

On the experimental analysis of human behavior

Acerca del Análisis Experimental de la Conducta Humana.

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ABSTRACT

The experimental analysis of human behavior (EAHB) represents the most significant, if immature, component of the science of human behavior. Reasons for EAHB's current immaturity include: the small number of operant researchers actively pursuing human research, researchers' unwavering adherence to an operant chamber paradigm, and a considerable lack of breadth of the behavioral phenomena investigated by operant researchers. Suggestions for improving EAHB's status as a science of behavior are discussed, and include: a broadening of empirical scope to include behavior not traditionally investigated by operant researchers, reassessment of the use of the standard operant chamber, and a willingness on the part of human operant researchers to familiarize themselves with relevant "nonbehavioral" and "nonpsychological" literature. Finally, while an evaluation of contemporary EAHB finds it wanting of methodological innovation, its prospects are nonetheless strengthened by a sophisticated and comprehensive theory of behavior.

DESCRIPTORS: Human behavior.

RESUMEN

El análisis experimental del comportamiento humano (AECH) representa al componente más importante, aunque inmaduro, de la ciencia de la conducta humana. Entre las razones de la inmadurez del AECH se mencionan: el pequeño número de investigadores operantes que se dedican activamente a la investigación con humanos, la persistencia de los investigadores a usar el paradigma de la cámara operante, y la considerable falta de diversidad de los fenómenos conductuales investigados por los investigadores operantes. Se discuten las sugerencias para mejorar el estado del AECH como una ciencia del comportamiento, y se mencionan: apertura de la perspectiva empírica para que se incluyan conductas que tradicionalmente no son investigadas por investigadores operantes, reevaluación del uso de la cámara operante, y el deseo de los investigadores operantes del comportamiento humano de familiarizarse con la literatura "no conductual" y "no psicológica". Por último, aunque la evaluación del estado actual del AECH sugiere la nece-

sidad de innovación metodológica, su futuro es promisorio por la existencia de una teoría sofisticada y comprensiva del comportamiento.

DESCRIPTORES: Comportamiento humano.

During the late 1950s and early 1960s a small group of behaviorists investigated a peculiar dependent variable, at least for operant researchers at that time—human behavior (e.g., Azrin, 1958; Lindsley, 1956). Although a few of these researchers were interested in uniquely human behavior, such as verbal and certain social behavior, the majority preferred to work with human performance on basic reinforcement schedules, an objective sired from interest in interspecies generality. Several researchers have since dared forays into other areas, such as cooperation (e.g., Schmitt & Marwell, 1968; Hake & Vukelich, 1973), sharing (e.g., Hake, Vukelich, & Olvera, 1975); verbal behavior (e.g., Rosenfeld & Baer, 1970), multiresponse settings (e.g., Bernstein & Ebbeson, 1978), and aging (Baron, Menich, & Perone, 1983), but the tradition of researching human performance under schedules of reinforcement has continued to the present (e.g., 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 as mundane and irrelevant to the discovery of variables that actually control human behavior, it nevertheless has been this type of work that has proven to be of import. The dozens of systematic replications involving human schedule performance have consistently shown that human behavior, regardless of the schedule in effect, is different, in varying degrees, than the behavior of the rat and pigeon (for a general review of these differences, see Lowe, 1979; Weiner, 1983). These differences, as Weiner (1983) has noted, have proved to be a thorn in the side of most human operant researchers over several decades. Performance differences between nonhuman animals and humans 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 usually 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 with humans has shown that human behavior is affected by the same classes of events 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 pri-

marily shaped and controlled by experimental contingencies, human behavior appears to be a blend of both experience with experimental contingencies and any experimenter-provided and/or subject-produced verbal descriptions (rules or instructions) of those contingencies. Experiments by Catania, Matthews and Shimoff (Matthews, Shimoff, Catania & Sagvolden, 1977; Shimoff, Catania & Matthews, 1981; Catania, Matthews, & Shimoff, 1982) as well as by Harzem, Lowe and Bagshaw (1978) have shown that human performance under highly controlled conditions involving reinforcement schedules, is affected by both the level and quantity of instructions provided by the experimenter and by a subject's own verbal behavior in experimental tasks. Thus it is not the case that human behavior is not subject to environmental control, it is simply that the controlling variables are different, both in themselves and in interaction with other variables.

Factors Impeding the Development of EAHB

The leading figure in operant psychology, B. F. Skinner, has fervently argued the urgency of an experimental analysis of human behavior (see e.g., Skinner, 1953, 1957, 1969, 1978). In fact, a reading of Skinner's works leaves one with the impression that operant psychology is the experimental analysis of human behavior and that only through experimental analyses will a complete understanding of human behavior emerge. If our ultimate goal as scientists, is to bring about a greater understanding of human behavior why are there so few operant researchers studying human behavior? Several persons have recently attempted to address this question and the answers they have offered are straightforward: Human research is difficult to undertake and complete successfully because of 1) "nuisance" variables, such as history effects and verbal behavior, that are difficult to control and thus contaminate results; 2) demand characteristics of the experimental situation; 3) ethical concerns regarding the treatment of human subjects necessarily restrict the types of research questions and problems one can address; and 4) individual differences among subjects indicating that sources of variation have been uncontrolled (for a detailed discussion of these issues, see Baron and Perone, 1982). Other researchers assert that the behavior of the rat or pigeon in the operant chamber may, in some special cases, be isomorphic to that of humans in their natural environment (Epstein, 1981) are also those who argue that the human species is an unsuitable one for the investigation of fundamental behavioral processes (e.g., Dinsmoor, 1983).

Promoting EAHB through Interdisciplinary Research

Partly to rectify these problems and partly because of serious interest in human behavior itself, a movement has begun among behavior analysts, both laboratory scientists and others, to encourage the development of EAHB and refine its methodology. The current sentiment among these persons is not that less nonhuman animal or applied work should be done, but that proportionally more basic human research needs to be conducted. Contributions to

knowledge about variables such as attention, affection, or which other social reinforcer control our workaday 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 and field research programs involving human subjects. Indeed, to realize Skinner's "active prosecution" of a science of human behavior at least two things are necessary. First, behaviorists, be they nonhuman animal or human operant, basic or applied, must possess a thorough understanding of the philosophy of their science, behaviorism. Without such moorings, behavior analysts can be easily led astray by the enticings of mentalism. Secondly, more persons must become attracted to and become *actively* involved in the experimental analysis of behavior (nonhuman and human), as presently there is only a skeleton crew composed of the JEAB editorial board and a few others, engaged in the business of doing *rigorous* operant research. Expansion of behavior analysis can only occur if its current researchers augment their interests with other, traditionally nonoperant areas of inquiry or if new persons with broad research interests are converted to experimental analysis of behavior. An important part of our missionary efforts is to demonstrate to other psychologists that we have the wherewithall to study broader, and perhaps more important behavior than the pigeon's keypeck.

One of the more critical objectives of the experimental analysis of human behavior is to enhance the breadth of research topics addressed by its practitioners. The ambitious nature of this goal becomes apparent when one considers, as have Harzem and Williams (1983), that "reinforcement theory is not confined to 'behavior' if that term is used to mean gross muscular movement. It is a far broader theory of human action, including the hopes, desires, passions, disappointments and other colors and shades of human nature" (p. 576). The challenge facing the experimental analysis of human behavior, then, is not a modest one and while no consensus exists on how to best do so, the enhancement of human operant research would seem to benefit from several plausible courses of action. Among other things, experimental analysts might be encouraged to: (1) attend to literature in other areas of psychology that has often been ignored by basic operant psychologists (e.g., developmental, personality, social, applied behavior analysis, etc.), (2) attend to literature in other social sciences which might bear relevantly upon a science of human behavior (e.g., economics, sociology, political science), and (3) strive toward experimentally investigating the full range of human behavioral phenomena to which Harzem and Williams (1983) referred, probably through analogue studies.

The first of these recommendations, attending to a wider psychological literature, could possibly lay open entire research programs to operant psychologists who would otherwise have been restricted to more traditional subject matter. For example, a significant contribution to the literature could be made by continued investigation of developmental factors and their

relationship to behavioral dynamics (see, e.g., Bijou & Baer, 1978; Bijou & Orlando, 1961; Birnbrauer, 1971; Lowenkron, 1984). Lowe et al. (1983) have taken a step in this direction with their research on infant schedule performance. While these researchers were specifically interested in the role of verbal behavior in schedule performance, highlighting the role of development in operant behavior need not involve verbal behavior.

Of course, behavior analysts would be prudent to recognize that other social scientific disciplines have something to say about human behavior. Fortunately, this fact has not gone entirely unnoticed. Examination of any current sociology textbook would reveal that the theoretical and experimental practices of sociology and psychology are not always readily distinguishable. There is, in fact, at least as much variation characterizing the methods and scope of psychological inquiry as there exists between the practices of psychologist and sociologists. It would, therefore, behoove the behavior analyst to discover whether the sociological literature contains material of theoretical or methodological value to a science of human behavior.

The experimental analysis of social behavior involving human subjects has been primarily limited to investigations of the smallest of social groups, the dyad (e.g. Shimoff & Matthews, 1975; Molm, 1979). An operant analysis of social behavior on a large scale (e.g., the family social organizations, international conflict) awaits both theoretical and methodological advancement, the former having perhaps received initial support in the form of a text on behavioral sociology (Burgess & Bushell, 1969). The call for an experimental analysis of social behavior is nowhere made clearer than by sociologist Homans, (1969) who contends:

the problem of explaining and predicting through behavioral principles the operation of fundamental social processes and their combination in particular circumstances is central to all of social science. The failure of psychologists to tackle it gives sociologist their opportunity (p. 24)

On another front, an empirically fruitful relationship has recently emerged between the experimental analysis of behavior and economics. The notion that economic science could benefit from the techniques of behavioral science, particularly those used in an analysis of functional relations, was initially proposed by Castro and Weingarten (1970). Reacting sluggishly, behavior analysts have only recently begun to design research paradigms for the laboratory study of economic principles (see Hursh, 1980; 1984). A substantial proportion of this research utilizes nonhuman species under conditions said to be analogous to economic conditions experienced by humans (Rachlin, Green, Kagel, & Battalio, 1976). The relevance of economic principles to the experimental analysis of human behavior is somewhat less apparent, although Kagel and Winkler (1972) have conceptualized the token economy common to many institutional settings as an especially appropriate context in which to conduct economic research.

The suggestions that EAHB expand its analysis to encompass behavioral phenomena commonly labelled "mentalist" would also seem to be a healthy recommendation. And, optimistically, the analysis of behavior may be more adequately poised to meet such a challenge than many of its critics would have us believe. In particular, Skinner's (1953, 1969, 1974) writings have long espoused the compatibility of private events and radical behaviorist philosophy. It has been, understandably, the empirical investigation of such processes that has proved especially onerous. What is being suggested is that while behavior analysts certainly need to "behavioralize" traditionally non-behavioral phenomena, this challenge may prove relatively less irksome than the problems posed by procedural considerations. For this reason, the operant psychologist whose interests include the construction and refinement of apparatus exclusively designed for human operant research would emerge as a vital contributor to the future of EAHB.

Of course, to suggest that EAHB strive to bring "naturally occurring" behavior into the laboratory is not to condemn the practice of conducting research on fundamental processes. The investigation of human performance on basic schedules of reinforcement, for example, has provided an important knowledge-base concerning species and history differences and its practice is justified if it does nothing more than this. This does not mean, however, that a science of human behavior is anywhere near completed by an exhaustive account of basic schedule performance. What EAHB would seem to benefit from is an extension of the analysis of schedule performance to realistically capture the extreme aperiodicity of reinforcement involved in human behavior. Advances in EAHB will require, among other things, the manipulation of highly integrated and complex chain schedules whose response and temporal requirements far exceed those typically employed in the operant laboratory. The data derived from basic schedule work, then, should not be viewed as a terminal objective of EAHB, but a means by which to determine how reinforcement and its delivery come to exert control over human responding.

Consequences of Expanding EAHB for Operant Psychology

Until a complete experimental analysis of human behavior is undertaken, it will be difficult to say, with any certainty, how valuable such an enterprise will ultimately prove to be. From the present state of affairs, both in psychology and society, such an undertaking seems to be warranted and the consequences beneficial. The consequences of devoting more research time and energy to EAHB are several and merit brief discussion.

First, EAHB has the potential of adding new life to operant psychology. With a broad EAHB base, operant psychology can be infused with new and important questions and problems that require the same kind of careful control and scrutiny required of nonhuman animal researchers. While research in areas such as autoshaping, the matching law, etc. is important, it is highly unlikely that any number of additional microscopic studies in any such area

will meaningfully contribute to our chances of improving the human condition. Moreover, it is important not to view experimental analysis of behavior simply as an area of psychology but rather as an approach to all empirical and conceptual issues found in the social sciences.

Second, an expanded EAHB would advertise to the test of psychology that we have the theory, methodology, and technology to provide answers to difficult questions concerning old and new human problems. This, in turn, may have the effect of drawing greater attention, funding, and personnel to the experimental analysis of behavior.

Third, and as Hake (1982) briefly explained, EAHB may serve as a bridge between the so-called basic and applied domains of operant psychology. A greater interest in EAHB may have the effect of making certain social/clinical problems of more interest to basic researchers. Just as important, applied researchers may begin to show renewed interest in the work of the "laboratory" researcher. With the continued development of both basic human operant and applied research, the armamentarium of tools for research and therapeutic use would grow and, conceivably, it would become possible to research and derive basic principles of behavior while addressing "applied" issues.

Summary

The fact that several behaviorists, among them Skinner (1978), consider the experimental analysis of human behavior to be the ultimate expression of the experimental analysis of behavior testifies both to the importance of and the enormous challenge facing EAHB. Unfortunately, several factors currently impede the emergence of EAHB as a mature science of human behavior including: (1) lack of experimental ingenuity and scholarly breadth, and (2) a shortage of personnel engaged in the experimental analysis of human behavior.

Though no immediate remedy for the ills currently afflicting EAHB has arisen, tactics that seem to be obvious stepping stones to a healthier science of human behavior include: (1) an increase in the amount of human operant research conducted by those currently involved in the experimental analysis of human behavior, though not at the expense of animal and applied research, and (2) encouragement of an interdisciplinary scholarship leading, ultimately, to a more encompassing range of human affairs addressed by operant psychologists.

The benefits to be derived from an expanded and healthier EAHB would include: (1) an enlivening and broadening of the discipline of operant psychology, (2) appraisal of the larger psychological community of the theoretical and methodological vitality of the experimental analysis of behavior, and (3) the development of a gainful bridge between human operant researchers and their applied colleagues.

Finally, while it might be tempting to consider the challenge facing the

experimental analysis of human behavior to be an overwhelming one, there is, similarly, reason to remain optimistic. Much of what needs to be done in the way of developing EAHB relies heavily on individual ingenuity, particularly with respect to research and apparatus design. The critical factor, of course, to expanding EAHB is the carrying out and publishing of good research. Fortunately, the theoretical edifice for asking the right questions and devising the appropriate experiments has been, at least in large part, laid by Skinner (1953, 1957). The future of the experimental analysis of human behavior, and it is a potentially bright one, depends upon its ability to empirically embrace what presently stands as a rich and encompassing theory of behavior.

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