

ACCEPTING THE CHALLENGE: A Behavioral Perspective on Improving Educational Performance¹

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ABSTRACT: During the second half of the twentieth century, schools have been encountering growing difficulties with student management, motivation and learning. Evidence documenting the seriousness of these problems was dramatically supplied in the report of the National Commission on Excellence in Education: *A Nation at Risk: The Imperative For Educational Reform* (1983). Applied behavior analysis has been addressing and discovering a host of successful strategies for ameliorating many of these issues, plus the methods for discovering others. Each of the high priority areas recently identified by the field of school psychology have been addressed by behavior analysis. This paper illustrates some of these applications within the areas of assessment, consultation, and methods for promoting a positive and productive classroom climate via effective management, motivation and instructional techniques that adjust to individual student needs and interests. The value and applicability of behavior analytic methods for discovering new findings of relevance to educational improvement are also discussed, along with consideration of some of the pressing issues in need of extensive investigation, such as tactics for broadscale implementation of these methods. Nevertheless, sufficient procedures derived from this discipline now exist to create a major force toward promoting excellence in schools.

A BEHAVIORAL PERSPECTIVE ON IMPROVING EDUCATIONAL PERFORMANCE

In reaction to the group-focused, lock-step instruction that had characterized educational earlier, toward the mid-twentieth-century, educational philosophers like John Dewey began to shift the emphasis to students as individuals. Children would learn more successfully and enjoy school better as a result. This progressive education called for teachers to adjust their instruction to individual students' distinctive levels of abilities paces and interests, and to provide varied opportunities for pupils to become actively involved in learning.

Many students apparently thrived with this new approach, yet progressive education was no panacea. Then, as now (Veenman, 1984), discipline, motivation and dealing with individual differences appeared to concern teachers most seriously. School psychologists spent the bulk of their time attempting to diagnose children to determine the causes of their difficulties.

Following the Soviet Union launching of its spaceship Sputnik in 1957,

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educators and the public began to examine the questionable quality of student performance. The acuteness of the problem was revealed in the 1983 report of the National Commission on Excellence in Education, *A Nation at Risk: The Imperative for Education Reform*. Clearly, the population of the United States was found to be marked by broadscale educational deficit. Behavior analysts working in schools need, along with our other educational colleagues, to recognize our responsibility to help rectify this situation without necessarily discarding the human values imparted by the progressive education movement.

The thesis of this paper is that many behavior analytic strategies now are available to permit acceleration of progress toward educational excellence, while meeting the needs of learners as individuals. These include methods for conducting behavioral assessments, effectively consulting, promoting positive classroom climates and high rates of quality academic production, enhancing staff skills, and most importantly, investigating new procedures for helping students to succeed in and enjoy school.

Applied behavior analysis has investigated a vast array of successful educational interventions over the past 25 years. To illustrate, in preparing a volume of papers on behavior analysis in education (Sulzer-Azaroff et al., 1988), the editors identified over 400 educational experiments published in just one of the many behavioral journals, the *Journal of Applied Behavior Analysis*. Additionally, our recently published text on the use of behavioral strategies for educators (Sulzer-Azaroff & Mayer, 1986) discusses how the principles and procedures of behavior analysis have been and can be applied toward achieving educational excellence: by promoting regular and effective student participation, positive social behavior, academic productivity and knowledge and skills in many different subject matter areas. Currently, while preparing a revision (Sulzer-Azaroff and Mayer, 1991) of another text (Sulzer-Azaroff & Mayer, 1977), we have discovered many hundreds of reports of behavioral interventions for effectively encouraging learning, retention and transfer of knowledge and skills and for dealing with and preventing school-related problems.

This accumulation of effective educational strategies, plus experimental methods for discovering others, is happening at an especially propitious time. Not only do these methods provide a set of valuable tools to help meet the public's demand for educational improvement, but they also serve our own priorities as behavior analytic researchers and practitioners. As evidence, applied behavior analysis has demonstrated its validity as a system for expanding the knowledge base for practice in each of the domains listed in *School Psychology: A Blueprint for Training and Practice* (National School Psychology Inservice Training Network, 1984). The relevant domains are:

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- class management
- interpersonal communication and consultation
- basic academic, life, affective and social skill
- parental involvement
- classroom organization and structure
- systems development and planning
- personnel development
- individual differences
- school-community relations
- instruction
- legal/ethical and professional issues
- assessment
- multi-cultural concerns
- research.

In the examples to follow, promising behavior analytic work that has been conducted in many of those domains is illustrated. (Unfortunately, space does not permit examples to be extensively elaborated for each area, but the papers included in journals such as *The Journal of Applied Behavior Analysis, Education and Treatment of Children, Behavior Therapy* and others cited in the reference lists should assist readers to locate articles of special interest for them.)

BEHAVIORAL ASSESSMENT

Assessment has many purposes, among them to classify, to place, to diagnose, to prescribe. Assessing in order to identify children with special educational needs is an important activity, if additional resources are to be obtained for these students. But we have begun to question assessing strictly for purposes of special placement, as data such as that reported by Madden and Slavin (1983) casts doubt on its benefit, at least for those with mild handicaps. To assess solely for purposes of categorization is probably an activity with limited payoff for students; but prescriptive assessment makes sense, because it is designed to accomplish something. Assuming our task is to maximize students' learning, and to prevent and cope with problems that may interfere with their progress, knowing about the individual pupil's behavioral repertoire and educational environment is of critical import.

Behavioral assessment looks at a problem not as residing within the student but in terms of the relation between the student's behavior and the environment. If pupils appear to be failing to learn, are disruptive, or are progressing more slowly than they might, the validity of these informal observations then is studied systematically. One way is to check records; another is to observe. Operating on

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the assumption that "students are always right" (their behavior is lawful, a function of historical and current contingencies), investigating the function served by the problematic behavior comes next. This requires evaluating not only the students' strengths, excesses and deficits but also contextual conditions.

Ecobehavioral assessment (Rogers-Warren & Warren, 1977) is a formal method for examining behavior within its context. It notes many properties and conditions of the environment, such as time of day, demands, instructions, assignments and other antecedents; also social reactions, access to activities, tangible items and other consequences. By observing repeatedly a given behavior and noting the environmental circumstances in effect, factors that may be functionally related to the behavior are identified. When feasible, these potential factors then may be analyzed experimentally to demonstrate the lawfulness of their relation to the behavior. The method has been used to isolate factors influencing maladaptive responses such as self injury (Touchette, MacDonald & Langer, 1985) and aggression and other problematic acts (Vyse, Mulick, & Thayer, 1984).

Simplified versions also can prove valuable. In one example (Wilczenski, Sulzer-Azaroff, Feldman, & Fajardo, 1987), several students previously identified as having special needs received extra help from resource teachers but remained in their own mainstreamed classes. Complaints by teachers included poor quality work or failure to engage in assigned tasks. Engagement, known to correlate with school success, (Berliner, 1979; Gettinger, 1986), was measured via a "PLA-check" system (Risley & Cataldo, 1973). For a number of sessions, the school psychologist visited the classroom, and according to a predetermined schedule, observed repeatedly whether or not classmates or the students of concern were engaged. Conditions in the classroom were also noted. Rapidly, patterns began to emerge. In one case the student completed his work quickly and was off-task for most of the remainder of the period. In another, the child worked well during group instruction, but was often disengaged when assigned an individual activity rather than one directed by a teacher. A third boy was found to perform inconsistently. In each case, after viewing their students' engagement patterns, the teachers instituted a successful change (increasing the length or difficulty of the assignment; involving an aide; changing the pupil's location and work group). Here was a case in which a joint assessment of the child's behavior and of the environmental conditions enabled teachers to produce relatively simple solutions.

CONSULTATION

Often the school psychologist is called upon to assess children for special placement (Ownby, Wallbrown, D'Atri & Armstrong, 1985). However, as these personnel become increasingly more effective in their consulting roles, requests for assessment for placement purposes should correspondingly diminish. One principal reported that the proportion of teachers' requests for specialized placements of their

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students dropped dramatically when staff were able to increase the effectiveness of their work with the previously troublesome children. The example just presented on the use of PLA-check illustrated how a school psychologist used her consulting services to ameliorate problems of student performance.

One problem is that teachers and administrators may be uninterested in obtaining consulting services (Witt, 1986). Establishing and sustaining a productive consulting relationship is an art rapidly evolving into a science (e.g., Ivey and Simek-Downing, 1980). In addition to the valuable techniques that our colleagues have developed to encourage potential consumers to accept and apply consultation, information increasingly is being discovered about aspects of the acceptability of particular terminologies (Witt, Moe, Gutkin, & Andrews, 1984) and procedures (Elliot, Witt, Galvin, & Peterson, 1984; Kazdin, 1980a, 1980b; 1981; Kazdin, French, & Sherick, 1981). Recently, researchers have begun to experimentally analyze the features that appear to be most promising. The importance of obtaining input from consumers of our services, such as workers (Schefflen, Lawler, & Hackman, 1971), and other strategies for enhancing the quality of our assistance (e.g., Maher, 1981) is becoming clearer. Here is an area where much more remains to be accomplished, though. For instance, the distinct contributions of such factors as reflecting, summarizing and other presumably effective consulting methods would benefit from further study.

DIRECT INTERVENTION

Behavior analysts more typically have worked with teachers or students directly, experimentally documenting their methods for promoting academic and social performance, and improved conduct. Thoroughly surveying these methods would require volumes of text, so instead, a few examples of strategies that have been used to meet some of the knottiest challenges facing educators will be described: managing deportment and motivating and effectively enabling students to achieve meaningful instructional objectives.

Classroom Management. Although this is not necessarily the most important area to tackle, many teachers find misconduct especially troublesome. Often, therefore, that is a good place for the school psychologist to reinforce use of consultation services. If psychologists help teachers to achieve a pleasant classroom climate, the teachers probably will be more amenable toward receiving assistance in other areas later on.

Rapid results often can be accomplished by using a method called the "Good Behavior Game" (Barrish, Saunders, & Wolf, 1969). Essentially, clear rules of conduct are established and communicated to the class. The group is divided into two or more teams who initially are awarded an equivalent number of points. Each time a rule infraction occurs, a mark on the board indicates that a point has been deducted from the team to which the perpetrators belong. The team with the

largest number of points remaining is permitted access to a special activity, unless both teams have managed to keep a set minimum number of points. In that case, both teams win and gain access to the activity. Should particular students continually break the rules, they are regrouped into a new team, so their former teammates are not penalized unduly. This technique has been reported to work very effectively in several formal trials (Barrish et al., 1969; Fishbein & Wasik 1981; Harris & Sherman, 1973).

An improvement on the original game is one in which points are *added* for good behavior, permitting additional rewards to be earned. This format, however, may require more vigilance than some teachers are ready to provide. In general, though, teachers seem to like the good behavior game because it is relatively easy to implement and the students enjoy their prized special activities.

Many other positive methods for promoting good conduct and student engagement have been developed and experimentally analyzed, such as token systems, use of contingent praise, and other reinforcing consequences for good or improved performance. These have been used alone or in combination with punishing consequences for misconduct. (See Sulzer-Azaroff et al, 1988 and Sulzer-Azaroff & Mayer, 1986, 1991).

Focusing on conduct exclusively, though, must reasonably be questioned. Producing compliance and docility are not the main aims of schooling. Rather, schools are designed to teach the knowledge and skills that will enable students to function effectively in this world--individually and as contributing members of to their larger societies.

Additionally, we need to ask ourselves why students are misbehaving in the first place. Misbehavior is not born out of stubbornness or malevolence but results from factors in the person's past and present circumstances. (Naturally, developmental, genetic, physical and socio-economic factors may influence the course of a problem and specialists who might be able to ameliorate those conditions need to be involved. But the current school environment can make matters worse or better.) Perhaps troublesome pupils have failed to acquire appropriate social skills, so these need to be supplied. Misbehaving may be a way of gaining attention or communicating a need for assistance (as Carr and his colleagues, e.g., Carr & Durand, 1985, have been discovering). Other more acceptable ways of attaining attention or communicating need to be taught. Aggression and escape (being truant or late) are predictable reactions to punishment and extinction. Possibly the unwanted behaviors are unwittingly promoted by the teachers' exposing the student to failure or derision. Perhaps educational activities aren't as reinforcing as getting into trouble can be. Ecobehavioral analyses, like those described earlier, should help us to identify and systematically analyze factors that may be responsible.

Furthermore, many studies have found that when students are rewarded for learning successfully, their misbehavior often begins to fall by the wayside. This leads directly into the area of "motivation", or to relabel it behaviorally, increasing

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rate and/or quality of classroom productivity.

Promoting Classroom Productivity. A number of years ago, a teacher in a public school in Southern Illinois requested assistance with her unruly class (Sulzer, Hunt, Ashby, Koniarski, & Krams, 1971). She was also dissatisfied with the pupils' rates of progress. We decided to focus on the latter and only monitor the former. Books were obtained that allowed each student to work in small steps, at his or her own level and receive immediate knowledge of results. The children earned rewards and privileges for doing their work correctly; the more they did, the more they earned. Their productivity improved considerably. So did their scores on standardized tests, with some children doubling or even tripling their rates of progress in reading and spelling over previous years. In the meantime, though never addressed directly, their conduct improved.

Accomplishing improvements in conduct as an adjunct to improving academic performance has been repeated many times, with individual students, whole classes, schools, and even regions as large as Los Angeles County (e.g., Ayllon & Roberts, 1974; Jones & Van Houten, 1985; Mayer, Butterworth, Nafpaktitis, & Sulzer-Azaroff, 1983).

Not all children need be given prizes and privileges to perform in school. For many, meeting interesting and challenging goals will do it. Others will continue producing to obtain occasional praise or to avoid reprimands (though the latter alone can take the fun out of being productive). Many persist because they have developed a well established pace due to fortuitous reinforcement histories, or because mastering new knowledge and skills alone are sufficiently rewarding. It is important to recognize that different conditions influence students idiosyncratically. Again, students don't fail to learn because of stupidity or nastiness. They don't learn because the conditions for learning are not right for them. Our challenge as behavior analysts working in schools is to help teachers and others identify and provide the appropriate circumstances.

Academic Instruction. Analyses of behavioral methods for teaching academic objectives have produced exciting results. Through continually evolving methods for achieving stimulus control, such as errorless learning, time delay and other procedures (e.g., Charlop, Schreibman, & Thibodeau, 1985; Etzel, LeBlanc, Schilmoeller, & Stella, 1981; Schreibman, 1975; Touchette, & Howard, 1984), children heretofore thought incapable of complex learning have been taught to communicate, count, read, care for themselves, earn a living and many other important skills. Nor does refinement in behavioral instructional technology end with disabled learners. Students at all levels have been benefitting from a number of evolving strategies: analyzing tasks to enable refined shaping and chaining procedures; applying incidental teaching; fading and delaying prompts; promoting fluency; and supporting maintenance and appropriate generalization. The latter methods promote knowledge and skills in an array of areas such as language, mathematics, reading, spelling, creative writing, remembering and using scientific

concepts and many others. (For instance in Sulzer-Azaroff & Mayer, 1986, major sections and chapters have been devoted to instruction in reading, compositional writing, spelling, handwriting, arithmetic, physical education and many other academic areas.)

Facility in written composition is one example. High quality creative writing has been found to incorporate a number of features, such as a variety of adjectives, different beginnings and endings, diverse action verbs, increased length of units and others. By pinpointing, teaching, and reinforcing the production of those special features, students ranging from grade through high school have been taught to improve the quality and creativity of their composition of written products (e.g., Brigham, Graubard, & Stans, 1972; Maloney & Hopkins, 1973; Maloney, Jacobson, & Hopkins, 1975; Van Houten & MacLellan, 1981; Van Houten, Morrison, Jarvis, & MacDonald, 1974).

Interestingly, *provided that the environment is carefully managed*, many of the tenets of progressive education have stood the tests of experimental analysis quite well, especially with "learning by doing" and capitalizing on the interests and capabilities of individual students. A case in point is "incidental teaching" (Hart & Risley, 1982). With this method, children's natural interests in objects and activities serve as a vehicle for teaching. Instructional opportunities present themselves when a student initiates an action to obtain an item or access to an activity. The teacher seizes that opportunity by interposing instruction, and permitting delivery of the item or access to the activity to serve as a "natural" source of reinforcement. Oral language, non-verbal communication, reading, social skills, and other academic and social behaviors have been taught in this manner. In one example (McGee, Krantz, & McClannahan, 1986), when children signaled wanting to play with a particular item, the teacher requested that the child first point to the written name of the item. Only then, was the item delivered. Results showed that the method enabled the children to learn and remember the written words in that context and elsewhere.

These and hundreds of other examples demonstrate how instruction can be powerfully abetted by applying behavior analysis in school settings, without necessarily discarding the values of progressive and humanistic education. Nevertheless, one must not be misled into concluding that applying behavioral procedures is always an effortless activity. Because they require careful planning, repeated measurement, precise implementation of procedures and experimental analysis, some behavior analytic interventions can be costly, in terms of extra time, effort or material or resources. The better trained our personnel are to use these methods and the more supportively the systems are organized and managed, the more likely behavior analytic methods will be implemented successfully. Recognizing the importance of this fact has led increasing numbers of researchers to search for effective staff development and organizational management tactics.

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STAFF TRAINING AND ORGANIZATIONAL MANAGEMENT

The fundamental principles of effective teaching appear to operate just as well with professionals and paraprofessionals as they do with students. As Baer and Bushell (1981) have argued, behavioral instructional methods need to be applied in the apprenticeship period--while in pre-service as well as during in-service training. Evidence suggests that staff learn best by doing, under supervision, just as other students do (Shapiro & Lentz, 1986). Feedback and reinforcement are also critically important elements, as many studies have shown. (See Prue & Fairbank, 1981 and Sulzer-Azaroff & Mayer, 1986, Chapter 22, and a series of recent articles in the *Journal of Organizational Behavior Management*). As one simple example, the percentage of assigned fire evacuation training trials conducted by staff members at an institution for developmentally disabled persons increased substantially when they received feedback from either their supervisors or from non-supervisors (Fox & Sulzer-Azaroff, 1989).

Trainers of school personnel need to ask themselves if they are structuring sufficient opportunities for their trainees to plan, try repeatedly, succeed in and otherwise attain reinforcement for applying behavioral methods. That is the way they are most likely to keep at it. (Curriculum materials such as Sulzer-Azaroff & Reese's 1982 laboratory manual, *Applying Behavior Analysis, A Program for Developing Professional Competence* have been designed for this purpose.)

RESEARCH

As the National School Psychology Training Network (1984), Reynolds & Clark (1984) and many other school psychological experts have contended, consuming and producing research is an essential activity for psychological practitioners in the schools. Progress can continue only when professionals keep abreast of current research and continue to identify the variables that affect student performance in schools. As a recent nationwide survey has shown (Strein, 1987), school psychology practitioners and scholars have strongly endorsed research in the prevention of school-related problems and in improvement in the functioning of non-referred populations. Those recommendations have merit because by learning more about the former, our attention can be turned to the latter, such as further enhancing the performance of our gifted, talented and otherwise capable students--our most valuable natural resources.

Earlier the cost extracted by applying behavior analysis was cited. The other side of the coin is that behavior analysis can provide something almost for nothing: research. The full behavior analytic model incorporates a feature for experimentally analyzing its interventions. Essentially, all the critical features of solid individual or group experimental design are included. When a problem is addressed, methods that successfully produce educationally important change are

discovered and documented; not only has an individual problem been solved but information also has been obtained that can be communicated to and applied by other psycho-educational practitioners.

AREAS NEEDING FURTHER EXPLORATION

Behavior analytic methods clearly are receiving increasing emphasis in the field of education, particularly among school psychologists and special educators. Yet the myriad of problems seen in schools hardly have been touched by the methods we have to offer. Academic deficit, absenteeism, drop-out rates, staff burnout and other symptoms of an ailing educational system continue to prevail. What are the barriers and how might they be surmounted? Only formal experimental inquiry can begin to answer these questions.

One possibility is to help identify ways to reduce the costs to educators of applying behavior analysis in the schools. Costs can be minimized in several ways. Free and inexpensive reinforcers abound (as we saw with incidental teaching, the "good behavior game" and in programs using feedback and/or praise). Personnel resources can be expanded by involving trained and supervised volunteers (Seekins, Mathews, & Fawcett, 1984), paraprofessionals (Mathews & Fawcett, 1977), other instructional staff members (Fleming, 1990; Jones, Fremouw, & Carples, 1977) and student peers (Greer & Polirstok, 1982), supervisors (Fox & Sulzer-Azaroff, 1990), individual staff (Hundert, 1982) and students themselves (Craig & Andrews, 1985), even those as young as four years of age (McGee, Almeida, Sulzer-Azaroff & Feldman, in preparation).

Ways to further increase reinforcement and diminish punishment for implementing behavior analytic practices need to be investigated: altered organizational arrangements and incentive systems, public and professional approval, techniques for more rapid documentation and communication of success, and others. Perhaps the issues we have tackled to date have been insufficiently relevant to educators' needs (i.e., have failed adequately to reinforce the efforts of the educational establishment). Maybe they want answers to more broad-based questions, such as what types of preschool education are best suited to preparing young children for elementary education (although the unfortunate fate of the research on the superior behaviorally based Follow Through Models, Becker & Carnine, 1981 hints otherwise). Perhaps the schools are dependent upon the products of teacher training institutions and await new, more effective models of personnel preparation. Impacting at the community level, as with school board members and parents and/or among professional leaders, such as local, regional, and state school administrators, could prove very influential and measures of that sort need to be studied.

Currently, many school districts are experimenting with strategies for improvement, such as merit pay, master teachers, mentorships and specialty schools,

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expanded schedules of operation, and use of technological innovations like computers. As behavior analysts, we are in a unique position to help design and refine, in accordance with current optimal principles of behavior, the specific ways such methods are applied as well as to assist in evaluating their immediate and long-term impact.

Our public image also may be an impediment. Work of the type conducted by Elliott et al (1984) and Kazdin (1980a, b; 1981; Kazdin et al, 1981) and their colleagues suggest that some behavioral methods are more acceptable to educators than others. Experimental work on the influence of the terms and descriptors we use might open the way toward wider acceptability of our methods.

Most behavior analytic research focuses directly on *process* variables, such as student engagement, rate of assignments completed accurately, social behaviors and so on. Daniels (1989) and others have argued in support of including results (or outcome) measures and on providing feedback based on results, as well as on process, in organizational behavior management. They contend that by specifying results, priorities can be clarified and time and energy saved. Similarly, educators may be more impressed by improvements in students' standardized test scores, reduced absenteeism and drop-out rates among students and staff, rates of graduation or college admission and other "bottom-line" information. Often such data can be collected fairly readily along with the process measures. We should find out if including them makes a difference.

Beyond training, supervising, systems, public relations and products, educators may be awaiting behavior analytic successes in relatively untouched aspects of behavior--sex and drug education, prevention of disease and injury, violence, promoting accomplishment by gifted and talented youngsters and so on; or other concerns may be of higher priority. How often do we take the time to ask educators what they are looking for by conducting extensive needs assessments? Advance planning of that sort may make a big difference. We need to discover just how much.

CONCLUSIONS

The extensive contributions of the field of applied behavior analysis toward promoting educational excellence have been discussed. In collaboration with other school psychological researchers and practitioners, the field has been helping to ameliorate many of the problems of concern to educators, such as misconduct and low achievement. Nevertheless, because behavioral procedures and research are not being implemented as broadly as they might be, many needy students and staff are missing valuable opportunities for achieving success. To address this problem, contingencies sufficiently supportive of application of behavioral methods in the schools need to be discovered, costs minimized and reinforcing contingencies extended. Research in these areas should yield especially valuable payoff by helping

remove roadblocks to the broad implementation of these valuable methods. Increased application of effective behavioral strategies will contribute toward successfully overcoming the educational risks now faced by this nation.

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NOTES

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