

Volume 18

1984

**Progress
in Behavior
Modification**

Edited by

Michel Hersen
Richard M. Eisler
Peter M. Miller

**PROGRESS IN BEHAVIOR
MODIFICATION**

Volume 18

CONTRIBUTORS TO THIS VOLUME

Ronald L. Blount

Jeffrey L. Chase

David S. Glenwick

Mark D. Godley

K. Gunnar Götestam

Leonard A. Jason

Susan M. Jay

Ernest R. Katz

Eugene A. Lamazor

Steven J. Linton

John R. Lutzker

Jerry A. Martin

Lennart Melin

Anna M. Palotai

Herman C. Salzberg

Trevor F. Stokes

Sandra Twardosz

James W. Varni

PROGRESS IN BEHAVIOR MODIFICATION

EDITED BY

Michel Hersen

*Department of Psychiatry
Western Psychiatric Institute and Clinic
University of Pittsburgh
Pittsburgh, Pennsylvania*

Richard M. Eisler

*Department of Psychology
Virginia Polytechnic Institute and State University
Blacksburg, Virginia*

Peter M. Miller

*Sea Pines Behavioral Institute
Hilton Head Island, South Carolina*

Volume 18

1984



ACADEMIC PRESS, INC.

(Harcourt Brace Jovanovich, Publishers)

Orlando San Diego New York London
Toronto Montreal Sydney Tokyo

**COPYRIGHT © 1984, BY ACADEMIC PRESS, INC.
ALL RIGHTS RESERVED.
NO PART OF THIS PUBLICATION MAY BE REPRODUCED OR
TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC
OR MECHANICAL, INCLUDING PHOTOCOPY, RECORDING, OR ANY
INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT
PERMISSION IN WRITING FROM THE PUBLISHER.**

**ACADEMIC PRESS, INC.
Orlando, Florida 32887**

United Kingdom Edition published by
**ACADEMIC PRESS, INC. (LONDON) LTD.
24/28 Oval Road, London NW1 7DX**

LIBRARY OF CONGRESS CATALOG CARD NUMBER: 74-5697

ISBN 0-12-535618-8

PRINTED IN THE UNITED STATES OF AMERICA

84 85 86 87 9 8 7 6 5 4 3 2 1

CONTENTS

Contributors

ix

Behavioral Analysis of Chronic Pain and Its Management

Steven J. Linton, Lennart Melin, and K. Gunnar Götestam

I.	Introduction	1
II.	Behavioral Processes	4
III.	Assessment	15
IV.	Treatment Suggestions	24
V.	Conclusions	36
	References	38

Controlled Drinking Revisited: A Review

Jeffrey L. Chase, Herman C. Salzberg, and Anna M. Palotai

I.	Introduction	43
II.	General Methodological Issues	45
III.	Methodological Issues Specific to Controlled Drinking Research	47
IV.	The Rand Studies	52
V.	Previous Reviews	55
VI.	Subsequent Controlled Drinking Research	58

VII. Conclusions	75
References	79

Behavioral Community Psychology: A Review of Recent Research and Applications

Leonard A. Jason and David S. Glenwick

I. Behavioral Community Psychology: An Introduction	85
II. Secondary Preventive Interventions	88
III. Primary Preventive Interventions	91
IV. Environment-Based Interventions	95
V. Discussion	107
References	110

Environmental Organization: The Physical, Social, and Programmatic Context of Behavior

Sandra Twardosz

I. Introduction	123
II. The Physical Environment	130
III. The Social and Programmatic Environment	141
IV. Importance for Behavior Modification	151
V. Conclusion	155
References	156

Behavioral Assessment and Management of Pediatric Pain

Ernest R. Katz, James W. Varni, and Susan M. Jay

I. Introduction	164
II. Acute versus Chronic Pain	165
III. Assessment of Pediatric Pain	167
IV. Behavioral Treatment of Pain in Children	170
V. Conclusions and Directions for Future Research	186
References	187

Self-Reinforcement by Children

Ronald L. Blount and Trevor F. Stokes

I.	Introduction	195
II.	Theoretical Considerations	197
III.	Teaching Children to Use Self-Reinforcement Procedures	201
IV.	The Effectiveness of Self-Reinforcement Procedures	208
V.	Related Areas and Future Research	217
	References	222

Advances in Behavioral Approaches to Adolescent Health Care

*Mark D. Godley, John R. Lutzker, Eugene A. Lamazor,
and Jerry A. Martin*

I.	Introduction	228
II.	Eating Disorders	228
III.	Cigarette Smoking	237
IV.	Dysmenorrhea	242
V.	Alcohol Abuse	246
VI.	Miscellaneous Disorders	249
VII.	Summary and Conclusions	256
VIII.	Pediatrician's Response	257
	References	260

Index		267
-------	--	-----

Contents of Previous Volumes		271
------------------------------	--	-----

This page intentionally left blank

CONTRIBUTORS

Numbers in parentheses indicate the pages on which the authors' contributions begin.

- RONALD L. BLOUNT** (195), Department of Psychology, West Virginia University, Morgantown, West Virginia 26505
- JEFFREY L. CHASE*** (43), Department of Psychology, University of South Carolina, Columbia, South Carolina 29208
- DAVID S. GLENWICK** (85), Department of Psychology, Fordham University, Bronx, New York 10458
- MARK D. GODLEY** (227), Alcohol Programs, Mental Health Services of Franklin and Williamson County, Inc., Marion, Illinois 62959
- K. GUNNAR GÖTESTAM** (1), Department of Psychiatry, University of Trondheim, Östmarka Hospital, Trondheim, Norway
- LEONARD A. JASON** (85), Department of Psychology, DePaul University, Chicago, Illinois 60614
- SUSAN M. JAY** (163), Department of Pediatrics, University of Southern California, and Childrens Hospital of Los Angeles, Los Angeles, California 90027
- ERNEST R. KATZ** (163), Departments of Pediatrics and Psychology, University of Southern California, and Childrens Hospital of Los Angeles, Los Angeles, California 90027
- EUGENE A. LAMAZOR** (227), 1610 North Eldorado Street No. 10, Stockton, California 95204
- STEVEN J. LINTON** (1), Department of Applied Psychology, University of Uppsala, Uppsala, Sweden
- JOHN R. LUTZKER** (227), Behavior Analysis and Therapy Program, Rehabilitation Institute, Southern Illinois University, Carbondale, Illinois 62901
- JERRY A. MARTIN** (227), Developmental Services, State of Florida, HRS, Pensacola, Florida 32576
- LENNART MELIN** (1), Department of Applied Psychology, Uppsala University, Uppsala, Sweden
- ANNA M. PALOTAI** (43), Department of Psychology, University of South Carolina, Columbia, South Carolina 29208
- HERMAN C. SALZBERG** (43), Department of Psychology, University of South Carolina, Columbia, South Carolina 29208

*Present address: Virginia Treatment Center for Children, P.O. Box 1-L, Richmond, Virginia 23201.

TREVOR F. STOKES (195), Department of Psychology, West Virginia University, Morgantown, West Virginia 26505

SANDRA TWARDOSZ (123), Department of Child and Family Studies, University of Tennessee, Knoxville, Tennessee 37996

JAMES W. VARNI (163), Departments of Pediatrics, Psychology, and Psychiatry, University of Southern California, and Orthopaedic Hospital, Los Angeles, California 90007

BEHAVIORAL ANALYSIS OF CHRONIC PAIN AND ITS MANAGEMENT

STEVEN J. LINTON
LENNART MELIN
*Department of Applied Psychology
University of Uppsala
Uppsala, Sweden*

K. GUNNAR GÖTESTAM
*Department of Psychiatry
University of Trondheim
Östmarka Hospital
Trondheim, Norway*

I.	Introduction	1
II.	Behavioral Processes	4
	A. Respondent Conditioning	4
	B. Operant Conditioning	6
	C. Reinforcement of Passive Behaviors	9
	D. Special Problems with Chronic Pain	10
	E. Case Example	12
III.	Assessment	15
	A. Evaluating the Problem	16
	B. Standardized Instruments	17
	C. Behavior Analysis	18
	D. Examples of Behavior Analyses	20
IV.	Treatment Suggestions	24
	A. General Treatment Strategies	24
	B. Examples of Treatment Based on Theoretical Analyses of the Problem	27
	C. Generalization and Maintenance	35
V.	Conclusions	36
	References	38

I. INTRODUCTION

Chronic pain is a problem of considerable proportion, and despite advancements it has remained amazingly recalcitrant to medical treatment. Pain is clearly

one of the most frequent complaints doctors encounter. Bonica (1981) estimates that chronic pain accounts for some 700 million lost work days and costs nearly 60 billion dollars annually in the United States alone. Brena, Chapman, and Decker (1981) have also calculated the cost of chronic pain per year in the United States. Their estimate, which they consider to be conservative, is over 100 billion dollars per year. In Sweden where sick pay benefits and absenteeism can be verified through the National Insurance Office, it has been found that for the approximately 5 million "insurees," back pain alone accounted for 11 million sick days in 1971 (Helander, 1973). Back pain accounts for 12.5% of all sick days in Sweden and the incidence rate is between 65 and 80% of the population (Andersson, 1979). Without a doubt, chronic pain is a significant problem for society. It is difficult to measure the personal consequences of chronic pain, but for the individual and his/her family the result is often devastating and traumatic.

Although pain is a common experience, it seems to escape concise definition. This is partly so because the word has been used to describe both physical and psychological suffering. Of the numerous definitions, Fordyce's (1978) revision of the International Association for the Study of Pain's definition seems to have merit: "Pain is an unpleasant experience which we primarily associate with tissue damage or describe in terms of tissue damage or both, and the presence of which is signalled by some form of visible or audible behavior." The definition allows plenty of room for both physiological/neurological and psychological factors. However, while acknowledging the importance of the physiological side of pain, it is not the intention of this article to dwell on it. Instead, learning processes related to chronic pain will be the focus.

Because pain is difficult to define, it is little wonder that it also presents difficulties for measurement. In addition to problems of reactivity, there is often a low correlation between noxious stimulus and various indexes of pain. Two persons may report differing amounts of pain even though the pain stimulus is of the same intensity. Similarly, the same person at two different time points may report different amounts of pain even though the pain stimulus is the same on both occasions. It is argued here that pain is a *set* of complex behaviors and therefore there is no "measure" of pain. The best approach is to use multiple measures which tap several aspects of the pain experience (cf. Sanders, 1979; Turner & Chapman, 1982).

Ordinarily, pain problems are treated within the health care system. Traditional medical approaches to the treatment of chronic pain have concentrated mainly on the organic portion of the pain problem. For acute pain (less than 6 months, pain disappears when healing takes place) this method is thought to work well, but for chronic pain (greater than 6 months duration) the results are generally considered to be disappointing. Some of the problems may be illustrated by using low back pain, a category accounting for a significant percentage of chronic pain patients, as an example. In the first place, it is quite difficult to

make an accurate diagnosis because more than 100 disease classifications exist in which lower back pain is a feature (Anderson, 1977) and because physical tests, for example, X rays, cannot be relied upon to distinguish organic causes of pain (e.g., Aitken, 1959; Freiburger, 1970). In as many as 80% of low back pain cases, a trustworthy diagnosis cannot be made (Stevens, 1968).

The problems of diagnosis become apparent when one looks at medical treatments and their selection. Nachemson (1979) in a review of medical treatments for low back pain points out that (1) because the etiology of low back pain is unknown, only symptomatic treatment is available; and (2) ordinary treatments (with the exception of surgery for the "true" herniated disc—a rarity) have unsatisfactory empirical support.

One reason that ordinary medical attention may not produce the desired result could be that learning factors, rather than organic ones, begin to control the pain in the chronic state. Fordyce (1976) has argued that a good deal of learning takes place in the development of a chronic pain condition. The model presented by Fordyce assumes that pain is behavior rather than a neurological state or a verbal report, and it also emphasizes that organic/nonorganic distinctions are not fruitful. Since the development of such a problem takes a good deal of time, learning has many opportunities to take place. Fordyce outlines three basic processes which account for chronic pain: (1) "direct" (positive) reinforcement of pain behaviors; (2) "indirect but positive" reinforcement (technically called negative reinforcement) of pain behaviors, for example, avoidance; and (3) failure to reinforce "well" behaviors.

An "operant" treatment program based on the above reasoning has been developed and tested. It consists of programs designed to decrease medicine use and pain behavior, as well as to increase physical activity and "well" behavior.

Although the operant approach to chronic pain has resulted in a good deal of research, little work has been conducted to expand upon the model Fordyce has presented, or for that matter, to generate other behavioral analyses of chronic pain states. A thorough analysis is essential, however, in providing insights into chronic pain which might subsequently be empirically tested, because the assumed model often forms a powerful influence on the manner in which a research program is conducted. With this in mind, the purpose of the present article is to analyze chronic pain from a behavioral perspective. The article begins with an examination of conditioning processes relevant to pain. Partly a reexamination of previous work, the discussion is cast in a different perspective resulting in some new ideas and highlights. For the practically minded an example of how chronic pain might develop is provided. In light of this examination of conditioning processes, the assessment and treatment of chronic pain are then considered. Rather than to construe the present article as an exhaustive review, it should be viewed as a selective review of material—logical, theoretical, or empirical—which might be related to the analysis of chronic pain.

II. BEHAVIORAL PROCESSES

In this section conditioning factors that can influence the development and maintenance of "chronic pain behavior" are examined.

One main thesis is that once pain occurs the responses people make are influenced by learning factors, and over time these responses may be entirely learned ones. Such learning is selective, that is, it is guided by discriminative stimuli and the consequences of the behavior. Stated in another way, at inception pain may be described primarily as a biological (neurophysiological) entity, whereas later on it may be more adequately described as primarily a psychological one. The way the person reacts or behaves is of primary interest in this article, and such reactions may be described as coping (with pain) behavior. In themselves, coping behaviors are ordinarily positive to the organism and community, but when they are selectively reinforced the end result may be a chronic pain problem. Conditioning is, moreover, an automatic process and therefore questions concerning the authenticity of pain cannot be fruitfully discussed.

In order to help elucidate the conditioning processes a model is presented, starting with acute pain, which may be applied to a large number of settings. Conditioning is complex, and we cannot cover all examples or possible situations. Instead, what are believed to be the most important factors in the development of chronic pain problems are presented. Pain behaviors which are not initiated by an acute injury are discussed later in this section.

Before we proceed with a discussion of conditioning, a word about noxious stimuli is in order since noxious stimuli are usually assumed to be unconditioned stimuli (UCS). Noxious stimuli are often defined as tissue-damaging stimuli that may be experienced as pain. But it is not a simple matter of an external stimulus damaging tissue as an electrical shock or knife cut might. Noxious stimuli may also come as "indirect" stimuli which lead to tissue damage, for example, lifting a burden if one has a problem back. Note that carrying something heavy is not a noxious stimulus unless it produces tissue damage.

A. Respondent Conditioning

A diagram of respondent conditioning is provided in Fig. 1. It is a potent conditioning process, especially in the acute phase of pain, and it continues to play a role throughout the course of the pain problem.

An acute injury leads to an unconditioned stimulus (UCS), which automatically produces an unconditioned response (UCR), for example, sympathetic activation, increased muscle tonus, and the psychological experience of fear and anxiety. Through repeated pairing of the UCS and external stimuli, the external stimuli (CS) alone may come to elicit the response (CR).