

INTRODUCTORY REMARKS

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During the late 1950s and early 1960s a small group of behaviorists began investigating a peculiar dependent variable, at least for operant researchers at that time—human behavior (e.g., Azrin, 1958; Laties & Weiss, 1960; Lindsay, 1956). A few of these researchers were interested in behavior that might be considered uniquely human, such as certain verbal and social behavior, but the majority preferred to work with human performance on basic reinforcement schedules, a strategy sired from interest in interspecies generality. Although there have been several researchers who dared forays into other areas, such as cooperation (e.g., Hake & Vukelich, 1973; Schmitt & Marwell, 1968), sharing (e.g., Hake, Vukelich, & Olvera, 1975); verbal behavior (e.g., Rosenfeld & Baer, 1970); multiresponse settings (e.g., Bernstein & Ebbesen, 1978), and aging (Baron, Menich, & Perone, 1983) to name a few, the tradition of researching human performance under schedules of reinforcement has continued to the present (e.g., Lowe, Beasty, & Bentall, 1983; Poppen, 1981; Ruddle, Bradshaw, Szabadi, & Foster, 1982).

Interspecies Generality and Basic Schedule Work

While the investigation of human performance under different schedules of reinforcement might be described by persons outside the field as tedious and probably irrelevant to human behavior in ordinary life, this type of work has proven to be of significant import. The dozens of systematic replications involving human performance on reinforcement schedules have consistently shown that human behavior, in the majority of cases and regardless of the schedule in effect, is different, in varying degrees, than the behavior of rats and pigeons on similar schedules (for a review, see Lowe, 1979; Weiner, 1983). These performance differences have been used by some to point to the weaknesses of operant research involving nonhuman animal subjects: (1) It is not generalizable to the human population; (2) human behavior is not amenable to experimental analysis, and (3) operant psychology simply does not do what its proponents said it could do (see e.g., Brewer, 1974; Spielberger & DeNike, 1966).

At first blush, these conclusions appear justified: There is an undeniable difference in the performance of human and nonhuman subjects under similar experimental conditions; operant research with nonhumans produces consistent and clear-cut results both between subjects and between replications while similar research with humans has produced large intersubject differences both within and across experimental conditions. Recent research, however, has shown that human behavior is affected by the same classes of things that affect nonhuman animal behavior, namely, antecedent and consequent stimuli, but that specific types and arrangements of stimuli may be different. While nonhuman animal behavior is considered to be primarily shaped and controlled by experimental contingencies, human behavior appears to be a blend of both experience with experimental con-

tingencies and any experimenter-provided and/or subject-produced verbal description (rules or instructions) of those contingencies. Experiments by Catania, Matthews, and Shimoff (Catania, Matthews, & Shimoff, 1982; Matthews, Shimoff, Catania, & Sagvolden, 1977; Shimoff, Catania, & Matthews, 1981) as well as by Harzem, Lowe, and Bagshaw (1978) have shown that human performance under highly controlled conditions is affected by both the level and quantity of instructions provided by the experimenter and by a subject's own verbal behavior regarding experimental tasks. It is thus not the case that human behavior is not subject to environmental control. Rather, the controlling variables are different, both in themselves and in interaction with other variables.

An Updated Census of the EAHB Literature

In order to sketch the development of the experimental analysis of human behavior (EAHB) as well as to provide the backdrop necessary to appreciate the papers presented in this symposium, I wish to address four questions briefly.

1. The first question is elementary: What is the experimental analysis of human behavior?

EAHB is simply the application of behavior-analytic theory, methodology, and philosophy to the study of human behavior. Human behavior is the dependent variable. As Jim Johnston (1983) has put it, "any and all behavioral phenomena or relations qualify for experimental attention, *regardless* of their origins, nature, mechanisms or traditional research context" (p. 2). The accent is on human behavior and not that of other animals for at least three reasons. First, nonhuman animal work has focused increasingly on conditioning to the exclusion of other significant variables. Second, and as Hake (1982) has pointed out, there may be cases such as the analysis of verbal behavior and certain social behavior in which humans are the *only* appropriate subjects to use. The acid test of our science is, of course, whether or not our theories and procedures work with the real McCoy. Third, operant psychology, despite passing itself off as the "science of human behavior" has concentrated primarily on the investigation of the behavior of nonhumans. Partly as a reaction to these conditions and partly because of serious interest in human behavior itself, both laboratory scientists and others have begun to encourage the development of EAHB and to refine its methodology. All this is not to say that nonhuman animal work is not important or useful. We do not indeed need less nonhuman animal research; we do, however, need proportionately more human work. Contributions to knowledge about the variables that control behavior in general will come from the joint efforts of both types of research, but knowledge about the special circumstances under which much human behavior takes place will only come about through intensified laboratory research programs involving human subjects.

2. The second question is a quantitative one: How much human operant research has been conducted?

I counted the number of articles involving human subjects published in JEAB from 1958 through November 1985 and found that they (199 studies) comprise roughly 10% of the total research-oriented articles that JEAB has published (cf. Buskist & Miller, 1982). The figure over the last 5 years is a bit more cheerful: 17.5%. Granted, these figures may not give us an accurate picture of the actual amount of EAHB research that has been conducted as many authors may have

had their research rejected by JEAB and either did not resubmit their report or submitted it elsewhere. However, in a survey of several other behavioral journals conducted by myself and Hal Miller in 1982, we found that JEAB was the primary publication outlet for EAHB research. A perusal of the same journals today would no doubt yield a similar finding.

3. What kinds of human subjects have been employed typically in EAHB research?

Surveying EAHB research published in JEAB from 1958 through November 1985, I found the following: normal adults (university and college undergraduates), 56%; normal children, 23%; retarded adults, 10%; and retarded children, 11%. These figures have changed moderately during the past 5 years: normal adults down to 51%; normal children, up to 37%; and both retarded adults and children down to 5 and 7%, respectively.

4. What types of human behavior have been studied most frequently?

To answer this question, I inventoried the various types of EAHB reports published in JEAB and came up with several general categories. In descending order of popularity they are: schedule performance and reinforcement effects, stimulus control, aversive control of behavior, social behavior and verbal behavior. Thus with the exception of the social and verbal behavior studies, which comprise only 11% of the total EAHB articles published in JEAB, EAHB research has followed, quite justifiably, traditional lines of nonhuman animal research. This trend is changing though, as 40% of the EAHB articles published in JEAB since January 1981 have involved social and verbal behavior.

In summary, the percentage of EAHB research published in JEAB over the last five years is nearly double that published during the period 1958-1980. Although the most popular subject for research is the normal adult, the use of normal children appears to be increasing rapidly, presumably, because researchers interested in language development and complex stimulus control such as that involved in the formation of equivalence classes have found children particularly suitable subjects (see Lowenkron, 1983). Similarly, whereas basic schedule work (i.e., examination of performance solely as a function of schedule parameters) with humans is still popular, the application of reinforcement schedules as a tool to study social and verbal behavior is also increasing.

Each of our presenters has contributed to the progress currently being made in the experimental analysis of human behavior. Mark Galizio discusses the importance of rigorous experimental control in a science of human behavior, with specific emphasis in the area of rule-governed control, in our first paper. In the second paper, authored by Barbara Etzel, the history and current role of children as experimental subjects in behavioral research is presented and compared to the role that nonhuman animals play in such research. The relation between the experimental analysis of human behavior and applied behavior analysis is considered in the third paper, written by Sam Deitz. The final paper authored by Aaron Brownstein and Rick Shull presents the case for the study of complex human functioning. Jack Michael has provided his comments as discussant.

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