

Preface

Conditioning and learning are core topics that have shaped how we think about and investigate problems in many areas of psychology and allied disciplines. The purpose of this book is to provide a concise, current, and sophisticated summary of the essentials of conditioning and learning for students and professionals in those areas.

Although this field of conditioning and learning is more than 100 years old, new discoveries continue to be made, and new applications of the basic research continue to be explored to solve major clinical problems, such as the treatment of fears and phobias, the development of training procedures for autism spectrum disorder and developmental disabilities, and the treatment of drug addiction and other forms of compulsive behavior. Recent research has led to a more comprehensive account of the effects of instrumental conditioning, including economic analysis of instrumental conditioning effects. Considerable new progress has been also made in basic research on Pavlovian conditioning, extinction, memory consolidation, and memory reconsolidation. This book provides a concise and highly accessible summary of these new perspectives.

Concepts from conditioning and learning are frequently used in the neurosciences, developmental psychology, psychopharmacology, and comparative psychology. Researchers in these areas are interested in how nonverbal organisms learn, process, and remember information. Investigations of learning and cognition in nonverbal subjects invariably require using conditioning procedures in some way. Developmental psychologists, for example, frequently use habituation and instrumental conditioning procedures to study infant cognition. Neuroscience programs often include a “behavioral core” that is devoted to collecting behavioral data on learning and memory to complement data from more molecular levels of analysis. A major goal of this book is to provide easy access to the “essentials” of conditioning and learning for students and scientists who use these procedures and concepts in their own areas of specialization.

The basic procedures of habituation, classical conditioning, and instrumental conditioning are familiar to many students and professionals. However,

our understanding of these procedures has changed dramatically in recent decades, and as a result, many common presumptions about learning are no longer valid. Did you know, for example, that

- contiguity between a conditioned and an unconditioned stimulus is neither necessary nor sufficient for Pavlovian conditioning?
- in many cases the most important result of Pavlovian conditioning is how it changes the organism's responses to the unconditioned stimulus rather than the development of a new response to a conditioned stimulus?
- instrumental conditioning does not "strengthen" the instrumental response?
- extinction procedures leave much of the associative structure of instrumental behavior intact?
- failure to remember something is rarely due to forgetting?
- consolidated memories are not permanent but can be changed when they are reactivated or retrieved?

Studies of basic conditioning mechanisms have moved heavily into the neurosciences, with numerous investigators studying the neural bases of conditioning and learning. However, one cannot examine the neural mechanisms of learning without being well informed about conditioning and learning procedures and phenomena at the level of behavior. Some graduate students and scientists in the neurosciences have had little or no training in behavioral techniques. Others are only familiar with the small number of behavioral techniques that are pertinent to the experiments they are working on. Such limited knowledge handicaps them from achieving a more comprehensive view of how behavior is related to neural mechanisms. It also limits their investigation to a remarkably small number of learning procedures. This book is intended to address this problem by exposing these scientists to at least the "essentials" of conditioning and learning.

Students (and professionals) in developmental and clinical psychology face similar challenges. These investigators also rely on conditioning and learning procedures, but their knowledge is often limited to specific procedures, without understanding the broader intellectual context for those procedures or contemporary theoretical analyses of those phenomena. Such a limited exposure to the field of conditioning and learning as a whole prevents these investigators from fully exploiting conditioning procedures to advance their areas of inquiry. For example, the "standard" therapy for overcoming pathological fears and phobias involves some form of extinction. Extinction is one of the most exciting areas of contemporary research in conditioning and learning, with numerous new techniques and perspectives discovered in recent years. Yet few of these have made their way into the clinical psychology curriculum.

Another area that is closely related to studies of conditioning and learning is applied behavior analysis, which originated in studies of operant conditioning carried out by B. F. Skinner and his intellectual descendants. Unfortunately, since its emergence as a separate field, applied behavior analysis has not maintained strong ties to the basic science on which it was founded. For example, many characterizations of Pavlovian conditioning in texts on applied behavior are seriously out of date. By

making contemporary perspectives readily available in a brief and accessible format, this book may encourage updating the scientific roots of applied behavior analysis.

This book can serve as the primary text for an introductory course on conditioning and learning. It can also serve as a supplemental text for courses in neuroscience, clinical psychology, applied behavior analysis, developmental psychology, and psychopharmacology. Finally, the book can be used to provide the foundations for an advanced course, supplemented with journal articles and other assigned readings. To facilitate that, each chapter ends with a list of suggested readings.

As an additional resource for professors, I have also put together a companion website with sample PowerPoint slides, quiz questions, and more (see <http://pubs.apa.org/books/supp/domjan>).

In preparing this book, I was guided by my students, who have encouraged me over the past 45 years to keep searching for ways to explain concepts more simply and directly. This fourth edition includes updates and clarifications of the text that are too numerous to list. It also includes numerous new references and suggested readings.

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