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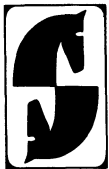
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**CLASSICAL
CONDITIONING
AND OPERANT
CONDITIONING**
A Response
Pattern Analysis

**CLASSICAL
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AND OPERANT
CONDITIONING**
A Response
Pattern Analysis

**Wendon W. Henton
Iver H. Iversen**

With 106 illustrations



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FOREWORD

Since the appearance of the treatise on “Schedules of Reinforcement” by Ferster and Skinner over two decades ago, the literature in behavior analysis, both experimental and applied, has been dominated by a range of studies dedicated to providing ever more systematic and refined accounts of these “mainsprings of behavior control.” For the most part, the analysis has been pursued in the best traditions of “scientific methodology” with careful attention to the isolation of controlling variables in unitary form. Of late, relatively simple interaction effects have provided an important additional focus for more sophisticated analyses. It is clear, however, from even a cursory survey of the monumental research and conceptual analysis which is represented in this scholarly volume by Henton and Iversen that the surface of this complex “behavioral interactions” domain has barely been scratched.

The primary focus of this pioneering effort extends the competing response analysis across all experimental schedules, both classical and instrumental, as well as the interactions between the two. Appropriately, the analysis emphasizes overt behavioral interactions, beginning with the simplest case of one operant and one respondent, and inevitably implicating more diverse and subtle interactions. As the analysis expands to include interactions between multiple recorded responses, increasingly more precise empirical specifications of reciprocal interactions in response probabilities are revealed independently of conventional procedural labels (i.e., operants, respondents, collaterals, adjunctives, etc.) and traditional theoretical distinctions. Overt responses are treated not as measures of “other things” but rather as behavioral interactions to be explained by an analysis of functional relationships rather than by attribution to hypothetical constructs or intervening abstractions.

From a methodological vantage point, the analysis described in this treatise

is advantaged by an imaginative and innovative procedural approach. Unfettered by slavish conventions involving “dependent” and “independent” variable assumptions, this dedicated molecular analysis focuses upon specific sets of events and interactions as multiple determinants of behavior. Of particular interest in this regard is the unique treatment of concurrent classical-operant conditioning schedules and the ingenious experimental manipulations which provide the foundation for a novel interpretive departure from the usual “baseline disruption” account of such interactions. Virtually all combinations and permutations of classical-operant “superimposition” procedures are explored systematically in a series of original experiments which emphasize the significance not of the “baseline disruption,” which occurs across procedures, but of the concurrent and competing response characteristics which are usually unobserved and unrecorded.

Of at least as great conceptual import would seem to be the frontal experimental attack by Henton and Iversen upon the myth of “response independence” which continues to dominate contemporary views of operant schedule interactions. In this regard, for example, the data presented on increased rates of orienting behaviors in concurrent response-independent and signaled reinforcement schedule experiments constitute a serious challenge to traditional accounts of reinforcer interaction effects based upon assumptions of negligible competing response influences. Similarly, this molecular analysis of response interactions in multiple operant schedules reveals the critical role of interacting collateral and competing responses which has all too often been obscured by current labeling practices (e.g., “contrast effects,” etc.). Even conventionally mislabeled “post-reinforcement pause” and “inter-response time” phenomena observed in simple operant schedules are shown to be influenced directly by the temporal characteristics of collateral competing responses. Indeed, a telling point is made with reference to the issue of response versus reinforcement interactions in the analysis of operant schedules, by directing attention away from a molar analysis based upon data averaged over sessions and focusing upon the molecular effects of real behaviors in the form of local response rate changes which occur and interact frequently in the absence of any local change in reinforcement.

A special place of importance is reserved in the final chapter of this book for a somewhat unconventional but characteristically innovative treatment of both simple and complex classical conditioning paradigms within the empirical framework of the well-developed and demonstrably productive competing response analysis. Here again, the authors present a convincing challenge to one of the more widely held misconceptions regarding the absence of overt responses and the resultant misguided theoretical interpretations of classical conditioning effects. Not only is the data on acquisition of delay conditioning, extinction, external inhibition, and conditioned inhibition persuasively marshaled to document a veritable mosaic of response interactions, but the long-neglected analysis of concurrent classical conditioning effects, suggested in the early writings of Pavlov, is creatively exposed to experimental scrutiny.

This singular empirical analysis with its focus upon the broadly based response interactions which characterize behavioral transactions at all conceptual levels can be seen to represent a “paradigm revolution” in the truest sense. The novelty and comprehensiveness of its integrative features are impressive, the gaps in knowledge which it reveals are critical, and the new directions of experimental inquiry which it suggests are the stuff of which progress in science has traditionally been made.

J. V. Brady

PREFACE

This volume attempts to organize a ten-year experimental analysis of interacting response patterns in behavioral conditioning. The research program actually began at the Walter Reed laboratories in 1968, as an extension of Brady's "competing response" analysis of conditioned emotions. The scope of this work is the development of the "competing response" analysis into a "concurrent response" analysis applicable to many of the common experimental techniques used in behavioral psychology today. More specifically, the present analysis concerns the concurrent and sequential response interactions generated by Pavlovian as well as Skinnerian conditioning procedures.

This book, written specifically for laboratory psychologists and students, is divided into three sections corresponding to the developing conceptual and experimental analysis of interactions in classical–operant schedules ("emotions," Section I), operant schedules (Section II), and classical conditioning (Section III). Section I is the completed analysis of "emotions" as the interaction of Pavlovian and Skinnerian conditioned responses, beginning with a comprehensive parameter by parameter review of the literature. The concurrent response analysis is then developed step by step through an experimental examination, and places Pavlovian–Skinnerian interactions more firmly within the broader framework of concurrent conditioning procedures. Section II expands the analysis into an experimental description of Skinnerian or operant conditioning methods, with chapters devoted to simple operant schedules, concurrent schedules, and multiple schedules, and therefore embraces many of the common Skinnerian procedures. Section III is the current use of the response interaction analysis in the context of Pavlovian or classical conditioning. This latter analysis includes many of the standard classical excitatory and inhibitory procedures, with a further development of Pavlov's work on concurrent

classical–classical conditioning. Our continuous concern has been an adherence to the inductive method of direct and systematic replication in the determination of lawful generalizations within and across these popular conditioning techniques.

On the other hand, this empirical approach bumps up against the traditional mentalisms, inferences, and cognitive theories which have gradually evolved into “laws” in each of the three research areas. In our introduction, we reply to the opposing arguments and occasionally heated disproofs of response interactions, with the relevant issues carried forward and specifically illustrated in each of the subsequent sections and chapters.

In all, the volume attempts a systematic position which might have something to offer investigators using either classical conditioning, operant conditioning, or classical–operant combinations. As a new analysis, the work necessarily contains various new procedures, reanalysis of old procedures, and a quantitative analysis of response frequencies and patternings. Our thesis is that behavioral conditioning procedures must control myriad response interactions which are important to the understanding of psychology, but which are nevertheless ignored by typical methodologies which record and analyze but a single response. The concurrent response analysis places these single responses within the ongoing matrix of simultaneous and sequential response interactions.

Lastly, we must express our continuing appreciation to the many individuals who have contributed to the making of this work. Our obvious debts to the science of B. F. Skinner and M. Sidman will be rather apparent. Many portions of the book have immeasurably profited from our personal and professional associations with an ever growing series of colleagues, including A. Brownstein, J. V. Brady, J. P. Huston, M. Lyon, C. L. Salzberg, and J. C. Smith. Significant contributions have also been gratefully received from J. Boren and C. M. Bradshaw. We can only hope that these gentlemen might recognize both their contributions and our deep appreciation.

The statements and opinions expressed in this work represent the views of the authors and may not reflect the views of the Department of Health, Education, and Welfare (HEW), nor any agency of the government of the United States or Denmark.

W. W. H.
I. H. I.

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