

Behaviorism Died Today, Again!

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Behaviorism is dead! Or so I have been told. Repeatedly! Reports of its death even extend to my daughter. When her Educational Psychology professor discovered her father was a psychologist, he asked "What kind?" When she indicated that I was a behaviorist, he responded "Oh how dreadful! They are all dead." My daughter knew I was still alive, and she also knew that I had many behavioral friends who were also still alive. And they had students! Her response to the professor was to write a term paper that, among other objectives, showed that behaviorism is still alive and well and doing very useful empirically validated work in his field. I wish I could reproduce that term paper here as it would save me some work in composing this column and in reporting that I have learned not to wake up every morning and read the obituaries in the latest journal to find out whether my professional interests have finally met their demise. Fortunately for me, these obituaries are not written by people who publish in the journals that I regularly read. The authors in these journals continue doing new and interesting things that advance the field and contribute to human well-being, unaware this work is not supposed to happen.

Let me assure you that behaviorism in general and behavior analysis in particular is alive and well, both within the American Psychological Association through the work of Division 25 and other related divisions, and in other organizations such as the Association for Behavior Analysis International (ABA) and the Association for Behavioral and Cognitive Therapies (formerly AABT). ABA, for example, started as a small regional organization of approximately 200 members with a conference in Chicago in 1975. Many others involved in behavioral work belong to affiliated organizations around the world. Today, ABA draws participants from around the world, has 4,300 members and continues to grow. ABA also sponsors an international conference every other year, with recent conferences so far in Italy, Brazil, and China.

If there is a sense in which behaviorism has died, it is that its progeny have ceased to focus solely on basic learning processes with rats and pigeons in the laboratory but have branched out into so many fields. Who among you does not understand the importance of behavior as the basic data in our field, whether it is a rat bar pressing, a student learning to read, or a college student in an experiment on priming and implicit memory? Can any of you honestly say you have never used reinforcement or extinction with your children or your students? Behaviorism will always be alive and well as long as its contributions to our understanding of behavior continue to be used. And used it is, with examples of behavioral techniques incorporated broadly into the work of a wide range of members representing a broad array of APA divisions.

Many of you will certainly be aware that the use of behavioral techniques played a major role in integrating individuals with developmental disabilities into society, allowing them to be mainstreamed in public schools or employed through sheltered workshops instead of being housed in state institutions, as was so common in the past. Given the growth in the number of children diagnosed with autism spectrum disorder, you may also be aware of the critical importance of applied behavior analysis as the only empirically validated technique in the treatment of these individuals. You will undoubtedly also know about systematic desensitization and other extinction-based therapies in the treatment of phobias. Token economies, contingency contracting, and a variety of other behavioral techniques have been empirically validated and are widely used in clinical prac-

tice today. You may even be aware of Acceptance and Commitment Therapy and other therapies that have been developed based on behavioral extensions of Skinner's analysis of verbal behavior or the work of Steve Hayes in developing Relational Frame Theory as a behavioral account of complex verbal relationships.

But there are other applications of which you may be less aware. Consider the behavior of animals in zoos. Typically, if you go to a zoo on a nice summer afternoon, you may be lucky to see some of the animals. They may be hiding in the shade or taking a nap. In other words, the animals may be rather passive, and you may not see much behavior. In the case of predators, their "predatory" behavior consists of waiting for the zookeeper to dump some food in their vicinity. When behavior analysts have become involved in zoos, the animals have become more active as the food may be contingent on something resembling more natural predatory behavior by making them chase and catch their food, an "animated" prey, rather than simply having it dumped in front of them (Markowitz, 1978). This not only is more interesting for visitors, arranging for greater levels of activity may also be good for the health and well-being of the animals. In addition, the use of aversive control is reduced, and the use of positive reinforcement becomes much more prevalent. Consider, for example how elephants have sometimes been managed in zoos in the past. When the zookeepers need to clean the elephant's area, they may have used fire hoses to force the animals back. But of course it is a simple matter to teach an elephant to move back on cue using positive reinforcement, with an added benefit that the elephants and the zookeepers may have much better relationships! If any of you have visited Shedd Aquarium in Chicago, or similar facilities elsewhere, you may have witnessed the result of training marine mammals to engage in various entertaining routines. But in addition to captivating an audience, the training also includes reinforcing marine mammals to roll over on their backs so that their temperature can be obtained and engage in other behaviors that facilitate routine health care. The simple use of reinforcement techniques arranges for animals to participate cooperatively in their health care, rather than resisting it. Given the success of behavioral techniques in zoos, perhaps it is time to consider taking your pet to see a behavior analyst. (Yes, we do that too!)

You may be aware of the close linkages between Division 25 and Division 28 (Psychopharmacology and Substance Abuse), because behavioral techniques have been of critical importance in assessing the behavioral effects of psychoactive drugs. You may not even know of the importance of behavioral contracting in obtaining striking outcomes in treating substance abuse. You may be even less aware of work that occurs in behavioral toxicology, where behavioral techniques are used to assess the possible behavioral and cognitive deficits that may be caused by potential neurotoxins. You probably are not aware that operant conditioning and "Schedule-Controlled Operant Behavior" are part of detailed EPA guidelines that manufacturers must follow under the Toxic Substances Control Act or other acts regulating the use of pesticides. In fact, operant techniques played a critical role in the removal of lead from products.

In the field of education, behavioral techniques play an important role in classroom management and instructional techniques that are based on evidence of effectiveness. "No Child Left Behind", for whatever its shortcomings, has had several important impacts that fit well with the applications of behavior analysis to education. The first is

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the promotion of evidence based, empirically validated approaches to instruction that characterize our work through techniques such as Direct Instruction and Precision Teaching. Precision Teaching, for example, focuses on the rate at which a behavior occurs, rather than a more typical measure such as percent correct. Response rate is a key variable in fluency. Jack Marr, a former President of Division 25, has even adapted Precision Teaching for use in the Engineering Program at Georgia Tech. Marr noted that despite having average SAT scores in the mid-1300s, only about half of Georgia Tech students pass the beginning engineering courses, a figure that is common nationally. In analyzing the problem, Dr. Marr found that many students who failed did the work correctly but did not complete all the problems on the test. He then instituted a program that had two features. He taught students the frames in which typical engineering problems fit, and how to solve problems that fit that frame. Secondly, reinforcement was based on response rate in working problems, increasing the likelihood that students would complete all of the problems on the exams. This program had a significant impact on retaining students in engineering, reducing the fail rate by half.

A second feature of "No Child Left Behind" is a focus on the individual child rather than the average student typically used in measures of school performance. If you live in a wealthy school district with high per pupil expenditures, does it really matter whether the average student does well if one student has not learned how to read by the third grade? With its focus on the individual and single-subject research designs, behavioral approaches are well suited for such cases. Consider how a reading program might be developed using programmed instruction moved forward to the Internet age, with everything we have learned about effective instructional design incorporated into the program and with the program thoroughly researched before it is made available for use. Consider also a reading program that can track student progress through every mouse-click as the student progresses through the reading program, generating more than 2,000,000 data points thus far. Visit www.headsprout.com to see such a program in use. Sign up for the free sample lesson, and let me know if you think this program would maintain the behavior of the beginning reader!

A number of School Psychologists in Division 16 and the National Association for School Psychologists (NASP) rely heavily on behavioral techniques in consultation with teachers and parents in solving student problems in our schools. Behavior analysts have also set up schools that rely heavily on behavioral approaches to education and on obtaining data on instructional effectiveness with each child. Examples of such programs are the work of Kent Johnson at Morningside Academy in Seattle, Charles Greenwood and others at Juniper Gardens in Kansas and the work of Douglas Greer at Columbia Teachers College. Behavioral programs have been shown to produce success for groups of at-risk students who often fail in the typical classroom.

Behavior analysts have also been very active in working with businesses and organizations. Such work in Organizational Behavior Management may involve more effective approaches to employee training or the effective use of reinforcement and feedback to enhance productivity. Particularly noteworthy is work on Behavioral Safety Programs, because such work deviates significantly from traditional approaches to safety in the workplace. Traditionally, industry has relied on measures of low-incidence behaviors such as work place injuries. But of course, once injuries have occurred, it is too late. It is better to have a program that focuses on injury prevention through teaching and monitoring safe work practices, to prevent injuries thorough reinforcement and feedback of safe practices.

While I have largely focused on applications thus far, I would be remiss if I did not indicate the strong linkages between basic research

in behavior analysis, applied behavior analytic research, and the important work in behavioral service delivery. The members of Division 25 are perhaps unique in the strong linkages and integration that occurs between basic research, applied research, and service delivery. In fact, while Division 25 is classified as a "science division" and works closely with the Science Directorate of APA, we also have a significant percentage of our members pay the special practice dues assessment and we also work closely with the Practice Directorate. Several years ago, Division 25, working cooperatively with Division 33, ABA and AABT, developed a Behavioral Specialty that was approved by APA Council.

But let me assure you that both basic and applied research remain active and vibrant today. A significant development regarding basic research is the role that quantitative models play, largely as the result of research on choice behavior and on behavioral economics, potentially generating a paradigm shift in the way we look at fundamental characteristics of behavior (Baum, 2000). In fact, the Society for the Quantitative Analysis of Behavior (SQAB) was formed specifically to serve as a forum for quantitative work in behavior analysis. Likewise, much recent work has focused on complex stimulus relationships, such as that exemplified by conditional discriminations and stimulus equivalence (Sidman, 2000). While the Partial Reinforcement Effect (PRE) has been around for years, recent developments in behavior analysis have encompassed this effect in a much broader phenomenon as resistance to any change, not just a change in the reinforcement schedule. Resistance to change is expressed theoretically as *behavioral momentum* (Nevin and Grace, 1999). Finally, among many other possible examples, work in the self-control paradigm and in behavioral economics has led to considerable work on the subjective discounting of rewards provided after a temporal delay (Myerson and Green, 1995).

For those who would like a slightly different approach to the work I have described here, you may also enjoy reading an excellent Presidential Column by Roddy Roediger in the 2004 *APS Observer*. For APS members, the column can be accessed at http://www.psychologicalscience.org/members/login.cfm?end_location=/observer/getArticle.cfm?id=1540. Additional information about many of the applications I have described can be found at the web site for the Cambridge Center for Behavioral Studies (<http://www.behavior.org>).

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