

COMMENTS ON THE FUTURE OF APPLIED BEHAVIOR ANALYSIS

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Kunkel's suggestion that the obvious change in applied behavior analysis over the last 20 years is a decline in the enthusiasm with which we describe our research is both disturbing and challenging. Some research published in the *Journal of Applied Behavior Analysis* has addressed problems that I consider to be extremely significant, for example, children's hitting their heads until they inflict serious damage (Lovaas & Simmons, 1969). Other research has dealt with normal subject populations, for example, adult male and female plastics workers (Hopkins et al., 1986). Some research has taken place in ordinary settings including homes (Wahler & Dumas, 1986), and some has even compared the effectiveness of treatments in the different cultures of Canada and Israel (Van Houten et al., 1985).

If no major changes in the principles of behavior have resulted from applied behavior analysis, practical requirements have led to interesting recombinations of principles such as those useful to produce generalization of responding (Stokes & Baer, 1977). Nevertheless, I judge that Kunkel correctly concludes that *JABA* was, and continues to be, largely devoted to research with one or a few limited behaviors of a few special populations in institutional settings. I am not sure that we now describe the research published in *JABA* less enthusiastically than we did 20 years ago. Nevertheless, I have observed that many applied behavior analysts are less enthusiastic about their work and the field than they were 20 years ago.

I will respond to Kunkel's challenging analysis by assuming that there has been a general decline

in enthusiasm and by arguing that the decline is related, not to a continuing emphasis on one or a few behaviors of a few special populations from institutional settings, but primarily to our failure to take into account certain limitations on the adoption of our technology. This argument can be subsumed under Kunkel's observations and may help explain them. It leads to a few suggestions that are related to, but more specific than, Kunkel's and to a few additional suggestions about how we can perhaps develop more useful work with special populations that are heavily dependent on government assistance.

Applied behavior analysts have focused primarily on problems that are responsibilities of government agencies for several reasons. A large proportion of our early applications was for people with special problems because many of us were psychologists and those were the people and problems that we knew best. Moreover, some of the things we did—for example, consistently turning our backs and walking away from a crying child (Williams, 1959) or ignoring an institutionalized mentally defective woman when she came by the nurses station to ask what time it was (Ayllon & Michael, 1959)—were, at first glance, treatments that might be tolerated only for subjects for whom everyone had little hope, especially considering that our technology was unproven. We also initially focused much of our energy on people with special problems because a large percentage of us are humanitarians; we are particularly likely to try to help the poor, the neglected, the young, the hopeless, the dependent—the people whose problems will be addressed with government funds if at all.

The early emphasis of applied behavior analysis on people with special problems was closely followed by the optimistic social programs of the Kennedy and Johnson administrations. Government initiatives led to large sums of money for care,

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training, and research aimed at populations dependent on government assistance. The government funding also led to jobs in government institutions for the people coming out of behavioral graduate programs. These forces worked together to cause us to be heavily committed to the special problems that are usually the province of government agencies.

Why should the fact that we have developed technology for people who are heavily dependent on government agencies contribute to a lack of enthusiasm? Has our work been unsuccessful? Have our principles been inadequate so that technology derived from them has been unequal to the job? There have been some technological failures; however, the most important source of our current disappointment is the fact that our technology has been successful in changing the behaviors of the special populations *but* government service agents have not widely bought or used our technology.

I will illustrate this argument with a brief description of a personal odyssey. When I began working in what has come to be called applied behavior analysis in 1965, the principles of behavior were reasonably well explored. Their generality was considerable. The collections of principles appeared to cover the behavior–environment interactions of interest in just about all other theories and even gave good clues about the reasons for the limits of the other theories. Keller and Schoenfeld (1950) and Skinner (1953) had only speculated about the applicability of the principles to important human behaviors, but their speculations were much more rational than the collection of inconsistent mentalistic speculations that I had learned from clinical psychology.

The early applied behavior analysis research (e.g., Fuller, 1949; Williams, 1959; and, particularly, Ayllon & Michael, 1959) provided clearer guides to lead us beyond speculations. Many variables controlling important human behaviors were environmental events; therefore, they were observable. Because they were observable, we could learn progressively more about their interactions with behaviors. The controlling environmental variables were often relatively current rather than buried in

some dark past. Therefore, we could more easily discover them and do something about them. Many important controlling variables were commonplace. Because they were commonplace, anyone might manipulate them. We could change behaviors so that people would be better off. Perhaps everyone could change just about all important behaviors.

Heady possibilities? You bet! Surely, we were going to use the controlling environmental variables to cure a sizeable percentage of psychotics. We were going to help the retarded be more skillful, perhaps some of them so skillful that the retardation, if it had meaning outside of skill, would not be limiting. We were going to better educate children and college students. We would train and empower the disenfranchised. Surely, after getting more experience, we would raise unidentically creative but consistently bright and happy children. The people of the world would see the usefulness of the technology, hasten to learn about it and the principles of behavior, and join in the efforts. Who would not be enthusiastic about the possibilities? The world was going to become a better place. That was the source of the enthusiasm that Kunkel found in the first issue of *JABA*.

A portion of my early enthusiasm was devoted to changing the behaviors of a group of long-term psychotics so that they could leave Kalamazoo State Hospital. That effort was apparently successful in increasing the discharge rate of our randomly selected experimental group to several times that of a control group, but the hospital administrators did not share my affection for the program (Hopkins, 1970).

About that time I visited a precedent-setting, ward-level token economy at a state hospital that was marvelously changing many behaviors of chronic women psychotics and just as effectively teaching us how our technology could be made to work, but all other wards in the same building continued to provide the sterile and nonfunctional environments long typical of state hospitals.

I visited a well-known program for training social, self-care, and work skills to girls at a state school for the retarded. My request to visit the cottage next door was so pointedly deflected, I

sneaked off on my own to see what was going on. That cottage was a snake pit of dirty, unoccupied, and neglected residents. Our technology was effective in changing the targeted behaviors of our subjects. Human service administrators were not adopting that technology in general practice at even the most likely settings.

I concluded that institutionalized retarded children and psychotic adults were poorly represented in government. Voters were not requiring states and communities to provide better services. Given these circumstances, there were no pressures for program improvements.

By the time the third volume of *JABA* was being published in 1970, I reasoned that if we could prove the value of our technology with some group of subjects whose behavior was important to sizable numbers of people who voted, surely there would be a demand for that technology. Most parents care about their school children's behaviors. Business people who employ high school graduates care about their skills. If we could develop the technology to improve the lot of school children, there might be use for it.

A group of graduate students and I set out on programmatic research aimed at training teachers to double how much any representative group of elementary school children learned in math, reading, and spelling. We simply supplemented, with logical extensions, selections from technology that were already available and within a short time had a teaching program that helped a very heterogeneous group of third-grade children progress at about two grade levels a year instead of their baseline one grade level (Hopkins & Conard, 1975). The educational technology we used was not very sophisticated. Had we chosen to keep perfecting it, I believe we could have done much better.

We studied the more advanced program development efforts of the Kansas Follow Through program (Bushell, 1978) and Achievement Place (Phillips & Wolf, 1978) to see how to proceed. We replicated our program several times to be sure we knew what the effective technology was. Again, we selected from and extended the considerable teacher training technology that was available and

within a couple of years could take a group of self-selected elementary school teachers and, in only one semester, have 8 of 10 skillfully carrying out the classroom procedures we had earlier developed (Conard, 1975). The trained teachers obtained about as good results boosting the academic achievement progress of their students as the teachers in our original classrooms (Conard, 1978).

We soon learned that many of the skills we taught teachers did not endure for long periods of time. Most teachers went back to their old ways within a month or two following the completion of training. Six months later, perhaps no more than one in 20 was still teaching substantially as we had trained them to teach. We were not, however, dismayed by this discovery. We were already planning to develop a training program to train principals to train teachers. We would solve the problem of the teachers' backsliding by training principals to maintain, as well as train, the skills of the teachers.

We soon had a principals' training program to train principals to train and maintain teachers' teaching children twice as much as they were ordinarily taught (Dangel, Conard, & Hopkins, 1978). Then we noticed a new problem; the principals did not reliably continue doing what we trained them to do.

I remember debates about the feasibility of training assistant superintendents to train and maintain principals' training and maintaining teachers to better teach elementary school children. However, by now we had learned to ask one more question; who would maintain the necessary behaviors of the assistant superintendents?

From a different perspective, our data had been telling us that the changes in students' behaviors produced by the classroom technology were not sufficient reinforcers to maintain the necessary teacher behaviors that were the predominant part of that technology. The changes in student behaviors and teacher behaviors were not sufficient to maintain necessary principal behaviors.

I called a halt to our education research and ran for the local school board. I hoped to find the pressures within our school district that encouraged staff to adopt improvements in educational tech-

nology. In 4 years I never saw an instance of systematic, differential reinforcement for anyone's doing a better job educating children or contributing to educating children. The only systematic performance contingencies I saw that might affect child behavior involved punishers and rare teacher and principal behavior that fell outside a very large range of acceptable practice.

Complicate the above problems by additional facts. Voters are divided on goals and methods, and they don't know when children are and aren't learning a lot. Teachers' unions are strongly committed to preserving the independence of teachers. Superintendents and school board members consistently occupy themselves with all kinds of questions and issues that are at best quite tangential to the education of any children. Some of our favorites were changing the attendance boundaries for schools, planning complex budgets, and performing ceremonial functions. Few people in the organization have any particular skill at monitoring the academic behavior of children or managing the behaviors of people beneath them in the organization. One can begin to see the problems in achieving systematic change in education practice. Individual teachers and administrators will be interested in what we have to offer. School districts are very unlikely to systematically buy and use improvements in behavioral technology, if they benefit only school children.

Are retardation or mental institutions likely to be more promising adopters of behavioral technology? I believe they differ from school districts in only minor ways. I believe my odyssey differs only in irrelevant details, such as settings, subjects, and behaviors, from the work of many other applied behavior analysts who have developed technology that is effective in changing the behavior of the clients it is designed to benefit but that now collects dust on the shelf. If the technological improvements we have produced aren't going to be used on any scale, how can that technology contribute to a better world? I believe this conundrum has been a major source of the diminished enthusiasm noted by Kunkel.

There are a few other sources of the decline in

enthusiasm. I believe these to be less critical but still important. Some of the problems we have dealt with have probably been more complex than we anticipated. For instance, if we have verifiably made retardation a nonhandicapping condition for even one person, that considerable accomplishment escapes my attention. It is simple enough to train a retarded child to feed himself, then to dress himself, then even to talk. However, it is clear that we can program a dozen such skills yet still leave our subject retarded. Do we have to train the hundreds or thousands of needed skills? Is there no way to teach the retarded child how to learn so we can simply leave much of his training to less systematically programmed environments? This is one possible example of Kunkel's observation that we have failed to address complexity. Again, I judge that Kunkel is correct.

In a few cases we may have underestimated the importance of environmental histories. In retrospect, it may be unreasonable to expect that a couple of hours of an ordinary token economy each day for a couple of years will offset the effects of many complex natural contingencies operating over a lifetime so that a juvenile delinquent will not again steal cars when placed back in the midst of those natural contingencies (Wolf, Braukmann, & Ramp, 1987).

In dealing with people who have some of the world's most intractable behavior problems (remember these are the ones we originally chose as our major focus), we have needed our very best technology. Kunkel asserts that we have, in contrast to this need, focused primarily on simple, short-term applications. I believe this assertion is also true and simply explained. Much research is done by university-based people. Much of the research of university people spans no more than a semester because the ends of semesters impose natural breaks in data collection. In addition, policies of universities, granting agencies, journals, and professional societies differentially reward our production of numbers of publications at the expense of extensive research. These forces work together to cause much of our research to be short term and limited in scope.

Our efforts to solve major problems have also often been compromised by various professional groups that have vested interests in defending their methods and areas of service and by advocates who attend more to the acceptability of method than to result. The compromises have amounted to our using distant approximations to our best technology for some very difficult problems. The reader who doubts this should review some of the arguments for effective treatment presented at the recent Association for Behavior Analysis meetings (e.g., Lennox, Miltenberger, & Spengler, 1987; Lovaas, 1987).

What can we learn from our only partial successes, trials, and disappointments?

After coming to doubt that I had anything to offer the public schools, I switched my efforts to business and industry research, partly to see if these endeavors involved differential consequences for people doing better work with human behavior (I believe a few, but by no means all, of them do) and partly to see if I could learn something about why organizations do or do not adopt technological improvements.

When I explained to colleagues in business schools how our technology is effective but not used, more than one has commented that applied behavior analysts have done poor market research. They elaborate that we have developed technology to benefit one person, a school child or mental patient. The technology, however, has to be bought by another person, a school or institution administrator. We went into the business before we determined that these people will buy our products. The technology has to be used by a third person, a teacher or caregiver. We have formulated the technology without asking if the teachers and caregivers will, under the existing contingencies, use what we have produced.

Following the above arguments, I suggest that the essential ingredient in our producing technology that will be useful is making sure that the technology, in addition to being effective for intended populations, will be reinforcing for all of the people who will buy and use it. I see indications that this may already be occurring. The program to teach

people to modify the problem verbal behavior of their impaired elderly spouses (Green, Linsk, & Pinkston, 1986), the procedures to train first-time fathers in infant care (Dachman, Alessi, Vrazo, Fuqua, & Kerr, 1986), the breast examination technology described by Pennypacker (1986), and the token economy for occupational safety described by Fox, Hopkins, and Anger (1987) may be steps in this direction.

Other promising possibilities for technology development are those that could be marketed directly to the person whose behavior would be changed by the technology or associations of people who share a common problem. Examples for behaviors that individual beneficiaries might pay to have changed in specified ways include social skills, remedial reading for nonreading adults, job-interviewing skills, skills at changing other people's behaviors, any of the behaviors treated in adult clinical psychology or counseling, and performance skills such as those involved in athletics or art.

I believe we can successfully continue to look for ways to productively develop technology for populations dependent on government money. Understand that the fundamental problem is not that the services are provided by government agencies. The fact that they are provided in government agencies simply reduces the chances that there will be differential reinforcement for improving services. To overcome this obstacle we must either develop technology that will be reinforcing for administrators to buy and for service providers to use or we must find ways to reinforce purchasing and using. The research culminating in the long-term use of behavioral technology by the staff at a retardation institution (Parsons, Schepis, Reid, McCarn, & Green, 1987) may be one of our first examples of maintained technology in a government facility. Generally we can treat adoption and long-term maintenance as problems for research so we can learn what controls these important behaviors.

Given that the changes in behaviors resulting from our technology may not generally be sufficiently reinforcing for the behaviors of government purchasers and users, finding ways to reinforce purchasing and using may be the more promising

strategy. The most straightforward step to take to make the purchase and use of behavior change technology for government-dependent populations reinforcing is to get the provision of the services out of government organizations. If governments only paid for the provision of services but the purchase decisions were made by the beneficiaries or their families or guardians, there would be a chance that the purchasers would be differentially reinforced as a result of buying better technology. Small, private organizations that provide the technology could arrange for the reinforcement of faithful use of the technology. We should systematically lobby governments to allow for such developments.

Until it is possible to privately provide government-paid-for services such as those for the retarded and the mentally ill, we should try to develop technology that can be sold to persons who can afford it. In some cases, such as care for the retarded and mentally ill, the services may be relatively expensive, limiting purchase of the services to the wealthy. However, there may be differential rewards for the provision of quality services. That might lead to our assembling the best technology we have to offer. We might even fundamentally change the lives of some retarded or mentally ill individuals. That development could lead to new and higher standards for publicly financed services.

A more difficult strategy for reinforcing purchase and use of good technology, if the technology is to be paid for by government, involves consumers learning to better manage government service-providing agencies. This strategy will be difficult because it will require that voters and service beneficiaries know what good standards of service are, know how to monitor provided services to determine how they compare to standards, and know how to manage the systems of government to cause them to differentially employ improvements in technology. For example, a serious effort at developing and installing technology for public schools would probably include teaching voters and parents new standards for what children can learn, developing ways for them to monitor how much children are learning, and teaching them much better meth-

ods for controlling the quality and quantity of the output of schools.

Research aimed at developing technology to teach consumers the standards of service that are possible and how they can monitor whether or not high quality services are being provided is valuable regardless of whatever else we do. All strategies I can foresee being useful assume that some customers will differentially use and, consequently, reinforce the provision of better services. That assumes discrimination of better services.

Given that consequences may be stacked to produce short-term treatment of simple problems, it may help to look for ways to establish extra rewards for research that goes beyond what we have typically done. The Association for Behavior Analysis or Division 25 of the American Psychological Association might annually recognize people who have done outstanding work in extending the usefulness of applied behavior analysis. To create a demand for technology by society, perhaps as a result of some of the actions described above, would produce its own rewards. These forces might help compensate for the fact that universities and government agencies do not differentially reinforce more extensive research that might contribute to solving major problems. If our professional organizations show them how, university and institution administrators can learn to discriminate differences in scope of research.

Administrators of funding agencies should be challenged to find ways to differentially fund research that comprehensively addresses clients' problems. We should systematically educate them about the promise inherent in making research on technology purchase and use a priority.

To foster the combination of limited technologies to address more complex problems, *JABA* might solicit and publish integrative reviews of treatments for particular populations. These reviews should be aimed at suggesting ways in which more comprehensive services might be developed out of existing technology.

Even though thorough descriptions of complex programs such as Achievement Place (Phillips &

Wolf, 1978) and Follow Through (Bushell, 1978) may be beyond the scope of *JABA*, the journal could educate readers about the existence and efficacy of these technologies because of their value as models for other program development. In addition, *JABA* might provide an appropriate platform for teaching us the methods of complex program development. These suggestions and Kunkel's are only the beginning of possible improvements we might make in applied behavior analysis.

We may be disappointed in ourselves and our field for failing to solve the problems of adoption of our technology. We could curse the buyers and users of human service technology for failing to behave as we assumed they would. However, all of us surely have behaved as we should.

The principles appear to be as universal as ever. We have many more demonstrations of the effectiveness of technology based on the principles. There are still no incomprehensible limits to what can be accomplished with our technology and perhaps no limits that need be more than temporary. We are coming to better understand the behaviors that impede our progress. That progress may not have been as rapid as we would like, but we are still learning about the workings of aspects of nature that are complex. As we do that, we can follow Kunkel's general advice and simultaneously clean up some unfinished business.

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