Book Note

Applying Basic Research: A Review of J. D. Keehn's *Animal Models for Psychiatry*

W. David Pierce and W. Frank Epling
University of Alberta

Behavior analysts not uncommonly assert that the basic principles of behavior generalize across species. In accord with this assumption, they have typically restricted their research on those principles to relatively simple organisms in experimental settings that allow for a high degree of control. The recent resurgence of interest in human operant behavior aside (see, e.g., *The Experimental Analysis of Human Behavior Bulletin*), complex human activity has typically been explained via “interpretations” derived from laboratory-based principles of nonhuman behavior (see Skinner, 1953). Appeals to nonhuman research for an understanding of human behavior, then, are not unfamiliar to behavior analysts.

Although behavior analysts have often used this “simple-to-complex” analytic strategy, both empirically and conceptually, they are less familiar with nonhuman models of socially important behavior. In addition to models of normal behavior in nonhuman organisms, nonhuman models of so-called psychiatric disorders also remain to be analyzed. An example of such a model may be found in Epling, Pierce, and Stefan's (1983) analysis of anorexia nervosa, which is based on the assumption that biobehavioral processes are involved rather than “personality disturbances” and that anorexia shows some generality across a variety of species.

The usefulness of any animal model,

of course, depends on evidence for parallels between (a) human and nonhuman performance and (b) the factors that establish and/or maintain such behavior. J. D. Keehn (1986) provides such evidence and argument in *Animal Models for Psychiatry*, and is particularly well qualified to do so—he is a productive behavioral researcher and is well known for his studies on ethanol addiction and polydipsia in rats.

Keehn's text is written for a specialized audience that includes psychiatrists, clinical and physiological psychologists, behavioral pharmacologists, and veterinarians. The book is not specifically written for behavior analysts; indeed, the behavioral reader may question some of its arguments and terminology. For example, in a chapter on psychosis, Keehn states that

True psychosis is a condition identifiable in humans; animals exhibit psychotic behaviour and may or may not suffer from true psychosis True psychosis is almost certainly a biochemical deficit that will eventually be corrected by pharmacological treatment. (p. 167)

Such theorizing aside, Keehn's book is replete with behavior-analytic interpretations of unusual behavior patterns in nonhumans, and makes a compelling case for examining animal models for psychiatry.

The book is divided into three parts. Part I consists of two chapters, the first of which discusses the appropriateness of animal models for psychiatric disorders, covering the psychiatric view of mental illness, prominent psychiatric classification systems, and unusual “symptomatology” of domestic and wild animals. The second chapter presents a well-written discussion of the ethics of animal research.

Animal Models for Psychiatry is published by Routledge & Kegan Paul, Boston (ISBN 0-7102-0562-7). We would like to thank Judy Cameron for her editorial assistance. Reprints may be obtained from W. Frank Epling, Department of Psychology, University of Alberta, Edmonton, Alberta T6G 2E9, Canada.

Part II of the book contains two chapters dealing with unusual motor movements (e.g., rocking and pacing), convulsions, and what Keehn calls "behavioural anomalies." Familiar examples of the latter include autoshaping, polydipsia, and bar-holding during negative reinforcement. The chapter on abnormal movement and convulsions describes some interesting research on animal seizures as a model for human convulsive disorders.

Part III of the book comprises four chapters that cover a range of animal models of disordered human behavior, and a final summary chapter. These chapters cannot be described in detail here, but they include such topics as neurosis, addictions, psychosis, and disorders of childhood. The chapter on animal addictions is particularly interesting. First, Keehn reviews research documenting that self-administration of "recreational" drugs occurs in 109 different species of animals. He then describes animal models of alcoholism and the symptoms of ethanol abuse. For example, human and nonhuman research suggests that "... for withdrawal-dependence on alcohol to develop, multiple daily doses must be taken to maintain blood alcohol levels continuously high for a period of time" (p. 148). One way to induce withdrawal-dependence by "voluntary" excessive drinking is based on schedule-induced polydipsia (SIP). In this procedure, food pellets are delivered on a time schedule along with the concurrent availability of an ethanol solution. This SIP procedure can turn initially unpalatable alcohol into a positive reinforcer, and hence may serve as a useful model for studying intoxication, tolerance, and dependence.

Keehn presents a wide variety of intriguing observations. These include descriptions of dissociative reactions in farm animals, a case of "multiple personality" in a dog, mass hysteria in white leghorn hens, autism in a young human-reared chimpanzee, the development of hyperactivity in a variety of species, and hallucinatory web-spinning in spiders that are administered small doses of LSD-25 or blood serum from a catatonic schizo-

phrenic patient. Although the psychiatric terminology used in these descriptions may be extended to animal disorders, Keehn clearly recognizes the difference between description and causation. He states that:

It is mistaken to assert that mental illness is the cause of abnormal behaviour, animal or human, because the only evidence of mental illness is the behaviour it is supposed to cause. In this sense mental illness does not exist in animals because it does not exist in humans. (p. 22)

Overall, Keehn presents a broad range of experimental and observational research that suggests reasonable parallels among nonhuman and human behavioral disorders. To date, most clinical analyses of human "abnormal" behavior have rested on assumptions derived from the medical model of psychiatric illness. Keehn's cogent arguments for and descriptions of animal models and abnormal animal behavior, however, raise serious questions about the adequacy and appropriateness of that model.

Before closing, we should comment that the text is not without some stylistic problems. The writing is a bit choppy, sometimes jumping from one topic to another in a less than organized fashion, which may weaken the reinforcing effect of the text for some readers. Also, the book contains an excessive number of lists, tables, and figures that are inadequately explained or discussed. These problems, however, are distractions. Our general evaluation is positive.

In conclusion, Keehn's book will be of interest to behavior analysts concerned with the extension of laboratory findings with nonhumans to socially important human behavior. Most readers will probably find the book a useful resource rather than a textbook for teaching purposes, although it could be used to supplement other readings in advanced undergraduate or graduate courses in abnormal psychology.

REFERENCES

- Epling, W. F., Pierce, W. D., & Stefan, L. (1983). A theory of activity-based anorexia. *International Journal of Eating Disorders*, 3, 27-46.
- Skinner, B. F. (1953). *Science and human behavior*. New York: Macmillan.