

Comments on the Dissemination of Behavioral Technology

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ABSTRACT

I agree with essentially all Shimamura (1996) has said concerning the dissemination of behavioral technology. Furthermore, I think his observations are insightful and nontrivial; and the implementation of his proposal could do much to further the impact of B.F. Skinner in the 21st century. In this commentary, I will simply supplement what he has said, much in the same spirit of what he has said.

Key words dissemination, applied behavior analysis, experimental analysis of behavior, systems analysis

The Problem: Behavior Analysis has Too Little Impact

A concern about dissemination of behavioral technology results from a concern about the limited impact of behavior analysis. Before looking at the impact of behavior analysis on the world of action, let us first look at its impact on the world of ideas, if you will pardon my dualism. It would be of interest to get a historical perspective on how much impact behavior analysis has had. In doing so, we should keep in mind its recent emergence, its small number of participants, and the small amount of resources that have been devoted to it. Are we behind, ahead of, or at the same level as other disciplines at a comparable stage of their development? For example, how do we compare to 19th century medical science? And how does the impact of Skinner's *Behavior of Organisms* compare to Darwin's *Evolution of the Species*, at a comparable number of years after its publication, and why? I have no answers to these questions and raise them in the hopes that someone else may. However, we might get an indication of the absolute intellectual impact of behavior analysis (Laties & Mace, 1993). In 1992, the paid circulation for seven of the leading behavioral journals was 17,081. Furthermore, as of 1986, there were over 40 applied behavioral journals (Barlow, 1993). This good news is slightly tempered by

the reality that there is considerable duplication in subscriptions among the seven journals, and a fair amount of the work is more behavior-therapy oriented than Skinnerian behavior analytic. We can also get a relative measure of the intellectual impact of behavior analysis. Compare the 1992 subscription of *the Journal of Applied Behavior Analysis* (JABA) (4,636) with two of the highest - subscription applied journals that do not specialize in behavior-analytic research, though they may publish some behavior-analytic articles, *the American Journal on Mental Retardation* (AJMR) (11,600) and the American Psychological Association's *Journal of Consulting and Clinical Psychology* (JCCP) (00,488). Also, JABA's impact can be measured in terms of the number and relative frequency of citations to its articles. In 1982, there was a total of 1,486 measured references to JABA articles and an average of 1.39 references per JABA articles published in the two previous years. This contrast favorably with 1,310 and 0.89 for AJMR and somewhat less favorably with 5,898 and 2.01 for JCCP. So in the world of scholarly research, it appears that behavior analysis plays a major, though not dominant, role. What contribution has behavior analysis made to applied settings? Against the reasonably optimistic picture of the impact of behavior analysis on the scholarly world, we might compare ABA's 2,500 members (R. Schnarrs, personal communication,

December 4, 1995) with the American Psychological Association's 132,000 members (G, Whitaker, personal communication, December 5, 1995), the great majority of whom are nonbehavior-analytic practitioners. Or, as Baer, Wolf, and Risley (1987) put it, behavior analysis constitutes a stable 2% of American psychology. This may indicate the much smaller impact behavior analysis has on the practitioner's world than on the scholar's world. The contrast would be worse if we were to compare the number of social workers, corrections workers, gerontologists, teachers, rehabilitation workers, substance-abuse workers, and business-management consultants belonging to ABA versus those belonging to the corresponding traditional professional organizations. Furthermore the majority of our applied work is concentrated in one important but relatively small field. Fifty-eight percent of the research articles published in a sample of four recent issues of JABA dealt with developmental disabilities. While developmental disabilities is an important problem, surely the rest of the world's problems deserve more than 42% of our experimental efforts. Furthermore, the imbalance in the percentage of articles devoted to developmental disabilities has increased rather than decreased throughout the history of JABA, although only 1% of our population has been classified as developmentally disabled (Northup, Vollmer, & Serrett, 1993). Laties and Mace (1993) suggest that behavior analysis has made contributions to other psychological services and to education. Behavior analysis has contributed procedures such as differential social reinforcement, token economies, prompt hierarchies, self-management, effective and nonintrusive forms of time-out, and functional analysis; and behavior analysis is now making preliminary contributions to road safety, community interventions, sports and exercise, social competence, and business and industry. But our technology has yet to be well disseminated in these other fields.

Causes of the Problem

To disseminate behavior analysis more widely, we need more behavior analysts to do the disseminating. There are not enough of us;

Skinner's "happy few" is too few. But attrition as well as under production is a major reason there are too few behavior analysts. Many, perhaps most, of the few of us who are trained as behavior analysts stop practicing behavior analysis soon after graduation from the university, especially those behaviorally trained alumni who work outside the university.

To appreciate the attrition from the ranks of behavior analysis, consider these data: About 50% of the attendees at the annual conference of the Association for Behavior Analysis are student members. For over the 23 year's ABA and its earlier incarnation have held an annual meeting; and during that time, the attendance has risen from about 900 to 1,750. Let us assume that the students attend the convention for two years before graduating. If we had no attrition of student members, the number of attendees would now be around 15,400 instead of 1,750. A large percentage of the 13,650 member loss consists of alumni who graduated from the university and entered the world of the practitioner. Often, to graduate is to leave a set of social contingencies that support behavior analysis and to enter a set of social contingencies that often either extinguish or punish behavior analysis. Those who do have to make a living based on what they disseminate often find it expedient to do so in terms of the current fad, for example conducting wilderness-adventure bonding experiences for executives rather than using behavior analysis to facilitate the application of behavior analysis. And contrary to what we might hope, the small though cumulatively significant, practical consequences of performing behavior analysis will not support such a performance.

Part of the problem is that behavior-analytic candidates are not available when behavior-analytic jobs become available and vice versa. And part of the problem is that there are just not enough of either behavior-analytic jobs or behavior analysts. That may explain much of the attrition of alumni membership in ABA. Most alumni become employed in jobs that do not support behavior analysis, and the behavioral community does not do an adequate job of maintaining the behavioral engagement of our alumni in such positions. In summary, there are

too few behavior-analysis jobs and too few behavior analysts to fill those jobs, Not enough organizations are effectively using behavior analysis. This is because not enough organizations are hiring behavior analysts, which, in turn, is because those organizations are not looking for behavior analysts to hire and because there are not enough behavior analysts to hire when the organizations are looking, But there may also be another problem, Behavior analysts may not be sufficiently effective in encouraging others to use behavioral technology; thus they fail to further the dissemination of behavior analysis,

Analysis

Rule-governed Behavior, or Id Control vs, Ego Control

As Shimamune points out, we should not confuse the indirect-acting, rule-governed analog contingencies of complex, verbal, human "decision making" with the simple, direct-acting contingencies of the rat in the Skinner box. However, such direct-acting contingencies do form the basis of all human behavior. In other words, the outcomes of the adoption of a particular technology are almost always much too delayed to reinforce or punish such an adoption; so it is metaphorical, at best, to extrapolate from the few seconds delay of reinforcement in matching-law research to the days, weeks, months, and years delay between the adoption of behavioral technology and the reinforcers that technology might eventually produce. But not only must we avoid the over simplification that plagues much of behavior analysis, we behavior analysts must also be wary of the seductive attractiveness of the rationality implicit in cognitive psychology. In other words, just because a potential adopter tacts all sorts of characteristics of the technology, Freud may be right in that many of those tacts might be no more than decorative rationalization; and the variables really controlling the adopters behavior may be the smiles and frowns of the technology disseminator. I am not suggesting that human beings are incapable of rational decision, just that such rationality may be more

rare than we assume. Furthermore, most of the potential adopter's statements or tacts describing the technology under consideration may be intraverbals devoid of contact with the actual technology itself. So our analyses must delicately balance the potential control by indirect-acting verbal rules and direct-acting contingencies of social reinforcement and punishment -- Freud's constant battle between ego contingencies and id contingencies,

Commitment vs, Adherence,

In considering the diffusion of behavioral technology, we tend to make the error of concentrating on commitment and ignoring adherence. While this is a special problem for cognitivists, behaviorists also make this mistake. With their rational model of human behavior, the cognitivists usually overlook the crucial distinction of commitment vs, adherence. Thus they are constantly being surprised to find that rationally agreeing to a particular course of action often fails to result in following that course of action; agreeing to a diet and adhering to a diet are two different behaviors, though fortunately for the Japanese readers, this example may be more relevant to the American culture than the Japanese culture. Generally we will adhere to our commitments, to the extent that each instance of such adherence results in a probable and sizable outcome. But failing to follow a weight-reduction diet for just one dish of ice-cream will have an infinitesimally small impact on our waistline, though the repetition of such failures has a cumulatively significant effect on more than our waistline. Similarly, an individual instance of adherence to the implementation of most behavioral technologies results in only an infinitesimally small beneficial outcome, though the repetition of many such adherence has a cumulatively significant outcome, For example, a single instance of a grade-school teacher's reinforcing a child's appropriate behavior will have a negligible impact on that child's behavior; but the consistent reinforcement of appropriate behavior can have the cumulative result of changing an academic failure into an academic success, But because of the poor control generated by rules describing small, though

cumulatively significant outcomes, most school teachers fail to adhere to behavioral technology in their grade-school classroom though they may have left the college classroom firmly committed to that technology.

Solutions

From the perspective of a goal-directed systems design, university teachers of behavior analysis can contribute greatly to the goal of increasing the impact of B. F. Skinner in the 21st century. There are several ways they might make such a contribution. Perhaps students can learn more about effective technology diffusion by studying the behavior of the used car salesperson and reading Dale Carnegie's (1982) *How to Win Friends and Influence People* than we can by studying mathematical models of decision making. For example, after he retired from Columbia University, Fred Keller disseminated throughout Latin America his personalized systems of instruction, a behavioral-inspired instructional technology; in the process he also disseminated behavior analysis in general throughout that continent. In my view, his secret is that he was so lovable that everyone wanted him for a grandfather; and he had an effective way of nodding his head in profound, thoughtful agreement as you speak; who could resist offending such a wonderful person by failing to adopt the technology that person advocated. Similarly, after he retired from the University of Illinois, Sidney Bijou has effectively dedicated much of his time to the international dissemination of behavior analysis, simply by concentrating on it, going where ever he is invited, and being supportive. University teachers can accomplish the subgoal of facilitating the dissemination of behavior-analytic technology through the accomplishment of a lower-level subgoal—ensuring that well-trained behavior analysts are in positions to make wide-spread use of behavior analysis. They contribute to that subgoal, in turn, by producing a large number of well-trained behavior analysts. But the data on retention in ABA suggests that merely producing a large number of behavior-analysis alumni is not sufficient. We must spend as much of our effort supporting their continued use of behavior anal-

ysis, once our students graduate. Teachers of behavior analysis might also encourage an alternative to the traditional model of behavior analyst as consultant. The behavior-analysis consultant attempts to persuade directors and managers of human-service, educational, and business organizations to adopt and maintain behavioral technology, often a difficult or impossible goal. An alternative is for behavior analysts to become directors and managers in such organizations, divisions, departments, wards, etc. Then they themselves can adopt and maintain the behavioral technology they have been trained to use. Although the behavior-analyst-as-manager model may decrease the problems of technology dissemination, it does not eliminate them. And the problem still remains of ensuring that our alumni end up in such managerial positions. In dealing with adherence, once commitment is obtained, it is almost always essential to establish an effective performance management system—one that will maintain adherence to an accepted behavioral technology. Behavior analysts are almost as likely to overlook the need for performance to maintain adherence as are cognitivists,

Behavioralizing the Culture

Some have argued we should disseminate behavioral technology by behavioralizing the culture. An example would be formally teaching behavior analysis at the preschool through high-school level, as well as at the university level, as a part of the students liberal education in the natural and social sciences. Along the same line, behavior analysts periodically suggest that we should infiltrate the popular media such as movies, TV shows, and newspaper columns with behavior analytic themes. While all these efforts to behavioralize the culture might be of value, their impact may be too diffuse and their implementation too expensive to be cost effective. For example, my observation is that without an effective maintenance system, an entire course in behavior analysis, no matter how effective and well received by the student, will have little lasting effect on the student, if the student does not end up in an environment that explicitly supports the use of

behavior analysis. (This is just another example of the commitment vs. adherence dichotomy.) Of course, if teaching behavior analysis in high school were followed by an effective channeling of the students into a behavior-analytic university program, the cost effectiveness of the high-school course would greatly increase.

Perhaps we can be more successful by addressing specific technological issues for specific audiences, rather than trying to behavioralize the culture. I find little resistance to behavior analysis as a technology in my undergraduate principles of behavior course and little need to behavioralize my student to prepare them for such acceptance of the behavioral technology. But I find much more resistance to behavior analysis as a world view in a follow up course; for example, few students are able to accept the implications of behavior analysis for freewill, awareness, religion, intelligence, or sexual values,

Research and Development

Shimamune (1996) suggests that research and development in the area of technology dissemination may be too long range to produce an adequate frequency of publication to ensure the academic survival of the researcher (see Hopkins, 1987, for a similar view of constraints on long-term research). I think the secret may be to publish in professional journals signs of accomplishment as the project progress toward its long-range goals. If scholars are sufficiently research and publication oriented they can both develop a long-range technology and publish along the way, though it is not easy. An example would be the researchers who developed the Achievement Place model (Fixsen & Blase, 1993); they have generated many publications as well as disseminated their technology. Furthermore, small scale efforts at dissemination research might not be excessively long. For example, we academicians might do research on dissemination of our behavioral technology to our undergraduate students to use in their every day lives, technology like self-management techniques, performance contracting, and effective study techniques. From the individual level of dissemination, we might go to a small-scale

organizational level, such as student organizations within the university. Similarly, many of our students, especially our graduate students work in organizational settings, whether clinical, educational, or business. These students might attempt small dissemination projects in their own settings. And, of course, the university, itself, is an organization notoriously resistant to innovation, especially of a behavioral nature, an organization that would provide a stringent test site of any of our theories and techniques related to the dissemination of technology, theory, philosophy, or even of fact. Most of us who teach behavior analysis to undergraduates work daily in a natural laboratory begging for a systematic effort at the diffusion of technology, science, and philosophy. Rather than blaming the student (the victim) for failing to appreciate the technological, philosophical, intellectual, and spiritual power of behavior analysis, we should systematically analyze the variables controlling our students commitment and adherence to behavior analysis in all of its many ramifications. Then we might gradually expand from our classroom. First we could move to other classrooms and organizations within the university, to those organizations outside the university our students have ready access to; and as we acquire an increasingly effective technology of dissemination, we can expand our efforts to include organizations and populations of greater and greater impact on our culture in general. All easier said than done, but I have accomplished nothing worthwhile in my life that I would have been willing to undertake had I appreciated, at the beginning, how difficult it would be ultimately. So it is best that we not be too honest about the anticipated difficulties of undertaking any new project; could that mild deception be the first step in the dissemination of behavioral technology? More generally, we might develop the dissemination technology that Shimamune (1996) advocates by performing a number of case studies. In those case studies, we could follow the process he recommends and document our successes and failures, modifying his recommendations as we do so. Then we should provide our graduate students with practicum training in implementing technology

diffusion on a small scale, in an individual institution, department, or class-room or ward within that institution. These small scale replications might even be a good place to start in the empirical research and development of Shimamune's dissemination technology. Perhaps university teachers could add dissemination to the requirements of acceptable dissertations and articles. This addition might seem like an unnecessary cruelty, but perhaps the initial scope of applied behavior analysis dissertations might be decreased to make dissemination more manageable within a reasonable time frame. Then it would not suffice merely to demonstrate that a particular example of behavioral technology works; it would also be necessary to demonstrate that the technology works in the hands of the end user, that the end user is likely to adopt it, and that the end user is likely to continue using it (a relevant variable would probably be ease of use by the novice and the expert). Such requirements placed on the already strict requirements for publication in behavior analysis journals might also facilitate dissemination. Alternatively, these journals might actively encourage the follow-up publica-

tion of usability and dissemination data as a means of encouraging such research and development efforts.

Conclusions

To supplement the points Shimamune (1996) has made, we should further consider the following issues: The extent of the contribution of behavior analysis at a philosophical, theoretical, and practical level. The maintenance of trained behavior analysts, The placement of trained behavior analyst. The training of more behavior analysts. The failure to appreciate the importance of rule-governed behavior in the adoption of behavioral technology. The irrelevance of rationality to the adoption of behavioral technology, The distinction between commitment and adherence. The impact of the consultant role vs, the managerial role, The impact of behavioralizing the culture vs. popularizing specific behavioral technologies, Whether we should use a traditional experimental-analysis model or an extended case-study model in doing research on and development of a behavioral technology for the dissemination of behavioral technology,

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