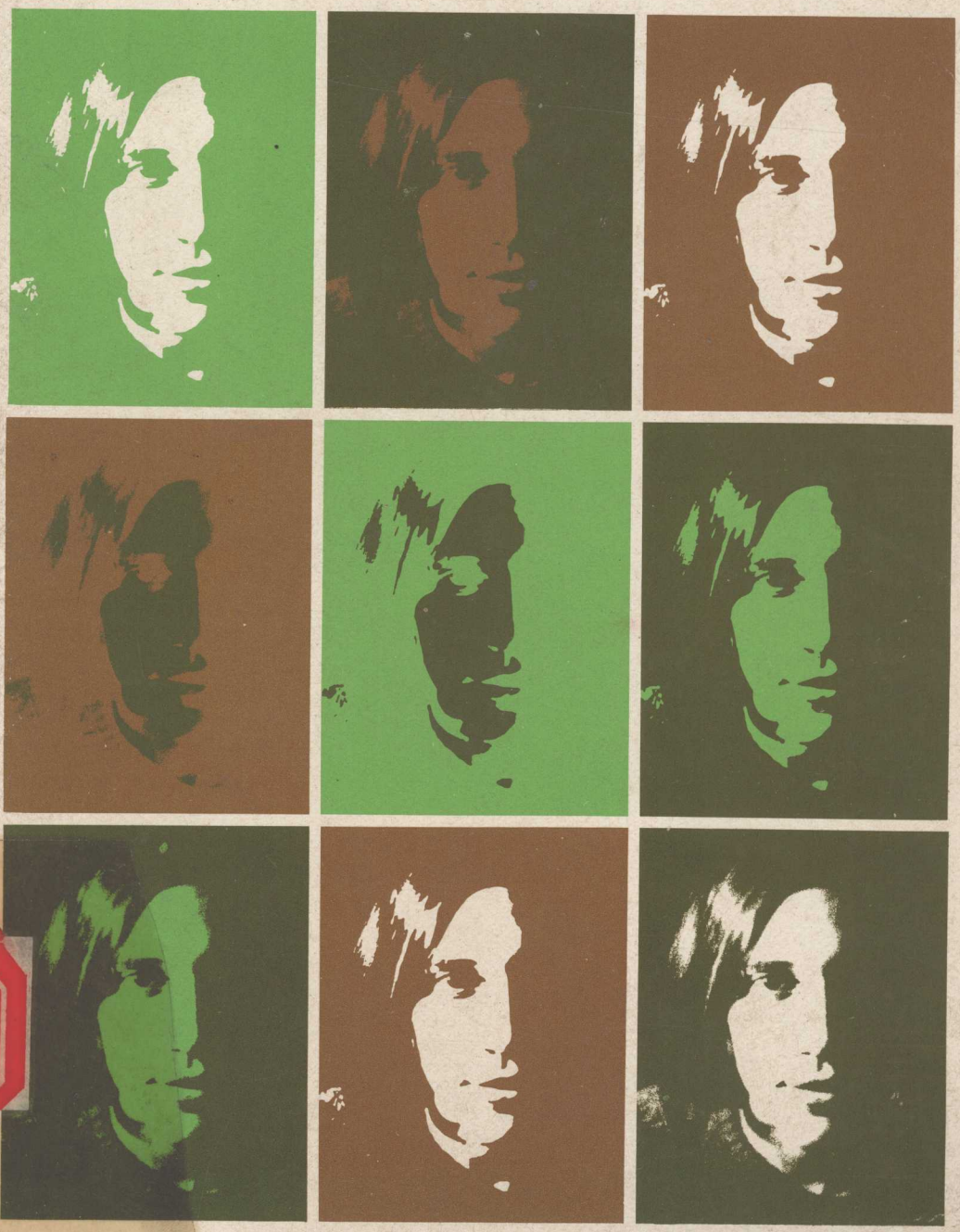
Behavior Modification: Principles and Clinical Applications

Second Edition

Edited by W. Stewart Agras, M.D.



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Little, Brown and Company
Boston

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Library of Congress Catalog Card No.
77-81503

ISBN 0-316-02031-1

Printed in the United States of America

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Preface

This book provides an overview of findings from the behavioral sciences that have application to clinical problems and presents selected descriptions of behavior therapy techniques. For this second edition, two new chapters have been added, one discussing the effects of relaxation-training procedures on various psychosomatic conditions and the other describing three multicomponent or packaged therapies. In addition, each of the chapters in the previous edition has been revised and several rewritten to reflect changes that have occurred in the field during the past five years. It is hoped that the book will continue to be used in advanced undergraduate courses and by clinicians and clinicians-in-training, who would find an overview of the field of behavior therapy useful.

As in the first edition, a short account of the behavior therapies can be obtained by reading the editor's introduction to each chapter, together with the pages referred to therein. These introductions do not comment on much of the experimental and theoretic material, concentrating instead on therapeutic techniques, their indications, and a brief review of their efficacy. Finally, the annotated therapeutic index serves to recommend therapeutic approaches for particular clinical problems.

This book was prepared during a year in residence at the Center for Advanced Study in the Behavioral Sciences, an environment that, under the able direction of Dr. Gardner Lindzey and with the support of the excellent staff, is particularly conducive to such work. The contributing authors also acknowledge the assistance of journal editors and publishing companies who have allowed reproduction of figures originally published elsewhere by them. Specifically, Figure 3 (by W. S. Agras) is reproduced by permission of the editor of the *Archives of General Psychiatry* (30:279, 1974) and the American Medical Association; Figure 11 (by J. M. Ferguson) is reproduced by permission of Bull Publishing Company, Palo Alto, California, from their book *Learning to Eat* (1975). Thanks also to Brunner-Mazel, New York, and to Benjamin J. Williams et al., authors of *Obesity Behavioral Approaches to Dietary Management* (1976), for permission to reproduce Figure 12.

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Editor's Introduction

In the beginning, some 20 years ago, behavior therapy was largely characterized by opposition to psychoanalytic theory and practice, an opposition engendered in part by the lack of demonstrated efficacy of psychoanalytic practice, and in part by the growing discrepancy between the practices of psychoanalysis and those suggested by the findings of experimental psychology. At present, the field is characterized by a sizable body of research, a fruitful interaction between the experimental behavioral sciences and the clinic, and a developing therapeutic technology. Behavior is viewed as being more affected by current events in the social environment than was formerly believed. Treatment procedures are well specified and therefore easily transmittable, and directed at specific behavior problems. This offers an important contract to the broad-gauge, less specific approach of the traditional therapies.

Two major influences that gave birth to the field can still be discerned. The first was the development of an alternative mode of therapy, systematic desensitization [26], using a mediational approach, in which the treatment of anxiety is hypothesized to lead to behavior change. By contrast, in the second development, the application of the operant approach to clinical problems, behavior is changed directly by altering events in the social environment that influence performance. Although there are exceptions and a marked tendency toward a merging of interests, workers in the first tradition have tended to focus upon the problems encountered in adult outpatient populations and to use between-group experimental designs; while those in the second tradition have tended to work with the problems of children and institutionalized adults, and to use within-subject experimental designs.

Thus, the field today is one of the major arenas of psychotherapy research, which one hopes will lead to the discovery of new principles underlying therapeutic behavior change and to the development of new and more effective therapeutic techniques. Moreover, it is by no means as narrowly focused a venture as earlier critics supposed. Indeed, the range of conditions to which the behavior therapies have been applied, as the reader of this volume will discover, is probably broader than that covered by the traditional psychotherapies. The relationship between the experi-

mental behavioral sciences, on the one hand, and endeavors in the clinic, on the other, is as it should be, and augurs well for the future.

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The rise of behavior therapy has stimulated both conflict and research. Early developers often attacked the traditional psychotherapies, producing a strong defensive reaction and a rejection and criticism of behavior therapy. Such antagonism is unfortunate, since it diverts attention from the contribution that the experimental behavioral sciences can make to practice and research in psychotherapy. These sciences contribute experimental methods and suggest new therapeutic possibilities that may strengthen the efficacy of traditional psychotherapies and lead to the development of new and more effective forms of therapy. This should be welcomed by therapists of all persuasions, none of whom can be satisfied with the results of present-day techniques.

Naturally, the viewpoint of the experimental behavioral scientist differs from that of the clinician. Overt measurable behavior is emphasized while thinking and feeling tend to be deemphasized, a point of view often opposite to that of the clinician. Yet this new emphasis may shed light upon aspects of behavior that have been neglected. Similarly, different concepts are used by the behavioral scientist, who emphasizes the environmental antecedents or consequences of behavior rather than explanatory internal concepts such as defense mechanisms or ego structure. Again, the fresh viewpoint may stimulate new thinking and creative insight.

Early Development

Most historians of the behavior therapies point to scattered empiric use in the past of concepts and techniques similar to those of present-day behavior therapy. In the nineteenth century, the era of moral therapy, rehabilitation toward normal behavior was stressed. Thus, Dr. John S. Butler is described [2] as relying on positive attention to build up desired behaviors: if a patient tore at her clothing, he provided her with a new dress and took every opportunity to compliment her on her appearance—a nice example of the use of social reinforcement! Later, Simmel [19] used procedures such as banishing patients to their rooms if they showed undesirable behav-

iors, a procedure now more technically known as "time-out" from reinforcement. Such techniques made no impact on the field of psychotherapy, partly as a result of the demise of moral therapy, but chiefly because of the lack of an experimental or theoretic framework.

Psychotherapeutic techniques, in fact, developed as an extension of the case history method of data collection and analysis. This approach is shared with other medical specialties and has shaped the thinking and practice of psychiatry and clinical psychology. To an internist the patient complains of a symptom, which is viewed as secondary to organic dysfunction. To a psychiatrist the patient, or his relatives, complain of a change in behavior (although this may be phrased as change in feeling or thinking). Sharing the viewpoint of medicine, psychiatry came to regard abnormal behavior as being secondary to internal changes.

This view was incorporated in the most important theoretic system to predate the behavioral approach, namely, psychoanalysis. However, many notions about behavior are shared by the two schools of thought, including the view that the history of an individual is important in understanding present behavior, that maladaptive behavior is largely acquired through learning in a social environment, and that the basic scientific aim is to understand the factors that influence abnormal behavior so as to modify it more effectively. Freud developed psychoanalysis without reference to psychology because psychology, in its infancy at the turn of the century, was unable to investigate complex human behavior. The first attempts to integrate the developing knowledge about learning with psychoanalytic theory consisted of translating one set of concepts into the other [7]. Later translations were more sophisticated [3] but did not change the research tactics or therapeutic procedures of psychiatry or clinical psychology.

More important were the clinical applications of behavioral techniques based on Pavlov's work. In an early and, by today's standards, somewhat crude experiment, Watson [25] produced a phobia in an infant by pairing a noxious stimulus (noise) with a neutral stimulus (a white rat). After a few pairings, crying and avoidance of the rat occurred, as well as avoidance of other animals, such as a rabbit, and materials such as fur, and to a lesser extent, cotton and wool. Soon afterward, Jones [10] described several direct techniques that eliminated children's fears. These included gradual approach to the feared object, and social imitation, in which a child was exposed to children who were not afraid of the same object, and who

thus modeled normal approach behavior for the child.

More therapeutic applications were those of Kantorovich [11] in alcoholism and Max [17] in the case of a homosexual. Both paired electric shock with the problem behavior. However, these isolated usages made little or no difference to treatment methods. Indeed, the only treatment based on learning theory that had gained some acceptance by the mid-forties was aversion therapy for the treatment of alcoholism [14], in which the taste and smell of alcohol were paired with nausea induced by the injection of apomorphine.

Later Development

Recent developments in the behavioral therapies derive from two sources: dissatisfaction with the results of the verbal psychotherapies and the growth of alternative approaches to treatment, particularly Wolpe's systematic desensitization [26] and extensions of Skinner's experimental work [20] from the laboratory to the clinic.

Dissatisfaction with the results of verbal psychotherapy grew slowly, since there was little research on the efficacy of such therapy. Eysenck's review articles [4,5] highlighting this problem produced an unfortunate furor, and his later writings on behavior therapy were interpreted as being antagonistic to psychoanalytic psychotherapy, placing proponents of such therapies in a defensive position. Nevertheless, Eysenck's position that psychotherapy had not been shown to be more effective than no treatment was solidly based. His critics identified many of the methodologic difficulties in evaluating the effects of psychotherapy but could not rebut his main conclusion. Later, Bergin [1], in a reanalysis of the data of controlled-outcome studies of psychotherapy, found that patients treated with psychotherapy show both negative and positive change when compared with untreated control subjects, who show slight improvement and cluster about the mean. This evidence suggests that behavior change does occur during psychotherapy but is masked in group studies, where the positive and negative effects cancel out. Moreover, in a recent review [16] of reasonably well-controlled comparisons of psychotherapy with no treatment or minimal treatment, psychotherapy was found to be better in 20 studies and of no benefit in 13, again suggesting that psychotherapy produces therapeutic behavior change in some circumstances.

Nonetheless, the realization that verbal psychotherapy has uncertain

effects left an opening for new forms of therapy. One such form was described by Wolpe in his book *Psychotherapy by Reciprocal Inhibition* [26]. Wolpe, an enthusiastic developer of new ideas, based this therapy on observations derived from an animal experiment, in which he successfully used feeding to reduce learned avoidance behavior in cats that by this means were gradually led to approach a feared situation. He hypothesized that "if a response incompatible with anxiety can be made to occur in the presence of anxiety-evoking stimuli, it will weaken the bond between the stimuli and the anxiety response." Instead of using feeding to inhibit anxiety in humans, Wolpe found that relaxation was seemingly as good. Thus, patients with neurotic avoidance behavior imagine a series of gradually more fear-arousing scenes while deeply relaxed. Supposedly, anxiety will be inhibited by relaxation as patients are progressively able to approach their feared object, first in their imagination and then in reality.

The second class of new therapies derives from B. F. Skinner's experimental analysis of behavior [20]. Skinner and his associates were able to gain precise control of certain aspects of animal behavior in the laboratory by varying the consequences of behavior. One of the first applications to the clinic was that of Fuller [9], who shaped a simple arm-raising response in a "vegetative idiot" by making a sugar-milk solution contingent on successively nearer approximations to this behavior. Later, Lindsley [15] used the techniques of operant conditioning to investigate the behavior of schizophrenics, after which a rapid expansion to various kinds of behaviors in children and adults occurred (see Chapters 2 to 5).

Since then, several other techniques, such as implosion, flooding, assertiveness training, and relaxation training, have been included within the behavior therapies, because they are either based on procedures derived from experimental psychology or are aimed at direct behavior change. At this point it can be seen that a number of forces have influenced the development of behavior therapy and that some way of defining the field is necessary.

Definition

There are two ways to define the behavioral therapies. One is to list the therapeutic procedures that purport to be derived from experiments in learning. Such a list includes:

1. Systematic desensitization
2. Shaping by positive reinforcement, including token economies
3. Aversive therapies
   a. Punishment
   b. Escape and avoidance conditioning
   c. Classic Conditioning
   d. Covert sensitization
4. Implosion-flooding
5. Modeling
6. Assertiveness training
7. Relaxation therapy
8. Paradoxical intent

This technique-oriented approach has the disadvantage of making behavior therapy a "school" of psychotherapy parallel with, but divorced from, other schools of therapy.

An alternative is to define the field as the use of the techniques of the experimental behavioral sciences to tease out the principles underlying therapeutic behavior change. At first, it would seem wise to determine the therapeutic efficacy of variables known to affect normal behavior. Later, discoveries unique to the modification of deviant behavior will doubtless be made. As effective variables are identified, they may be combined into therapeutic procedures testable in controlled-outcome studies. Unfortunately, the behavioral sciences are not advanced enough to allow a comprehensive compilation of the variables that cause behavior change. For the time being, then, it is necessary to blend these two approaches, moving from therapeutic technique to experiments analyzing the effective ingredients of such techniques, and from variables that affect behavior to new therapies.

Relationship to Psychoanalytic Psychotherapy

As noted earlier, psychoanalysis followed the theories of medicine by hypothesizing that internal events explain disturbed behavior. Constructs such as ego, id, and superego, and hypothetical energy such as libido are used in a series of somewhat loosely arranged hypotheses to explain behavior. The experimental behavioral sciences, on the other hand, consider behavior to be maintained largely by current environmental events. Skinner [21] objects to the use of inner constructs to explain behavior on the ground

that such constructs can be misleading. Thus, while a functional analysis of behavior is interested in the direct effect of punishment on behavior, a mental psychology views punishment as inducing anxiety, which in turn causes behavioral change. The danger in such a formula is that there is a tendency to view anxiety as causing the behavior change, and to forget to specify what caused the anxiety in the first place. The more complex the internal hypotheses, the more likely this is to happen. Skinner therefore argues for the simpler approach, in which the environmental factors prompting and maintaining abnormal behavior are defined and their effects analyzed experimentally.

Psychoanalytic psychotherapies usually assume that the following factors are essential to change symptoms: emotional and intellectual understanding or insight, resolution of the conflict underlying the symptom, and the use of transference behavior to achieve the first two aims. These assumptions have been essentially untested; however, they derive from psychoanalytic observations and hypotheses. The aims of psychoanalytic therapy, according to Knight [12], are:

1. Disappearance of presenting symptoms
2. Real improvement of mental functioning, for example,
   a. The acquisition of insight, intellectual and emotional, into the childhood sources of conflict, the part played by precipitating and other reality factors, and the methods of defense against anxiety that have produced the type of personality and the specific character of the morbid process
   b. Development of tolerance, without anxiety, of the instinctual drives
3. Improved reality adjustment, for example,
   a. More consistent and loyal interpersonal relationships with well-chosen objects
   b. Free functioning of abilities in productive work

The main drawback to this list is that, with the exception of change in symptoms, most of the aims are unmeasurable. Particularly difficult to measure are aims such as development of tolerance of instinctual drives, which are based on hypotheses concerning inner mental events.

The behavior therapies, on the other hand, assume that problem behavior is maintained by its consequences. Thus, to change behavior it is necessary to change those consequences and to arrange an environment in

which appropriate new behavior can be learned. The aims of behavior therapy, therefore, are to:

1. Eliminate problem behavior (symptoms) directly, either in the life situation in which it occurs or in a specially designed artificial situation
2. Build up desired behaviors in small, progressive steps in a specially designed program.

These aims, together with the theoretic and experimental predilections of the behavior therapies, have implications both for the design of therapy and for the evaluation of outcome. Treatment should be aimed at a well-delineated problem and should consist of specific and replicable procedures, rather than poorly defined treatment for global problems. Assessment of change should involve direct measurement of the target behavior and not global ratings, which depend so much on recall and are considerably influenced by the demand characteristics of the measurement situation.

Example of Procedure

A simple example of the differences in procedure between the psychoanalytic psychotherapies and a behavior therapy is illustrated by a case of agoraphobia in a married woman aged 23 years. She had not been able to leave her home alone for more than one year and had associated fears of crowds, choking, and dying. Her past history revealed a brief episode of fear of choking and dying in childhood. At that time her mother was in hospital having a thyroid operation, and the patient, who was "very close to her," recalled thinking that her mother might die. Her agoraphobia started shortly after marriage and progressively worsened.

Psychoanalytically oriented treatment would aim at elucidating the conflicts underlying her symptom, using verbal interchange and the transference relationship to enable the patient to gain insight into her problem. An initial hypothesis might be that the patient was overdependent upon her mother and that separation through marriage replicated the frightening situation in childhood when her mother deserted her and was in danger of dying. Further therapy might involve exploration of ambivalent feelings and fantasies toward her parents and her husband. Change in symptoms would be expected to occur as insight developed, to be reflected in changes in interpersonal relationships and in the therapeutic transference.

From a behavioral viewpoint, the first problem to be dealt with was that of not being able to leave home alone, which was the patient's presenting problem. Several approaches were possible. One possibility was to identify factors in her environment that maintained the problem behavior, such as attention given to the patient by her mother and husband for not leaving home. Gradual removal of such attention might lead to a reduction in phobic behavior.

The approach decided on, however, was to teach the patient to leave a safe situation (in this case, the hospital) by herself. As a first step, an objective measure of agoraphobia was devised. Since the central symptomatic behavior was the patient's difficulty in leaving a dependent situation, the distance walked from the hospital alone was used as a measure. A course was laid out from the hospital to downtown, and landmarks were agreed upon by patient and staff at about 25-yard intervals for more than one mile. The patient was asked to stay on the course and to note the point at which she turned back. Two 30-minute treatment sessions were held each day. At the end of each attempted walk the patient reported how far she had gone. Since much of the course was observable, checks were made that confirmed the accuracy of the patient's report.

The second step was to determine her initial level of behavior by having her attempt to walk alone over the course for a few sessions, after which treatment was begun. This simply consisted of praising the patient and commenting enthusiastically about her progress each time she met the reinforcement criterion. This was determined as follows: if the patient was praised for walking 100 yards alone in one trial and then she walked 120 yards in the next, the criterion for reinforcement became 110 yards, that is, the mean value between the previous criterion and the next trial in excess of it. The patient now had to meet, or exceed, 110 yards to receive praise.

As can be seen in Figure 1, the patient was able to walk farther alone during each session during reinforced practice in the first phase. Although it is not essential clinically to test whether the treatment being used is responsible for the behavior change, it is, nevertheless, useful to do so. Thus, for the next few days the therapist no longer praised the patient for improvements in performance. After a brief spurt, her performance declined and picked up again only after further reinforcement during the final phase. At this point the patient was able to walk downtown alone, and she was then encouraged to walk elsewhere, which she found she could do. In addi-