. Although this is a great category of research, practitioners should expand their array of options for contributing. For example, many journals have outlets for brief reviews, treatment models, and recommended practice guidelines. There are excellent models in the literature of these types of contributions, many of which were written by practitioners working in the field (see Aguirre, Valentino, & LeBlanc, 2016, for an example of a literature review; Geiger, Carr, & LeBlanc, 2010, for an example of a treatment model; and Sellers, Valentino, & LeBlanc, 2016, for an example of recommended practice guidelines). Adding this kind of research to your agenda as a supplement to data-based studies or as a stand-alone focus can be helpful because it allows you the flexibility to work on it during your own time. You are not limited by participant availability, times for data collection, or participant dropout. Although this type of writing certainly requires a time commitment, practice, and focus, with the appropriate writing schedule and realistic goals, it absolutely can be accomplished.

Identify Clinical Problems and Ask Questions That Will Help You Solve Those Problems

Many of the problems that practitioners face in their daily clinical activities would make excellent research questions. For example, a client who has mastered mands for information using a variety of *wh*– forms but often makes errors— saying "where" when he should have said "when"—might lead a practitioner to ask the question "I wonder if there is a

procedure I can implement to help him discriminate across establishing operations?" As another example, you might notice that when teaching intraverbal behavior and presenting a discriminative stimulus and an echoic prompt, a client repeats both the discriminative stimulus and the response (this clinical problem occurred for the first author and was answered in Valentino, Shillingsburg, Conine, & Powell, 2012). When you ask those questions, go to the literature and determine if there is existing literature that will give you the answer. If there is not a clear answer in the literature, conduct the study. If some literature exists, replicate and extend that literature. If you are a supervisor, help your supervisees see their clinical problems as areas for investigation. Several years ago, the primary author was consulting on a case with the primary referral concern being pace of eating. Her mentor helped her see this as an extension of the existing literature on the topic of pace of behavior, and a study was ultimately published in the *Journal of Applied Behavior Analysis* on the case (Valentino, LeBlanc, & Raetz, 2018). What seemed to be a simple clinical consultation turned into a unique way to extend the literature while very effectively addressing the client's primary clinical concern.

View Research in Practice as Different From Controlled Lab Work

Practitioners who have recently entered the workforce may have a very strict idea about how research should be conducted. This likely stems from experiences with master's theses in graduate school, which often need to be very controlled and are focused on being an ideal learning opportunity for the student. In clinical practice, many variables influence data collection, participant enrollment, and completion. The data you collect may not be collected under perfectly controlled conditions. This does not mean the data are "bad" or cannot be used. It simply means you will need to control as many variables as you can, and for those you cannot control, you will need to describe the conditions for your readers. In many ways, research focuses on the story you tell about the data, and if the data demonstrate experimental control, it is up to you to describe the data in an interesting way that contributes to the literature. There will naturally be variability, and you will need to describe that variability, not avoid it or throw away a data set because it occurred. As an example, Veazey, Valentino, Low, McElroy, and LeBlanc (2016) published an article on teaching feminine care skills to females with ASD. There were several procedural changes that occurred over the course of that study, as the authors needed to be very flexible in their clinical approach. However, the last research article published on this topic had been published over 30 years ago,

and the authors knew what they had done would be helpful to the behavior-analytic community. The contribution was truly in the writing and the story about the updated procedures, the connection to autonomy and independence for this population, and the unique modifications the authors made to ensure success.

Be Patient

When conducting research as part of your clinical practice, you will inevitably have incomplete data sets. Families may relocate unexpectedly mid-data collection, or you might find that the procedure was implemented incorrectly by a team member or that the participant no longer meets the criteria for the study because the skill developed more quickly than you intended and it is no longer a clinical need. These are natural parts of clinical service delivery. The good news is that you do not have a timeline. You are not trying to graduate by a specific date or turn in a paper by a deadline. Research takes time, and you have that time. Be patient and continue to collect data with other participants who meet the criteria, or if the question does not apply to any of your clients, ask a different question.

To conclude, practitioners are motivated to conduct research during practice. This motivation, however, is met with some barriers. This article offered solutions to some of the common barriers acknowledged. It is our hope that practitioners wishing to conduct applied research will use this article as a resource and source of motivation to begin doing so. It is also our job as a behavior-analytic community to support practitioners in their research endeavors. Organizations that employ behavior analysts should consider ways to allow opportunities for research, and senior leaders in our field should determine ways to mentor and support practitioners. Our field will greatly benefit from these contributions in the form of answers to applied questions, a more research-engaged and connected practitioner group, and overall long-term career satisfaction. Importantly, these efforts are likely to bridge the research-to-practice gap that exists in our field.

Compliance with Ethical Standards

Appendix 1

Survey of BCBAs' Research Practices in Applied Settings

Introduction

Amber Valentino and Jessica Juanico of Trumpet Behavioral Health invite you to participate in a research study. The purpose of this study is to gather information regarding research activities in applied settings. This form includes detailed information about the study to help you decide whether to participate. Please read it carefully and be sure you do not have any questions before you agree to participate.

Procedures

You will complete a short survey about applied research. The survey is anonymous and it should take you less than 20 min to complete.

Risks and Benefits

There are minimal risks to participating in this survey study. Possible risks include discomfort completing a questionnaire that asks you about your experiences. Loss of confidentiality is also a risk in most research projects. To minimize those risks, no identifying information will be collected. If you have had a bad research-related experience, please contact the principal investigator of this study right away at avalentino@tbh.com. There is no direct benefit to you for your participation in this research study. This study will help the researchers learn more about the barriers to and opportunities for practitioners to conduct research in applied settings.

Confidentiality

Every effort will be made to keep the information you provide as part of this study confidential. Your information will be collected through SurveyMonkey™, which will keep your responses confidential. The information collected in SurveyMonkey™ will be securely stored in a restricted-access folder on Box.com, an encrypted, cloud-based storage system.

Voluntary participation and withdrawal Your participation in this research is completely voluntary. If you agree to participate now and change your mind later, you may withdraw at any time by not completing the questionnaire. If you choose to withdraw after you have already submitted the survey, withdrawal will not be possible as the questionnaire is anonymous. The research review committee (RRC) at Trumpet Behavioral Health has reviewed and approved this study. If you have questions about the research study itself, please contact the principal investigator at avalentino@tbh.com.

Informed consent Informed consent will be obtained on the subsequent page. Please be sure to retain a copy of this form for your records; you can save or print the letter before completing the survey.

Survey

1. **Informed consent:** If you agree to participate in this study, please acknowledge this by clicking on the appropriate selection below. In so doing, you indicate that you understand the risks and benefits of participation and that you know what you will be asked to do. You also agree that you have asked any questions you might have and are clear on how to stop your participation in the study if you choose to do so.

   a. I understand my participation is voluntary, all responses will be kept confidential, and I AGREE to participate.
   b. I choose not to participate. *(Logic ➔ End of survey)*
2. Are you a BCaBA, BCBA, or BCBA-D?

   a. Yes
   b. No *(Logic ➔ End of survey)*
3. Which level of certification do you hold?

   a. BCaBA
   b. BCBA
   c. BCBA-D
4. How long have you held your current certification (BCaBA, BCBA, or BCBA-D) with the Behavior Analyst Certification Board?

   a. 0–2 years
   b. 3–5 years
   c. 6–9 years
   d. 10+ years
5. Do you work in a clinical organization? If yes, identify the clinical population with whom you work. Select all that apply.

   a. Children (0–9 years old)
   b. Adolescents (10–19 years old)
   c. Adults (19+ years old)
   d. Autism spectrum disorders
   e. Intellectual and developmental disabilities
   f. No *(Logic ➔ End of survey)*
   g. Other (please specify)

6. How large is your clinical organization (i.e., number of employees)?

   a. 0–50 employees
   b. 51–100 employees
   c. 101–250 employees
   d. 251–500 employees
   e. 501+ employees

7. Have you conducted research while employed by your clinical organization?

   a. Yes
   b. No *(Logic ➜ Question 12)*

8. Have you presented your research that you conducted at your clinical organization at a conference?

   a. Yes
   b. No

9. Have you published your research that you conducted at your clinical organization?

   a. Yes
   b. No

10. Does your organization provide specific time for you to conduct research?

    a. Yes
    b. No

11. Do you receive compensation when conducting research at your organization?

    a. Yes
    b. No

12. Does your organization provide its employees opportunities to conduct research?

    a. Yes
    b. No *(Logic ➜ Question 14)*

13. Specify the type of research opportunities your organization provides. Select all that apply.

    a. Research mentoring/supervision
    b. Regular research groups
    c. Active research projects for employees to participate
    d. Writing projects for employees to join
    e. Opportunities to present at conferences
    f. Opportunities to write
    g. Opportunities to publish
    h. Other (please specify)

14. Does your organization provide its employees specific time to conduct research?

    a. Yes

    b. No *(Logic ➜ Question 16)*

15. How much time does your organization provide its employees to conduct research (please report in hours per month)?

16. Does your organization have an internal research review/ethics committee?

    a. Yes
    b. No

17. Are you interested in presenting research at a conference?

    a. Yes
    b. No

18. Are you interested in publishing?

    a. Yes
    b. No

19. What is the primary barrier that prevents you from conducting research? *(Drop-down menu)*

    a. Lack of time
    b. Lack of knowledge
    c. Lack of interest
    d. Lack of research community
    e. Lack of appropriate protections (e.g., IRB)
    f. Fear of making a mistake
    g. Lack of research mentorship available
    h. Lack of research ideas
    i. Lack of opportunity
    j. Other (please specify)

20. What is the secondary barrier that prevents you from conducting research? *(Drop-down menu)*

    a. Lack of time
    b. Lack of knowledge
    c. Lack of interest
    d. Lack of research community
    e. Lack of appropriate protections (e.g., IRB)
    f. Fear of making a mistake
    g. Lack of research mentorship available
    h. Lack of research ideas
    i. Lack of opportunity
    j. Other (please specify)

21. List any other barriers associated with conducting research in your applied setting.

22. If there were no barriers to conducting research within your clinical practice, would you do so?

    a. Yes
    b. No
    c. N/A (I already conduct research and there are no barriers to me doing so.)

23. If your organization provided some time for you to conduct research, would it influence your long-term commitment to the organization?

    a. Yes
    b. No
    c. Indifferent

24. Does/has an organization's opportunities for research influenced your job choice?

    a. Yes, it has influenced me to accept or not accept a position.

    b. No, opportunities for research have never influenced job choice.

25. How important is conducting research to you?

    a. Very important
    b. Important
    c. Somewhat important
    d. Not at all

Appendix 2

Summary of Recommendations

?

Barriers	Recommendations and Resources
Lack of protections (access to an IRB/RRC)	• Start an RRC (LeBlanc et al., 2018). • Explore work settings with an existing research infrastructure.
Lack of time	• Develop a schedule and stick to it. • Remove distractions during writing and thinking time. • Create a task analysis. • Identify small, accomplishable daily goals on each project (Silvia, 2017).
Lack of research ideas and lack of knowledge	• Use clinical practice as an opportunity to identify applied research questions. • Expand research opportunities (e.g., literature reviews, practice guidelines). • Identify problems in your clinical activities and ask questions to solve them.
Lack of mentorship and lack of opportunity	• Find an internal mentor. • Reach out to external mentors in the field with similar research interests. • Contact professionals in academia to identify opportunities for collaboration and mentorship.
Lack of research community	• Create a research community internally (e.g., volunteer research lab, reading group, journal club).
Fear of making mistakes	• View applied research flexibly (i.e., uncontrolled conditions, participant dropout). • Be patient (research in applied settings will take time).

References

Aguirre, A. A., Valentino, A. L., & LeBlanc, L. A. (2016). Empirical investigations of the intraverbal: 2005–2015. *The Analysis of Verbal Behavior, 32*(2), 139–153. https://doi.org/10.1007/s40616-016-0064-4.

Behavior Analyst Certification Board. (n.d.). BACB certificant data. Retrieved from https://www.bacb.com/BACB-certificant-data

Carr, J. E., & Briggs, A. M. (2010). Strategies for making regular contact with the scholarly literature. *Behavior Analysis in Practice, 3*, 13–18. https://doi.org/10.1007/bf03391760.

Carr, J. E., Coriaty, S., & Dozier, C. L. (2000). Current issues in the function-based treatment of aberrant behavior in individuals with developmental disabilities. In J. Austin & J. E. Carr (Eds.), *Handbook of applied behavior analysis* (pp. 91–112). Reno, NV: Context Press.

Geiger, K., Carr, J., & LeBlanc, L. (2010). Function-based treatments for escape-maintained problem behavior: A treatment selection model for practicing behavior analysts. *Behavior Analysis in Practice, 3*, 22–32.

Goodfellow, L. (2004). Can a journal club bridge the gap between research and practice? *Nurse Educator, 29*, 107–110. https://doi.org/10.1097/00006223-200405000-00008.

Heinicke, M. R., Carr, J. E., Pence, S. T., Zias, D. R., Valentino, A. L., & Falligant, J. M. (2016). Assessing the efficacy of pictorial preference assessments for children with developmental disabilities. *Journal of Applied Behavior Analysis, 49*, 848–868. https://doi.org/10.1002/jaba.342.

Kelley, D. P., Wilder, D. A., Carr, J. E., Ray, C., Green, N., & Lipschultz, J. (2015). Research productivity among practitioners in behavior analysis: Recommendations from the prolific. *Behavior Analysis in Practice, 8*, 201–206. https://doi.org/10.1007/s40617-015-0064-1.

LeBlanc, L. A., Nosik, M. R., & Petursdottir, A. (2018). Establishing consumer protections for research in human service agencies. *Behavior Analysis in Practice, 11*, 445–455. https://doi.org/10.1007/s40617-018-0206-3.

McIntyre, D. (2006). Bridging the gap between research and practice. *Cambridge Journal of Education, 35*, 357–382. https://doi.org/10.1080/03057640500319065.

Remler, D. K., & Van Ryzin, G. G. (2011). *Research methods in practice: Strategies for description and causation*. Thousand Oaks, CA: Sage Publications.

Rynes, S., Colbert, A., & Brown, K. (2002). HR professionals' belief about effective human resource practices: Correspondence between research and practice. *Human Resource Management, 41*, 149–174. https://doi.org/10.1002/hrm.10029.

Sellers, T. P., Valentino, A. L., & LeBlanc, L. A. (2016). Recommended practices for individual supervision of aspiring behavior analysts. *Behavior Analysis in Practice, 9*, 274–286. https://doi.org/10.1007/s40617-016-0110-7.

Silvia, P. (2017). *How to write a lot*. Washington, DC: APA Life Tools.

Valentino, A. L., LeBlanc, L. A., & Raetz, P. B. (2018). Evaluation of stimulus intensity fading on reduction of rapid eating in a child with autism. *Journal of Applied Behavior Analysis, 51*, 177–182. https://doi.org/10.1002/jaba.433.

Valentino, A. L., Shillingsburg, M. A., Conine, D. E., & Powell, N. M. (2012). Decreasing echolalia of the instruction "say" through use of the cues-pause-point procedure. *Journal of Behavioral Education, 21*, 315–328. https://doi.org/10.1007/s10864-012-9155-z.

Veazey, S. E., Valentino, A. L., Low, A. L., McElroy, A. M., & LeBlanc, L. A. (2016). Teaching feminine hygiene skills to young females with autism spectrum disorder and intellectual disability. *Behavior Analysis in Practice, 9*, 184–189. https://doi.org/10.1007/s40617-015-0065-0.

Wandersman, A., Duffy, J., Flaspohler, P., Noonan, R., Lubell, K., Stillman, L., & Saul, J. (2008). Bridging the gap between prevention research and practice: The interactive systems framework for dissemination and implementation. *American Journal of Community Psychology, 41*, 171–181. https://doi.org/10.1007/s10464-008-9174-z.