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Changing Course through Collaboration

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I agree with Vyse's (2013) argument that becoming more mainstream will require openness to new methods and a careful examination of how the next generation of scientists is to be trained. However, I do not believe that turning away from behavior analysis to become a generalist is the answer, nor do I think that sufficient action can be taken by any individual scientist. To achieve the most mainstream relevance, we must take systemic action by increasing our connections and collaborations with others. We must seek out individuals from other perspectives and listen to what they have to say, integrate between- and within-subject designs, and train the next generation of behavior-analytic scientists to be collaborative specialists. We can act in these ways without turning away from behavior analysis as a discipline.

Increasing Collaboration

Increasing collaboration will require listening to individuals from other disciplines. As noted by Vyse and others, seeking outside perspectives tends to be a weakness for behavior analysts. Our technical language may isolate us from other disciplines. This language allows us to convey very precise meanings within our community, but it is a barrier to communicating effectively with others (e.g., Hineline, 1980; Jarmolowicz et al., 2008). To collaborate with others effectively, we must be able to translate our principles and practices into language that other verbal communities will understand.

This translation can be more challenging than it appears. For example, I started a collaborative teacher-training program with our local school district several years ago. The program was designed to provide teachers with courses and experiences to be eligible for certification by the Behavior Analysis Certification Board. The courses were tailored to the needs and experiences of teachers (for a more complete description of the program, including teacher perspectives, see St. Peter Pipkin, 2009). I thought that my experience in conducting school-based research would provide a solid foundation for translating basic behavioral principles to understandable educational applications. Yet, as the program progressed and I had the opportunity to interact extensively with the teachers, I was amazed at how little I really knew about the issues they faced on a daily basis. These were issues of behavior. Despite the clear relevance of behavior analysis to these problems, the teachers and I had to work together to find language that clearly explained the links between basic science and real-world application.

I remain convinced that I learned every bit as much as the teachers did from the training program. My graduate students and I did not just want to impart our wisdom to the teachers; we wanted to listen and work together to use behavior-analytic tools to solve the problems in their classrooms. This collaborative arrangement produced a group of highly trained teachers who use behavioral principles as ''insiders'' in schools. In fact, the school district hired some of these teachers in new positions that

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were explicitly designed for behavioral experts, positions that did not exist before our program. These teachers knew the issues that were most important to other educators and were able to translate behavioral research into language that was easily understood by educational professionals.

Despite all my training as a behavior analyst and years of working in public schools, I could not have created this understanding on my own. I needed the help of specialists who were fluent in issues important to, and the language of, my target population. The teachers were able to create powerful behavior-analytic interventions and present them in way that was acceptable and understandable to other educators. Interaction with the teachers also resulted in new avenues of research for my laboratory because we were able to identify issues that the teachers thought challenged a behavioral approach (e.g., Pence, St. Peter, & Tetreault, 2012).

Researchers in the experimental analysis of behavior could initiate similar collaborations to increase their mainstream relevance. Vyse provides an excellent discussion of how behavior-analytic work in delay discounting gained mainstream attention. He argues that the work had three key features; all three could be established through collaboration. First, delay discounting challenged traditional conceptualizations of the phenomenon. Second, discounting was a pervasive effect that did not require steady-state performance and was easy to demonstrate. Third, discounting targeted a problem associated with socially relevant behavior. Vyse argues that Herrnstein and colleagues were uniquely poised to take advantage of these features because they spoke multiple ''languages''; they were able to translate their findings into mathematics and economics in a way that was immediately meaningful to scientists in those disciplines.

How can we use discounting as a model for making basic science more mainstream? Vyse states that scientists must find research areas that have implications for important social problems through good fortune and broad training in a variety of disciplines. According to Vyse, scientists must also relate this research to the work of those who use other methods. Breadth of training seems to be at the heart of both suggestions; Vyse seems to argue that behavior analysts should be trained to be generalists and makes specific arguments about training in a variety of within-subject and between-subjects methods. The latter is certainly important in the current culture of grant funding. However, to achieve the kind of interdisciplinary knowledge necessary to replicate the relevance of discounting, broad training would be required in a variety of disciplines, not just in between-subjects research designs.

I believe that broadening the scope of our training to include many varied perspectives would weaken the training of behavior-analytic principles and procedures. There is only so much time available in graduate training programs, and students already have a daunting number of skills to master within that time. As Critchfield (2011a) suggests, we should ''be as broadly educated as time allows but do not attempt to master everything. You can't'' (p. 141). Increasing the scope of our training may have the long-term impact of weakening our science rather than strengthening it by turning our students into ''jacks of all trades, but masters of none.''

An alternative to generalist training is to actively engage individuals with different backgrounds than our own (both within and outside the field). Collaboration with specialists from other disciplines would increase the likelihood that our research would challenge traditional conceptualizations of behavioral phenome-

na, effectively increasing our "luck" at stumbling on "a line of research that challenges a cherished notion in another discipline" (Vyse, p. 127). Collaboration with others also naturally increases the relation of our work to the work of scientists from other laboratories who use other methods.

Work in collaborative teams allows basic scientists to see how the principles of behavior operate in other contexts. We have already seen the fruits of these kinds of collaborations in fields like behavioral pharmacology, behavioral economics, behavioral neuroscience, behavioral medicine, and positive behavior support. An added benefit of successful collaborations is that all parties learn new skills. The behavior analyst leaves the experience knowing more about pharmacology, economics, neuroscience, medicine, or education, and probably learns new methodological skills, even if they are not an expert in any of those domains. The other collaborators gain knowledge and appreciation of the power of behavior-analytic approaches and the possible applications of these approaches to their fields. They may contact journals with which they had little or no previous exposure (e.g., the *Journal of the Experimental Analysis of Behavior*). They may also come away with a greater appreciation for within-subject research designs and how those designs can be integrated into traditional group studies so that phenomena of interest can be examined at the level of the group and the individual. All of these attributes contribute to the sustainability of behavior analysis as a field.

Basic researchers should collaborate not only with individuals from other disciplines but also with researchers in applied behavior analysis. Behavior analysts have discussed the apparent divergence of basic and applied sciences for several years. This divergence may be the foundation for Vyse's suggestion that basic scientists attend conferences like the Association for Psychological Science instead of the Association for Behavior Analysis International (ABAI), which Vyse laments is a "sea of applied professionals" (p. 131).

Applied behavior analysts still have much to learn from basic research. Several areas of inquiry are gaining attention in applied research because of the implications discovered through highly controlled research with nonhumans. For example, the reemergence of problem behavior after successful intervention may be explained through a phenomenon called *resurgence,* which has received considerable attention in the experimental analysis of behavior (e.g., Lattal & St. Peter Pipkin, 2009). There is also emerging interest in how transitions between environmental events can disrupt behavior (e.g., Pilgrim, 2011; Williams, Saunders, & Perone, 2011), a finding that originated with nonhumans in highly controlled experimental contexts (e.g., Perone & Courtney, 1992).

It would be a mistake to split an organization like ABAI on the distinction between *basic* and *applied.* Instead, we (both basic and applied researchers) should use ABAI as a means of building new collaborations. ABAI could facilitate these collaborations by creating a series of invited presentations or panel discussions that include basic and applied scientists who are interested in similar issues. Collaborations may also emerge when basic and applied scientists attend single-track conferences that include a mix of presentations from both subdisciplines.

Learning a Variety of Methods

There have been recent calls to increase the scope of our methods to include more group designs (Vyse, 2013) and humans as subjects (Critchfield, 2011b). These changes in method, however, may not be sufficient to improve the relevance

of our science to mainstream society. In my opinion, methodological issues were best captured by Vollmer (2011), who advised that "we should not let the cart drive the horse" (p. 33) when it comes to our methods.

We are guilty of putting the cart before the horse in many instances. Vyse uses self-report as an example of an "elephant in the living room" (p. 130). Yet, self-report and the correlated behavior listed by Vyse may not be the best examples of understudied topics. There are several behavior-analytic evaluations of self-report (e.g., Israel, 1978; St. Peter, Montgomery-Downs, & Massullo, 2012; Wilson, Rusch, & Lee, 1992), and many of the related topics deal with choice, a vibrant area of basic research.

Self-report and choice are certainly valid areas of behavior-analytic study. However, we should expand our research agendas beyond self-report. We should include other socially important problems that we may have ignored due to our reliance on within-subject methods and easily observable behavior, including low-frequency responding and prevention of problem behavior, among others.

Low-rate high-intensity responses are extremely important to society; just one example is the recent increase in school shootings. Although there is limited research on the assessment of low-rate behavior (which targets responses that occur about twice per hour; Kahng, Abt, & Schonbachler, 2001), further understanding of the environmental causes of intense low-frequency behavior would certainly garner substantial public attention.

Behavior analysts have also talked about prevention. Iwata (2012) recently discussed how to prevent severe problem behavior. In addition, a search for *prevention* in the *Journal of Applied Behavior Analysis* reveals several articles. However, few of these studies actually measure prevention, which presumably would require comparison across groups who received the preventive environmental change and those who did not. In the few studies that have used this kind of comparison (e.g., Mayer, Butterworth, Nafpaktitis, & Sulzer-Azaroff, 1983), the participants or organizations were already engaging in the undesired behavior at the start of the study, suggesting that the studies actually treated an existing problem rather than truly preventing behavior. Yet, prevention of behavior like overeating (obesity) and abusing controlled substances should be areas in which behavior analysts can make substantive contributions. To study issues like prevention of behavior, we must be willing to use designs that are appropriate for the problem.

Expansion into understudied areas may allow behavior analysts to combine traditional group (between-subjects) designs with within-subject designs. Description of within-subject design outcomes primarily in group-design publications may increase the acceptability of within-subject research in nonbehavioral journals. One barrier to combining group and within-subject designs is that many behavior analysts are not well versed in the intricacies of making valid group comparisons (however, as Branch, 1999, noted, this issue may not be limited to behavior analysts). The current grant-funding culture, which highly favors traditional group comparisons over within-subject evaluations, may provide strong contingencies for learning these skills. However, established researchers may simply not have the time to master entirely new skill sets. In many ways, adopting and blending these within-subject and group experimental designs may depend on how we train the next generation of scientists.

Training the Next Generation of Behavior Analysts

Training the next generation of behavior analysts may be the most

important thing that we can do to reshape the future of the field. There have been several suggestions for how young scientists could be as productive as possible (e.g., Critchfield, 2011a), and I agree with much of what has already been suggested. The development of high-quality training programs that poise graduates for success will be the start to iterative change in the science.

How should we change our graduate training programs? Vyse seems to argue that training should not occur in dedicated behavior analysis training programs that are dominated by behavior-analytic faculty. In my opinion, we should retain strong, dedicated behavior analysis programs instead of integrating those programs. High-quality training may be less about whether the program is dedicated to behavior analysis or integrated with other disciplines. Instead, we should work to ensure that our students are exposed to other perspectives and are required to interact meaningfully with individuals with diverse backgrounds and training. This requirement is not unique to behavior analysis; all scientists need to be exposed to alternative ways to solve similar problems.

An additional reason to retain strong behavior analysis programs is that students who come from those programs are likely to be highly skilled in the principles of behavior and the application of those principles. We must add to these programs direct instruction and practice in talking about our science using accessible language. Our graduate training programs should have explicit requirements for learning to communicate effectively with individuals outside our discipline. This must be done in a more systematic way than having someone who is not a behavior analyst sit on thesis and dissertation committees. Instead, we must teach our students to collaborate with scientists and practitioners from other areas. Combining these skills with the knowledge necessary to evaluate group designs should make our students valued contributors to collaborative research endeavors.

Conclusions

If these issues are as important to our field as they seem to be, then why have we not already substantially changed our nonverbal behavior? To some extent, our nonverbal behavior *has* changed to align with our stated goals. We have developed translational sections of journals and books (e.g., *APA Handbook of Behavior Analysis*). We have continued to publish in an array of behavioral and traditional journals. We have attempted to train our graduate students in a way that makes them competitive for positions after graduation. However, these behaviors have not yet resulted in mainstream relevance.

Vyse argues that the lack of change may be political, based on "defending that grand theory and the methodological strategies that built it" (p. 129). I do not think that reactions in favor of the support of current practices are political in nature. Established researchers have a long reinforcement history for behaving in accordance with existing traditions. This behavior occurs "at strength," and it will require powerful reinforcement contingencies to change it. It is unlikely that established researchers will be willing or able to learn entirely new skill sets. However, those researchers could contribute meaningfully to collaborative projects (in fact, many already are doing this). The reinforcement history for established researchers is perhaps the most important reason to focus on changing how we train the next generation of scientists; we do not have to compete with their reinforcement histories but rather can shape the collaboration and communication skills that we think are important for the future of the field.

I agree with the core of Vyse's argument, but perhaps not all the

details. Behavior analysts should be open to the study of topics that are of interest to other disciplines, including (but not limited to) self-report. We should use group designs in our research when the research question calls for it. Our students should be trained to evaluate, if not create, group experimental designs, but should remain specialists in the analysis of behavior–environment relations.

To accomplish these goals, we must talk with people in other disciplines, but more important, we should listen to them. Exposing ourselves and our students to other perspectives is perhaps the most viable and important action that we can take to improve our science. To do so does not require turning away from behavior analysis, but it does require an appreciation for approaches that differ from our own. Only when we actively behave in multiple ways will we attain the mainstream relevance about which we have spent so much time talking.

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