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BEHAVIORISM MAKES ITS DEBUT: A REVIEW OF LATTAL AND CHASE'S BEHAVIOR THEORY AND PHILOSOPHY

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Behavior Theory and Philosophy, masterfully edited by Lattal and Chase, is a collection of 21 papers by major behaviorists, presented and discussed at a conference on the intersection of philosophy and behavior analysis held at West Virginia University in 2000. The chapters in Part I are devoted to philosophy of science (causality, constructs, theory, explanation, reductionism) and the relations among behavior analysis and several contemporary philosophical movements (humanism, empiricism, pragmatism, selectionism, analytic philosophy). Part II examines behavior-analytic interpretations of mentalistic concepts (intention, imagination, ethics, cognition). Part III presents extensions and applications of basic research in behavior analysis (verbal behavior, creativity, development, education, disability, and corporate culture). The publication of this book signals that behaviorism has developed mature philosophical foundations.

Key words: behaviorism, philosophy, Skinner, experimental analysis of behavior, applied behavior analysis, ethics

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With the publication of *Behavior Theory and Philosophy* behaviorism has clearly come of age. By ''behaviorism,'' I do not refer to the science of behavior but rather to the philosophy of that science (Skinner, 1974, p. 3). Through much of its early history, behaviorism was unfortunately burdened by an association with the philosophy of science known as ''logical positivism.'' In some cases (Hullian theorizing for example), this association was explicit, but in other cases the connection was artificial (Zuriff, 1985). Discussions of behaviorism were often attacks or defenses of various forms of operationism and logical positivism. A second source for behaviorist conceptual thought was the writings of the major early behaviorists. Weiss (1929), for example, developed a rather sophisticated philosophy of science for the new behaviorism. However, Weiss was the exception. For the most part, early behaviorist conceptual writings, like those of Watson (1924), did not contextualize behaviorism within the larger currents and issues of mainstream philosophy. As psychologists rather than philosophers, these major behaviorists were more interested in developing their own scientific approaches than in discussing the broad issues of philosophy in philosophical terms. Decades later, the chapters of this book, edited by Lattal and Chase, constitute a major step towards accomplishing the objectives of a mature behaviorism: they free behaviorism from logical positivism, articulate a sophisticated behaviorism, and delineate the relation between behaviorism and contemporary philosophical movements.

The behaviorism of this book is not all of behaviorism but rather the version inspired by B. F. Skinner. Throughout his large corpus of writings, Skinner founded not only the beginnings of an empirical science, ''operant psychology,'' but he also developed a philosophy of science, an epistemology, a philosophy of mind, and a social philosophy, all closely associated with that empirical science. The contributors to this volume do not all agree with all these aspects of Skinner's thought. In some cases they explicitly disagree with his positions, and in other cases they ignore major components of Skinner's writings. In some cases they accept certain ideas of Skinner's, but reject others. Nevertheless, what all the authors have in common is that Skinner is their implicit starting point—whether to refute his views or to extend his approach, Skinner is their baseline. Thus although the authors, and the legion of behaviorists like them, do not agree entirely with Skinner, or even with one another, on all issues, they do constitute a family, united by their resemblance to their

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intellectual ''father.'' No term exactly fits this group. ''Radical behaviorism,'' ''Skinnerian behaviorism,'' and the ''experimental analysis of behavior,'' the term used by the editors of this book, come close, but all have their flaws in capturing what I am describing. Accordingly, I shall offer a neologism, ''*Skinner Inspired Behaviorism*,'' to designate this behaviorism and its associated empirical science. Felicitously, the acronym, SIB, also conveys the idea that members of this tradition are intellectual siblings rather than subscribers to a single doctrine.

Provenance of the Book

The book is based on papers delivered at a conference held at West Virginia University in April 2000 in recognition of the contributions to psychology of Hayne W. Reese, Centennial Professor of Psychology, on the occasion of his retirement from the University. Included in Reese's many scholarly interests were works on conceptual and philosophical issues in psychology. The book's title is taken from the name of a course Reese developed in the late 70s. Lattal, one of the editors, later taught this course, and his course outline served as a rough framework for the conference paper topics. Lattal and Chase, both members of the Department of Psychology at West Virginia University, organized the conference and edited the book.

Presenters at the conference were selected for their expertise in the topics of the conference, and the result is, for the most part, a collection of SIB luminaries, including editors of SIB journals, officers of SIB organizations, major researchers and theorizers, and former graduate students of Skinner's. The contributors heard one another's presentations at the conference and had the opportunity to discuss the papers. They later wrote formal versions of their presentations, eventually edited and organized into this volume by Lattal and Chase.

Lattal thus was able to realize every professor's dream. Instead of having to search for readings for each topic in a course syllabus, he was able to invite experts on each course topic to write his course readings for him! The result is a book that can be used in an advanced graduate course in philosophy and SIB, provided that the students have had considerable background in SIB and some introduction to philosophy. At the same time, the book is a good source for any scholar interested in contemporary philosophy of psychology.

Philosophy

Philosophy can be organized by topics (e.g., metaphysics, epistemology, logic) or by philosophical systems (e.g., pragmatism, realism, constructionism, empiricism) which represent systematized positions on the various topics. On the one hand, a mature SIB should be able to articulate its own system and how it relates to various contemporary philosophical movements, noting where it is congruent with a particular philosophical school, where it differs, and why. On the other hand, a mature SIB should be able to stake out sophisticated positions on the philosophical topics most relevant to it. For behaviorism, these include the metaphysical issue of the mind-body connection, the epistemological topics within philosophy of science (including the issues of explanation, reductionism, theory construction, concepts, and causality), philosophy of mind (mental concepts such as intention, imagination, perception), and possibly, issues of ethics and psychology (e.g., determinism and personal responsibility).

The organization of this volume fits reasonably well into the scheme just outlined. Part I, called ''Philosophical Foundations,'' covers the relation of SIB to several contemporary philosophical movements, and it also examines several important issue in SIB's philosophy of science. Part II, called ''Interpretations,'' is devoted chiefly to topics in philosophy of mind and to ethics. Thus Parts I and II constitute the core of the book's central concern, behavior theory and philosophy. In addition, the conference included a third set of papers, organized into Part III, entitled ''Extensions to Research and Application.'' According to the editors, this section explores the ''relation between basic research in behavior analysis and the applications of principles derived from the basic science'' (p. 5).

This inclusion of Part III is one of the book's few weaknesses. In an obvious sense, *all* behavior-analytic research is an extension and application of the basic philosophy and scientific principles of behavior analysis. It is not clear why these particular research programs were selected as examples. The chapters

in this section do not examine, for example, the philosophical issues involved in deriving ''basic principles'' in science and then extending and applying them, a very difficult and very interesting topic. To be sure, nearly every chapter in this section reports interesting and exciting research and/or conceptual thought, but the relevance of the section to the overall book topic is vague.

Behaviorism and Philosophical Systems

Several chapters in Part I are devoted to the relation of SIB to relevant schools of philosophy. Lattal and Laipple focus on pragmatism, the philosophical movement most congenial to behaviorism. After presenting a brief history of the movement, they persuasively show how Skinner's thought is congruent with pragmatism and then trace this association into contemporary SIB. Illustrating one of the recurring strengths of this book, they discuss how philosophical commitments may be manifest in concrete research issues. They show, for example, how the debate over the use of aversive control in the management of human behavior can be interpreted as a conflict over pragmatic goals.

Similarly, Donahoe examines the relation between SIB and selectionism. First, he carefully explains how selectionism overcame the apparent problems of teleology and essentialism to gain acceptance in modern biology. Second, on the basis of a parallel with biology, he argues that for selectionism, in the form of reinforcement theory, to be accepted in modern psychology, behavior analysis must develop quantitative procedures for tracing selection. To accomplish this, he suggests the use of computer simulations of neural networks. In a later section, Glenn extends the selectionist analysis to cover the origins and development of culture, using the concepts of replicators, interactors, and lineages.

Ribes-Inesta explores SIB and analytic philosophy, concentrating on scientific concepts and theory construction in SIB, arguing for a number of contrarian conclusions about the concept of reinforcement and theories of reinforcement. He argues, for example, that it is a logical error to use the concept of reinforcement to explain the decrease in response rate under a differential-reinforcement-of-low-rates schedule because reinforcement refers only to an increase in response rate. His argument ignores the long history of attempts to show that such decreases in response rate are the result of the reinforcement of incompatible behavior (e.g., Zuriff, 1969). He also argues that the concept of reinforcement as used by researchers is a dispositional one and therefore cannot be used as an explanatory concept. Nevertheless, working scientists traditionally are resistant to pronouncements from philosophy on how they should do their research and theorizing, and it seems unlikely that Ribes-Inesta's recommendations will have any discernible impact on SIB research. Possibly an exploration of the convergence of SIB and analytic philosophy in their treatment of ordinary mentalistic language might have been fruitful. Analytic philosophy has much to offer for our understanding of the nature of behavioral interpretation of mental terms (Zuriff, 2003).

In his chapter, Marr mounts a strong defense of empiricism, based on his interesting premise that ''experience,'' the core of empiricism, can be identified with the ''behavior-environment interaction,'' the core of SIB. In tracing the implications of this premise, he shows that SIB's behavioral epistemology results in a philosophically respectable blend of pragmatism and empiricism. In contrast, Staddon finds flaws with Skinner's behavioral epistemology. He objects to Skinner's attempt to derive values from science via evolutionary theory and his rejection of personal responsibility via determinism. Instead, Staddon suggests alternate conceptions of personal responsibility and cultural values that he claims are more compatible with a scientific approach.

In their respective chapters, both Marr and Staddon attack the postmodern philosophy of social constructionism, currently fashionable among psychologists, including some behaviorists who champion contextualism. It is a tribute to SIB that it is one of the few perspectives in psychology to rebut thoroughly this negative philosophy (see also Zuriff, 1998) despite the fact that social constructionism represents an assault on all scientific psychology, and on science itself. Perhaps because social constructionism is so closely associated with feminism and multiculturalism, mainstream psychology has generally not dared to criticize it strongly because to do so would seem politically incorrect.

Philosophy of Science

The remaining chapters in Part I explore SIB and philosophy of science. Moore takes on the issues of explanation and causality. After a review of the history of these topics, he contrasts their role in cognitive psychology, neobehaviorism, and SIB, and concludes that for Skinner, explanation is not identical to description.

Schaal's chapter is a good example of SIB's coming of age. From the beginnings of behaviorism, and in Skinner's early writings, there are discussions of the relation between a science of behavior and neurophysiology. In philosophical terms, this issue is known as ''reductionism''; that is, whether the molar laws of behavior can be ''reduced'' somehow to the ''underlying'' principles of biology. Behaviorists have addressed this question in various ways, but with some points of consensus. First, behaviorists have never denied the role of an underlying biology although they differ in their positions on the relation between the mental and the physical, depending on their understanding of the mental. Second, most of them agree on the value of an autonomous science of behavior, independent of neurophysiology. Third, most believe that although in principle an understanding of neurophysiology could be helpful to the science of behavior (and vice versa), in practice, neurophysiological theories frequently include speculations and concepts detrimental to the study of behavior. These discussions have been, for the most part, abstract and hypothetical because the possibilities of a productive reductionism have seemed remote. In contrast, Schaal's chapter verges on contemporary scientific practice. While acknowledging the reasons for behaviorist skepticism with regard to explanatory reductionism, he describes what such a reduction might look like, documenting his description with research examples. He neatly contrasts his version of behavioral neuroscience with that of cognitive neuroscience, and suggests a mutual synergism between behavior analysis and behavioral neuroscience. Whether Schaal's promising account will serve as a model for future explanatory reductions in SIB remains to be seen.

Emerging from Part I is a diverse set of strong and mature philosophical foundations for SIB, comparable to any offered by other branches of scientific psychology. Historically behaviorism has always been self conscious about its philosophy, because from its very beginnings it saw itself as representing the often-revolutionary view that psychology is a science. This stance raised two fundamental questions: What is a science and how can the mind be studied scientifically? These questions, in turn, necessitated at least some formal attention to the philosophy of science and the mind–body issue, and behaviorists often sought support from philosophical positions congenial to its premises. Part I of this book signals that now these questions have at least been addressed, if not resolved, in sophisticated ways, although no consensus has emerged.

Philosophy of Mind

Part II, entitled ''Interpretation,'' illustrates several examples of SIB's approach to phenomena that, on the surface, seem to involve the kinds of conscious mental events SIB excludes from its science. Palmer presents a very instructive example of how SIB can account for cognition, contrasting the behavior-analytic interpretation of this example with the cognitive approach. Suppose a speaker responds ''P'' when asked ''What is the tenth letter after F?'' A behavior-analytic interpretation of this event might appeal to the covert mediating verbal behavior ''. . . L-M-N-O-,'' thus explaining the response as the product of a plausible history and familiar principles such as reinforcement, generalization, and chaining. In contrast, a cognitive explanation might appeal to constructs such as representations, memory storages, and control processes. Palmer argues that the former explanation is scientifically more respectable because the hypothetical mediating behavior is ''constrained by an independent experimental analysis; no explanatory concept can be invoked that has not been analyzed in the laboratory under experimental control, and the terms must interact according to empirical principles'' (p. 178). In contrast, the cognitive explanation invokes theoretical concepts that are not similarly constrained and therefore cannot carry any explanatory weight.

Using this example, with its appeal to hypothesized covert verbal behavior, Palmer gives a clear and concise explication of the notion of ''interpretation'' as it is used in

science, and in SIB in particular, a notion that has not always been well defined (Zuriff, 1985, 2003). He shows that an interpretation is a kind of hypothesis, a provisional explanation of phenomena in the light of scientific theory that can help guide and organize research. Hineline, in turn, tackles the mental concept of ''intention,'' and he, too, embeds his analysis in a useful discussion about the ways that everyday mental language both reveals and distorts features of use to an experimental analysis of behavior. Rather than merely dismissing the mental discourse, he interprets intention as behavior identified in terms of its relevant consequences.

In his interpretation, Hineline makes use of the concept of ''multiple scales,'' that is, the view that individual stimuli and responses can be measured over extended periods of time and space. Taking this concept several steps further, Rachlin, in his chapter, argues that privacy, one of the hallmarks of the mental, can be given a behavioral interpretation using appropriate behavioral scales. In contrast, Skinner and most of his followers have dealt with the problem of privacy (e.g., a person visualizes a page and then appears to read from it) by postulating covert stimuli and responses. In fact, Skinner's ''radical behaviorism'' is often distinguished by this feature. However, Rachlin has imaginatively developed a ''teleological behaviorism'' that eschews covert events, and in his chapter he extends his analysis to ''imagination.'' He argues that to imagine something is ''to behave in the absence of that thing as you would normally do in its presence'' (p. 196), without appealing to covert stimuli. Extending his analysis yet further, he interprets the alcoholic's first refusal to drink as an act of imagination. The alcoholic is behaving ''in the absence of a pattern of [receiving reinforcement for] not drinking, as if that pattern already existed'' (p. 199).

Two of the chapters of Part II cover ethical questions. Chiesa deals with several of the issues discussed by Staddon in Part I. Like Staddon, she argues that determinism is compatible with some notion of personal responsibility and punishment for behavior the culture considers unacceptable. Unlike Staddon, however, she accepts much of Skinner's interpretation of how and why society came to call certain actions ''good'' or ''bad.'' Yet, despite her attempt at a detailed behavioral interpretation of the ethical issues, she often falls back on unanalyzed notions such as the ''rights'' and ''responsibilities'' of the community. In the other chapter on ethics, Galuska makes a valiant attempt to find commonalities between behaviorism and what he terms ''Judeo-Christianity'' (why not Islam?). As he notes, both seek to solve social problems and both have developed methods to do so. However, on important philosophical questions, such as free will and divine intervention, he can say no more than that the two philosophies must ''agree to disagree'' and concentrate on practical cooperation to solve social problems such as poverty, disease, crime, and failing education. Although Hineline, Galuska, Staddon, and Chiesa agree that SIB is not incompatible with some form of personal responsibility, they significantly differ on the intellectual route to that conclusion.

Applications and Extensions

Part III of the book is a mixed bag of chapters on SIB research, both applied and basic. Catania discusses verbal behavior and provides both an historical background as well as a sound conceptual framework for behaviorist research on language. He recommends, for example, the concept of ''verbal governance'' as theoretically more adequate than ''rule governed.'' Nevertheless, it is clear from his chapter that SIB is still in a primitive state with regard to verbal behavior. Nearly his entire chapter is in the form of interpretations of verbal behavior, that is, provisional explanations in the light of scientific theory (see discussion of Palmer, above), rather than a synthesis of empirical findings. Neuringer reviews his decades of research on behavioral variability and shows that variability itself is a controllable dependent variable and how this work may address operant psychology's putative problem with creative behavior, that is, how novel behavior is generated.

The chapter by Baer and Rosales-Ruiz is special for two reasons. First, it is one of the last papers written by Don Baer, one of the founders and leaders of SIB; he died after the conference and before the book was published. Second, the paper is an excellent example of SIB's commitment to lean theory.

Most behaviorists agree that behavior theory needs a few state variables, that is, variables related to the state of the organism that determine values for a wide variety of functional relations. For example, many functions relating behavior to food reinforcement depend on the organism's state of hunger, a state variable produced by a set of establishing operations such as food deprivation. Similarly, in the area of developmental psychology, many functional relations seemingly depend on the age of a child, and developmental stage seems to be a good candidate for a state variable. In this chapter, however, Baer and Rosales-Ruiz struggle mightily to argue that what appear to be developmental state variables may, in fact, represent changes in the child's social environmental, rather than in the child. As the child ages, parents, teachers, and others may change the contingencies they apply to the child's behavior in a step-wise fashion, resulting in what appears to be discontinuous ''stages'' in the child's growth.

Chase's chapter reviews one of the success stories in applied behavior analysis. He updates recent work in the application of behavioral principles to education, and he shows that applied behavior analysis has made steady progress in solving the efficiency problem (i.e., how to implement behavioral instruction without teaching every skill directly) and the novelty problem (i.e., how to teach behavior that is adaptive to a changing environment). His chapter is cause for optimism. Another area in which applied behavior analysis has been successful as well as influential is in its application to developmental disabilities. Neef and Peterson construct a model for interactions among basic research, applied research, technology, and applied practice. The final chapter by Krapfl examines applied behavior analysis in the business world. The relation between this and the SIB of the rest of the book is a bit of a stretch, and this chapter is best viewed as an example of the application of a behaviorist attitude rather than the direct extension of basic principles or philosophy.

Editing

The editors have done an exemplary job in making the book convenient for the reader. Unlike many edited volumes, this one includes both subject and author indices. Lattal and Chase have somehow managed to persuade the authors to write introductions, which in many chapters actually state what the author will do in the chapter, and conclusions, which in many cases actually summarize what the author has said. Section headings and subheadings also help organize the material for the reader. To convey some of the intellectually charged atmosphere at this conference, there are many internal cross-references in which authors refer to other chapters to agree or to disagree. Most important, the editors have written an opening chapter identifying some broad themes that cut across the chapters. Not surprisingly, among these themes are selectionism, pragmatism, and environment-as-context. By and large, the editors selected an outstanding set of contributors. Nevertheless, inevitably, the quality of the chapters is not uniformly high, and even though the majority of chapters are of excellent quality, some did not go much beyond their author's already well-expressed views. The reader is strongly advised to read carefully the useful introduction to each chapter before proceeding, in order to get a good sense of which chapters fit each of these categories.

SIB

Reading this book, one wonders why SIB is not more widely accepted in psychology. The contributors are aware of their marginal status and often refer to the rest of psychology as ''mainstream'' or ''normative'' psychology. Certainly, SIB's minority status is not attributable to the fact that it has been disconfirmed. As a philosophy with its own canons of evidence, validity, and truth, it is not an empirical theory subject to empirical disproof. Nor has it been refuted on philosophical grounds as is demonstrated by the defenses of behaviorism mounted in this book. Even its empirical component, operant psychology, cannot be said to have been disconfirmed. For one thing, there is not one universally accepted version of this empirical theory, as evidenced by the disagreements in several chapters in this book. Furthermore, the theoretical frameworks of the various versions of operant psychology have thus far proven rich enough to accommodate the empirical findings critics have used in attempts to

refute them, as Palmer, Catania, and others illustrate.

The reasons for SIB's marginalization seem to have less to do with the logic of science than with the psychology of the scientist. For some reason, SIB is simply not appealing to most psychologists today. Undoubtedly, there are many reasons for this. Chase suggests some of these with regard to the resistance to SIB in education, and Morris discusses the antipathy towards SIB even within theories relatively congenial to SIB. Another reason may be found in a topic touched on in many of the chapters, namely, explanation.

SIB explains events by showing that they instantiate behavioral principles. These principles, in turn, are explained as derived from more fundamental principles. Ultimately, explanation reaches its bedrock in the form of primitive principles such as the laws of operant conditioning, with no further explanations forthcoming. Many psychologists, including behavior analysts, are satisfied with this. Others, including most experimental psychologists today, are less accepting of this endpoint and seek an explanation for the laws of operant conditioning. Plainly, that explanation cannot be found in behavioral psychology but will have to refer to processes and principles different from those of behavior.

One obvious candidate for explanatory mechanisms is to be found in neurophysiology, and Schaal suggests a model for how this might take place. Yet Schaal seems ambivalent about explanatory reduction. At times he writes as if neurophysiological processes obey operant laws (''sequences of neuronal activity . . . selected by contingencies'') whereas at other times he acknowledges that neuronal activity may have to be explained by other principles. In any event, it is not yet clear that neurophysiology is sufficiently developed at this time to offer the appropriate mechanisms to explain behavioral principles.

Accordingly, most cognitive psychologists have postulated a level of theoretical mechanism intermediate between behavior and neurophysiology, often using the concepts of information processing. For their part, behavior analysts, including several in this volume, have argued that these postulated mechanisms are not truly explanatory and have misdirected research. Some, including Palmer in this volume, argue that these mechanisms are not legitimate because they lack ''empirical foundations'' (p. 180). However, it is not clear that this is necessarily the case. That a postulated process does not obey the same principles as observed entities does not imply that it has no empirical foundation. Nor does it imply that principles can be freely attributed to a postulated process without constraint. A theoretical process must explain empirical data comprehensively and parsimoniously, survive empirical test, and guide empirical research. If it performs these functions effectively, then it is grounded in observations and has an ''empirical foundation.''

In principle, there are no decisive philosophical objections to a cognitive theory. Practically, however, there is ample disagreement over whether such a theory will, in fact, generate fruitful research progress. Cognitive psychology and cognitive neuroscience are betting that such a theory is feasible, whereas SIB seems committed to its unlikelihood. Although science is not a democracy, with truth decided by popular vote, its credibility is ultimately decided by success, both success in explanatory progress and success in passing along a theory from generation to generation. At present, the jury is still out on the ''success'' verdict.

Yet the future may not belong to either of these alternatives. Morris suggests in his chapter an intriguing third possibility. He describes what he calls ''programs of direct action,'' that is, approaches in psychology that are nonrepresentational and nonmediational. Gibson's theory of direct-perception is offered as an example because, rather than postulating that perception requires an internal representation, Gibson construes perception as an action, a mutual relation between the perceiver and the perceived. Morris reviews five such programs, most of which are independent of one another and of SIB. However, Morris sees the possibility of growing alliances among these programs and SIB because of what they share and how they complement one another. He suggests that these alliances of direct-action programs may represent the next stage in the evolution of scientific psychology. Morris also speculates that for a variety of reasons, this next stage will not be known as ''behaviorism.'' Thus many of the core ideas of SIB may survive, but SIB may no longer exist as a recognized and

self-identified movement, a gentle and painless way to expire.

Yet, this book demonstrates that SIB is far from ready to exit. SIB has always staked its future not on the ultimate truth of its teachings, but rather in the effectiveness and success of its approach. As behaviorism rapidly nears its centennial in 2013, this book raises the question as to whether the contributors to this book, mostly second and third generation senior behavior analysts, will be able to effectively pass on their heritage to new generations of followers who will hold equally successful conferences on behavior theory and philosophy.

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