

A Behavioral Commentary on Poplin's Discussion of Reductionistic Fallacy and Holistic/Constructivist Principles

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We would like to thank J. Lee Wiederholt, editor-in-chief of the *Journal of Learning Disabilities*, for providing us with the opportunity to join the discussion of Poplin's two papers, "The Reductionistic Fallacy in Learning Disabilities: Replicating the Past by Reducing the Present," and "Holistic/Constructivist Principles of the Teaching/Learning Process: Implications for the Field of Learning Disabilities." Dr. Wiederholt's charge to us was to prepare a response to Dr. Poplin's manuscripts from a behavioral perspective.

At the outset, we would like to state that our comments will be based on a full range of behavioral orientations, including applied behavior analysis and Direct Instruction. A behavioral response appears particularly pertinent since Poplin asserts that the reductionistic model is best represented by the behavioral paradigm. To characterize the behavioral paradigm as reductionistic or mechanistic simply does not reflect an accurate picture of the discipline. Also, to imply as Poplin does that persons holding a behavioral view maintain a microscopic perspective of learning as a set of discrete, isolated variables begs the question. Simpson and Eaves (1985) deflate much of Poplin's argument on this latter point when they state:

The astute quantitative [substitute behavioral] researcher is not without holistic purpose. A good theorist/researcher surveys the available evidence in order to obtain the best overall view of an area to be studied. Based on his perception of the "full picture" he formulates his research questions, develops hypotheses, [and] collects data . . . The fact that one focuses on specific questions through controlled means does not indicate a failure to maintain a holistic perspective. (pp. 326-327)

We hold few illusions that a single article will substantially change Poplin's position with respect to the behavioral paradigm, or even begin to modify her passionately and deeply felt convictions about the attitudinal differences between holism and behaviorism. There is little room for misinterpreting her position when she states:

This [holism] is incompatible with the myriad of manipulation techniques that are used to *force, coerce, or cajole* students to learn what others want them to learn. *These behavior management systems are developed to assure that students' behaviors are controlled while "learning" is forced down passive, uninterested throats.* These include such methods as assertive discipline, clinical teaching, response cost procedures, and programmed learning. (Poplin's second article, emphasis added)

We will state now that it is not our goal to persuade Poplin, or to match her pejorative style. Our intent is to describe the behavioral paradigm in as clear a manner as we can, using Poplin's paper as the point of departure. Since space limitation does not permit an itemized discussion of all of the philosophical and methodological issues raised in Poplin's two papers, our response will relate the contributions of the behavioral paradigm with respect to the teaching literature, including generalization. Finally, our conclusion will summarize the contribution of applied behavior analysis to the continuing development of special education practices. We plan to present points that will lead to further *constructivist* (to borrow a phrase) and informed

exchanges and a continued exploration of effective teaching methodologies.

EFFECTIVE TEACHING AND LEARNING

Suffice it to say that whatever differences appear in our orientations, we share her clearly implied commitment to student learning; a simply stated yet complicated goal. One needs to look no further than the definition of applied behavior analysis to see our viewpoint:

Applied behavior analysis is a discipline devoted to the understanding and improvement of human behavior . . . [It] focuses on objectively defined, observable behaviors of *social significance*, it seeks to improve the behavior under study while demonstrating a reliable relationship between the procedures employed and the behavioral improvement; and it uses the method of science—description, quantification, and analysis. (Cooper, Heron, & Heward, 1987, p. 2, emphasis added)

Poplin views behavioral efforts to enhance student learning as unidirectional, meaning that the teacher "knows" what is to be learned, and the student's job is to learn it. She describes the behavioral paradigm as passive with little student participation in the learning process. In our view, learning is active, implying teacher *and* student participation in the instructional process.

Teacher Participation

The teacher's responsibility is to arrange the instructional environment to provide opportunities for supervised practice, feedback, and application. This task is more difficult than it sounds, particularly when teaching students with learning disabilities, each of whom may be working on different levels. However, it has been done—witness the work in multiple peer tutoring approaches (Greenwood, Delquadri, & Hall, 1984; Heward, Heron, Ellis, & Cooke, 1986).

¹For the reader's benefit, the arguments presented in Poplin's two manuscripts are consistent with previous literature (e.g., Heshusius, 1982, 1984, 1986; Poplin, 1984, 1987). Also, the literature contains articles that describe the behavioral contribution to learning (e.g., Gersten, Carnine, & White, 1984; Gersten, Carnine, & Woodward, 1987; Gersten, Woodward, & Darch, 1986; Nelson & Polsgrove, 1984; Rose, Koorland, & Epstein, 1982; White, 1986).

With respect to the teacher setting the occasion for student opportunity to respond (OTR), the efficacy data are convincing (Gersten, Carnine, & White, 1984). As Gersten et al. (1984) conclude from their studies:

Approaches which specify instructional objectives, explicitly teach specific problem solving strategies, and *carefully lead students through all the steps in applying these strategies to real world problems*, are more effective than approaches that try to develop vaguely defined general problem solving or inquiry skills. (p. 56, emphasis added)

In addition to the content that the teacher attempts to teach, the well-trained behaviorally oriented teacher has a repertoire of instructional alternatives and uses them in an organized manner so that the student can practice and apply the principles to many different types of learning situations in the real world (Greenwood, Delquadri, & Hall, 1984; Greenwood, Dinwiddie, Terry, Wade, Stanley, Thibadeau, & Delquadri, 1984). Wallace and Kauffman (1986) support a strong focus on the importance of practice when they state: "Students need to be directly taught the specific skills they are lacking. They learn to read by reading and calculate by calculating. Obviously, the more time spent in developing any given skill, the greater the chance that the student will learn that skill" (p. 95).

Practice is consistent with the concept of task analysis, which should be used to guide (not restrict) instruction. Most learning that is useful for students, for whatever purpose—leisure, enjoyment, employment, or personal use—is complex and can be difficult for an individual to learn all at once. This difficulty is compounded by the learning problems encountered by a student in special education. Instruction needs to be systematic, constantly building on previous learning. To this end, task analysis can be an effective procedure for developing a progressive series of linked steps. However, the focus is not on the components, but rather remains on the goal of learning, that is, making it relevant to the student (Treiber & Lahey, 1983). The goal should be repeatedly re-assessed to determine

progress, and if steps are learned vicariously, so much the better—learning progresses even faster. As Polloway, Payne, Patton, and Payne (1985) describe the prescriptive teaching model, task analysis is not static; it is a dynamic cyclical process of assessment/planning, teaching, and further assessment.

Student Participation

The behavioral paradigm does consider the student to be central in the learning process. Applied behavior analysis has long been interested in focusing on the student as a critical facet of the student-environment interaction. The term "operant" itself implies that the individual's behavior *operates* on the environment and modifies it, which, in turn, influences future behavior.

When considering the curriculum, or the content of learning, one should always focus on the student. Even in situations in which the student's learning disability requires a great deal of teacher/parent direction, the content and instructional approaches should center on the goals of the student. Baer, Wolf, and Risley (1987), for example, point out that research studies and instructional practice should focus not only on student learning, but also on the impact of that learning on the student's life. For instance, does teaching a student appropriate social skills actually lead to higher quality of life in "mainstream" society? The guiding assumptions of the "Relevance of Behavior Rule" (Allyon & Azrin, 1968) and concept of social validity (Wolf, 1978) speak directly to this issue.

Contrary to Poplin's belief about behavioral instruction, student experiences and learning history are important in the instructional process. Baer, Wolf, and Risley (1987) discuss the concept of "contextualism," meaning that the individual influences environmental conditions as well as being influenced by them. Baer et al. go on to explain that learning does not occur passively in a sterile vacuum; rather, it occurs actively in a rich and complex environment. It is important to examine

previous interventions, the student's past learning patterns, maintenance of skills/concepts, effective settings and strategies, and the consequences that result in the most productive learning. Foremost among all of these considerations are activities that interest the student. Behavioral teachers integrate instruction and practice within such a context.

Finally, by actively engaging students in learning, other effects are noted. Gersten et al. (1984), when summarizing the results of several OTR studies, shed light on the subject when they stated:

The most surprising aspect of the results was that students in Direct Instruction (and other behavioral programs) seemed to feel better about themselves and take more responsibility for their own successes and failures in school. By aiming more narrowly and more precisely than the other approaches, the model succeeded in its broader goal—of developing reasonably intelligent, self-reliant learners. (p. 56)

We submit that using the behavioral paradigm in the prescribed manner produces exactly the outcomes Poplin would like to achieve for students with learning disability. These reasonably intelligent and self-reliant learners develop because of the manner in which they are involved in the learning process, including how errors are corrected. Unlike Poplin's characterization, students are not blamed or punished when errors are made. To the contrary, in a behavioral paradigm every attempt is made to provide students with a strategy for problem solving and to let them work out the problem themselves. In the best designed programs, two things happen when an error is made. First, the teacher conducts an analysis of student behavior, including an examination of presentation mode, feedback, and structure.² Second, teacher assistance is faded as soon as possible (Gersten et al., 1984). It is never the case that the assumption is made that the student is to blame for the error.

Some current practices in special education, such as the administrative functions of labeling and categorizing, which serve as the basis of the identification process, are in direct contrast to this

²The reader is referred to Wallace and Kauffman's (1978) text *Remedial Teaching Model* for an excellent description of how errors are treated in a way consistent with a behavioral orientation.

attention to individual students and their learning needs. For example, in the field of learning disabilities, the establishment of a discrepancy between aptitude and achievement may enable students to receive special education services, but it does very little to increase the understanding of their learning needs. This view is consistent with the perspective of a cross-section of prominent special educators (Algozzine & Ysseldyke, 1987; Reynolds, 1985). When misused, labeling places the "blame" for the student's learning difficulty within the student. A behavior analyst focuses on facilitating student learning by involving the student and establishing an environment conducive to learning, whether it be by arranging the physical setting, presenting sequential activities, providing for systematic feedback, or encouraging frequent practice.

Generalization

Poplin quite appropriately places a great deal of importance on the generalization of learning. We agree with her position that "failure to generalize and maintain skills after repeated instruction remains a major concern of teachers of students with learning disabilities" (Poplin's first article), and that learning without generalization can be incomplete or limited. We disagree, however, with her assertion that the behavioral paradigm has failed to document generalization and maintenance of skills, and subsequently that the behavioral paradigm "actually creates" the failure in the first place.

Generalization has been defined as the "occurrence of relevant behavior under different, nontraining conditions (i.e., across subjects, settings, people, behaviors, and/or time) without the scheduling of the same events in those conditions" (Stokes & Baer, 1977, p. 350). It has been an axiom of applied behavior analysis for 20 years that practitioners need to design generalization as part of the student's program, rather than simply lamenting its nonoccurrence (Baer, Wolf, & Risley, 1968).

Increasingly within the past 10 years, much attention has been paid to enhancing generality of behavior change, including the examination of environmental cues, learning requirements, and reinforcement schedules (Kohler & Greenwood, 1986; Pigott, Fantuzzo, & Gorsuch, 1987). We concur that the effort to program for generality is dif-

ficult, given the complexity of individuals, environments, and learning requirements, which are an integral part of functioning in a variety of situations. Dunlap and Johnson (1985) address this complexity, pointing out that generalization involves the examination of the environmental or situational conditions as well as the consequences or feedback delivered contingent on behavioral occurrences. The difficulty with demonstrating generality may well be related to inadequate analysis of the environmental or contextual conditions that form the basis of complex interactions between the individual and the environment (Barrett, 1987).

Deshler, Alley, Warner, and Schumaker (1981) adapt Stokes and Baer's (1977) strategies for promoting generality of behavior change with students with severe learning disabilities. Included in their suggested practices are the use of cues; sufficient examples; multiple trainers, settings, and conditions; delayed reinforcement; and the students themselves. While the application of one or more of these strategies does not guarantee generality of behavior change, the absence of any of these strategies in the student's instructional program does little to foster its development.

Programming to enhance generalization remains a complicated issue (Cooper et al., 1987), but one with promising trends (Ellis, Lenz, & Sabornie, 1987a, 1987b). One point is clear: generalization is an active process that requires specific programming efforts, and these efforts go hand in hand with the acquisition of the skill (Baer et al., 1968, 1987; Deshler et al., 1981).

CONCLUSION

This brief review summarizes our views regarding the relationship between a behavioral perspective and learning. We agree with Baer (personal communication, October 1982) when he states:

An ideal science would specify the necessary and sufficient conditions for its subject matter; our subject matter is behavior change, and we can specify some actionable sufficient conditions for it. It is illuminating to ask all alternative approaches whether they can specify even some actionable sufficient conditions for behavior change of the sort necessary to the solution of educational problems, and can do so at the level of proof.

In the spirit of inquiry we offer the challenge to Poplin and her colleagues to specify at the level of proof a convincing case for the holistic/constructivist paradigm, while at the same time reminding ourselves that our commitment to the field of applied behavior analysis requires us to continue with our demonstrations. Learning as defined by the interaction between the individual and the environment, whether labeled as behavioral, cognitive, developmental, functional, holistic/constructivist, maturational, or skill based, takes place as a function of the contingencies of reinforcement with or without the conscious awareness of the individual.

It is clear that our collective understanding of the complex interaction between the individual and the environment is still developing, and that all practitioners, including those who adopt a behavioral paradigm, must be technically competent. In short, we readily concur with Baer (personal communication, October 1982) when he states:

At the level of our current practice, we need to recognize that it is entirely possible for poorly trained personnel to construct arbitrary translations of problems into behaviors to be changed; arbitrary translations can easily be foolish translations, and subsequent behavior-change programs aimed at foolish targets are rendered foolish themselves. . . . Thoughtless behavior analysis is probably as bad as thoughtless anything else.

Most important, however, the behavioral paradigm has provided a validated and documented methodology with which to continue the investigation of the relationships among the individual, the environment, and learning, no matter where it may lead.

In sum, our preparation and involvement in applied behavior analysis has served us well as special educators, especially in our work with students with learning disabilities. It has enabled us to:

1. Concentrate on the individual student's learning strengths and needs as the focus of our efforts, rather than presumed disabilities or preconceived categories.
2. Base educational goals on learning relevant in natural environments, and analyze the complex learning re-

quired to achieve those goals.

3. Consider the full context of the student's learning environment, including the student's interest, learning history, and school/home/community settings.
4. View the student as an *active learner* and base instructional decisions on frequent measures of student performance, rather than administrative labels or comparative testing.
5. Acquire an array of instructional strategies and methods for facilitating and evaluating positive learning experiences (Alberto & Troutman, 1986; Engelmann & Carnine, 1982; Pollock et al., 1985; Rusch, Rose, & Greenwood, 1988; Sulzer-Azaroff & Mayer, 1986). Our background also enables us to appreciate the efforts of individuals whose work would not be classified as strictly behavioral literature. For example, Palincsar and Brown (1984) in the reciprocal teaching of reading; Graves (1983) in the writing process; and Johnson and Johnson (1984) and Johnson, Johnson, Holubec, and Roy (1984) in cooperative learning illustrate quite clearly the benefits of a focus on relevant learning and on-going practice.

We share Dr. Poplin's clear commitment to the field of learning disabilities, and her desire to enhance the academic and social experiences of these students. It is our desire that the preceding comments lead to further clarification of the issues that bind us together.

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