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TRAINING NONPROFESSIONALS IN BEHAVIOR MODIFICATION

Dissertation

Presented in Partial Fulfillment of the Requirements for the Degree Doctor of Philosophy in the Graduate School of The Ohio State University

By

James Michael Gardner, B.A., M.A.

The Ohio State University
1972

Approved by

[Signature]
Adviser
Department of Psychology
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March 12, 1945 .... Born - Queens, New York City
1965 ................. B.A., Psychology, City College of New York, Manhattan, New York
1966-1967 ........... Research Psychologist, Pennhurst State School and Hospital, Spring City, Pennsylvania
1968-1970 ........... Member of editorial board of The Clinical Psychologist.
1968-1970 ........... Member of editorial board of Professional Psychology.
1970-1972 ........... Director of Research and Development, Orient State Institute, Orient, Ohio.
1970-1972 ........... Editorial consultant, Behavior Therapy
1972 ................. Editorial consultant, Journal of Applied Behavior Analysis
1972 ................. Vice-President, Southwest Mental Health and Retardation Board, Franklin County, Ohio
VITA (continued)

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Studies in Community Psychology.....Professor Jaques Kaswan

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INTRODUCTION

We shall not cease from exploration
and the end of all our exploring
will be to arrive where we started
and know the place for the first time.

T. S. Eliot

There is nothing new in behavior modification. Principles of behavior modification exist in our folk lore ("You can get more flies with honey"), our laws ("eye for an eye") and our traditions. The application of behavior modification techniques also is not new. Parents have been rewarding their children ever since recorded time. School systems, wages, and laws are based on the application of behavior modification principles and techniques.

Not only are these techniques in operation, but they are formalized. Criminal justice, for example, is a formal attempt to institute an avoidance paradigm to eliminate various classes of undesirable behavior. Company wages, and particularly bonuses, are designed with the understanding that rewards increase desirable behavior. Why then, the tremendous concern with behavior modification in recent years?

There are many reasons for the increased concern with
behavior modification at a formal or systematic level. In the first place, it became apparent in the mid 20th century that the formal and informal practices for controlling behavior simply were not efficient. Despite wages and other benefits, turnover was high in many organizations. Despite capital punishment, murders increased. Despite all the ice cream cones, children misbehaved. The mass media daily chronicled the rising number of undesirable behaviors. Clearly, in order to stem this tide, there was a need to increase the efficiency and effectiveness of our ways of rewarding and punishing. It was out of just such concerns with the problems of increasing disorder and turbulence that behavior modification was founded. As conceived by John B. Watson (1919), behaviorism was a method to achieve behavioral and social control. His concern for social control grew out of an apparent discontent with urban life. In the preface to Psychology From the Standpoint of a Behaviorist (1919), he noted that as a result of urban living "the strain of adjusting ourselves to others increases daily." After despairing on the ability of chemistry, physics, and education to assist people in their adjustment to this strain, he noted with optimism:

If we are ever to learn to live together in the close relationship demanded by modern social and industrial life we shall have to...enter upon a study of modern psychology (1924, xi).

In a later book The Ways of Behaviorism (1928a), Watson
sought to create a world in which science could "make an individual display any given bit of behavior..." and "...reach such proficiency in our science that we can build any kind of social or asocial being upon order (p. 20)."

In 1948, B. F. Skinner published Walden Two in which he set forth mechanisms for achieving the goals enunciated by Watson. Skinner's future society was one in which the individual was controlled by the state. More than 20 years later, Skinner continued this theme in his controversial book Beyond Freedom and Dignity (1971).

A second reason for the increased concern with behavior modification at a formal level was that the methods of transmitting our knowledge concerning rewards and punishments were not systematic. In Western societies the parent is the major agent of acculturation, however, the parent has little formal training in the systematic application of rewards and punishments. Often parents find themselves with no ready solution to apparently insurmountable problems. In other societies, as well as in past generations of Western society, three and four generations lived together. In recent years, however, family structure in the United States has grown increasingly toward a two generation (i.e., parent: child) model.¹ This change from a three or four generation to a two generation family has major implications in terms of the transmission of child-rearing practices. In the past, one way in which parents (particularly mothers)
undoubtedly learned how to raise children was by modeling the practices of their own parents. They could observe the way that the child's grandparents responded to the child. Later, when the parent was with the child, immediate feedback was available from the grandparents: "Hold him higher." "That's right." "No, honey, let him get it himself."

It can be assumed that to some extent, a process of natural selection operated in transmitting child-rearing practices. That is, in those families that represented the multiple generation model, a high level of adaptive behavior was maintained. For example, they were able to maintain themselves economically. Further the mere existence of the older members pointed to good physical condition factors. Finally, an adaptive level of interpersonal behavior was suggested in the existence of the large numbers of people peacefully coexisting within the family structure.

At the very least, the existence of the multiple generation structure provided direction in child-rearing. Specific responses as well as generalized response patterns (or attitudes) could be transmitted. Even though these responses may not have been adaptive under certain circumstances (eg., transmitting criminal behavior) some base of instruction was provided. Under these conditions, the parents' anxieties about what-to-do would be considerably less than the anxieties of the parents in a two generation family.
As a result of the movement from a multiple generation to a two generation family, there was an increased need for new sources of information on child rearing. Little wonder then that Dr. Spock (1946) became a national best seller, surpassed only by the Bible. Dr. Spock, however, represented the common-sense approach endemic to the mid 20th Century. With the advent of the Space Age, a more "scientific" approach to child rearing was desirable in terms of the Zeitgeist. Moreover, the emergence of behavior modification was paralleled by other "scientific" applications of social and behavioral science to applied behavior change. For example, the actuarial prediction of behavior (ie., prediction based on data provided by large samples of subjects) became popular in the 1950's; computer technology and computer assisted instruction became popular in the 1960's. Extending out from the scientific laboratory and based on considerable research, behavior modification provided a "scientific" approach to child rearing which was consonant with the emerging times. The trappings of the experimental laboratory, and the emphasis on objective measurement and reliability gave an air of scientific credence to the behavior modification method.

Apart from the immediate family, folk lore is another mechanism which provides information on child rearing practices. Folk lore exists in favorite stories (eg., Abe Lincoln walking a mile to return one cent), fables (eg., the
tortoise and the hare), and common sayings (eg., "Spare the rod, spoil the child"). Folk lore can provide one way in which members of a society justify their behavior. Thus, folk lore can be used as a response to a stimulus which inquires into the reasons for some behavior: "Why did you hit your kid like that?" "Well everyone knows, 'Spare the rod ...

Though reference to folk lore can serve as a response to questions about why certain child rearing practices are in effect, the relationship between folk lore and child rearing practices is not reciprocal. That is, reference to child rearing practices cannot serve as easily as the response to questions about the folk lore. Discrepancies in the folk lore which, when interpreted into child rearing practices, often lead to incompatible responses provide one reason for the lack of reciprocity between the folk lore and child rearing practices. Thus, "A stitch in time saves nine" but "Better late than never." "The early bird catches the worm" but "He who laughs last, laughs best." "Haste makes waste" but "He who hesitates is lost." "Absence makes the heart grow fonder" but "Out of sight, out of mind.

The seemingly incompatible implications for child rearing practices suggested by the folk lore was another factor which may have resulted in the need for more detailed information on child rearing practices - a need which was to be met in some measure by information on behavior
modification principles and techniques. Of course, the turmoil on college campuses, inner city riots, assassination, etc. added to the sense of urgency which professionals and nonprofessionals shared - a sense of urgency that the current ways of doing things were not adequate; that other ways needed to be developed. For the solution, many people turned to science, and the applied psychological or sociological approach most consonant with science was behavior modification.

Behavior modification in its current form appeared on the scene in the late 1950's. Like any fad, its proponents promised solutions to present problems. The backward psychotic would return to normal, the retarded would leave the institution, delinquents would reform, and the whole mental health and retardation scene would be changed radically. Behavior modification drew heavily upon its scientific background; laboratory research, empirical validation, and reliability were built-in procedures.

Programs sprang up everywhere: Gerard Bensberg, Cecil Colwell, and Maurice Dayan in the south, Donald Baer and his associates in the far west, Skinner, Lindsley, and Barrett in the east, and Ayllon and Azrin in the midwest. Behavior modification programs and prophets proliferated. New techniques to change behavior appeared monthly. The behavioral revolution had begun.

More than a decade later, the appearance of another
book in the area of behavior modification requires a good
deal of justification. Currently, four journals are devoted
exclusively to behavior modification, while many other jour­
nals include behavior modification as part of their content.
A review of the literature quickly reveals the plethora of
behavior modification books. Collected readings of applied
studies patterned after Ullmann and Krasner (1965) are plen­
tiful. How-to-do-it manuals are available for parents
(Patterson & Gullion, 1968), teachers (Meacham & Wiesen,
1969) and psychologists (Holland & Skinner, 1961). More re­
cently, critical reviews of selected applied areas have ap­
peared (Franks, 1969) and the number of general texts in be­
havior modification increases yearly (Bandura, 1969).

All the activity referred to above would imply that be­
havior modification now rests upon a solid foundation of
demonstrated principles and techniques. Moreover, the level
of activity implies that the methods for communicating this
knowledge are systematic, formalized, and consensually vali­
dated. Generally, the former is true, while the latter is
not. Studies of behavior modification techniques are end­
less; studies of training people to use behavior modifica­
tion techniques are rare. Thus, while the basic technology
and expertise for effective behavior change exists, the
mechanisms for communicating this knowledge are in a pre­
technological state.

Information is no more valuable than the people who use
it. This is as true in behavior modification as it is true in classical language. Even though a large number of empirically validated techniques for changing behaviors may exist in the literature, these techniques can be applied only if appropriate mechanisms for teaching the techniques are developed. To date, researchers and practitioners have trained people in behavior modification techniques, and then examined the results of the trainer's intervention on some client population. This practice assumes that the principles, techniques, and methods of imparting this information are standardized. As will be seen in later chapters, this is not the case. Different behavior modification experts emphasize different aspects of the behavior modification process. Moreover, different behavior modification experts use different techniques to train others in the use of behavior modification.

Thus, at present, behavior modification is part science and part art. The science is represented by the vast number of technique-oriented studies which have replicated basic outcome findings. These demonstrations are related to theoretical constructs such as reinforcement, successive approximations, and stimulus control. The artistry of behavior modification lies in the basic application of these techniques, as well as the mechanisms for teaching both the application and the technique.

Science requires both theory and technology. To
approximate the level of physical sciences, the technology of behavior modification requires that the scientist be able to specify the exact requirements for behavior change, including temporal and spatial variables and motor and verbal movements. Moreover, the mechanisms for teaching these fundamental requirements also must be specified.

The latter requirement (i.e., the specification of methods of teaching behavior modification) is critical. One of the great advantages of behavior modification is its potential for wide-spread application. First, the techniques are said to be universal; they apply regardless of environment, client and trainer population. Second, since the techniques are relatively simple, nonprofessionals can be used as the principle change agents in many cases. However, neither of these ends is likely to be achieved unless standardized curricula and methods of instruction are developed and evaluated. In this regard, Ayllon and Haughton (1964) made the following point:

Therapy must be couched in a set of objective techniques which can be easily taught and implemented by relatively untrained personnel....All the sophisticated professional staff composed of psychiatrists, social workers, psychologists, counsellors, recreational therapists, etc., will not suffice if the dynamics of therapy are not translated into a practical down-to-earth form to be used by the very personnel entrusted to care for the patients (p. 97).

The present book summarizes the literature in the area of training nonprofessionals in behavior modification principles and techniques, including a review of the history of
the behavior modification movement, a review of different methods of teaching behavior modification, and finally, a review of research on the teaching process. It is hoped that the book serves a number of purposes. First, it brings together in one place some of the major reports of training nonprofessionals in behavior modification. The more than 200 articles reviewed here are representatives of a vast literature. As a result of this compilation a second purpose can be achieved; i.e., formulating general principles and summarizing results across the studies reviewed. The accumulation of data is a significant step in the scientific evolution of any field of endeavor. No single study can represent adequately general principles of behavior. However, when large numbers of studies are collected and analyzed, significant patterns may emerge.

A third goal to be achieved is the identification of heretofore neglected areas. The progress of science requires hypothesis generating as well as hypothesis testing. The purpose of hypothesis generation can be furthered by identifying neglected areas of study.

Finally, where applicable, results of the different training models and procedures will be analyzed in terms of behavior modification principles. That is, the current ways of teaching behavior modification will be analyzed in terms of the very principles which these methods attempt to teach. Are the methods used to instruct people in reinforcement
reinforcing? Is the teaching of shaping principles based on the principles of shaping? When instructors teach stimulus control in their classes, have they considered the stimulus conditions under which they are teaching?

This book has been written for at least two audiences. For the student of behavior modification, the book is designed to present an overview of the field of behavior modification as well as an intensive review of research on training nonprofessionals in behavior modification. Hopefully the interested student will discover important new areas to explore as well as becoming sensitive to some of the many problems which confront researchers in behavior modification.

The book also is intended for instructors of behavior modification, whether those instructors are nurses in institution programs, school counselors, social workers in parent training programs, or university professors. For this audience the book is intended as a basic resource for curriculum construction and evaluation of training techniques. It is hoped that the instructor can extrapolate from the many findings, reports, and interpretations presented here to their own setting, bringing a new focus on the methods of instruction, the practicum experiences, and the entire area of training in behavior modification.

The first part of this book includes an extensive history of behavior modification, definitions of major principles and techniques of behavior modification, and a
comparison of two methods of behavior modification with psychoanalysis. The second part of the book is a review of principles and techniques for teaching behavior modification, and a review of research in the area.
WHAT IS BEHAVIOR MODIFICATION

INTRODUCTION

HISTORICAL PERSPECTIVE

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Time Variables

SUMMARY
WHAT IS BEHAVIOR MODIFICATION

INTRODUCTION

This book is concerned with behavior modification, but what is behavior modification? Is it the same as behavior therapy? Are operant conditioners the same as contingency managers? Does reinforcement therapy involve the same things as behavioral engineering? Even a cursory review of the literature reveals a plethora of terms which are used to imply some kind of application of principles of learning to human behavior change. For the novice, this proliferation of terms is very confusing. For the expert, it is annoying. One of the foundations of science is the use of a common language. One of the major benefits of a common language is increased facility of communication. Therefore, a major purpose of this section will be to establish a common language in regard to behavior modification. Behavior modification has been adopted here as a generic term which refers to all applications of principles and techniques from experimental psychology to the problem of applied behavior change. Implied in this definition is: (1) a focus on overt behavior, (2) some definition of adaptation, and (3) specifiable operations in terms of training.
It should be noted at the outset, that the purpose of this chapter is not to provide a definitive approach to behavior modification, but rather to suggest some basic conventions in the usage of language as it pertains to behavior modification. Where appropriate, references will be made to sources which provide definitive approaches to the particular subject matter. The basic position taken throughout this book is that behavior modification can be understood best in historical perspective. Moreover, the definition and usage of terms throughout the book conform to this historical perspective. For these reasons the first section is devoted to an indepth history of behavior modification. History, however, is not sufficient to describe the current status of a phenomenon. Therefore, the second section of this chapter is devoted to a careful definition of two major methods of behavior modification as practiced today. Finally, to complete the perspective, these two methods of behavior modification are compared and contrasted to each other as well as to psychoanalysis so that the uniqueness of each method, and its relationship to other methods, is clear.
HISTORICAL PERSPECTIVE

Introduction

It is no mere accident that the United States is the bulwark of behavior modification today. Current forms of behavior modification rest upon a history of more than half a century of theory and experimentation in the United States. It has been said by many that behaviorism is the one peculiarly American school of psychology.

The purpose of this section is to trace the development of behavior modification through the first six decades of the 20th Century in the United States in terms of theory, application, and professional developments. Behaviorism took root in America in the early part of the 20th Century. It found a home in the practical "show-me" attitude of the American culture. The rather simplistic, yet all-encompassing nature of behaviorism was also consonant with American thought. Furthermore, there was an excitement in the behaviorist approach that said "The world is what you make it." This appealed to the Americans who felt strongly that "All men are created equal," and who looked upon behaviorism as a scientific validation of this equalitarian principle.
The first decade of the 20th Century was a mixture of many conflicting philosophies in psychology. The strong influence of Titchener's structuralism dominated much of the academic scene. However, the Chicago school (i.e., Functionalism) was emerging during this period. Darwin was omnipresent in American psychology. His thought influenced animal psychology, child psychology, statistics, and functionalism. Near the end of the decade, Freud and his associates made their monumental visit to Clark University.

Consciousness was the chief concern of the times, and introspection was the chief method of studying consciousness. This was carried over largely from the German experimentalists. However, psychologists in America were becoming disenchanted with consciousness. Even William James (1904) wondered; "does consciousness exist?"

Behaviorism had already started during the first decade of the 20th Century, though it was not to take concrete form until the next decade. Pavlov (1927) was just beginning his experiments in Russia; the functionalists were questioning the usefulness of consciousness, and research on animals was gaining impetus.

One of the immediate precursors to behaviorism was the work in animal experimentation during the last part of the 19th Century. Boring (1950, p. 472) credits Darwin with
"starting the modern era in animal psychology" by publishing *Expression of the Emotions in Man and Animals* (1872). In that book he traced human emotions back to hypothesized original animal states. His work was extended by George Romanes who published the first text in comparative psychology (*Animal Intelligence*, 1882), and by the work of C. Lloyd Morgan. In 1894 Morgan published *Introduction to Comparative Psychology* in which he put forth "Lloyd Morgan's canon" or the "law of parsimony." Basically, the law of parsimony stated that actions should be interpreted at the simplest level of explanation, without attempting to postulate higher mental processes. Morgan's work is often interpreted as a reaction against Romanes' anthropomorphism.

Darwin had made the initial overture, and Romanes had drawn closely the parallels between human and animal behavior. Morgan went further and stated that higher processes should be attributed to organisms only when no simpler explanation was possible. Jacques Loeb (1902) took the next logical step when he asserted that animals had no consciousness.

The relevant work in America in animal psychology at this time centered around Edward Thorndike (1898) at Columbia. He demonstrated that problem solving by cats could be explained by describing their behavior, without recourse to mental processes. In addition, Thorndike introduced the law of effect which, stated simply, referred
to the fact that responses which satisfied need states of the organism were likely to be repeated.3

Coming as it did in 1898, Thorndike's work fit well with the interest in applying experimental methods to psychological problems. Shortly thereafter, W. S. Small (1899) introduced the maze for studying problem solving by rats. And, in 1903, a young student in Chicago was completing his thesis on the neurological and psychological maturation of white rats. His name was John B. Watson.

The Fire Is Lit: 1910-1920

John B. Watson is considered by many (eg., Boring, 1950) to be the founder of behaviorism. Watson offered behaviorism as an alternative to the existing systems. He stressed the study of behavior rather than introspection which was in vogue at the turn of the 20th Century. Watson wrote:

Behavioristic psychology or behaviorism, as it is sometimes called, contends that the most fruitful starting point for psychology is the study not of our own self, but of our neighbor's behavior (1924, p. xii).

In 1913 he noted that the "theoretical goal" of behaviorism "is the prediction and control of behavior (p. 158)." To achieve that goal he attempted to:

apply to the experimental study of man the same kind of procedure and the same language of description that many research men had found useful for so many years in the study of animals... (1930, p. 5).
Despite his prominence and charisma, Watson should not be considered the "founder of behaviorism." In terms of theory and application, he was preceded by a number of individuals. For example, Titchener (1914) traced the tenets of behaviorism back to Comte and Cournot, both of whom had written a half century earlier. Other contemporaries of Watson who had expressed behavioristic ideas included William James, James McKeen Catell, Max Meyer, and William McDougall. As early as 1911, Max Meyer had published *The Fundamentals Laws of Human Behavior* which Roback (1964) considered the first behavioristic text. Moreover, the work of Herbert Jennings, Jacques Loeb, and Pavlov were similar expressions of behavioristic sentiments. All of this indicates that in terms of theory, Watson was a representative of his time; the expression of behaviorism was not the expression of one man, but rather an expression of the Zeitgeist. Boring (1950) so aptly described the conditions at that time:

In 1910 American psychology had embraced experimental human psychology, animal psychology and mental tests and was beginning to discover Freud. Some conservatives were Wundtian, some radicals were functionalists, more psychologists were middle-of-the-roaders. Then Watson touched a match to this mixture, there was an explosion, and behaviorism was left (p. 506).

There was almost no attempt to apply behavioristic principles to problems of human behavior during this decade. Basically, this decade can be interpreted as the be-
behaviorist's "campaign." Promises were made, speeches were many, and the clear message was "Throw the rascals (introspection) out." During this period behaviorism was gaining support in the universities. At Johns Hopkins University Watson established one of the first centers for behaviorism. Karl Lashley, an early behaviorist, obtained his Ph.D. there in 1915. The department of psychology at the University of Missouri under Max Meyer was another center for behaviorism, and A. P. Weiss graduated in 1916. In later years Weiss advanced a physiological theory of learning. Chicago, the stronghold of functionalism, produced Walter S. Hunter in 1912. At Harvard, Edwin Holt represented the behavioristic tradition, and one of his most prominent students was Edward Tolman who received his Ph.D. in 1915. All these men were to occupy positions of importance in the field of psychology in the first half of the 20th Century.

The behavioristic movement then, was a movement of young, American educated men who received their training during the first decade of the 20th Century. In most cases they were trained by American educated professors whose inclinations, if not behavioristic, can be described as functionalist. Further, great impetus was given to the movement when Watson was elected president of the American Psychological Association in 1915.
In the 1920's, behaviorism was to assume a position of significance in American psychology. While the previous decade was characterized by theory and principles of behaviorism, the third decade of the 20th Century saw a tremendous expansion of behaviorism and schools of behaviorism emerged; theory was extended to include application, and the growth in popularity resulted in important professional developments. Boring (1950) noted:

For a while in the 1920's it seemed as if all America had gone behaviorist. Everyone was a behaviorist and no behaviorist agreed with any other (p. 645).

Koch (1964) made a distinction between "classical behaviorism" and "neobehaviorism." Classical behaviorism arose between 1912 and 1930, and was characterized by five major orientations: first was objective techniques, second, the stimulus response (SR) orientation, third, peripheralism, fourth, an emphasis on learning, and fifth, a strong environmentalist position. All of these characteristics were clearly represented in Watson's behaviorism. Several aspects were shared by other writers. For example, Smith and Guthrie (1921) published General Psychology in Terms of Behavior in which they advanced even more elaborate peripheralistic hypotheses than Watson had proposed. The SR orientation was clearly present in Tolman's (1922) article "A new formula for behaviorism."
During the 20's, various forms of behaviorism emerged. Edwin Holt and Edward Tolman for example, represented a form of behaviorism best described as purposive behaviorism. That is, the behavior of the organism was the central focus, however, behavior was considered in relationship to the situation. In many cases this situation involved the purpose of the behavior. In 1932 Tolman published his most important work entitled *Purposive Behavior in Animals and Men.* In that book he made it quite clear that behavior was a function of the situation as well as other antecedent events. Holt published *Animal Drives and the Learning Process* in 1931 in which he also advanced a purposive emphasis and stressed the wholeness of responses.

Another branch of behaviorism was represented by those men who attempted to reduce behavior to physiological or neural components. This can be traced back to the work of William James (1890). In 1923 Karl Lashley published his papers on "the behavioristic interpretation of consciousness." Later, Lashley was to become one of the leading psychologists in the study of localized brain functions. Another psychologist with a similar view to Lashley's was Albert Weiss. In 1929 he published *Theoretical Basis of Human Behavior* in which he attempted to reduce psychology to physical and chemical changes. This was reinforced still further by Anrep's translation of Pavlov's *Conditioned Reflexes* which appeared in 1927.
Near the end of the 1920's, a book which was to have great impact in the next decade emerged. In 1927 a Harvard physicist Percy W. Bridgman published *The Logic of Modern Physics*. This book presented the basic principles of operationism. Stated simply, operationism meant that a concept was synonymous with the operations which defined it. That is, operationism postulated that an object, event, or stimulus was meaningful only in so far as the operations which resulted in that object, event, or stimulus could be described and measured by objective criteria. A frequently used example of applying operationism to psychology was the statement: "Intelligence is what an intelligence test measures."

One of the important topics presented in Bridgman's book was his discussion of pseudoproblems. As defined by Bridgman, pseudoproblems referred to meaningless questions which are oftentimes presented to people for answers. One of these pseudoproblems (Bridgman reported) was the question of comparing sensations. Are one person's sensations comparable to another's? For Bridgman, this was a meaningless question because it was impossible to measure subjective criteria. The extension from sensations as a meaningless question to consciousness as a meaningless question was only too obvious. This view was not new, and indeed Max Meyer had discussed this issue in his 1921 book *Psychology of The Other One*. 
In 1920, Watson and Raynor published one of the first major applications of behavior modification to humans. Their study was an attempt to demonstrate experimentally that "emotional" responses could be conditioned. They chose an eleven month old robust boy named Albert. The conditioned stimulus was a white rat to which the child previously had shown no fear response. The unconditioned stimulus was a loud tone which was created by striking a steel bar immediately behind the child's back. The rat was presented to Albert, and just as he began to reach for it, the bar was struck. The child reacted violently. He fell forward, burying his face in the mattress. When he reached for the rat again, the bar was struck again. After only seven presentations of the rat with the sound, Watson and Raynor had produced what they felt was an emotional response: the child cried, fell over on his side, raised himself up on all fours, and crawled away as rapidly as possible. Following the establishment of the conditioned fear response, Watson and Raynor attempted to see whether or not this response generalized to other stimuli. Albert was presented with blocks and he responded to them appropriately. Then Albert was presented with a rabbit to which he responded with whimpering and tears, and finally tried to escape. When a dog was placed before him, this stimulus did not produce as violent a reaction as had the rabbit, however, "fear" responses were noted. A seal fur coat produced similar fear responses,
as did cotton and wool. Unfortunately (for Albert as well as for science) the child was removed from the hospital before these conditioned responses could be eliminated. Watson and Raynor offered four possible strategies for eliminating these kinds of responses: (1) habituating the child to the response by constantly presenting the fear-evoking stimuli, (2) reconditioning, by simultaneously showing objects which evoked the fear response while stimulating the erogenous zones, (3) reconditioning, by associating food with the fear object and, (4) building up constructive activities around the object by imitation and modeling.

While Watson and Raynor (1920) were studying the production of fear in Albert, other investigators were examining the experimental induction of neuroses in animals. One of the first studies was by Krasnogorski (1925) who exposed subjects to ambivalent stimuli. The most influential work was reported by Pavlov (1927). Neurosis was induced in a dog through an extremely difficult discrimination problem. In the first phase, the animal could obtain food when one stimulus was presented. Then a second stimulus similar to the first was presented, however it was not associated with a reward. As a result of this procedure the animal underwent abrupt changes. Pavlov noted:

The hitherto quiet dog began to squeal in its stand, kept wriggling about, tore off with its teeth the apparatus for mechanical stimulation of the skin, and bit through the tubes connecting the animal’s room with the observer, a
behavior which never happened before. On being taken into the experimental room the dog now barked violently (p. 291).

In 1924 the laboratory research of Watson and Raynor was validated through the applied work of Mary Cover Jones (1924a, b). Jones described the procedures as follows:

During a period of craving for food, the child is placed in a high chair and given something to eat. The feared object is brought in, starting a negative response. It is then moved away gradually until it is at a sufficient distance not to interfere with the child's eating. The relative strength of the fear impulse and the hunger impulse may be gauged by the distance to which it is necessary to remove the feared object. While the child is eating, the object is slowly brought nearer to the table, then placed upon the table and finally, as the tolerance increases, it is brought close enough to be touched. Since we could not interfere with the regular schedule of meals, we chose the time of the mid-morning lunch for the experiment. This usually assured some degree of interest in the food and corresponding success in our treatment.

In the same year that Jones published her work, Burnham published a classic volume entitled *The Normal Mind* (1924). In that volume he adopted a behavioral approach. Some of the procedures recommended in this book included relaxation training, conditioned avoidance, negative practice and extinction, and selective positive reinforcement. Note the resemblance of Burnham's approach to Jones' (1924) analysis:

In other words, one brings the child definitely to face the cause of its fear, just as the horse trainer, with soothing words, leads the colt face to face with what has frightened it. Then one associates a rival
stimulus with the fear-inspiring object or idea....(p. 623).

Thus, as theories of learning and behaviorism expanded greatly, a small number of applied studies began to appear. These were buttressed by techniques which were said to be effective in changing human behavior. By far, these pronouncements were still more like campaign promises than reforms, but the behaviorist movement had begun to show that it had vitality.

With the exception of Watson's demise in the 20's, behaviorism continued to expand. The early leaders who had been educated between 1900 and 1920 took positions at universities all over the country, from Clark Hull at Yale to Edward Tolman at Berkeley. In 1922, Dunlap was elected president at APA, which was heralded as another advance for behaviorism. By 1922 W. S. Hunter was able to point to about a dozen people whom he considered staunch behaviorists. These included Watson, Max Meyer, Edwin B. Holt, A. P. Weiss, and himself.

**Neobehaviorism: The 30s**

The period beginning with the decade of the 30's was characterized by Koch (1964) as neobehavioristic. Koch stated that the identifying characteristic of neobehaviorism during this period was that the behaviorists sought "To realize and implement objectivism at the level of theory."
The distinctions between different schools of behaviorism became more apparent in the 1930's. As indicated earlier, the work of Holt and Tolman on purposive behaviorism emerged as a major force at this time. Physiological definitions of learning were also prominent during the 30's, taking the form of more sophisticated explanations than those offered by Weiss and Lashley in the previous decade. Holt (1931), for example, wrote:

...if one afferent (i.e., sensory) path already has connection with a motor path, then another afferent path if stimulated simultaneously, or nearly simultaneously, with the first will tend to acquire the same motor path of discharge.

One of the major influences during this period was Hull's hypothetico-deductive formulation. Hull's theory was an attempt to reduce psychological phenomena to quasi-mathematical constructs. Working with very industrious students at Yale from 1929, Hull developed a set of postulates from which he derived experiments to confirm the postulates. By the end of the decade he collected his massive work and published Mathematico-Deductive Theory of Rote Learning: A Study in Scientific Methodology (1940).

Another major influence was operationism, which had been presented in Bridgman's (1927) book. Operationism was introduced into psychology during the 1930's. S. S. Stevens, an experimental psychologist interested in learning processes, was one of the most influential psychologists in
terms of integrating operationism and psychology. In 1935 Stevens published The Operational Basis of Psychology. By 1939 Stevens had already included 66 items in his annotated bibliography on operationism. Operationism was embraced quickly by most learning psychologists who were comfortable with the mechanistic perspective. Support for operationism had been advanced earlier by Carnap (1932) who wrote that "every sentence of psychology may be formulated in physical language (p. 164)." Further, he stated: "The meaning of a sentence is in its method of verification. A sentence says no more than what is tenable about it (p. 174)."

The addition of operationism to behaviorism allowed for a more sophisticated approach to complex behavior. In Watson's formulation, complex behaviors could be analyzed into the simpler components, and reconstructed in the same way that the British Associationists constructed complex thoughts. Pavlov (1927) shared this view. He stated:

It is obvious that the different kinds of habits based on training, education, and discipline of any sort are nothing but a long chain of conditioned reflexes (1927, p. 395).

The brick-and-mortar approach of British Associationism was rejected by theorists like Hull. They asserted that operationism provided a scientific way of approaching complex behavior without simultaneously adopting Watson's simplistic view. In 1935 Hull noted:
In order to correct a frequent misunderstanding, due presumably to the wide dissemination of the views of J. B. Watson, the writer wishes to make it quite clear that neither here nor in any previous publication has he assumed that the more complex forms of behavior are synthesized from reflexes which play the role of building blocks. This may or may not be true (p. 227).

In 1931 Skinner's Ph.D. dissertation on reflex strength introduced the rate of response as a basic dependent variable. In addition, his use of the cumulative record made the process of behavioral change clearly visible. Somewhat later in the decade, Skinner published The Behavior of Organisms (1938). One of the important features of that work was Skinner's reliance upon the single case study; another was his emphasis upon operant behavior. Skinner noted:

"There is a large body of behavior that does not seem to be elicited, in the sense in which a cinder in the eye elicits closure of the lid...The original "spontaneous" activity of the organism is chiefly of this sort, as is the greater part of the conditioned behavior of the adult organism" (p. 19).

"This kind of behavior might be said to be emitted by the organism, and there are appropriate techniques for dealing with it in that form. One important independent variable is time...The use of a rate is perhaps the outstanding characteristic of the general method to be outlined......Such behavior as is not under this kind of control I shall call operant and any specific example an operant" (19-20).

Skinner also used this opportunity to attack some of the competing approaches to learning, including the neurological
formulations by Lashley, Weiss, and others, and the quasi-mathematical theorizing of Hull. He noted:

"The gain to the science of behavior from neurological hypotheses in the past is, I believe, quite certainly outweighed by all the misdirected experimentation and bootless theorizing that have arisen from the same source" (p. 426).

"A science of behavior cannot be closely patterned after geometry or Newtonian mechanics because its problems are not necessarily of the same sort" (p. 437).

In distinction to the theoretical formulations of Hull, Lashley, and others, Skinner argued for an experimental analysis of behavior. He noted that one of the distinguishing features which defined the experimental analysis of behavior was the concern with the probability "that a given behavior will occur at a given time." This concern with external behavior served to distinguish the experimental analysis of behavior from other kinds of psychology in which behavior was treated as the symptom of some internal process, or behavior was treated within a holistic or purposive perspective.

In addition to Hull and Skinner, Tolman and Guthrie loomed large as leading influences in learning theory and research. Tolman, in a chapter in F. A. Moss' *Comparative Psychology* (1934) offered his theory of sign-gestalt learning. Tolman spoke of "expectations" by the animal that various "signs" would lead to various outcomes, which he described as "significates." Tolman's theory was regarded
as an SS (stimulus-stimulus) theory of learning; i.e., it was concerned with the stimulus components. In addition, one of the striking features of Tolman's theory was that it did not place any emphasis on reinforcement in the learning process.

Guthrie, in 1935, published the first edition of *Psychology of Learning*. In that work he put forth his basic hypotheses concerning learning, which differed somewhat from Hull, Skinner, or Tolman. For example, Guthrie felt that learning occurred rapidly, and that the mechanism of reinforcement is stimulus change rather than drive-reduction (Hull's position).

Basic research on the experimental induction of "neuroses" in animals was popular during the 30's. Patterned after the methodology introduced by Pavlov, subsequent work with neuroses induced through difficult discriminations was reported by Bajandurow (1932) with doves, Jacobsen, Wolfe and Jackson (1935) with chimps, Dworkin, Raginsky, and Bourne (1937) with dogs, Karn (1938) with cats, and Dworkin (1939) with cats and dogs. A variety of other attempts to induce experimental neurosis through the use of aversive stimuli were reported by a group at Cornell, as illustrated by Anderson and Liddell (1935). Other studies using aversive stimuli included Dimmick, Ludlow and Whiteman (1939).

Theoretical concepts were increasingly applied to problems of human behavior change in the 30's. The full impact of behavior modification was far from being achieved, but
the rumblings of a great movement could be heard. Hollingsworth, for example, published a book entitled Abnormal Psychology (1930) in which he presented his theory of "redintegration." Basically, redintegration involved "....the substitution of some other reaction for the disabling one .....(p. 421)." In 1932 J. Stanley Gray published an article entitled "A biological view of behavior modification." Gray tied behavior and behavior change to organic and neural processes. Preceding the theoretical work of Hebb (1949), Gray wrote:

The organism learns to behave in a certain way when it is stimulated to behave in that way for a length of time sufficient for it to undergo those structural changes..........(p. 616).

He went on to refute subjectivism and to place emphasis on objective description for education. Anticipating the work of the present behavior modifiers, Gray wrote:

Perhaps the most important implication of this position is that it places the responsibility for pupil learning directly on the educator. If the pupil does not learn it is because the educator does not...arrange the school environment to fit him (p. 620).

Jacobson published a book entitled Progressive Relaxation in 1938 wherein he introduced the concept of systematic desensitization. He offered a method of muscle relaxation which was designed to produce incompatible behavior (ie., relaxation) to anxiety. Twenty years later his method was to be adopted by Wolpe (1958) as an integral part of the
method of reciprocal inhibition.

Some support for the work of Watson and Raynor and Mary Jones in the previous decade was offered by Jersild and Holmes (1935). Their study concerned methods by which parents attempted to alter their children's fears. In this study Jersild and Holmes found that verbal explanations and reassurance were relatively ineffective. However, modeling was considered more effective and the use of successive approximations (as illustrated in the work of Jones) was found to be the most effective method. Note the following description by Jersild and Holmes:

....the mother made it a policy to get him accustomed to a small flow of water, she then gradually increased the flow; to overcome fear of alarm clocks, the parents used a clock with a softer ring, and then later introduced the louder clock....(p. 87).

In 1932 Dunlap published Habits: Their Making and Unmaking in which he recommended negative practice as a means to eliminate stuttering, thumb sucking, nail biting and masturbation. In this case the person repeated the habit continually so that it could be brought under conscious control and subsequently eliminated.

Tendler in 1933 asked for a reorientation in psychotherapy. He spoke about "detensors." In this case the psychotherapist presented a client with relaxing ideas or imagined enjoyable situations, and in that way reduced the patient's anxiety. L. Max (1935) extended the earlier
work by Kantorovich (1929) on aversive conditioning of alcoholism to the problem of sexual difficulties.

In 1935 Edgar A. Doll published the Vineland Social Maturity Scale. Though the scale was to have little immediate effect, it was one of the precursors of the types of behavioral analysis in vogue in the 1960's in behavior modification programs. The Vineland reflected Doll's concern with behavior and behavior alone—not motivation, attitude, or even the reasons for the behavior. Doll was interested simply in whether or not a person was able to exhibit a specific behavior. Coming in the 1930's as it did, this emphasis was overshadowed by the more popular projective techniques and intelligence tests.

In 1938, Mowrer & Mowrer began the first in a long series of experimental treatments of enuresis. Mowrer developed a moisture sensitive pad which was wired to a bell. Whenever the child "wet" the pad, contact was made with an electrical circuit and a bell rang. In this study, Mowrer noted 100 percent cure in his 30 subjects. Moreover, no "symptom substitutions" were noted, and in fact, general overall gains were made by the children. As early as 1939, Morgan and Witmer replicated Mowrer's basic design.

It is clear that there was much activity in the 30's in terms of applying behavior modification to the problems of human behavior change. Though these books, articles, and other publications were often unrelated to each other, the
sheer number indicated that behavior modification was very much alive during this period.

Interest in psychoanalysis was also high at this time and psychoanalysis was a dominant influence in clinical psychology. This influence was enhanced by the immigration of many German and European psychoanalysts to Western countries during Hitler's rise to power. Few of the behaviorist authors quoted here offered behavior modification as an alternative to psychoanalysis. Most of the cases of behavior modification were concerned with motor behaviors, such as phobias (eg., Hollingsworth), thumbsucking (eg., Dunlap), alcohol consumption (eg., Kantorovich), and sex (eg., Max). It was not until the 1950's that Skinner's (1953) work on verbal behavior would provide the theoretical framework for the next great expansion of work in behavior modification.

The role of behaviorism in the 1930's had enlarged and was a dominant force. Little wonder then, that Huxley's Brave New World came out in 1932. Walter S. Hunter, in his presidential address before the American Psychological Association in 1931 defined psychology as follows:

Psychology seeks to describe and explain, to predict and control, the extrinsic behavior of the organism to an external environment which is predominantly social. (Reisman, 1966, p. 246).

Later in that same decade, Clark Hull (1936) was elected president of APA. Under Hull's guidance, there was much work in the middle to late 30's at Yale University, attempt-
ing to integrate learning theory and psychoanalysis. Among Hull's students and colleagues were Neal Miller, O. H. Mowrer, Robert Sears, and John Dollard. Perhaps the greatest achievement during this period was the publication of the now classic work Frustration and Aggression (Dollard et al, 1939).

Despite all the activity in theory, techniques, and professional affairs, the application of behavior modification to the problem of human adaptive behavior change was still limited. In his 1938 book The Behavior of Organisms Skinner noted:

The reader will have noticed that almost no extension to human behavior is made or suggested....The book represents nothing more than an experimental analysis of a representative sample of behavior. Let him extrapolate who will....(441-442).

A Brief Decline: The War Years

For a number of reasons, much of the tremendous growth and notoriety of behaviorism from 1915 to 1940 decreased in the late 1940's. First, as psychologists turned their attention to the war, psychological assessment assumed great importance. Later, psychotherapy emerged as a major focus of psychology; however, at this time, the magnitude of the problems encountered in psychotherapy seemed far beyond the reach of behaviorism.

Second, behaviorism as a separate entity enjoyed the
same fate as functionalism and gestalt psychology. That is, the basic tenets of behaviorism were absorbed into the mainstream of America psychological thought. With this absorption, the need to define behaviorism in distinction to other schools disappeared. Nonetheless, there was activity during this time which deserves notice. Clark Hull, in 1942 published a simpler version of his hypothetico-deductive theory which had appeared three years earlier. Entitled Principles of Behavior, the book was more easily accepted by students and colleagues. In fact, it was heralded by some (eg., Koch, 1944) as the dawning of a new era in psychology. One of the significant features of the book was Hull's reliance upon Thorndike's law of effect, which became a major factor in Hull's theory. Moreover, Hull pointed to the gradual process of learning in distinction to the one-trial learning hypothesis advanced by Guthrie (1935).

In the 40's, different schools of behaviorism were extended into different areas. For example, Hullian theory became the basis for explorations of verbal learning (Hull, 1940), social behavior (Miller and Dollard, 1941), motor learning (Ammons, 1947; Kimble, 1949), and psychotherapy (Dollard and Miller, 1950). Tolman's theory was extended into social behavior (Tolman, 1941), and Skinner's approach found expression in animal training (Breland and Breland, 1951) and behavior modification (Skinner, 1948).

Work in the experimental production of neuroses
continued in the 40's as research initiated in the previous decade was extended by Gantt (1944), Dworkin, Baxt and Dworkin (1942), and Liddell (1944). One of the most prominent studies during this period was Masserman's (1943) work with cats. Near the end of the decade, Joseph Wolpe (1948) began a series of animal studies which were to eventuate in the formulations of his system of behavior therapy in the next decade.

Immediately following World War II, a number of attempts to integrate experimental and clinical psychology were made. Notable among these were the efforts of Shaw (1946, 1948), Shoben (1949), and Dollard and Miller (1950).

In the area of application, Voegtlin (1940) and Lemere, Voegtlin, Broz, O'Hallaren and Tupper (1942) extended the work of Kantorovich (1929) using aversive conditioning on alcoholics. Seiger (1946) extended Mowrer's (1938) research on enuresis.

In the area of mental retardation, Fuller's (1949) study represented the first application of behavior modification within an applied setting. Previously, a number of researchers had studied classical conditioning with retardates (Razran, 1933; Segal, 1929; Shastin, 1930; and Wolowick, 1929). In his study, Fuller conditioned an 18 year old profoundly retarded, multiply handicapped child to move his arm. As a result of this arm movement, a syringe filled with warm sugar milk delivered a small drink
to the subject's mouth. At first, the response rate was less than one per minute while after the fourth session the response rate had increased to three per minute.

Of major importance in the last half of the 1940's were events such as the decline of classical psychoanalysis and the growth of other forms of psychotherapy. Prior to World War II, the major purpose of psychotherapy was to deal with intrapsychic events. The field of mental health was dominated by psychiatrists and psychoanalysts. Therapy was limited largely to white, middle and upper class, urban, educated adults. For example, Hollingshead and Redlich (1958) reported that (in New Haven, Connecticut) regardless of age, sex, and diagnosis, low socio-economic status clients received only mechanical types of treatment, while high socio-economic status clients were likely to receive extended psychotherapy. The basic corrective conditions for successful therapy at this time were insight and resolution of intrapsychic conflicts.

The dominant concept of psychotherapy was attacked from several fronts. First, the assault came from within. Neo-Freudian analysts such as Karen Horney (1942) and Harry Sullivan (1947) emphasized the importance of social conditions and interpersonal relationships. Behavior did not occur in isolation, they argued, but rather in a complex personal-social environment. Sullivan (1947) noted:
When we speak of impulse to such and such action, of tendency toward such and such goal, or use any of these words which sound as if you, as a unit, have these things in you and as if they can be studied by and for themselves, we are talking...about something which is observably manifested as action in a situation. The situation is not any old thing, it is you and someone else integrated in a particular fashion...
The situation is still the valid object of study (p. 24, italics added).

The work of the Neo-Freudians de-emphasized the importance of the insight-oriented therapies which dominated the pre World War II period. They also emphasized the nature of the personal qualities of the therapist. Rather than the passive "blank slate" image that dominated pre World War II ideas, the therapist took on a more active character in the Neo-Freudian systems.

In addition, there was also an attempt to alter the nature of analytic therapy. For example, Berliner (1941) recommended shortening the length of therapy, while Horney (1942) spoke of "autonomous therapy" wherein individuals might analyze themselves. Alexander and French (1946) proposed that therapy be shortened and that significant people in the client's environment be used.

The decline of psychoanalysis was one factor which allowed for the emergence of behavior modification. As the values associated with psychoanalysis (eg., long therapy, introspection, past events) decreased in popularity, the opposite values associated with behavior modification
Following World War II, increasing numbers of returning servicemen required some form of mental health intervention. It was evident that the number of people requiring attention far exceeded the number of trained professionals; there were sixteen million veterans of World War II and four million from previous wars. Forty-four thousand neuropsychiatric patients were already in VA hospitals, and the VA claimed a shortage of almost 5,000 mental health professionals (Reisman, 1966).

The group therapy "movement" was initiated by J. Moreno in 1932, and by the end of that decade almost everyone in the mental health field had at least heard of the method, and many were using it (Reisman, 1966, p. 243). However, it was not until after World War II that the practice of group therapy increased greatly in scope. Reisman (1966) reported that in the decades of the 30's and 40's, 89 and 739 articles respectively appeared in psychological journals on group therapy. In the first half of the decade of the 50's, 879 articles had already appeared.

Group therapy procedures required a new orientation to mental health intervention. It was no longer possible to provide the intensive relationship inherent in the one-to-one therapies. Because the therapeutic situation now included a number of people (generally peers) attention often was focused on interpersonal interaction.
During this same period, other forms of psychotherapy emerged. These included filial, family, client-centered, and milieu therapy. Basic concepts inherent in these therapies stressed the importance of the environment, including significant people in that environment. In addition, child oriented therapies began to involve these significant people in the therapy process.

Prior to World War II, child oriented psychotherapy was modeled after adult therapy. The therapist was regarded as a parent-substitute, and parent-child interactions as an integral part of therapy were minimized. At best, therapy for parents would accompany the child's sessions. The basic formulations for child therapy were drawn from the medical model. For example, the child was isolated in an attempt to deal with the "disease." In general, attention was given to the problem (read: disease) in isolation, removed from other stimuli.

Following World War II, greater emphasis was placed on the environment and significant persons in the environment, particularly during the first few years of life. The predominance of psychoanalytic theory in the child development literature at this time was a contributing factor to this trend. Also, research in the early 1940's witnessed an increased concern with early childhood experiences. Kanner's (1943) work on "early infantile autism," and Spitz's (1945) research on "hospitalism" were focused on the importance of
the first few years of life.

The growth of filial therapy and family therapy were simultaneous events. While filial therapy emphasized the educative role of the parent, family therapy had broader implications. In family therapy, the assumption was made that the entire family situation was non-adaptive, and therefore required change. Not only was the parent therapist to the child, but the child was therapist to the parent.

In addition, child oriented therapies emphasized the therapist's personal qualities. Fidler et al (1969) noted: "...the role of empathy in communication is given very great weight... (p. 53)."

Another significant post-war event was the emergence of client-centered therapy. Developed by Carl Rogers (1942), client-centered therapy was based on the individual's potential for growth. The role of the therapist was to allow the client to gain a better understanding of himself by freely experiencing feelings. Rogers' therapy focused on the feeling qualities of the therapist, rather than intellectual experiences.

Milieu therapy was an extension of group therapy. As first applied by Bettelheim and Sylvester (1948), this involved a total approach including physical environment, personnel, etc.

The growth of the new psychotherapies was another post-war event which facilitated the development of behavior
modification. The emphasis in these therapies was on the here-and-now. The complex, intellectual role of the therapist as exemplified in psychoanalysis, was no longer accepted by many. Moreover, in many cases, behavior modification was adopted as a strategy for use in these therapies. For example, much of the current literature in child and family therapy is concerned with behavior modification.

While these events reinforced the position of behavior modification in some respects, in other ways, the new therapies emerged as rivals of behavior modification. This was particularly true of client-centered therapy. Group therapy also emerged as a rival of behavior modification. Behavior modification techniques have rarely been used with traditional groups, and group therapy has developed a culture of its own, based largely on the study of interpersonal relationships.

Changes in professional development in the post-war period fostered the establishment of a number of important concepts. In addition many traditional notions were challenged during this period. The necessity for long term, intensive, introspective therapy designed to produce insight was questioned seriously. Also the requirements of the therapist were dramatically changed from those of a passive guide to those of a human being with personal qualities. Both these changes were important because they laid the foundation for the rationale of using nonprofessionals. If
effective intervention required highly trained psychiatrists, the use of nonprofessionals could not be justified. If effective intervention was based on the therapist's personal qualities rather than formal education, then the use of nonprofessionals would be possible.

A third major post-war change was the increasing use of simplified therapeutic techniques such as behavior therapy and client-centered therapy. Because the basic techniques in these therapies were few in number and easily communicated, the use of nonprofessionals was possible. Obviously, complex psychoanalytic concepts required extensively trained and sophisticated professionals; however, newer and less complex therapies opened the road for nonprofessionals.

A fourth major post-war change was the basic change in the definition of mental health. During this period, the concept of "coping" and adaptive behavior emerged. This meant that a person did not have to resolve his "basic conflicts." It became accepted fact that most people had tensions and anxieties throughout their life, and what was important was their method of coping with these problems. Adaptive behaviors were defined as behaviors such as keeping a job, staying inside the law, etc. The use of behaviorally oriented criteria to define mental health and mental retardation provided a basis for objective measurement which was not possible when intrapsychic events were the major variables of interest. The use of objective
measures was, in turn, significant for nonprofessional manpower because these measures provided an accountability mechanism whereby the therapist's performance could be monitored.

Another major post-war change was the emerging ahistorical view of the new therapies. While acknowledging the influence of previous history, the new therapies emphasized the here-and-now. There was no need to initiate elaborate and time consuming explorations for "deep seated" conflicts. This change in emphasis made the intervention role more clear cut, and allowed for the use of nonprofessionals. The use of nonprofessionals is less possible when the requirements of the therapist (analyzing free associations, dream interpretation) are too complex.

The emergence of these changes laid the foundation for the evolution of current day forms of behavior modification.

The Second Coming: The 50s

Most of the forces set in motion in the 1940's became even stronger in the 1950's. By this time, behaviorism per se had been adopted into the mainstream of American psychology. However, during the 1950's, specific techniques of behavior change based on behavioral principles were to become popular. These were not new. Precursors to almost every "new" technique could be found in Burnham's 1924 volume, and in the work illustrated by Dunlap, Mowrer, and
others. However, it was significant that these techniques provided psychologists in the 50's with an identity separate from that of the other mental health professions.

In the middle of the 1950's, the focus on theories (eg., Hull, Tolman) declined. As the great debates between Hull and Tolman were concluding, Skinner's approach began to attract more attention. In that decade the Journal for the Experimental Analysis of Behavior was founded with the goal of gathering data to generate changes, and recording them. The need to have theories of learning as Skinner would soon point out (1961) was not strongly felt by many at this time.

In 1953, Skinner published Science and Human Behavior. Previously, Walden II (1948) had been a philosophical and utopian description of the implications derived from Skinner's animal research. Science and Human Behavior was an attempt to apply to humans the same precision of his empirical work with animals (eg., The Behavior of Organisms, 1938).

One of the most important developments during the 1950's was the questioning of the effectiveness of conventional psychotherapeutic techniques. For example, in work by Sheppard and Gruenberg (1957) the question of base rate occurrence of remission was raised, and the figure of 70 percent marked improvement over two years was given. Wolpe (1954, 1958, 1961) offered similar evidence. Eysenck's
(1952) article received the most attention. Even granting sound objections to his methodology and conclusions (Luborsky, 1954; Rosenzweig, 1954), Eysenck (1952) dramatically questioned the effectiveness and efficiency of psychotherapy. He noted that estimates of improvement in psychotherapy ranged from 40 to 80 percent; however, untreated individuals had a spontaneous recovery rate of approximately 70 percent. In 1953, in a short essay Eysenck wrote:

We thus find that among neurotic patients being treated by psychoanalytic or eclectic psychotherapy, about two out of three recover. Similarly, among neurotics treated by their G.P. along non-psychotherapeutic lines, or obtaining simple custodial care, again two out of three improve. It is difficult to interpret these results as supporting in any way the hypothesis that psychotherapy has a beneficial effect (p. 198).

In his 1953 essay on the effects of psychotherapy, Eysenck listed a number of techniques for modifying behavior. The first was conditioning, which he associated with the work on enuresis and alcoholism. Second, he talked about substituting one habit for another. The third method was suggestion. Fourth, he listed negative practice (as exemplified in the work by Dunlap).

Wolpe published Psychotherapy by Reciprocal Inhibition in 1958. In that book he described the methods of reciprocal inhibition and systematic desensitization. Basically, this was an extension of the earlier work of Watson, Dunlap, and Jacobsen with the noted exception that Wolpe's theo-
retical framework was decidedly Hullian. In that initial work Wolpe reported a success rate of approximately 90 percent.

Further study on enuresis was reported in the 1950's, and the success rates were high. For example, Davidson and Douglas (1950) reported a 75 percent cure rate with 20 deprived children; Seiger (1952) reduced enuresis for two months or longer in 94 of 106 cases; Geppert (1953) cured 38 of 42 cases. Using more severe methods, Crosby (1950) was successful in 52 of 58 cases. In his study, an electric impulse stimulated the subject's genitals at the first sign of micturition. Wickes (1958) reported research on 100 "persistently enuretic" children between the ages of five and seventeen. Sixty-five percent of the sample were reported "dry" at the end of the study, however, on follow-up (ranging from four months to one year) only 50 percent remained "dry."

Much of the work in the later part of the 1950's was concerned with demonstrating the effectiveness of behavior modification in laboratory settings. For example, in 1955 Verplanck demonstrated the effects of reinforcement upon subjects' verbal statements during simulated interview conditions. In this case Verplanck was working with psychology students. Statements by student subjects were followed by either reinforcement (paraphrasing the students' statements) or by extinction (saying nothing or disagreeing).
Late in the 1950's, Flanagan, Goldiamond, and Azrin (1959) applied behavior modification to stuttering in a laboratory setting, while Azrin and Lindsley (1956) demonstrated the effectiveness of behavior modification techniques in establishing, maintaining, and then eliminating cooperative behavior between children.

A New Presence: The 60s

The decade of the 1960's represents two dramatically different periods, which can be divided roughly at the midpoint. The time from 1960 to 1965 is best seen as an extension of the previous decade. Laboratory demonstrations of behavior modification techniques proliferated, comparisons of behavior modification and traditional therapy were numerous, and concern with behavior modification as a distinctively psychological form of mental health intervention was prominent. Around the midpoint of the decade, a tremendous increase in demonstrations of applied behavior change emerged. Later, concern with instrumentation appeared.

Laboratory demonstrations continued in the early part of the 1960's. Azrin, Holz, Ulrich, and Goldiamond (1961) replicated and extended Verplanck's (1955) studies on verbal conditioning. The work of Bijou and Orlando (1961) further extended laboratory experiments; in this case they illustrated the development of multiple schedule performance with
In the work of Brady and Lind (1960) hysterical blindness was treated with the use of operant conditioning techniques and a specially constructed apparatus. One of the justifications for this research was the experimental demonstration of a behavioral (rather than a psychoanalytic) treatment of this behavior (i.e., hysterical blindness).

The work of Ferster and DeMeyer (1960) is a classic in the area of behavior modification. They were concerned with the experimental analysis of the behavior of autistic children. A large experimental room which contained a wide variety of devices which could be operated by coin was used. The devices included a pinball machine, color wheel, television set, phonograph, and electric train. In addition, one of the machines delivered food. Once the child's behavior was shaped to obtain coins, various experiments were conducted. In the first, the child's coin-getting behavior was placed under the discriminative control of lights which were mounted behind plastic panels. In this case coins could be delivered only when the lights were on.

Much of the work in the early 1960's was concerned with hospitalized psychotics (Salzinger and Pisoni, 1958, 1961; Weiss, Krasner and Ullmann, 1963; Ullmann, Krasner, and Edinger, 1964). For example, Issacs, Thomas, and Goldiamond (1960) reinstated verbal behavior in hospitalized psychotics. In their study, a psychotic man was reinforced
with gum for verbal statements. The patient was seen on an individual basis three times a week. With another subject, this technique was extended so that verbal statements in group sessions were rewarded with sticks of gum.

Ayllon (1960) applied behavior modification techniques to eating behavior of chronic schizophrenic patients. In one case the patient was left to remain on her ward when she chose not to eat. Within a week the patient came to the dining room unaided, and she also began taking food without any help. In another case the problem was leaving the dining room, and social attention and candy were used to reinforce leaving the dining room. In the previous case candy was used to get the patient to help herself to food in the dining room.

Ayllon and Michael (1959) also initiated studies of applied behavior change with chronic schizophrenics. They noted:

> The pretreatment studies indicated that what maintained undesirable behavior in most of the patients was the attention or social approval of the nurses toward that behavior (p. 324).

They then proceeded to train the nurses to accelerate and decelerate a wide variety of behaviors.

The high success rates in studies of behavior modification encouraged comparisons between traditional techniques and behavior modification. For example, Lazarus (1961) compared the effectiveness of group desensitization vs group
interpretation for dealing with phobic disorders. Thirteen of 18 subjects treated with the desensitization technique recovered, whereas none of the nine treated by interpretation recovered. Jones (1960) published a review of over 100 articles on enuresis in which he noted that behavior modification techniques generally were more effective than expressive therapies.

Other workers were interested in expanding behavior modification to a host of areas. For example, Wolpe (1958) reported that he achieved success in 188 out of 200 neurotic cases in an average of 35 sessions using reciprocal inhibition. In 1961 Lazarus expanded the techniques of systematic desensitization to use in group therapy. In 1960 Bond and Hutchinson (1960) applied reciprocal inhibition to exhibitionism.

In the area of education, Williams (1959) demonstrated the elimination of tantrum behavior by extinction procedures. In this case a 21 month old child was so disruptive that one of the parents was spending one half to two hours each night waiting in the bedroom until the child went to sleep. During the first time extinction was applied, the child screamed for 45 minutes. The second time, however, he did not cry at all and by the tenth occasion the crying had disappeared completely.

Though attention to programmed teaching dates back as early as the 1920's (Sidney Pressey, 1926), a keynote article
by Holland (1960) was very important. Holland's teaching machine illustrated a number of principles: (1) reinforcement for correct responses was immediate, (2) behavior had to be emitted by the student and afterwards it was reinforced, (3) success at earlier stages in the program was necessary to achieve success at later stages. Holland noted: "We have seen that the principles evolved from the laboratory study of behavior have provided the possibility for the behavioral engineering of teaching. (p. 287)."

Despite the fact that Fuller applied behavior modification techniques to the mentally retarded in 1949, there was almost no work in this area until the theoretical articles by Headrick (1963) and Ellis (1963). Ellis' article was a theoretical analysis of toilet training procedures applied to the severely retarded. His article stimulated other researchers, and shortly thereafter articles based on the application of his analysis appeared (Dayan, 1964; Giles & Wolf, 1966; Hundziak, Maurer, and Watson, 1965).

During the early part of the 1960's, three trends in studies of applied behavior change emerged. The first trend was exemplified by the work of Eysenck (1959) and Wolpe (1958), and involved an extension of the earlier work of Dollard and Miller (1950). Literature representing this trend was concerned with single subjects, technique oriented, (eg., systematic desensitization) and largely based on behavior treated in private settings (eg., phobias,
anxiety). The principle therapists were professionals, mainly physicians and university psychologists.

A second and less dominant trend in the literature dealt with clients in institutions for the emotionally disturbed (Ayllon & Azrin, 1964) and the mentally retarded (Ellis, 1963; Headrick, 1963). This client population represented the most severe forms of deviance (eg., back ward psychotics, severely and profoundly retarded) and the principal therapists were nonprofessional ward attendants. Usually, these programs were directed by psychologists and, to a lesser extent, nurses. Unlike the private practitioner trend noted above, the literature concentrated on the application of positive reinforcement in the everyday environment in which the behavior occurred. Much of the concern in this area was with basic self-care.

A related area was the work with autistic children. Operant conditioning techniques were applied to autistic children to eliminate undesirable behaviors such as self-injurious behaviors (eg., Lovaas et al, 1965) as well as increasing desirable behaviors such as language (Hewett, 1965; Lovaas, 1966) and cooperation (Hingtgen, Sanders, & DeMeyer, 1965). This work grew out of the experimental research of Ferster and DeMeyer cited earlier.

The third major trend was the least dominant and received the least attention until the 1970's. This was the area of training in public schools. The earlier literature
(eg., Williams, 1959) dealt with behavior problems, while later studies were concerned with accelerating behaviors as well. In general, the clients were elementary school students and the trainers were teachers or teacher's aides. Psychologists or educators were the principal consultants. Contingency management emerged as a popular term at this time to describe the application of Skinnerian principles and techniques, particularly reinforcement, in classrooms. As defined by Homme et al (1968) contingency management was subsumed under the general law of reinforcement. They stated:

Contingency management is the management of what events are contingent upon what behavior. It is clear that contingency management is merely the taking seriously that great law of life: When reinforcing events are contingent upon a given behavior, the behavior will increase in strength; when they are not, the behavior will decrease in strength (p. 425).

As the decade of the 1960's drew to a close, techniques of behavior modification increased in sophistication, areas of application increased in scope and depth, and increasingly complex instrumentation systems were introduced. In an attempt to describe the complex combination involved in total interventions which appeared to be possible in the near future, behavioral engineering emerged as a concept. Behavioral engineering referred to the combining of instrumentation, environmental alterations, and operant conditioning to effect applied behavior change. Homme et al (1968)
stated:

...behavioral engineering is a blend of two technologies: the technology of contingency management and the technology of stimulus control....In analyzing a behavioral engineering task, the engineer must determine: (a) exactly what behavior he wants to occur, (b) what stimuli are to control it, and (c) what reinforcers are available. The technology of contingency management deals with managing reinforcers, and the technology of stimulus control with arranging stimuli so that they come to control (p. 425).

The later part of the 1960's was marked by a tremendous growth in the literature. The explosion in behavior modification articles resulted in the appearance of journals exclusively devoted to behavior modification content. The first such journal, Behavior Research and Therapy, appeared in 1963 under the editorship of Eysenck. Shortly thereafter, the Association for the Advancement of Behavior Therapy published Behavior Therapy (1968) while Division 25 (Experimental Analysis of Behavior) of the American Psychological Association sponsored the Journal of Applied Behavior Analysis.

There have been two studies of the growth of behavior modification literature (Gardner, 1971b; Gardner & Selinger, 1971). Both of these were concerned with behavior modification of the mentally retarded. The first finding of note was that studies of behavior modification with the mentally retarded increased tremendously from 1958 to 1968 (Gardner & Selinger, 1971). Moreover, the increase in this area was
greater proportionately than in any other area of learning research (eg., discrimination, generalization, verbal learning).  

Gardner (1971b) categorized the literature in behavior modification with the mentally retarded into two areas: self-help and social skills. He noted that while studies of self-help remained stable over the decade of the 60's, there had been a tremendous increase in studies of social skills.

While it is too early to evaluate the dominant trends in the past few years, a number of trends can be listed here. Only time will determine the final importance of these trends.

1. **Increased Technology**

   Increases in the scope of problems covered by behavior modification resulted in increased levels of technology. Some recent examples include a fully automated toilet training apparatus, engineered classrooms, and feedback mechanisms which provide information on postural control.

2. **More Effective Research**

   In the latter part of the 1960's, behavior modifiers became concerned with the level of research being conducted. Gardner (1969b) reported that:

   The reason for the current lack of knowledge concerning major contingencies can be found in both the confounding of innumerable variables in research designs, and in the lack of comparability among various studies due to insufficient clarification of the sig-
nificant variables. What is required, therefore, is the specification of the major therapeutic contingencies, the manipulation of the independent variables using multivariate techniques to isolate and evaluate the various factors, the exact specification and measurement of the dependent variable, and adequate controls to assess the efficacy of the treatment procedures (p. 844).

Franks (1969) published Behavior Therapy: Appraisal and Status in which a number of the leading researchers attempted to examine critically their respective fields. Reviews of research in the literature included Gardner's (1969) review of punishment and Axelrod's (1971) review of token programs in schools.

3. Increased Concern With Teaching Behavior Modification

The importance of parents, teachers, and aides for mental health manpower was seen by Ullmann and Krasner in 1965. They wrote:

In terms of training and the role of the psychologist, we foresee many possible changes. The first is the development of a profession of psychotechnicians trained in the application of behavior modification techniques...Finally, as we have noted before, teachers, nurses, parents, and other people usually either shunted to the background or cast as recipients of therapy, will now become actively involved in the treatment program (p. 60).

Over the last half of the 1960's, the work of innovators like Gerald Patterson with parents, Wesley Becker, Vance Hall, and Ogden Lindsley with school teachers, and
Luke Watson and the author in institution programs has brought attention to the teaching of behavior modification techniques. The current book is one testament to the increasing importance of this field.

4. **Curriculum Construction**

In the early part of the 1960's, behavior modification in schools was concerned with classroom management. In more recent years, attention has turned to teaching academic material. This includes the Distar programs developed by Englemann (1969), the behavior modification self-care programs developed by Foster (1972), and the classroom curriculum developed by Becker, Engleman, and Thomas (1971).

5. **Administration**

As a result of attempts to institute behavior modification programs in various applied settings, operant conditioners have become aware of the need to apply learning principles to the administration of their programs. Tharp and Wetzel (1969) noted:

> In this way contingency management gets to involve innovations in the training of personnel in techniques of observation, recording, and administration. The success or failure of a demonstration of behavior control rests as much on the researcher's ability to train and administer as it does on the effectiveness of a reinforcing event and its scheduling. If behavior modification work is to be meaningful to mental health problems and pertinent to clinical and education issues, then the processes of training and administration must
be studied as carefully as the processes of contingency management (p. 29).

Amen!

"Where Have All The Flowers Gone..."

Unlike McArthur's "old soldier," the past never fades away. Rather, it is present in new form, as history recycles ideas and events. The dozen or so men that W. S. Hunter identified as staunch behaviorists have passed on in the half century since Watson issued his hue and cry. Of the great debaters in the 30's, only Skinner remains. Had someone fallen asleep during Watson's 1915 APA presidential address and awakened today, he would find the world changed, yet some things would not have changed.

Pavlov, almost three quarters of a century ago, tried to describe behavior in terms of underlying physiological processes. His work found favor years later in the work of Americans like Weiss and Lashley. This kind of precise reductionism was exemplified best by Hull, who erected a quasi-mathematical theory to explain behavior. Hull's own interest in hypnosis was undoubtedly a factor in the interest of his students in Freudian theory during the 30's. Later, attempts to synthesize learning theory and psychoanalysis took place (Dollard & Miller, 1950). In the present, this tradition of internalized explanation is carried on by Eysenck and Wolpe.
In sharp contrast to the reductionism of Hull or Pavlov was the emphasis of Watson on behavior and behavior alone. Just as his position was inimical to Pavlov's, Skinner in the 30's came to oppose Hull's speculations. "Look to the data" was the call of the Skinnerians who were characterized as proposing a "black box" explanation of "mind." This emphasis on behavior, independent of internal processes, found its clearest expression in the work of Lindsley, one of Skinner's students and a leading worker today in education.

The kind of trial and error approach of Thorndike, which culminated in the "law of effect" contributed substantially to both Hull and Skinner. Today, Thorndike's theoretical "law of effect" finds its clearest practical expression in the work of Eysenck and Wolpe, while the empirical "law of effect" is best exemplified by Premack and others.

Finally, the stimulus emphasis of Guthrie and the purposive behaviorism and holistic approach of Tolman and Holt are present to some extent in the modeling research of Bandura.

Times change. New data appear with new ways of looking at the data. American psychologists in the 70's have moved far from the great debates of nearly 50 years ago. "Is reinforcement necessary?" "Do animals think?" "Does man think?" The growth of behaviorism has come half circle
from these heated concerns of the 30's to the technique oriented articles which fill today's journals. Whether or not the trend in behaviorism continues on to complete the cycle or ends here is a matter of conjecture.

The variety of terms used today to describe behavior modification and related areas are best understood in historical perspective, rather than as an arbitrary assignment of signs to significates. For example, behavior modification and behavior therapy are not, as Ullmann and Krasner (1965) imply, synonymous. In many cases, they are, in fact, incompatible. The remainder of this book will follow the historical meanings of the terms which have been outlined here. It will be useful, therefore, to review these various meanings here. Operationism refers to a philosophy of science which was endorsed most heartily by psychologists who belonged to the school of psychology called behaviorism. As behaviorism lost its separate identity various approaches to learning emerged. One of these approaches was called the experimental analysis of behavior; an integral part of the experimental analysis of behavior was the laboratory method operant conditioning. When applied to changing the behavior of people whose responses have been defined (somehow) as maladaptive, operant conditioning has been called reinforcement therapy. When applied in classroom settings for the purpose of reducing maladaptive behavior, operant conditioning has been called contingency management.
A second approach to learning which emerged at the same time as Skinner's experimental analysis of behavior was Hull's hypothetico-deductive theory. This approach is represented today in the application of Hullian principles to changing neurotic behavior; this application is referred to as behavior therapy. Behavior therapists were mainly private practitioners who treated single subjects for single problems. The methods used included systematic desensitization and reciprocal inhibition.

In order to establish clear conventions, the next section will define in broad terms some of the common forms of behavior modification. Because this book is concerned mainly with operant conditioning, the major emphasis will be in this area.
METHODS OF BEHAVIOR MODIFICATION

Introduction

Bandura (1961) listed the major techniques of behavior modification as extinction, discrimination learning, methods of reward, punishment and social imitation. Grossberg (1964) noted the following techniques: aversion, negative practice, positive conditioning, reinforcement withdrawal, and desensitization.

Ullmann and Krasner (1965) made the point that while the prevalent forms of behavior modification may have derived from various theoretical positions, in actual practice there was little difference between various kinds of behavior modifiers in terms of what they did. Further, they noted that the major aspects of behavior modification were the focus on overt behavior and the application of concepts drawn from learning theory. In attempting to provide some kind of synthesis, they noted:

Despite differences in approaches and techniques, we would propose that all behavior modification boils down to procedures utilizing systematic environmental contingencies to alter the subject's response to stimuli (p. 29).
Nonetheless Ullmann and Krasner described what they called the major techniques of behavior therapy: namely, assertive, sexual, and relaxation responses, conditioned avoidance responses, feeding responses, chemotherapy, expressive therapy, emotive therapy, in vivo presentation of disruptive stimuli, modeling, negative practice, self-disclosure, extinction, stimulus deprivation and satiation, and selective positive reinforcement. Further, they characterized selective positive reinforcement as "the prime technique of behavior modification (p. 34)."

In this section, reciprocal inhibition and operant conditioning will be described as separate systems of behavior modification. As noted by Ullmann and Krasner (1965):

There are two principle schools: the one preponderantly using operant conditioning and Skinnerian terms, and the one centering to a greater extent on Pavlovian conditioning and using Hull and Wolpe as theoretical reference points (p. 29).

In the next section, these two systems will be compared to each other and to psychoanalysis in terms of variables related to training. Psychoanalysis has been added to provide a contrast to the behavior modification techniques.

The Operant Conditioning Method

The operant conditioning method involves the manipulation of stimuli following a response. Stimuli are chosen so that the response may be increased or decreased when a
stimulus is either introduced or removed. The kinds of stimuli selected may be pleasant, unpleasant, or neutral. Reynolds (1968) noted:

"Strictly speaking, the term operant conditioning refers to a process in which the frequency of occurrence of a bit of behavior is modified by the consequences of the behavior (p. 1)."

Before discussing specific techniques, some characteristics of operant conditioning as a method can be noted. First, operant conditioning typically deals with the behavior of an individual rather than the behavior of groups of individuals. Second, it can be argued (e.g., Davison, 1969) that operant conditioning makes no assumptions about organic or physical conditions. Rather, operant conditioning is a technique whereby a great deal of the variance of response rates can be accounted for without recourse to physiological or organic explanations. Third, operant conditioning is concerned with behavior and behavior alone - not internal states, motivation, drive reduction, etc. In this regard, operant conditioning represents the integration of operationism and behaviorism in the strictest sense.

The major dependent variable in operant conditioning studies is the rate of responding. That is, operant conditioners are interested in determining those factors which influence rate of response. The major task of the operant conditioner is to discover all the observable variables which affect the probability that a response will occur.
Independent variables (i.e., those variables which effect the dependent variables) include the stimulus, which is treated in the language of physics rather than that of metaphysics. Skinner (1938) placed more stock in concepts such as stimulus control and discriminative stimuli than he did in concepts such as perception, experience, remembering, and motivational factors. That is, Skinner saw the need to operationalize the variables with which he was concerned. In terms of the experimental analysis of behavior, motivation referred to variables such as food intake rather than "hunger," aversive stimuli rather than "fear" as an acquired drive, and preaversive stimuli rather than "anxiety." Another class of independent variables of interest in the experimental analysis of behavior are contingencies of reinforcement; some common examples include extinction, delay of reinforcement, and schedules of reinforcement. To a great extent the experimental analysis of behavior implies that specific methods are not used in order to analyze what has happened; rather, in the actual setting, the relationship between the dependent and independent variables is manipulated in order to determine which variables result in what kinds of changes in response rate.

Reinforcement

Behavior may be increased by one of two methods. In one case, a stimulus may be introduced following a response which increases the probability of that response occurring
in the future. This operation is called **positive reinforcement**. Positive reinforcement, therefore, is the increase in response frequency that results from the application of a stimulus. Stimuli which lead to increased response rate when they (the stimuli) follow that response are called **positive reinforcers**.

A second method to increase response frequency is to remove a stimulus. This is called **negative reinforcement**. Stimuli which when removed lead to increases in frequency of responses which they (the stimuli) follow are referred to as **negative reinforcers**.

As used in this context, reinforcement refers to the increase in response frequency following the presentation or removal of a stimulus. If the **presentation** of the stimulus leads to the increase in response frequency, the operation is called positive reinforcement and the stimuli are called **positive reinforcers**. If the **removal** of the stimulus leads to the increase in response frequency, the operation is called negative reinforcement, and the stimuli are called **negative reinforcers**.

Increasing behavior is only half the story. Using **operant conditioning methods**, behavior can be decreased. Again, the same paradigm can be used. In this case, when the presentation of a stimulus leads to a decrease in response frequency, the operation is called **punishment**, and
the stimuli are referred to as **aversive stimuli**. When the removal of a stimulus leads to a decrease in response frequency, the operation is referred to as **response cost**, and the stimuli are referred to as positive reinforcers. These relationships are described in Table 1.

**INSERT TABLE 1**

When response frequency has been altered by presenting a positive or aversive stimulus, the subsequent removal of that stimulus leads to a return to the original (or nearly to the original) state of the organism. This operation is referred to as **extinction**. Within this context, extinction may have accelerating or decelerating consequences. That is, when a positive reinforcer is removed, and the subject is under extinction conditions, the result will be a decrease in response frequency. On the other hand, when an aversive stimulus is removed, the result will be to accelerate the frequency of the response.

Often there is a good deal of confusion surrounding the use of the terms "punishment" and "negative reinforcement." Consistent with the definitions employed here, Davison (1969) noted:

*Strictly speaking, negative reinforcement increases the probability of a response via removal of an aversive stimulus, while*
TABLE 1

DEFINITION OF OPERATIONS WHICH EFFECT PROBABILITY OF
BEHAVIOR OCCURRING ACCORDING TO INTRODUCTION OR
REMOVAL OF STIMULI

EFFECT OF STIMULUS ON PROBABILITY
OF BEHAVIOR OCCURRING IN FUTURE

<table>
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<tr>
<th>STIMULUS MOVEMENT</th>
<th>INCREASE</th>
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<tr>
<td>INTRODUCE</td>
<td>POSITIVE REINFORCEMENT</td>
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<td>REMOVE</td>
<td>NEGATIVE REINFORCEMENT</td>
<td>RESPONSE COST</td>
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<td>INTRODUCE &amp; REMOVE</td>
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punishment decreases the probability via presentation of an aversive stimulus (p. 222).

In a similar vein, punishment was defined by Azrin and Holz (1966) as a reduction in the probability of a specific future response as the result of the delivery of an aversive stimulus for that response. When dealing with punishment in practical situations, they advocated that the punishing stimulus should be as intense as possible, frequency of punishment should be as intense as possible, frequency of punishment should be as high as possible, the punishing stimulus should be delivered immediately after the response, and extended periods of punishment should be avoided. They also pointed out that alternate responses which can receive positive reinforcement should be available to the organism.

Azrin and Holz provided another technique (time-out) which they classified as a form of punishment. They noted that when physical punishment cannot be used for various reasons, the "withdrawal of positive reinforcement... by arranging a period of reduced reinforcement frequency (p. 427)" will also have the effect of reducing response frequency. While the definition of time-out used by Azrin and Holz is acceptable here, time-out will not be considered as an instance of punishment in the formal sense, but rather as a separate technique.

**Successive Approximations**

Oftentimes, operant conditioners are concerned with
complex responses (for example, language is a very complex organization of responses). When the response to be increased is a complex one, it is impossible for the operant conditioner to wait until the response is emitted, and then reinforce it. From the operant point of view, complex responses do not occur spontaneously. In order to produce complex responses, operant conditioners developed the method of successive approximations. Successive approximations refers to the process of creating complex responses by establishing simple responses which are within the subject's repertoire, and gradually increasing the complexity of the responses as they approximate the desired response. The first response chosen to reinforce may bear no resemblance to the final response. For example, in Bricker and Bricker's (1971) analysis of language, one of the first responses chosen was motor imitation. That is, the child was asked to imitate a simple motor response by the trainer. Within the Brickers' model, the trainer gradually increased the level of complexity of motor responses, and then changed to verbal responses. Having established imitation in the client's repertoire, the topography of the response was shifted from a motor response to a verbal response. Later, the child was trained to emit verbal responses to simple stimuli. Gradually the complex response of "relating experiences in sentences" was approximated.

Successive approximation refers to a procedure by which
complex behaviors are approximated. The major method used to accomplish this approximation is **shaping**. Shaping refers to the systematic application of reinforcement and extinction in order to produce the desired behaviors. For any given complex response, the operant conditioner usually begins by defining the steps which are required to perform a response. Thus, if the response were putting on a shirt, the operant conditioner would define the various steps which would include: (1) picking up the shirt, (2) opening the shirt, (3) putting the shirt over the head, (4) putting arms inside the shirt, and (5) pulling the shirt down to an appropriate level. Then, to teach a child to put on his shirt, the operant conditioner would teach the last step first and then proceed in a step-wise fashion from the last step to the first step (i.e., 5 to 1). For example, in teaching a child to put on his pull-over shirt, the trainer would begin with the shirt almost on (step 5), and have the child pull it down to the appropriate level. This process is referred to as **reverse chaining**. Reverse chaining means that the experimenter starts with the last step first, and moves backwards step-by-step. The rationale for reverse chaining is that the reinforcement contingency remains constant. That is, in the example of the pull-over shirt, the child always would be rewarded for putting on the shirt (rewards are administered when he completes the response). If the trainer were to begin at the first step (i.e., picking up a
folded shirt), the reward would have to shift each time the trainer moved to a more advanced step.

**Stimulus Control**

Behavior occurs within settings. In many cases, problem behavior results because a response occurs under conditions in which it should not. For example, it is considered all right to get undressed in a bedroom, however, if someone gets undressed on a public bus, this behavior is likely to be interpreted as "inappropriate." Operant conditioning is concerned with the occurrence or non-occurrence of behavior in relation to the presence or absence of certain stimuli. **Stimulus control** refers to situations in which the probability of certain operant behavior is high only in the presence of certain stimuli. These stimuli are called **discriminative stimuli.** Reynolds (1968) stated:

> The rule for the control of behavior by discriminative stimuli is that an operant will occur at a high frequency in the presence of the discriminative stimuli which in the past have accompanied the occurrence of the operant and have set the occasion for its reinforcement (p. 10).

**Summary**

The concepts of reinforcement, successive approximations, and stimulus control are the major elements of the operant conditioning method. Reinforcement defines the motivation state, successive approximation serves the educational or teaching function, and stimulus control determines
the occurrence or non-occurrence of the behavior. The metaphor of a train seems appropriate to explain the interrelationships between these three elements. Reinforcement is the engine - it's what makes the train go; successive approximations is the tracks - it determines where the train will go; stimulus control is the tower - it indicates what goes when.

Behavior Therapy

The elimination of anxiety has been a major goal of many psychotherapeutic approaches. In the mid 1950's, Joseph Wolpe, discontented with the psychotherapeutic successes of that time for eliminating anxiety, turned his attention in two directions: (1) to work on the experimental induction of neuroses in animals (see pages 41 to 42) and (2) to the classic investigations of Watson and Raynor (1920) and Mary Cover Jones (1924). In his own research, Wolpe (1948) had demonstrated that laboratory induced neuroses in cats could be eliminated by gradually feeding the animals in the presence of the anxiety-evoking stimuli. Wolpe began with small approximations of the total stimulus conditions (e.g., a picture of a cat rather than the real cat), and gradually increased the resemblance between the original stimuli (the stimuli that had caused the anxiety) and the stimuli which he associated with food. The similarities between this approach and that of Burnham (1924)
should be noted (see page 29).

Despite the success of Jones (1924) with children, and the success of the animal experimentalists with sub-human species (see pages 28, 35, 41) Wolpe felt that feeding responses had limited value for reducing anxiety in adults. In an attempt to discover responses which would be antagonistic to anxiety in adults, Wolpe came upon the work of Jacobsen (1938) who had recommended the use of relaxation in treating anxiety responses (see page 36). Using Jacobsen's work as background, Wolpe developed the methods of reciprocal inhibition and systematic desensitization.

Reciprocal Inhibition

Wolpe defined the principle of reciprocal inhibition as follows:

If a response antagonistic to anxiety can be made to occur in the presence of anxiety-evoking stimuli so that it is accompanied by a complete or partial suppression of the anxiety responses, the bond between these stimuli and the anxiety responses will be weakened (p. 71).

Wolpe clearly stated that the principle of reciprocal inhibition does not deny the possibility that other methods may be effective in weakening the bond between the stimulus and the response. He did note, for example, that the effects of extinction under certain conditions led to a weakening of the stimulus-response bond; however, he stated that extinction was ineffective when applied to problems of
anxiety.

**Mental Imagery**

Initially Wolpe attempted to relax his patients in the presence of the actual anxiety-provoking objects, however, it was soon apparent that this process was both tedious and impractical. That is, there were a large number of stimuli (e.g., buses, cows, airplanes) which could not be brought into the therapist's office. Further, some cases of anxiety were not related to any concrete object. In order to apply the methods of reciprocal inhibition and systematic desensitization in the office, Wolpe attempted to have his patients imagine the stimuli. Thus, rather than bringing a dog into the office, the patient was instructed to imagine the presence of a dog. Wolpe was satisfied with the success of the imagery method for reducing anxiety. Years later, a study by Cooke (1966) indicated that there were no overall differences in reduction of fear of rats between subjects who imagined the rats and subjects who were treated with the rats present (both treatment groups were superior to a control group).

**Systematic Desensitization**

While reciprocal inhibition described the basic change agent, Wolpe's method for achieving change centered around the concept of systematic desensitization. Wolpe (1958) described systematic desensitization as follows:
Meanwhile an "anxiety hierarchy" is constructed. This is a list of stimuli to which the patient reacts with unadaptive anxiety. The items are ranked according to the amount of disturbance they cause, the most disturbing items being placed at the top and the least at the bottom. The patient is hypnotized and made to relax as deeply as possible. Then he is told to imagine the weakest item in the anxiety hierarchy - the smallest "dose" of phobic stimulation. If the relaxation is unimpaired by this, a slightly greater "dose" is presented at the next session. The "dosage" is gradually increased from session to session, until at last the phobic stimulus can be presented at maximum intensity without impairing the calm, relaxed state (p. xi).

Summary

The methods of reciprocal inhibition, mental imagery, and systematic desensitization define behavior therapy. The purpose of behavior therapy is to reduce anxiety whether that anxiety is manifested in fears, obsessions, hysteria, or other neurotic symptoms. The therapist begins by defining the stimulus characteristics associated with the onset of anxiety and constructing a hierarchy of anxiety-evoking situations. Then the patient is trained in the process of progressive relaxation. Once the patient is able to relax, he is asked to imagine various anxiety-evoking situations which are selected from the list which the therapist constructs during the initial interviews. The therapist moves from the least to the most anxiety-evoking stimulus, pausing after each stimulus until the patient can remain relaxed in the presence of that stimulus.
Summary

Both operant conditioning and behavior therapy grew out of the learning approaches developed during the 30's. Operant conditioning came from Skinner's work while behavior therapy developed from the work of Pavlov and Hull. The similarities and differences between operant conditioning and behavior therapy will be discussed fully in the next section. It is sufficient at this point to note that despite the differences in origins, some general similarities between the two systems can be noted. For example, in both systems, great attention is given to the process of reductionism. For example, in operant conditioning the method of successive approximations was developed to break down complex responses. In behavior therapy the process of systematic desensitization was designed to break down complex stimuli. While the content is different (i.e., response vs stimulus) the importance of the process of reductionism is present in both systems.

Moreover, the basic processes involved in changing behavior are present in both systems, though differences are more apparent than similarities because of the elaboration of different aspects of the change process. For example, the extreme concern with stimulus components characteristic in the behavior therapy approach is subsumed under the concept of stimulus control in the operant conditioning
framework. That is, the characteristics of the stimulus, and the results of different stimuli upon responses are important in both systems. The operant conditioner relates this concern to the issue of discrimination learning, while the behavior therapist is concerned with internal processes.

Similarly, both systems are concerned with reinforcement. In the case of behavior therapy, the locus of intervention is narrowly defined as the elimination of anxiety, and for that purpose, relaxation is chosen as the major reinforcement. Because operant conditioning focuses upon broader problems, a significantly larger number of reinforcers are selected and used.
COMPARISON OF OPERANT CONDITIONING, BEHAVIOR THERAPY, AND PSYCHOANALYSIS

Introduction

The previous discussion has centered on the definitions of operant conditioning and behavior therapy. In this section, these systems will be compared to each other and to psychoanalytic psychotherapy. A variety of approaches are available for the purpose of comparing different systems. However, there are some major elements which are common to all systems. These elements are the existence of an individual who is defined as a "helper," a client who is to be "helped," and a setting in which the client and helper interact over time.

Client Variables

The major types of client variables include the nature of the population (e.g., psychotic-neurotic; adult-child), the client's personal-social characteristics, the specific target behaviors, the definition of the situation (e.g., is the client defining himself as "maladapted," or does someone else define him as "maladapted"), and the degree of responsibility which the client is expected to exercise.
Nature of the Population

Psychoanalysis and behavior therapy have generally centered on the elimination of neurotic disorders in adults (though some attention was directed toward schizophrenics by Sullivan). Operant conditioners, on the other hand, has been concerned with a broader range of clients, including neurotics, psychotics and the mentally retarded.

It can be noted that the operant conditioning method, derived as it was from Skinner's experiments with rats and pigeons, is ideally suited for psychotic and mentally retarded clients, because operant conditioning does not rely upon the language skills of the client. Psychoanalytic therapy, on the other hand, places a great deal of reliance upon the client's self-report.

Similarly, operant conditioning has been concerned with children to a greater extent than either behavior therapy or psychoanalysis. Again, one reason for this may be the client's language skills which are more developed in the adult.

Target Behaviors

Partly as a function of the different populations treated by operant conditioning (as compared to either behavior therapy or psychoanalysis), the target behaviors have been different. In the case of psychoanalysis, therapists have dealt with broad response patterns including such non-behavioral concepts as intrapsychic conflicts and id impulses. Both behavior therapy and operant conditioning (due
to their foundation in learning theory) deal with discrete, observable behaviors. In the case of behavior therapy, these have included phobias, hysteria, obsessions, and other neurotic behaviors. In the case of operant conditioning, the specific behaviors have included self-care, social skills, educational, and vocational skills.

In terms of the nature of the population and the target behaviors, psychoanalytic theory limits the nature of intervention. As indicated earlier, one of the limiting factors is the presence of a high level of verbal fluency. Another major factor is the client's ability to form a relationship with the therapist. The therapist-client relationship is fundamental to psychoanalytic therapy. The difficulty of establishing a "meaningful" relationship, on a verbal level, has been a major impediment to the application of psychoanalysis to either psychotics or the retarded.

Behavior therapy, was derived for the specific purpose of treating neurotic behavior. The theoretical model is based on the assumption of high levels of anxiety in the client. This anxiety must be translated by the client into verbally identified objects or occasions. Therefore, behavior therapy, to some extent, relies upon the verbal skills of the client.

**Definition of the Situation**

In most cases, psychoanalysis proceeds with the client's definition of the situation. That is, in psycho-
analysis the client comes to the therapist with a specific complaint; he (the client) defines some part of his behavior as maladaptive. A similar approach is seen in behavior therapy, with the client defining the nature and extent of his adaptation. One difference between psychoanalysis and behavior therapy is the extent to which the client defines the degree of the adaptation. In the case of psychoanalysis the therapist is likely to incorporate a wider range of variables than the client initially defined. That is, the client may come to the therapist because he can't get along with his boss and end up discussing his relationship to his father, castration fears and sibling rivalry. The extension from the client's presenting problem to problems of broader scope is related to the psychoanalyst's concern for underlying dynamics. That is, the presenting problem is treated as the symptom or reflection or more profound disturbance which has been manifested in the specific complaint. On the other hand, in the behavior therapy situation the presenting complaint is likely to be accepted as the locus of intervention.

Operant conditioning often is based on a different definition of the situation. That is, operant conditioning may be applied to a client through the intervention of an intermediary who has defined the situation. Thus, parents apply operant conditioning to their children, oftentimes without the child's knowledge. In this case, the parent
is defining the level of adaptation. The same is true in institutions, where nursing service personnel define the level of adaptation of the client.

In terms of principles of operant conditioning, the definition of the situation is problematic. Operant conditioning is a method of changing behavior, regardless of its definition in terms of adaptiveness. If a client were to define a given behavior as maladaptive (rather than a third person definition as indicated above), operant conditioning techniques could be applied in this case. For example, operant conditioning has been used to eliminate stuttering, in which case the client has defined the situation. As in the case of behavior therapy, the operant conditioner is not likely to go beyond the presenting behavior. That is, in terms of operant conditioning formulations, the "underlying dynamics" are not at issue.

The behavior therapist and the operant conditioner are likely to differ in their focus on the situation. For the behavior therapist, the major concern is likely to be on the stimulus qualities - what is causing the anxiety? For the operant conditioner, the focus in likely to be on the response end - what consequences follow the response such that they maintain that response? As has often been noted, these views are not incompatible; rather, they are complementary. The behavior therapist focuses on one end of the stimulus-response continuum and the operant conditioner concentrates
Client's Responsibility

In addition to the different client populations, target behaviors, and varying definitions of the situation, the kind of responsibility assumed by the client is also different in the three systems. In psychoanalysis, the major responsibility is on the client: he must report his feelings and thoughts. He must take whatever insights are gained in the therapy session, and apply them to his real life experiences.

In the typical behavior therapy case, the client has less responsibility than he would have in psychoanalysis. Essentially he may remain passive while the therapist systematically desensitizes him in the training session. Later, it is expected that this will generalize to everyday life settings. Though some client responsibility exists in terms of identifying the problem, providing the trainer with a desensitization hierarchy, actively imagining the anxiety-evoking stimuli and feedback to the trainer, the client's level of responsibility for the behavior change is minimal.

In operant conditioning, the client's responsibility often is minimal throughout. The client can be completely passive. Someone else defines the situation, provides the major impetus for behavior change, (i.e., manipulation of reinforcement contingencies), and evaluates the results. One notable exception to this is recent work on contingency
contracting. Contingency contracting involves an agreement or contract between two parties concerning the delivery of reinforcements. In essence, the two parties agree that certain behaviors will be followed by certain consequences. Positive as well as negative consequences are associated with various behaviors, so that desirable behaviors are accelerated while undesirable behavior are decelerated. For example, a contract between a parent and his child might be that the child's watching TV after 9:00 p.m. is contingent upon his doing the dishes. In this case, the child can watch TV if he does the dishes. Washing the dishes by the child reinforces the parent, watching TV reinforces the child. Obviously, in the case of contingency contracting, the client has a major role in terms of the responsibility for the success of the program. In essence, the client is providing a reinforcement hierarchy which is then negotiated with the parent in terms of the parent's reinforcement hierarchy.

**Personal-Social Characteristics**

In many cases psychoanalysis has been limited to middle to upper class white adults who are usually well-educated. This selection factor related largely to the Freudian heritage. Psychoanalysts are highly trained and charge high fees which prohibits many middle and almost all lower class individuals from attending. The extreme emphasis on verbal skills in psychoanalysis has made it relevant only to highly educated people with high verbal skills.
In distinction to psychoanalysis, behavior therapy has involved mostly middle class clients. The education range has been broad, though a disproportionately high number of studies have been conducted with college students. Part of the reason for this may be that behavior therapy is closely associated with university professors who find easily accessible audiences in undergraduates. In some cases behavior therapy has been applied to children.

Of the three systems, operant conditioning has found the broadest application, involving children and adults, normals and retardates, and lower-and middle-class clients. Since operant conditioning has the unique advantage of requiring few verbal skills on the part of the client, application to retardates and children has been great. To the extent that operant conditioning is a mechanistic system, it has found greater appeal to lower-class groups than verbal therapies. In this regard Hunt (1969) has noted:

...since those parents whose practices and implicit theories most need improvement are the poor who are especially unresponsive to mere talk, attempts to change their practices and theories through psychotherapy-like approaches, either individually or in groups, are doomed to failure. I know personally of a number of such projects in which efforts have been made by clinical psychologists, psychiatrists, or social workers to affect change in the child-rearing practices of the poor by means of talk. The evidence available to me indicates that the children of these parents have profited not one whit....(p. 74).

Finally, the use of nonprofessionals in operant conditioning
reduces the cost factor, and allows for greater dispersion to a wider socio-economic class structure.

**Living Space**

Most people who attend either psychoanalysis or behavior therapy sessions live in the community. The operant conditioning client, on the other hand, is found in the community as well as in state mental hospitals, prisons, and institutions for the mentally retarded. One of the distinctive features of operant conditioning is that it is applied to clients who have been untreated by traditional forms of psychologic intervention.

At the theoretical level, the variable of living space is not significant for any of the three systems. That is, psychoanalysis can be practiced in state hospitals as easily as in mental health centers or in private offices. The same is true of behavior therapy and operant conditioning.

**Motivation**

In regard to motivation, the major underlying assumption in both psychoanalysis and behavior therapy is that the organism operates on the homeostatic principle. That is, stimuli disturb the "natural state" of the organism by creating tension, and the organism responds by attempting to reduce the tension and return to the "natural state." This process is held to be true whether the stimuli are "id impulses" or feared objects. Thus, in both psychoanalysis and behavior therapy, the underlying assumption is that the
client is internally motivated.

On the other hand, in operant conditioning there is no assumption concerning internal processes. That is, the operant conditioner deals with probability statements, not with recourse to internal states as explanatory concepts. Motivation is defined as the application of reinforcement - an external event.

Helper Variables

Some of the major elements in terms of helper variables are the helper's education and necessary skills, the helper's role definition, and the major theoretical model of intervention.

Helper's Education and Skills

Psychoanalysis is a complicated task requiring years of training. Most psychoanalysts are physicians (M.D.'s) or psychologists (Ph.D.'s), who are trained for three to five years beyond their doctorate training specifically in psychoanalysis. The psychoanalyst needs to be highly skilled in interpersonal relations, with an excellent grasp of language and a high degree of intelligence. This relates to the demands of the position, which include analyzing dreams and free associations, and associating the client's current experiences with past life experiences.

Behavior therapists are also professionals, generally psychiatrists (M.D.) or psychologists (Ph.D.). However,
while this is the typical case, there are no inherent demands of behavior therapy which require such highly trained individuals. The behavior therapy setting is one in which nonprofessionals easily could be trained. Some skill in interviewing would be necessary for establishing rapport and developing the desensitization hierarchies. Beyond that, the basic procedure of systematic desensitization is relatively simple. In fact, in one case, an automated system has been developed (Lang, 1969).

In distinction to both behavior therapy and psychoanalysis, operant conditioning has generally involved nonprofessionals. While professionals (usually psychologists) have been involved as consultants and supervisors the actual trainers usually have been nonprofessionals (e.g., parents, institution aides).

Role Definition

In psychoanalysis, the role of the therapist is clearly stated. He is an expert. His purpose is to assist the client in the increased understanding of his internal conflicts. The same is true of the behavior therapist, who can be defined as an expert in learning how to undo certain stimulus-response associations. While operant conditioners do not share the same status as "expert," their role also is well defined. The operant conditioner is there to apply prescribed techniques to change the behavior of the client.

The helper's status as expert is all three systems
represents a common view of the client, i.e., the client as victim. In all three systems, the client is looked upon as having few resources. His impoverished ego, or behavioral repertoire, is to be restored by the mental health expert who holds "all the marbles," whether defined as the royal road to the unconscious, a desensitization hierarchy, or a set of reinforcers.

**Prototype Model**

Psychoanalysts of course, derive much of their work from Freud, and to a lesser extent from the neo-Freudians (eg., Horney, Sullivan). This model can be characterized as internal, dynamic, and historical. That is, the classical psychoanalyst deals with the interaction between various internal processes, which are related to early life experiences.

Behavior therapy, on the other hand, derives from Pavlov and Hull, and can be characterized as internal, behavioral, and ahistorical. Behavior therapists attempt to deal with overt behaviors by manipulating the current state of the organism and the environment. Sometimes there is concern, at least at the theoretical level, with internal (eg., physiological) processes underlying the behaviors.

Operant conditioning derives from Skinner and may be characterized as behavioral, semi-historical, and external. The concern of the operant conditioner is with overt behavior, without any reference to underlying dynamic or internal
processes. The history of the organism is important in determining the kinds of reinforcers which will work, however, change is in the here-and-now.

Setting Variables

Degree of Environmental Control

In the typical psychoanalytic situation, the therapist exercises little direct environmental control. The only contact between client and therapist is in the therapist's office, therefore, the client must report on his behavior outside the office. On occasions, reports may be obtained from other people in the environment, however, this is rare. Moreover, the psychoanalyst rarely communicates with people in the everyday environment, so that external control is minimal. In essence, psychoanalysis occurs independent of the everyday environment.

In behavior therapy, the trainer has a high degree of control over the occurrence of the specific behavior, however, the behavior therapist does not exercise control in the everyday environment. In the office, the behavior therapist replicates the basic problem (e.g., fear of snakes), and then proceeds to decrease the strength of the bond between stimulus (snake) and response (fear). In the case of in vivo desensitization, a higher degree of control is exercised since training is in the everyday environment.

Operant conditioning is the system which exercises the
greatest degree of environmental control. This control can involve such things as control over food intake, free time, and material reinforcers. By no means, however, is the degree of control in operant conditioning complete. At this point, the organism still has a considerable degree of freedom in most settings, largely because operant conditioning deals with limited response patterns. In token economies, a wider range of responses can be selected for change, and there is a consequential increase in the degree of environmental control.

The issues of reinforcement and environmental control can be related to the relationship between the schools of psychoanalysis and behaviorism and the growth of urban living (Bakan, 1966). At the turn of the 20th Century, the increased industrialization in Western Europe and the United States resulted in tremendous increases in urban populations, with the concomitant increases in tension due to overcrowding. In this atmosphere, people sought refuge from the tensions in one of two ways: they turned to the study of self, concentrating on their adjustment to the strain of urban living, or they turned to the study of their neighbor, wondering how they might change their neighbor so that their own tension could be reduced. Psychoanalysis can be thought of as the professional manifestation of the former solution while behaviorism can be taken to represent the latter.

Bakan (1966) noted:
The problems of living in the city forced a turn either inward or outward, since the simple harmony between the inner and the outer world, characteristic of rural society, could not be had in the new world of the city (pp. 21-22).

As a consequence of these competing philosophies, the emphases in terms of reinforcement and environmental control were different. For the analyst, the issue was the individual's ability to cope with the existing conditions. Hence, little effort was made to exert any major influence by the therapist in the client's environment. For the behaviorist, concern was with the environment, and thus the issues of environmental control, use of other people, and external reinforcement were critical.

**Equipment**

The basic equipment in psychoanalysis is the client's couch and the analyst's pad. Apart from this, psychoanalysis has never involved the use of equipment which is largely related to the psychoanalyst's concern with intrapsychic events. Equipment is rarely used in behavior therapy. One instance where equipment does assume a major role is the automated systematic desensitization apparatus designed by Lang (1969).

In contrast to both psychoanalysis and behavior therapy, operant conditioning may involve extensive use of equipment. This use derives in part from the emphasis on the quick delivery of reinforcement and the recording of response.
frequency. Therefore, such elaborate equipment has emerged as: signaling lights and consoles to indicate the presence of "good" behaviors in the classroom, toilet training pants which signal wetness, and toilet training seats which result in light flashes and the delivery of candy upon appropriate urination or defecation.

**Use of Other People**

In both psychoanalysis and behavior therapy, other people rarely are used as part of the training. In psychoanalysis, generally the concern is with intrapsychic events, therefore therapy consists of client-therapist interaction with the content on the client's statements about his thoughts and feelings. Similarly, behavior therapists rarely involve other people in the training, unless the client's problem relates to other people (eg., fear of strangers). In that case (problems related to other people) the therapist is likely to involve other people.

Of the three systems compared here, operant conditioning is the system in which other people most likely will be used. For example, in classroom contingency management, one common procedure is group contingent consequences. In this case, the behavior of an individual determines consequences for the group (for example, each time a child misbehaves, the whole class loses one minute of recess). In homes, both parents are sometimes used as trainers. On institution wards, an entire shift of nurses and aides may have to
serve as trainers for the client.

The differential use of other people in the three systems relates to the theoretical basis for each system. In terms of psychoanalysis, the main emphasis is on the client's adjustment to his world; i.e., how he comes to deal with the conflict between his own needs and desires and the demands of society. In contrast, operant conditioning focuses upon the environment rather than the individual - change the environment and the person will change his behavior. Since one of the strongest reinforcements available is the behavior of other people, operant conditioners have made use of this resource.

**Time Variables**

Time is a major variable of concern in discussing the three systems. Some of the major elements in regard to time are: (1) what defines a "session," and (2) what defines "end of training."

In psychoanalytic therapy, a session has traditionally been limited to 50 minutes. This practice may be derived as much from economics (e.g., need for accounting) as from psychoanalytic theory. However, within the psychoanalytic framework, the use of a standard time period provides a structured setting in which to evaluate the contents of the session. Behavior therapy is usually more flexible, though it also may be centered around time expectations. In both
psychoanalysis and behavior therapy, a session has definite boundaries, determined in the case of psychoanalysis by time, and in the case of behavior therapy, by completion of a task (i.e., attaining a given level on some hierarchy).

Two forms of operant conditioning can be delineated in terms of time dimensions. In one type, clients are trained in specific areas, and the time dimensions are similar to the behavior therapy paradigm. That is, a session is constituted either by time or, as in the majority of cases, by attainment of some level of achievement. The relationship between time and task completion is such that units of time define outer limits, while task completion may terminate sessions prior to reaching the time criteria. An example of language training illustrates this relationship. A client may be trained in a given area (e.g., motor imitation) until he accurately imitates ten responses, or until 20 minutes have elapsed.

In a second approach to operant conditioning intervention, training is literally continuous. This situation is illustrated best by ward programs and token economies. In these cases, the client's behavior is under contingent conditions most of the time, and there is no formal training session as such.

Just as there are differences in terms of what constitutes a given session, considerable differences exist between the three systems in terms of what constitutes an end
to treatment. In traditional psychoanalysis, the course of therapy is lengthy, averaging three to five years. There is no clearly identifiable temporal criterion for termination of therapy. Rather, the success of therapy is based largely on verbal reports of feelings and thoughts provided by the client.

In behavior therapy, treatment is quicker, and the criteria are specific. Of course, a major reason for the shorter length of behavior therapy in comparison to psychoanalysis is that behavior therapy deals with specific behaviors, while the concerns of the psychoanalyst are much broader.

Operant conditioning may involve relatively short periods of time, or as indicated above, the length of training may be extended. In either case, "success" is defined by achievement of specific behavioral criteria. It can be noted in passing that time criteria are most likely to be used when the task is establishing new behaviors, while the continual training situation is more common to maintaining existing behaviors.
SUMMARY

This chapter has been concerned with establishing conventions in the use of language centered around behavior modification. Behavior modification has been adopted as a generic term which refers to all applications of principles and techniques from experimental psychology to the problem of applied behavior change. Implied in this definition is: (1) a focus on overt behavior, (2) some definition of adaptation, and (3) specifiable operations in terms of training.

The historical development of a variety of terms which describe some aspect of behavior modification was traced, and the meanings of these various terms were placed in historical perspective. Thus, operant conditioning was defined as the laboratory method derived from Skinner's experimental analysis of behavior. When applied to school settings, the term contingency management has been used, while when operant conditioning is used in institutions or in private settings, reinforcement therapy has been the popular term. In addition, the work of Pavlov and Hull is represented in the use of behavior therapy, a term used to describe the application of the techniques of reciprocal inhibition and systematic desensitization to neurotic behaviors.
At present, the two major forms of behavior modification are operant conditioning and behavior therapy. These two forms of training have been compared and contrasted with each other and with psychoanalysis. In general, it was found that behavior therapy bears closer resemblance to psychoanalysis than to operant conditioning when variables such as client population, helper characteristics, setting, and time factors are taken into account. Moreover, operant conditioning seems to be a more flexible system in that it may provide more alternatives at each decision point than either psychoanalysis or behavior therapy.
II. INSTRUCTION IN BEHAVIOR MODIFICATION

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II. INSTRUCTION IN BEHAVIOR MODIFICATION (continued)

FUNCTIONAL ANALYSIS OF INSTRUCTIONAL METHODS

- Introduction
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SUMMARY
INSTRUCTION IN BEHAVIOR MODIFICATION

INTRODUCTION

Behavior modification is one of the few forms of mental health intervention for which a scientific base is claimed. Implicit in this assumption is the working hypothesis that the basic determinants of adaptive behavior change can be identified and that those techniques necessary to achieve the required change can be specified and taught. As a consequence of this basic assumption, explicit criteria, curricula, and methods of instruction should be an integral part of behavior modification systems. This requirement is more true of behavior modification than other forms of mental health intervention which rely upon the skills or the artistry of the therapist. Indeed, at the extreme, there is no "listening with the third ear" in behavior modification. There is simply the strict application of techniques derived from learning principles, and modified according to empirical data.

The purpose of this chapter is to examine various approaches to instruction in behavior modification. More specifically, this chapter will be concerned with analyzing
different levels of training for varying levels of competence in behavior modification and the manner in which these levels of skill are achieved.

Though hundreds of education programs in behavior modification exist, there has been little attention to the underlying assumptions and methods used in each of these programs. In many instances curricula appear to be dictated more by personal preference than by empirical or theoretical consideration. One purpose of this chapter will be to explore the areas of curricula and instructional methods in terms of the empirical justification for current approaches.
LEVELS OF TRAINING

Functional Levels

1. Applicator

There are a variety of goals of instruction in behavior modification. The least ambitious goal is to produce a person who can be termed the "behavior modification applicator." An applicator is an individual who applies a specific behavior modification technique under very limited conditions. Generally a trainer at this level is instructed by a professional and then is supervised continually. Or, when supervision is not provided continually, the requirements of the task are detailed to such a high degree that application is very simple. One common example of a behavior modification applicator is the classroom aide. For example, Patterson and Reid (1969) trained a teenage boy "in a few minutes" to use reinforcement principles and shaping procedures to teach a modified version of football. Then, these activities were supervised by a classroom teacher.

Edlund's (1969) work is an excellent example of the unsupervised use of a behavior modification applicator who has been given highly detailed instructions. In his program,
parents supplied rewards at home for their children's performance at school. The payoff was determined by a simple social and academic behavior checklist which the child carried home each day. The child's home time was broken down in proportion to his school assignments, and rewards were given accordingly (parents used free time and material reinforcers). As summarized by Edlund: "The checklist program provided teachers and parents with very highly specific procedures to follow...regarding what to do, how to do it, and when to do it (126-127)." In this case, the parent was a reward dispenser, and the conditions for dispensing rewards were detailed.

Tough et al (1971) provided another excellent example of the use of a behavior modification applicator. In their study punishment (a cold bath) was applied to two young children for bed wetting. This simple procedure was specific to that response. The consultants made no attempt to extend either the range of target behaviors or to incorporate a greater number of stimuli.

2. Technician

The second level of skill in training is the "behavior modification technician." This is an individual capable of applying specific behavior modification techniques under limited conditions. Though monitoring is necessary, the behavior modification technician does not require continual supervision. Such a terminal goal is appropriate when the
environmental conditions support such a person. Generally, highly structured institutional programs provide such conditions.

In Foster's (1972) program, for example, institution attendants trained residents in highly specific areas (e.g., eating with a spoon). That is, the attendants worked with all residents on a given task. This program can be contrasted with approaches which involve the attendant working on a large number of tasks with a few residents. The resident training programs used in Foster's program were detailed, and the environmental conditions were such that low trainer:resident ratios were maintained in a relatively distraction-free area. The technician's performance was monitored in a variety of ways, including inspection of daily training data sheets and evaluation of resident progress over time.

Risley et al (1972) used behavior modification technicians in the Juniper Gardens project, which was an attempt to increase the adaptive behavior of young children from a low-income inner city area. In this project lower socioeconomic class mothers trained children from the same environment. The mothers worked with these children on specific programs such as language, math, and reading. Each session was monitored by a behavior modification consultant.

Laws et al (1971) provided still another illustration of the use of a behavior modification technician. In this
case a paraprofessional was trained to apply a highly structured language program to three extremely deviant young children. The instructor was given written directions by the consultant listing appropriate responses for handling various classes of deviant behavior. The combination of the highly structured language program plus explicit directions for handling deviant behaviors resulted in a highly effective program. The investment of professional time was only six hours over a period of six weeks. A similar program for reading skills was developed by Staats et al (1970).

3. **Specialist**

A third level of proficiency is represented by the behavior modification specialist. This is a unique type of individual who is trained to high proficiency in a specific area and who can combine principles and theory to solve different aspects of similar problems. For example, a behavior modification language specialist would be a highly skilled individual capable of dealing with a variety of language problems. He would be a resource to nonprofessional applicators and technicians for problem solution in specific areas of competence.

Economic conditions generally prohibit the likelihood of developing behavior modification specialists at the program or applied level. In most clinical settings, the professional behavior modification staff are required to gain a moderate degree of sophistication in a large number of
areas. One of the few examples of behavior modification specialists is the community training program described by Watson (1972). In this program specialists monitored the behavior of parents as they worked with their children. Thus, one parent had contact with a number of specialists. The advantages of such a program have not been specified to date.

4. Generalist

The fourth level of training skill can be identified as the behavior modification generalist. At this level the individual is trained to apply principles and techniques to a wide variety of problems. Such an individual is generally a classroom teacher or a parent. These individuals have to deal with a large variety of problems, therefore both principles and techniques are necessary prerequisites for effective application.

Schell and Adams (1969) presented a good example of a behavior modification generalist program for the parents of a profoundly retarded child. Initially, the parents were trained in observation and measurement. In addition, they were given various reading assignments (eg., Ullmann & Krasner, 1965; Ulrich, Stachnik, & Mabry, 1966). Following this, the parents met with the behavior modification consultants one evening per week for an hour or two to review data and summarize the program. These sessions were supplemented by twice weekly visits to the home during the day.
The total program lasted five months and involved 21 consultation sessions. The behaviors dealt with over the four months included decelerating arm tugging, tantrums and repetitive behavior, while accelerating play, self-help, speech, preschool and social behaviors. The techniques used by the parents included extinction, time-out, environmental change, imitation training, and positive reinforcement. Obviously, a wide range of client and trainer behaviors such as those exhibited in this case illustrates a need for comprehensive training.

5. Consultant

Finally, there is the behavior modification consultant, who trains others in behavior modification principles and techniques. Training programs for consultants are usually in the university system, and behavior modification consultants generally are professionals. Most behavior modification consultant training programs are for psychologists. Recently, however, consultant training programs for speech therapists (Bryden, 1969; Neuberger & Pettibone, 1971), special educators (Lovitt, 1970; McKenzie et al, 1970), and elementary school guidance counselors (Prutsman, Knowles, & Smith, 1969) have been developed.

Poser (1967) offered two basic levels of skill training for the behavior modification consultant. At the highest level Poser referred to a professionally trained person who is knowledgable in contemporary theories of psychopathology,
the psychology of learning, and the measurement of behavior change. For the lower level Poser noted: "Any mature individual who can master the basic principles and operations used in the behavior therapies (p. 38)."

The curriculum proposed by Poser (1967) was an additive one. All trainees were required to fulfill what he calls "level one" training. Primarily, level one training referred to the apprentice model: students observe and later assist trained therapists. In addition, demonstrations, audio visual aides, films, and tape recordings were used. The purpose of level one training was to familiarize the student with the basic techniques of behavior modification and to introduce him to the purpose and rationale for behavior modification intervention. Level two training was restricted to those people who had advanced training in mental health professions. Level two involved an intensive reading program in verbal conditioning, learning theory, personality theory, and behavior change, as well as a series of lectures in which the fundamental concepts of reinforcement and shaping were discussed thoroughly.

With respect to the training of consultants, it is interesting to note that instruction in behavior modification at the college level is increasing, though not in proportion to the increased popularity of the field. For example, in 1969 Poser noted that "in most clinical training programs no more than one course or seminar is presently offered on
the practice of clinical psychology from a experimental behav­
ioral learning point of view...(p. 183)." More recently
Yen (1971) surveyed 208 universities and colleges and re-
ported that more than 80 percent of the 173 respondents did
not have an undergraduate course in behavior modification.
Moreover, at the Master's level, only 61 percent of the
schools reported behavior modification courses (84 percent
of the schools at the doctoral level had behavior modifica-
tion courses).
Determinants of Levels of Training

In the previous section, five levels of behavior modification training were identified, and illustrations of each level were provided from the current literature. In this section, those factors which determine the appropriate level of training will be discussed. These factors include characteristics of the relevant social and technological system, and the major problem area.

1. System Implications

Training programs for various levels of skill acquisition in behavior modification must be concerned with the social and technological systems in which the individual is going to operate. These systems include the organization structure, client characteristics, and available technology.

Some pertinent aspects of organization structure which relate to training in behavior modification include the availability of relevant resource people and materials, specific rules and guidelines, and the structure of relationships to other mental health workers. As each of these characteristics increases in rigidity and formal structure, the need for behavior modification professionals is decreased. For example, in a state institution for the
retarded all three characteristics listed above are specified fairly well. In a free clinic these characteristics may be largely unspecified.

Client characteristics are also significant in determining a suitable level of training for behavior modification workers. One important variable is the complexity of the target behaviors. A given problem may be complex for a variety of reasons. First, it may concern behaviors which are difficult to accelerate or decelerate. Language for example, is a complex chain of responses and may require elaborate training procedures. A second factor in determining complexity is the duration of the behavior problem. Behaviors of long duration may be difficult to alter if they have been subjected to intermittent reinforcement and are therefore highly resistant to extinction. Finally, behaviors may be complex because of their pervasiveness or scope. Behaviors which form a large part of a person's repertoire (chronic lying or stealing), and for which he may be receiving considerable amounts of positive reinforcement may require extensive treatment.

Increases in the technology applied within schools, institutions, or homes can decrease greatly the level of skill required of the behavior modification worker. Highly controlled data collection and instrumentation systems allow for increased use of less skilled personnel. The work of Azrin and Foxx (1971) and of Surratt et al (1969) exemplify
Surratt et al (1969) developed a data collection and information feedback system for use in an elementary school setting. A console was constructed so that "time spent working" was recorded on a cumulative recorder, while individual lights signaled that "good" behaviors were occurring. The subjects were rewarded according to the number of minutes of time spent working. In this study, a fifth grade student operated the console and monitored the behavior of four first grade students.

Azrin and Foxx (1971) developed a signaling system for aid in toilet training profoundly retarded institutionalized adults. There were two major elements of the system: (1) a commode which registered "hits" and (2) moisture sensitive underwear which signaled "misses." Using these two devices, plus an intensified toilet training schedule, institution attendants were able to train profoundly retarded adults in four days, which is significantly faster than in any other reported study (Dayan, 1964; Kimbrell et al, 1967).

While there are numerous examples of sophisticated technology in schools (Patterson et al, 1969; Zimmerman & Zimmerman, 1962) and institutions (Azrin and Foxx, 1971) there has been little work in the home. One reason for the lack of comparable advances in home-based technology is cost. Technological sophistication is economically feasible when the equipment and supplies are applied to large numbers
of people (eg., school classes, institution wards). The usual home environment, in comparison, usually includes only one client, and the use of expensive equipment is hard to justify.

Another reason for the paucity of home-based technology is the relatively informal nature of the home environment when compared to either the classroom or the ward. For example, the variety of behaviors exhibited by the client are more limited in a class or on a ward than in a home. In addition, freedom of movement for the home-based child is greater, and physical limitations are less. A nonprofessional can monitor the behavior of a school child or an institutionalized resident because the range of behaviors is limited, the physical space is constricted (usually to one room), time and motion are tightly scheduled (eg., lunch time is from 12:00 to 12:30, no exceptions), and feedback is accomplished easily (eg., light on desks).

2. Problem Area

The three major areas of application of behavior modification are the home, the school, and the institution. Indeed, most of the literature is confined to investigations in these areas, though there is some work in other areas as well (eg., outpatient clinics, prisons, private practice). While conditions within each of these areas (home, school, institution) are varied, there are considerable differences between them. The variability between and within areas is
of significance when the level of training proficiency of the behavior modification worker is considered.

In general, it can be stated that the home environment requires the highest level of proficiency. There are a number of factors determining this conclusion. First, the range of behaviors exhibited by the client can be quite large in the home, whereas in the school or institution, the range is constricted by environmental limitations. For example, responses which alter the environment (e.g., turning on a light, adjusting a fan, opening the window) can be considerable in the home, less numerous in the school, and almost nonexistent in the institution. Similarly, freedom of movement is greatest in the home since the level of observation is minimal. That is, the child's behavior is not continually monitored. Since the number of potential responses in the home is greater given the large number of stimuli, the possibilities for incomplete or inappropriate responses are also greater.

Second, the nature of the trainer:client interaction over time is extended in the home, while in both school and institution it is time-limited (usually to less than eight hours). In the case of deviant behavior, by virtue of the extended contact, the frustration tolerance of the parent is likely to be taxed. Thus, ways of assisting the parents to develop strategies for dealing with this frustration need to be developed.
Third, the parent is the major (and sometimes only) source of reinforcement in the home, while in both school and institution a variety of sources of reinforcement are available. For example, recent work on contingent group consequences indicates that the peer group can exercise a high degree of control over each member. Also, due to increased contact with a number of adults in either the school or institution, no single adult acquires the reinforcing stimulus control value of a parent.

Fourth, other resources (textbooks, consultants) are more available to the teacher and the attendant than to the parent. When problems occur in the school or institution, assistance is only a phone call away. Psychologists, counselors, nurses, etc. can be dispatched to these areas (school, ward) quickly. In the home, however, this assistance may not be as easily available. Even if the parent has a phone number to call, the physical proximity to outside resources decreases the potential for intervention.

Fifth, the routine within both school and institution is rigid, and stimulus control generally is well established. For any given time period, it would be simple to predict the kind of behavior the school child or the institution resident will be engaged in. Since most homes do not operate on such a rigid schedule, the parent must be flexible.

The environmental factors mentioned above have important consequences in terms of the application of behavior
modification techniques. First, the range of target behaviors is likely to be greater in the home than in institutions, and therefore, requires considerably more observation, measurement, and recording. The reinforcement delivery system will be effected by the diversity of target behaviors. For example, the need for intermittent schedules of reinforcement is more clear cut under these circumstances (i.e., to avoid satiation or high costs).

In terms of daily routine, the rigid schedules in schools and institutions allows for the sequential programming of events. For example, school children may have lunch followed by an academic exercise and then a nap. Institution residents may be programmed for lunch, a trip to the toilet, hand-washing, and then recess outside. In both cases (school and institution) the trainer can program specific consequences to correspond to the sequenced activities. In the home, similar consequences can be programmed, however, the sequence may not be maintained. Consequently, responses often must be treated in isolation rather than in sequence, which requires considerably more time and thought by the trainer.

This brief review suggests that parent training probably should be directed toward the level of the behavior modification generalist, while training for institution attendants can be directed toward the level of the behavior modification technician. Training for school personnel can
be directed toward either the specialist or the generalist level. In all of these environments, nonprofessional behavior modification applicators can be used.
1. **Role of Personal Qualities**

One of the controversies concerning the role of the behavior modification worker centers on the influence of the trainer's personal qualities. One of the prerequisites for effective training outlined by Liberman (1969) is creating and maintaining a "positive therapeutic alliance." Liberman feels that without a positive therapeutic alliance there can be little or no success. On the other hand, Patterson (1969) and others often rely on programmed texts, ignoring the interpersonal relationship between consultant and trainer. In an attempt to coordinate the two views, Lazarus (1971) stated:

> the training of behavior therapists should aim to maximize the combination of specific and general therapeutic factors. Specific therapeutic factors refer to precise maneuvers and techniques such as systematic desensitization, behavior rehearsal, assertive training, etc., all of which presuppose the application of a systematic sequence of operations with specifiable outcomes. General therapeutic procedures refer to relationship variables and various personal qualities such as a sincere desire to be of service, a nonpejorative attitude, and a sprinkling of warmth, wit, and wisdom. At this level, one basic assumption is that the therapist's authenticity and non-
possessive warmth can be employed to potentiate the effects of specific procedures (p. 373).

One crucial element which determines the importance of the behavior modification worker's personal qualities is the nature of the client interaction. If the locus of concern is direct trainer:client contact (e.g., systematic desensitization), personal qualities may be of prime significance. If the locus of concern is an indirect contact (e.g., training a parent to train her child) personal qualities may be of less significance.

Another important variable is the reinforcement history of the client population based on subcultural background. Classroom teachers for example may respond differently to a trainer's personal qualities than do lower class parents. Further, since the behavior modification consultant is likely to be from a middle-class background, racial and ethnic differences may contribute to differential importance of personal qualities.

2. Place of Theory in Training

In discussing instruction in behavior modification, a number of important distinctions can be made. First, instruction can be divided into two general areas: theory and practice. In the university system, instruction often is geared toward theory (Lloyd & Knutzen, 1969; Sheppard & MacDermitt, 1970), while in the field, instruction often is designed for specific application only (Wahler, 1969a).
However, it can be noted that an increasing number of investigators are involving students in both theory and practice (Gardner, 1971a; Horner, 1971; Patterson, Shaw & Ebner, 1969). Cohen et al (1968) noted: "The most effective methods of training students include instruction in both theoretical and practical subject matter (p. 1)."

It is instructive to examine the various kinds of training required for proficiency in each of the levels outlined above. For example, detailed theory is not necessary for behavior modification applicators while it is for behavior modification consultants. In the case of behavior modification applicators and technicians the individuals are given instructions which detail the conditions under which very specific responses are to be emitted. The applicator and the technician can be expected to emit those specific responses since the range of possible stimuli is narrow. Continued monitoring or supervision insures compliance.

The importance of theory increases as the range of stimulus conditions likely to be presented to the trainer increases. Theory in this regard can be viewed as a resource which permits the trainer to go beyond specific situations. Thus, the addition of theory can be expected to increase the level of complexity of the tasks performed by the trainer by allowing for greater generalization.

The importance of theory also varies inversely with the base rate occurrence of the particular deviant behavior.
For example, behaviors which occur at low rates are likely to be difficult to alter since their nonoccurrence prohibits adequate assessment as well as dispensing of reinforcement. However, one way to deal successfully with low base rate behaviors is to conduct a complete analysis of the behaviors to determine those behaviors which occur early in the response chain and which might be amenable to change. Obviously, theory has an important function here.

In terms of the various skills outlined above, the importance of theory begins with the third level of personnel; namely the behavior modification specialist. In his particular area (e.g., language) the specialist is expected to encounter a wide variety of problems, and it is important that he generalize from one situation to another. In the case of the behavior modification generalist and the consultant, theory is of even greater significance, since the range of stimulus conditions is likely to be large.

Some negative consequences of incomplete training in this regard should be noted. As indicated earlier, the level of the behavior modification generalist is an appropriate one for the parent trainer. In a study by Tough et al (1971), however, the mother was trained at the level of a behavior modification applicator. In this case, she was to apply cold baths to her two young children in response to bed wetting. Though successful with her first child, various problems (e.g., slow improvement, inconsistencies in
apparatus) emerged in training the second child. As a result, both mother and child became "emotionally disturbed" and the mother terminated the training. It is possible that more advanced training (eg., to the level of the generalist) would have prevented this unfortunate occurrence.

Wagner (1968) developed a parent intervention program based on the applicator model. He provided the parents with a set of instructions which included: "what we want to occur, reinforcement, what we want to stop, non-reinforcement or punishment." The target behaviors covered in the instructions included general self-care and increased self-esteem. Significant changes in the behavior of the child were reported by the parents. However, it should be noted that months after the training program was terminated the consultant was still receiving "very frequent telephone contacts" from the parents. Such a continuing reliance by the parents on the consultant is an example of poor planning. One possible reason for this dependence may be that the applicator model was not sufficient for the parent intervention program, particularly when the program was concerned with such large numbers of behaviors.

3. Emphasis on Techniques in Training

The importance of detailed techniques for various levels of personnel also can be examined. For example, in the case of the applicator and the technician, the necessary techniques can be provided in outline form. In the case of
the specialist, however, there are a wide variety of problems which are likely to be encountered. Thus, the range of techniques at the disposal of the specialist should be wide and varied. At the level of the behavior modification consultant of course, the importance of a wide variety of techniques as well as broad theory is obvious. If the consultant is going to train other personnel, particularly non-professionals, he has to be skilled in both theory and techniques.

Summary

Five levels of proficiency in behavior modification training were identified. These levels ranged in complexity from the most elementary case in which detailed behavior modification techniques are applied under supervision (behavior modification applicator) to cases where professionals are trained in principles and techniques of behavior modification (behavior modification consultant).

It is essential to specify terminal goals of instruction in behavior modification training in order to maximize the potential impact of the intervention program. That is, not all levels of training proficiency are suited for any given behavioral intervention. The failure to educate trainers to levels appropriate to the kinds of situations in which they are likely to find themselves may have grave consequences. If the trainer has more training than the
task demands, boredom is a likely result. If the trainer has less training than the task demands, inefficiency and ineffectiveness are likely by-products.

The level of proficiency of the behavior modification trainer should be determined by an analysis of the physical, social, and technological systems in which the individual is going to operate. Of particular importance are factors such as: the number and range of responses available to the client, the spatial:temporal relationship between the client and trainer, and the presence of technological supports.

Once the level of proficiency of the behavior modification trainer has been determined, the importance of principles, techniques, and an emphasis on the trainer's personal qualities can be considered. In general it has been noted that as the complexity level of the behavior modification trainer increases, the importance of all three variables (i.e., principles, techniques, personal qualities) increases.
PHASES OF TRAINING

Introduction

The components of a comprehensive intervention program based on behavior modification include a functional analysis of the situation and identification of target behaviors, the observation and measurement of those behaviors, selection of appropriate reinforcement and specific successive approximations gradients, and the application of behavior modification techniques. This process may be considered to consist mainly of three elements: (1) behavioral observation and measurement, (2) use of principles of behavior modification, and (3) use of behavior modification techniques. In order to educate a trainer (at the level of the technician or higher) so that he is able to carry out an effective intervention program, training programs in behavior modification must include instruction in the three areas listed above. This section contains a discussion of current work in the area of behavior observation and measurement, classroom instruction in behavior modification principles, and practicum experiences in the application of behavior modification techniques.
Behavioral Observation and Measurement

Behavior modification proponents are empiricists. One of the central characteristics of the behavior modification professional is a commitment to a functional analysis of behavior. This commitment has a number of implications. First, intervention is based on data. Second, the data must be quantifiable in discrete behavioral terms. Third, the data must be reliable. Fourth, changes in behavior must be noted over the course of the intervention.

By virtue of a high reliance upon behavioral observation and measurement, behavior modification can be distinguished from various other forms of mental health intervention. For example, interventions based on an experiential-existential model might deal with variables such as self-concept, feelings and relatedness to the world. While these concepts have a certain face validity and human appeal, variables such as these are not ordinarily measured except through the person's self-report. To the extent that these variables are defined and made operational, to that extent they would fall outside the traditional province of existentialism.

Instruction in behavioral observation and measurement is one of the central features of almost all behavior modification training programs. Breyer and Grieger (1970) described a 15 hour program to train paraprofessionals in
behavioral observation. Initial sessions involved rating tapes and films outside the classroom until trainees achieved the criterion of 80 percent agreement.

When the behaviors to be observed and measured are known and definable, considerably less time is required to train observers to a reliable criterion. For example, Neuburger and Pettibone (1971) trained a team of four observers to a criterion of 80 percent agreement after only eight hours of training. However, training consisted of rating the video tapes of performances of children with respect to the occurrence of specific disruptive behaviors. When the complexity of the task is increased (for example in rating a broad range of behaviors occurring in a natural environment) the complexity of the training necessary to achieve an adequate level of reliability is increased.

While most theorists and practitioners agree upon the importance of behavioral observation and measurement, there has not been a demonstration of the effects of this variable. Such a demonstration would require that people trained in behavioral observation and measurement achieve significantly greater changes in client behaviors than individuals who have not received this training. In one of the few studies which relate to this issue, Salzinger et al (1970) noted that only those parents who were proficient in behavioral observation and measurement made significant progress with their children. In this case, it appears that behavioral
observation and measurement was a necessary (though not sufficient) condition for behavior change.

If behavioral observation and measurement are significant determinants of behavior change, there are a number of strategies which can be adopted to insure that trainers have these skills. First, the skill can be trained, as in the case of Beyer and Grieager (1970) and Neuburger and Pettibone (1971). Second, individuals could be selected on the basis of high pre-instruction skills in this area. While this approach would be possible in schools and institutions, it would be difficult in parent training: teachers and aides can be hired, children must be sired. Thus, it would appear that effective courses in behavioral observation and measurement should be developed for parents, even if options for selecting certain trainers (i.e., teachers, attendants) with these skills are available.

Classroom Instruction

The content of courses in behavior modification is varied. In most settings programs include principles and techniques of data collection, rewarding, shaping, and stimulus control. In addition, courses sometimes include discussions of token economies, contingency management, etc. Table 2 indicates the coverage of various content areas by different investigators. This table was derived from published accounts of training programs and may not correspond
exactly to actual procedures. Only a few of the hundreds of training programs are summarized here, since most studies describe the contents of their programs in little detail. For example, Hall, Panian, Rabon and Broden (1968) noted: "Before the first experimental phase reinforcement principles and procedures were explained to the teacher.... (p. 318)." Similarly, McNamara (1971) wrote: "After a brief introduction to the principles of behavior modification....(p. 207)."

It is clear from Table 2 that most training programs have little time formally allocated to the areas of instrumentation (eg., use of stop watches), architecture, modeling, contingency management, group vs individual techniques, and administration. Comprehensive training programs should deal with all these areas, particularly if the terminal goal is other than a behavior modification applicator or technician.

It seems self-evident that the curricula content should correspond closely to the kind of environment in which the trainer is likely to find himself. Thus, we may expect communality of content areas among training programs for classroom teachers which may not correspond to the kinds of curricula designs for parent training programs. Similarly, institution programs are likely to vary considerably from
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*Designed for moderately retarded residents.
either classroom or home training programs. Moreover, within specific areas (such as classroom training) there are likely to be homogeneous groupings according to the nature of the problem. Courses for special class teachers should incorporate principles which are not stressed in classes for normal children. For special education students who are limited in the number of stimuli they can discriminate at any one time, it would be essential for the teacher to be very skillful in breaking down complex behaviors into component parts. For the teacher of normal students, shaping skills are not as essential since the student's ability to discriminate is better, allowing them to respond to larger gradients in any given series of (successive approximations) steps. Simply stated: because the trainer's behavioral repertoire of effective techniques for training different target populations is varied, the basic curricula taught in training programs for different target populations should be different. In fact, differences in the content of existing curricula appear to be more a function of individual preferences rather than a logical outgrowth of an analysis of the identified population and environment. Obviously a considerable degree of work remains to be done before the curricula of behavior modification programs resemble a scientific textbook approach.
Practicum Training

Numerous investigators use demonstrations and practicums extensively. In one setting trainers are placed in an experimental area where they observe an experienced therapist, following which the trainers learn some basic principles and then proceed to work with clients. At another setting intervention is provided by suggesting various alternate methods based on data collected by the trainer. In this case, the behavior modification consultant may never see the client. In a third setting, there is an intermediate level whereby the trainers rehearse the practical procedures with other trainers (role playing) before actually working with clients. All of these approaches are represented by the papers referred to in this review.

Early studies in parent training used laboratory environments almost exclusively. Russo (1964) presented one of the first studies on training parents in behavior therapy. In this case the parent brought the child to the office where the trainer supervised parent:child interaction. Russo began the instruction with a discussion of the aims and methods of the project, after which the parent observed a trainer. Soon, both parent and trainer were involved with the client. After this the trainer observed the parent and child interaction. Following each session the parent and trainer discussed what went on during that session.
Straughten's (1964) study was also conducted in the laboratory. Straughten was concerned with "desensitizing" a mother to her child. The mother had an extremely high rate of anxiety when she was around her child. In this case, the trainer worked with the child in the playroom and the mother was gradually introduced so that by the end of the fifth session she was able to be in the room with the child without anxiety. Other early studies of parent training in behavior modification techniques were also limited to laboratory interventions (Patterson and Brodsky, 1966; Wahler et al, 1965).

Training in Laboratory vs Everyday Setting

Laboratory training can be defined as training in a controlled environment in which client and trainer behaviors are carefully monitored. The rationale for laboratory training is that the basic client:trainer interaction can be replicated more easily in the laboratory than elsewhere. Thus, a mother's response to her child's tantrum or a child's response to her commands are likely to be similar in the home or the laboratory. If this is the case, then laboratory training seems preferable since it involves considerably less professional time and permits increased control and analysis (eg., video tape).

There are various system implications which must be considered in selecting the site of the behavior modification training. These system variables include cost factors,
availability of client and trainer, and role expectations. An illustration of the kinds of problems which can emerge is given by Meacham and Wiesen's (1969) report of a behavior modification consultant who suggested that training for client and trainer occur in the natural setting. The prospective trainer's response to his suggestion was: "If a counselor is any good, he solves these problems in his office, I don't have time to be fooling around in the classroom. I'm here to teach (p. 131)." This anecdote illustrates the fact that despite the high costs and historical inadequacy, many people feel that the "office" or laboratory should be the focus point for mental health interventions. One of the great tasks, therefore, for behavior modification professionals must be the restructuring of people's opinions so that the everyday environment is the focus of choice. Benson (1969) made a strong case against laboratory training. He noted:

the child is not taken...to the office or the clinic and then returned, with the prayer that the new-found behaviors will blossom. It is assumed that the new behaviors will most likely persist and generalize if they are conditioned in the setting in which they are to occur (p. 9-10).

Patterson, Shaw and Ebner (1969) also made a case for training in the everyday environment. They stated:

it seems quite logical to design treatment procedures which are carried out in the setting where the deviant behavior occurs, and where it is reinforced. In addition, it has been found...that
behaviors shaped in special settings like in an office, often do not generalize to social settings outside the office (p. 16).

Patterson, Shaw and Ebner presented two other reasons for intervention in the everyday environment. First, long term gains undoubtedly are dependent upon changing the behavior of key social agents in the environment. This change can be done best, they felt, when the training takes place in that environment. Second, training in the everyday environment is likely to be a more efficient process in that it maximizes the potential for generalization.

Tharp and Wetzel (1969) felt that removing an individual from his everyday environment and employing the traditional model of psychotherapy creates intrusions into the person's natural relationships. For example, problems in family constellations (whether marital, sibling, or parent: child) often result when one member seeks psychotherapy.

Meacham and Wiesen (1969) illustrated the problems of laboratory training. In one study an extremely disruptive boy did not exhibit deviant behaviors when placed in a laboratory setting. However, when returned to the everyday environment he did exhibit the deviant behaviors. Apparently the production of these deviant behaviors was under very specific stimulus control.

Wahler's (1969b) study showed that some behaviors are setting specific; that is, the behavior of oppositional
children was determined by the stimulus conditions within the environment and not by some generalized personality trait. In his study differential attention was applied to increase the study or cooperative behavior of oppositional children. In the first phase attention was applied in the home only; in the second phase it was applied in both home and school. Wahler reported significant increases only in the home when differential attention was applied only in the home and significant increases in both home and school when the reinforcement contingencies were applied in both home and school. In each case the return to baseline conditions decreased the incidence of adaptive behavior.

Meacham and Wiesen (1969) also demonstrated that deviant behavior is setting specific: they reported that rates of deviant behavior for one child were extremely high in a science class and extremely low in an English class. This difference indicated that the deviance may not have been within the child, but rather may have resulted from the interaction between the child and the environment.

Training in the laboratory and the everyday environment are not incompatible when instruction is considered independent of application. Granted that application in the laboratory has limited value, there are obvious advantages (e.g., accurate record of sessions; minimal disruptions) of the controlled setting for initial development of behavior modification skills. Terdal and Buell (1969), for example,
trained parents in a laboratory setting. Initially, the parents were allowed to interact normally with their children while baseline rates of parent attention were recorded. Then the parents were instructed in the appropriate use of attention, and changes in the children's responses were noted. Once the appropriate behavior modification skills had been learned in the laboratory, the parents applied these skills in the everyday environment.

Fredericks et al. (1971) described a training program for moderately retarded children involving both school and home. In the initial training sessions the parents were introduced to basic concepts of behavior modification, including reinforcement, successive approximations, chaining and reverse chaining, time-out, extinction, and data collection. Then the parents worked with their children in a laboratory setting using video tape recordings, following which the parents observed the teachers work with the child in the same setting. Once the observations were completed, the parent was provided with programs to teach the child at home. The teacher provided these programs on a daily basis and they were returned to the classroom each day by the student. This procedure allowed close control by the teacher, although it was a time-consuming process. Parents were required to train the child from 10 to 15 minutes a night with one specific program. The kinds of programs varied from language acquisition to decreasing inappropriate behaviors,
to increasing self-help skills.

A similar approach to training teacher's aides is described by Wetzel (1970). In this case, the aides came to the laboratory setting twice each week with "their 10 worst behaving children."

Methods of Training

A. Five Popular Methods

1. Modeling

One common method for teaching trainers within the laboratory or the natural environment is modeling. In modeling sessions the trainer observes an experienced trainer work with a specific client. Such an experience can be a good educational tool for the new trainer. First, it provides a model of successful intervention which can be duplicated. Second, it provides a dramatic demonstration that deviant behaviors are controllable. In this regard it seems likely that programs which utilize parents to teach other parents are likely to produce favorable results. In such cases the naive trainer should identify with the experienced trainer to a considerably greater extent than he would if the experienced trainer were a psychologist or other professional. Liberman (1969) noted that one advantage of modeling is that it short-circuits the tedious and lengthy process of trial and error learning while incorporating complex chains of behaviors.

Johnson and Brown (1969) noted from their clinical
experience that "modeling seem to be particularly valuable in effecting rapid and initial change in parental behavior (p. 114)." They employed an interesting technique in conjunction with modeling: while the behavior modification consultant worked with the client, the parent not only observed but in addition recorded the interactions between the client and the consultant. In the training situation the mother recorded attention to off-task behavior and criticism by the consultant. Johnson and Brown reported that following this recording the mother was instructed to go in the training room and use whatever method she felt was appropriate to work with the child. No attempt was made to suggest any of the specific behavior modification techniques which had just been demonstrated. The mother went into the room and her attention to off-task behavior dropped from an average 98 percent during baseline to 20 percent during the first two treatment sessions. In addition, her critical comments rose from an average of 12.5 percent in baseline to an average of 50 percent in treatment. In that study the mother had previously been trained in behavior modification techniques using didactic material as well as group sessions. However the baseline data indicated in this study that her control over her child was still inadequate. In this case modeling achieved results which the other techniques had not been able to achieve. In retrospect the mother indicated that modeling was the most effective techniques for learning
behavior modification techniques.

2. Role playing

Role playing is a teaching technique which is used in the laboratory setting only. In this case the trainers rehearse behavior modification techniques with other trainers assuming the role of the client. This method has a number of advantages and disadvantages. On the one hand role playing is likely to produce a high degree of proficiency in the application of the techniques. However, it is likely that generalization will be minimal. Regardless of the acting abilities of the other trainers, the stimulus conditions in role playing are dramatically different from real life conditions. Role playing may be inefficient when used by itself as a technique to prepare individuals for intervention programs. However, role playing when followed by instruction with audio visual tapes or "bug-in-the-ear" sound systems (described below) may allow the trainer to gain experience under conditions like those in which they are most likely to work.

3. Signaling devices

There are a variety of signaling devices which are used in training sessions. The purpose of such devices is to provide immediate feedback as to the appropriateness of the trainer's behavior. Risley et al (1972), for example, used a flashing light to signal correct responses to teacher's aides while they work with their clients. One disadvantage
of this kind of signal device reported by Johnson and Brown (1969) is that parents often missed seeing the signals.

McNamara (1971) presented a most elementary signaling device: an experimental radio-controlled aversive conditioning stimulus through which a low voltage shock or pulse could be administered. The receiver shock unit was mounted in a plastic cigarette case and signals in the form of mild electric impulses were delivered through electrodes connected to an arm band worn on the upper arm of the trainer. One pulse was used to signify appropriate responses while two pulses signaled inappropriate responses.

4. Bug-in-the-ear sound systems

Krapfly, Bry and Nawas (1969) used the bug-in-the-ear (BIE) technique as an adjunct to laboratory training. Bug-in-the-ear sound systems are feedback systems whereby a consultant observes a trainee and communicates verbally through an electronic unit in the trainee's ear. This electronic unit usually resembles an earplug. One advantage of the BIE over traditional approaches is that the BIE provides immediate feedback without altering the environment. This is not true of other systems, such as Risley's signaling device or intercom methods.

A second major advantage of the BIE is that it provides the opportunity for shaping responses which might otherwise be difficult to shape. Krapfly et al gave the example of a mother of a nine year old autistic boy who was highly
manipulative. Effective intervention in this case required significant alteration of the mother's responses to the manipulative responses of her child. Due to the highly stressful conditions under which these manipulative responses occurred, it is questionable whether techniques such as role playing would have been effective. The BIE, however, provided an ideal medium. The following passage describes the use of the BIE during the first session.

In the first session, Paul's mother found it quite difficult to comply with the instructions of the therapist, particularly when they required change in long established behaviors, e.g., giving up a babyish nickname and substituting the name Paul. She also found it difficult to give Paul direct instructions or to ignore his unrealistic demands. Toward the end of the first hour, the therapist instructed her to ask Paul to put away the toys with which he was playing. When she made the request, Paul asked, "Why should I?" Before the mother was given a chance to answer in her usual way and thus perpetuate her son's argumentative behavior, the therapist immediately and with firmness instructed her to tell him "because I said so." This appeared to have had a stunning effect on Paul for he was not used to this style of interaction. He completed without asking further questions. When the session was over his mother expressed surprise at her curt remark and Paul's equally surprising compliance. After that she appeared to place more faith in what the BIE and the simple, straightforward yet firm "yes" and "no" could do (pp. 33-34, italics added).

"Bug-in-the-ear" sound systems have an additional advantage because they allow the trainer to function in the environment without the physical assistance of the consultant.
The absence of the consultant is important in terms of generalization effects.

5. Audio and audio-visual tape

Audio and audio-visual tape feedback systems are often used in training in behavior modification techniques. Audio-visual feedback is likely to be more effective than audio feedback only, because much of the skill in behavior modification techniques includes motor variables: e.g., physically rewarding the client and using physical prompts. These variables would be lost without visual feedback components. On the other hand, audio feedback systems can be useful when the target is verbal behavior and when the trainer's reinforcement is verbal (even if it is associated with material reinforcement).

Butterfield, Thomas, and Soberg (1970) developed an electronic device which simultaneously recorded verbal and signal data. Used with a standard tape recorder, light signal data produced by either client or trainer were electronically recorded in conjunction with the verbal feedback. Such a system made audio feedback a more powerful tool.

Marshall and Hegrenes (1970) stated that the use of audio-visual tape can facilitate information processing by parents. They felt that video tapes in conjunction with an interview can facilitate the integration of various kinds of data and allow the basic treatment plan to begin much sooner. Another advantage pointed out by Marshall and Hegrenes is
the fact that video tapes assist in the identification of specific behavioral deficits which are overlooked in the traditional observation and measurement process. In addition, video tape provides an excellent record keeping system, which allows for the measurement of change in precise terms.

Breyer and Grieger (1970) used video tape to train students as behavioral observers. Two additional advantages of video tape which they list are: (1) the ability to use video tape with large groups, and (2) the fact that there is no disruption of ongoing activities. Breyer and Grieger have been able to train as many as 20 students at the same time. Another advantage, suggested by their work, is that the tapes can be edited so that highly significant events which occur over long periods of time can be telescoped into a short presentation.

B. General Considerations

As indicated, various methods have been used to instruct trainers in the application of behavior modification techniques during practicum experiences. In discussing methods of training, a number of points need to be considered.

"Ideal" training standards

First, to what extent is an "ideal" of good training established? In some programs, there is a clear standard of acceptable training procedures. This approach is
represented best by the work of Gardner, Brust, and Watson (1970) who developed *The Training Proficiency Scale* to measure a trainer's proficiency in applying behavior modification techniques. At present, this scale is used by Watson (1972) as an integral part of his contingent training program; trainees must receive a score of 90% or higher on *The Training Proficiency Scale* before they can advance through the training sequence.

There are certain advantages of establishing "ideal" training procedures. In the first place, the development of a curriculum based on these procedures is simple, once the procedures are specified. Second, it is possible to compare individuals with each other since each person is expected to approximate the same standard. Third, the "ideals" provide a definite goal toward which individuals can strive.

The greatest shortcoming of this approach is that the "acceptable" training procedures have never been validated in applied settings. In almost every case, these standards (e.g., rewards should be administered as quickly as possible) have been extrapolated from animal research, or highly controlled laboratory studies with humans. The gap between the laboratory and the real world often is large, and effective laboratory procedures may be counterproductive when applied in actual clinical settings.

Another disadvantage of "ideal" standards is the danger
of prescriptive requirements. In the extreme case, each trainer may be molded into highly standardized automata, repeating identical commands, in identical tones, using identical gestures, etc. This can limit severely the creative potential of the individual, which is a critical factor. Note, for example, the following description by Lindsley (1968) concerning the importance of the individual creativity of a trainer:

I think Elaine may especially like the magic-marks, not only because they work so well and cost so little, but also because she thought them up. They are her creation...Elaine is...dedicated...and dreaming up new ways of helping her children may be a very important consequence for her. If we rob our best teachers of their resources and creations - we lose (SIC) not only them as teachers, but the opportunity to learn from their experiences and dedicated creative talent (p. 47).

A third shortcoming of the "ideal" standards approach is that the trainer's ability to generalize may be limited. That is, when ideal standards of behavior are learned, the trainer is not likely to use other responses even if the situation calls for a different approach (eg., the old way is not working as well as predicted).

**Focus of information**

A second general consideration is the focus of the information provided by the consultant. This focus involves information on the trainer's behaviors, the client's behaviors, and the resultant interaction. Some systems
emphasize one of these areas to the exclusion of the others. Watson's (1970) program is an example of extreme emphasis on trainer behavior. The greatest proportion of consultant time was spent in developing and then providing information concerning trainer behavior. Trainers were expected to perform in a specified manner, with the assumption that these behaviors would result in increased adaptive behavior in client populations. There was no attempt to determine client success separately. Training was considered complete when the trainer exhibited various specified behaviors.

Watson's approach can be contrasted with Patterson's approach in which the focus of training was on client outcome with little attempt to measure trainer behavior. Training was considered complete when the trainer was able to achieve a certain level of adaptive behavior change in the client. While "ideal" standards were presented, the interpretation and implementation of these standards were left to the trainer.

Few training programs concentrate on the interaction between trainer and client, despite the universal acknowledgment of the importance of this interaction. Patterson and Reid (1969) for example, have built a theoretical model around the concept of "reciprocity" and "coercion." In their words:

"Reciprocity" describes dyadic interaction in which the persons A and B
reinforce each other, at an equitable rate. In this interaction, positive reinforcers maintain the behavior of both persons. "Coercion," on the other hand, refers to interaction in which aversive stimuli control the behavior of one person and positive reinforcers maintain the behavior of the other. Both reciprocity and coercion are held to be stable patterns of dyadic interaction... (p. 1-2).

Despite this emphasis, Patterson's training system was concerned almost wholly with specifiable outcomes in the client population, with the assumption that the trainer-client interaction was appropriate when various desirable outcomes were achieved. Such an assumption may be unwarranted, particularly when narrow outcome variables are studied. For example, while certain limited outcomes may be achieved, there is no attempt to determine the effects of the trainer-client interaction on other variables.

Nature of information

A third consideration in training is the nature of the information provided by the consultant. This information can be categorized in terms of the areas of involvement, the format of presentation, and the immediacy of feedback. These areas are related closely to the kinds of methods employed. The five methods of instruction discussed in the previous section (i.e., role playing, modeling, signaling devices, bug-in-the-ear systems, and audio-visual tape) can be used in the laboratory setting. However, modeling is the only practical method for use in the everyday environment.
Equipment and strategic problems limit the applicability of signaling devices, bug-in-the-ear systems, or audio-visual tape. For example, all three methods (signaling devices, bug-in-the-ear, and audio-visual tape) often use one-way mirrors so that the client is not distracted by the presence of the consultant. While this convenience is possible in the laboratory, it is difficult to achieve in the everyday setting. If the consultant is allowed to remain in the everyday setting, motor and verbal cues by the consultant are likely to interfere with the course of training. Further, the cost of transporting audio-visual equipment, for example, would be tremendous.

When all five methods are compared in the laboratory setting, audio-visual tape is the technique which provides the most information. In terms of focus, audio-visual tape provides information on the trainer, the client, and the trainer:client interaction. Moreover, this information is provided in visual and auditory form. The trainer need not rely upon verbal or written reports on the session for he can observe it himself! Role playing by comparison provides considerably less information if only because role playing concentrates on trainer behavior to the exclusion of client behavior and trainer:client interaction. Modeling and bug-in-the-ear formats, also provide information on all three foci (trainer, client, trainer:client interaction). Since the method of communication (signals) with signaling devices
is limited, less information is provided.

Of the five techniques considered, bug-in-the-ear and signaling devices have the greatest potential for immediate feedback without altering the training conditions. Audio-visual tape does not allow for this kind of immediate feedback during the actual taping session, however, during replay this is possible. In the case of modeling, immediate feedback can result in altered training conditions.
FUNCTIONAL ANALYSIS OF INSTRUCTIONAL METHODS

Introduction

In this chapter five levels of the behavior modification worker have been delineated, and methods of classroom and practicum instruction have been discussed. In the following section, the instructional methods will be subjected to a functional analysis in terms of the kinds of reinforcement used, the nature of the responses reinforced, issues of generalization and stimulus control, and selection procedures for techniques and trainers.

Nature of Reinforcement

One of the most crucial determinants in the use of various training methods for teaching behavior modification techniques is the role of reinforcement. First, what kind of reinforcement is provided? In most cases reinforcement consists of positive regard or approval from the behavior modification consultant. For example, in a role playing situation, the inexperienced trainer is instructed as to whether or not his behaviors are appropriate. Similarly, in modeling, feedback is provided in terms of "Yes, you are
doing right" or "No, you are doing it wrong."

In other cases, reinforcement can take the form of providing information concerning the change in the client's behavior. For example, using bug-in-the-ear systems a trainer could be informed "Look, you did this and he did that." In this case reinforcement consists of information on desirable or undesirable changes in the client. This kind of reinforcement is available only with the bug-in-the-ear sound systems or with audio-visual tape. It is not possible when role playing is used because of the very nature of the interaction (i.e., the situation in role playing is artificial). It is impossible moreover using existing signaling systems because they provide only limited amounts of information. That is, the signals provide a light or two lights, a pulse or two pulses, etc. Though feedback as to client behavior is possible in a modeling situation, the nature of the trainer:client contact must be interrupted in order to provide this kind of feedback. Thus, reinforcement can be provided by including information as to changes in the client's behavior, however this is possible only in the cases of audio-visual tape and bug-in-the-ear sound systems.

While there are advantages to BIE and audio-tape systems because both provide reinforcement in terms of changes in client behavior, there are also disadvantages. One disadvantage of audio-visual tape systems is the lack of immediate reinforcement. That is, while the trainer may be
viewing a film of what he did, this is different from the situation in which the trainer is behaving. Thus, audiovisual systems require that the person verbally mediate information obtained from the audio-visual session so that this information is ready to be used in the actual training session with the client. This verbal mediation is probably not a very difficult thing to do, and requires only a moderate degree of skill. However, if the client's behavior is a powerful stimulus, it may be difficult to achieve change in the trainer's behavior outside the training setting. Highly coercive behaviors (e.g., screaming) are examples of the kinds of behaviors which elicit immediate reactions. It may be difficult then, to modify the trainer's response to these kinds of stimuli because of the temporal separation between the trainer's response and the feedback provided by audio-visual tape.

There are disadvantages to the use of bug-in-the-ear sound systems also. One disadvantage is that the feedback may be too immediate and may be lost in the many stimulus-response events and demands which can occur in a training session. In this case, feedback by the consultant is provided while other demands (i.e., client's behavior) compete for the trainer's attention. This difficulty could be exaggerated in the case of a hyperactive client who is likely to be emitting high rates of responses. Thus, both the bug-in-the-ear sound systems and audio-visual tape can provide
the trainer with added reinforcement, however, both methods have their relative advantages and disadvantages.

Note also the necessity of providing ideal training standards in the use of the consultant's approval. That is, a consultant could systematically approve or disapprove of the trainer's behavior only if an ideal of that behavior had been established. On the other hand, the use of change in the client's behavior as a reinforcer does not rely on the concept of ideal trainer behaviors. Thus, the consultant points out to the trainer what behaviors were desired and the fact of whether or not these behaviors occurred. This method in no way implies that there are absolute standards of trainer behavior. Simply, it implies that under those circumstances such and such a behavior by the trainer was followed by either a desirable or undesirable response by the client.

Nature of Responses

Another crucial element in the analysis of the effectiveness of various training methods to teach behavior modification techniques is the nature of the response which is reinforced. Is reinforcement provided for trainer behavior in the presence of the client in the everyday training situation? Or, for some reason, is reinforcement provided for responses in different training situations or with different client populations or different trainer populations. For
example, changes in the trainer population occur in the modeling paradigm. In this case the behavior under question is the consultant's behavior and not the trainer's behavior. Subsequent analysis of the session involves reinforcement of the trainer's talking about the consultant's behavior. In the role playing model the change is in the client population as well as the training situation. The use of other trainers as the "clients" provides a different client population than normally would be encountered.

The importance of training the trainer with the appropriate client in the appropriate situation is suggested by Burt (1969). He compared three techniques in teacher training: (1) teachers watched a video tape of their own teaching behavior, (2) they recorded the frequency of various types of teacher behavior while someone else was teaching, and (3) they observed their own video tape and recorded various types of (their own) teacher behavior. Burt found that having the teacher record her own behavior resulted in greater changes than the other two conditions.

**Generalization**

The question of generalization is of major importance when considering training procedures. The extent to which trainer, client, and training situations are varied in the initial teaching of behavior modification will effect the outcome of the training process. If all three conditions
(situation, trainer, client) are varied, generalization is not likely to occur. If all three conditions are extant, generalization is likely to be maximized.

In terms of stimulus characteristics of the training model, the major element is the trainer's behavior. The application of behavior modification techniques requires that the trainers have these techniques in their repertoires. Therefore, training models which provide for varied opportunities for the trainer to practice various behavior modification techniques are likely to be very effective models. The more trainer behaviors are shaped and reinforced the more the trainer will be likely to use these behaviors.

Logically, the next most critical element is the training situation which includes such things as physical space, supplies, reinforcers, and the presence of other people. The trainer's behaviors will be effective only if the environment supports these behaviors. Does the trainer have the appropriate reinforcers? Can these reinforcers be applied in this setting? What effect will training have on other people in the environment? Will they condone it, or disapprove?

Training in laboratory environments has the advantage of providing a stable and controlled setting, however, the potential for generalization is weakened as the differences between the natural and the laboratory environments increase. Those behaviors by the trainer which are useful in accelerat-
ing client behaviors in the laboratory may not work in the home. Deceleration techniques which work in isolation (eg., electric shock) may not be permitted in other settings. Thus, it may be important that the trainer be allowed to practice the behavior modification techniques in a situation which closely resembles (or equals) the actual training environment.

Behavior modification techniques are said to be applicable across varied client populations. Hence, the element of least relative significance in the training model (though of obvious importance) should be the client. Time-out is time-out, whether the client is a back ward psychotic, a delinquent, or a stutterer. While it is true that each person has a unique hierarchy of reinforcers as well as a unique history of reinforcement, the determination of individual preferences is a task facing all trainers, regardless of previous experience. That is, each time a new client appears, a new determination must be made. Therefore, since each new client presents a new experiment wherein variations on basic procedures are used, training with one population is likely to generalize to another population. Of course, differences between populations may create some problems. The type of training program for multiply-handicapped profoundly retarded children is likely to be different from a training program for high level corporate executives. Within gradients of these extremes, variability in the
choice of a client population for the initial development of behavior modification techniques should not be of prime concern.

**Stimulus Control**

Another issue of importance in training is stimulus control. What stimuli are controlling the behavior of the trainer? Are these controlling stimuli related to client characteristics, environmental components, or internal processes of the trainer? What kinds of stimulus control conditions can be generated, and what kinds can be maintained, and how?

In terms of shaping principles, the stimulus control elements in the training model should approximate those conditions present in the natural environment. Most trainers are not likely to work in situations where audio-visual tape, BIE, or signaling systems are in operation. In the majority of cases, data is obtained by the trainer, while in other cases, independent observers provide information on trainer and/or client behavior.

If behavior modification techniques are successful, then by definition changes in client behavior will result from the application of these techniques. To the extent that the techniques are brought to bear on problems of importance to the trainer, the client's change in behavior can be said to reinforce the trainer's use of the techniques.
This situation bears a metaphorical similarity to the psychoanalytic notion of counter transference. That is, as the client gets "better," the therapist feels himself enhanced, and regards the client positively. It seems essential, therefore, to develop an accurate and efficient method of measuring and charting client behavior. In this manner, the trainer's behaviors will be maintained by the knowledge that the techniques are working (i.e., the client is changing in a desirable direction). Without such a mechanism of evaluation, the trainer's behavior could be subject to extinction. Such a situation is not uncommon. Individuals are often trained in behavior modification techniques in crash workshops and short courses, then they return to their natural environment and thereafter cease to use the newly learned techniques. The implementation of an evaluation system as an integral part of the training model would provide the trainer with the mechanisms whereby he could obtain information which reinforces the behaviors (the use of behavior modification techniques) once the initial training is completed.

Other elements could be added to the evaluation system to insure the continuance of the behavior modification techniques in the trainer's repertoire. For example, aperiodic evaluation by independent observers may insure that the trainer remains capable of exhibiting the behavior modification behaviors, although independent raters do not insure
that these behaviors are exhibited in the rater's absence. If only aperiodic ratings were used, then the application of behavior modification techniques could be under the stimulus control of the rater; i.e., behavior modification techniques might be applied when the rater was present, and not at other times.

Another element which could be used to supplement the evaluation system is the case conference. At periodic intervals, trainers could meet and share the results of their programs. This procedure would add an element of social approval and achievement to the overall system. Moreover, results of data collected by the trainers could be posted conspicuously, adding to the reinforcing value of data collected. While data collection reinforces the application of the techniques, the reinforcement for data collection remains to be specified. As indicated above, social approval and achievement are two possible reinforcements which can be built into the overall system, and which can be extended to incorporate external reinforcers, such as attendance at conventions, workshops, etc. In this case, trainers who had achieved specific kinds of success with specific programs could be allowed to present their programs at a convention or workshop.

Panyan et al (1970), found that posting the number of training sessions accomplished on various wards resulted in a significant increase in the number of sessions when
compared to baseline conditions.

Other forms of controlling stimuli may exist in the trainer's environment. One major class of controlling stimuli is administrative norms. Most trainers behave within environments in which their behavior is tied to role expectations. There are certain behaviors which are expected of a mother, a teacher, or an institution aide. In addition, there are other behaviors which are not expected, some of which are explicitly prohibited. For example, parents are expected to hit their children on occasions, however, such behaviors by an institution aide could result in dismissal and legal action. It is essential, therefore, that the training model incorporate trainer behaviors which are not incompatible with the role expectations of the trainers in a given system. Behaviors which are incompatible with administrative role expectations may be decelerated through the application of aversive stimuli (eg., reprimands, loss of job, legal action). Conversely, behaviors which are illustrative of administrative role expectations are likely to be accelerated through reinforcing stimuli (eg., approval, recognition, pay raise).

In the same manner, the trainer's own role expectations form another major class of controlling stimuli. The nature of these role expectations has implications in terms of manpower selection as well as the selection of appropriate techniques for given trainers. In the case where the likelihood
of various types of trainer behaviors are known, personnel should be selected who have high base rate frequencies of these behaviors. For example, in an institution program, a highly aggressive and physical trainer is likely to be inappropriate. His high frequency behavior (e.g., hitting) will not be compatible with the administrative role expectations, nor with the techniques offered by the behavior modification consultant. In the case of parent programs, selection is a moot point. Therefore, techniques should be selected which match the parent. In some cases, however, the role of the behavior modification consultant may be to alter the parent's role expectations, rather than to offer some technique which is compatible with his/her expectations. This issue may be as much determined by ethics as by methodology.

Selection of Trainers and Techniques

It is generally accepted in the literature that establishing new behaviors should be based on the application of positive reinforcement alone. On the other hand, the elimination of existing maladaptive behaviors can be based on the application of both positive and negative reinforcement. In attempts to eliminate maladaptive behaviors deceleration techniques are used to decelerate the frequency of the maladaptive response while acceleration techniques are used to increase the frequency of other and/or incompatible re-
responses. The situation in parent training programs is clearly one of modifying existent maladaptive parent child-rearing practices. It is evident by the parent's identification of the child's responses as maladaptive that behaviors of the parents are maladaptive (if the child's responses are a function of the parent's responses). Both positive and negative reinforcement may need to be used in parent training programs in order to shape desirable child-rearing behaviors. On the other hand, the need for both positive and negative reinforcement is less clear in training programs for institution attendants. Institution attendants may have no existing particular methods for dealing with the client population. Hence, new behavioral repertoires need to be established, although working in an institution probably does not require an entirely new behavioral repertoire because the attendant's ways of relating to people generally will be of some use. Nonetheless the institutional situation involves considerably more new and different behaviors than the parental situation. In comparing parent programs with institutional programs, it can be noted that the relative use of deceleration techniques in the teaching process should be considerably less necessary with the institution group.

The nature of a specific intervention must be considered in relation to the trainer. In any given case the selection of the principle trainer is problematic. For
example, should both parents be involved as trainers or would it be preferable for only one parent to be involved? Should siblings be involved as well as the parent? Within the classroom the same basic problems emerge. Is the teacher the agent of change or should the teacher's aide be the agent? Should other members of the classroom be included as the agents of change?

One of the essential issues in the selection of the trainer is the determination of (1) who controls the reinforcers and (2) who is able to use the reinforcers on a contingent basis. For example, it may be appropriate in a given case that a father supply considerable warmth by positive verbal statements about his child. However, the father may not have these kinds of behaviors in his repertoire. Therefore, though he would be able to use reinforcement contingently, the father's repertoire may not contain the necessary behaviors. In the same manner, a parent's emotional behavior may interfere with specific intervention programs. That is, the parent may be emotionally upset by specific responses and be unable to follow through with the requirements of a specific intervention program. In this case while the parent's repertoire may be potentially reinforcing, the parent may be unable to use them contingently.

Few behavior modification training programs take into account the effects of extraneous stimuli which can impinge upon the behavior of the trainer. These stimuli can be
emitted by other people—within the environment as well as by the client. Thus, the client's behavior will change as a function of the trainer's intervention, and this change will have various consequences in terms of maintaining the trainer's behavior. But additionally, other people within the environment will react to the trainer's intervention and thereby affect the trainer's behavior. In this regard it is interesting to note some practical considerations in terms of the application of deceleration techniques. One resident involved in an intensive spoon-use training program in an institution was deprived of food whenever he refused to comply with the trainer's request to pick up his spoon. Eventually the resident's parents learned of these circumstances and complained to the administration that the child was being starved. The point is that behavior modification programs do not exist in isolation, and the kinds of pressures upon the trainer population need to be considered in the design of any curricula. In the above illustration the trainer was in possession of the necessary reinforcers, was in a position to use the reinforcers contingently, but was prevented from doing so by administrative fiat.
ETHICAL ISSUES

There are a number of ethical issues concerned with instruction in behavior modification which are discussed rarely. Many professionals maintain that behavior modification is simply a technique or approach, and that it does not have any political, social, or moral implications. These individuals maintain that behavior modification techniques are applied without regard to value judgments. Behavior modification is simply a tool which allows a person to achieve results more efficiently than other approaches. Nonetheless, there are some pressing ethical issues which arise from the application of these techniques.

As indicated in an earlier section, the most appropriate level of skill for a parent is the behavior modification generalist. The generalist is an appropriate level because of the complexity of the parent:child relationship, the amount of time spent together, and the wide range of relevant self-help and social behaviors with which the parent comes into contact. As previously noted, the generalist is trained to a level where he is able to combine principles and techniques to solve varieties of problems, whereas the
applicator and technician have more limited roles.

Since the parent is trained to the level of a generalist, it can be expected that most parents will go beyond the specific problems which arise in the initial sessions with the behavior modification consultant. Indeed, this is the goal of almost all parent training programs. Note the following comments by Fredericks et al (1971):

One of the ancillary benefits of this entire parent training effort has been the application of these techniques to the retarded child's siblings. Parents report establishing token systems within their household and using positive reinforcement techniques successfully with normal children. In addition, many of the parents have expanded the number of programs accomplished daily with their retarded child. For example, in one of the preschools of ten children, one parent reported accomplishing six programs daily and three parents report administering four different programs daily. Most agree that they are now using the principles and techniques as a way of life in raising their retarded child (p. 26, italics added).

Thus, parents can be expected to expand the number of programs as well as the number of people concerned. Patterson, Shaw, and Ebner (1969) for example, noted that the parents of an extremely deviant, hyperactive, aggressive child turned their attention to their next youngest son following success with the first subject.

Such a spread of effect raises a number of issues. First, what is the nature of the checks on the parent? Certainly the normal checks (child abuse laws, child labor
laws, etc.) provided by society against exploitation of children by parents have not been wholly adequate in the past. The high rates of adolescent suicide, infantile and childhood schizophrenia, youth drug addiction, drop outs, etc. may indicate that many parents do not adequately perform their intended function of acculturation. While it may be true that the systematic application of behavior modification techniques by well-trained parents may reduce the rates of these forms of deviant behaviors, what checks exist to provide against movement in the opposite direction? What is to prevent a mother from programming her child to be "My son, the doctor?" At present, the answer is "Plenty!" (Ask any mother). However, if given the potentially powerful tools of behavior modification, such accomplishments are not improbable. At present, there is not a single training program reviewed in this book wherein attention is directed to this question (Yen & Gardner, 1972).

This problem is important particularly when the trainer population is considered. Parents who are trained in behavior modification techniques are almost always those parents who are experiencing extreme difficulties with their children. When analyzed from a behavioral viewpoint, this indicates that behaviors on the part of the parent are mal-adaptive (i.e., they lead to destructive and aggressive forms of behavior in their children). Are these the people, then, to whom the tools of behavior modification are to be
entrusted?

Another issue in parent training is the effect of the behavior modification training on the entire family constellation. Behavior modification trainers need to anticipate the results of a "successful" intervention. How will this change the family's habitual patterns of responding to each other? Though there are no "hard" data on this, Liberman (1969) pointed to one of the complexities of intervention in families which have deviant members. In one family, as the child developed more independence from his parents and spent less time at home, his parents began to argue considerably. Thus, it may be that the child was serving as a scapegoat for the parent's hostility and he had provided at least a temporary basis of solidarity.

Most parent training programs operate through the mother as the behavior modification generalist. To what extent does this reinforce a "matriarchy" in the family structure? For example, Patterson and Reid (1969) have noted that in a family setting fathers dispensed the least positive social reinforcement and the lowest rate of aversive consequences. In addition, they found that the fathers received the lowest rate of social reinforcement and the lowest rate of aversive consequence. This finding is of particular importance when one considers the total impact of behavior modification intervention on the family constellation.
Some serious questions must be raised about the kinds of problems selected for modification. For example, Johnson (1971) reported that parents decreased the disruptive behavior of their children during meal time. Both children were normal young adolescents (nine and 11 year olds), and attention was drawn to them during the father's therapy sessions. Apparently, disruption consisted of "a noisy reaction" to the "very hot and spicy dishes" prepared by the mother (who was of Spanish extraction). The deceleration techniques used in this case included extinction, instructions by the father, and being sent away from the dining table. To increase the children's acceptance of the food, gradual increments of one tablespoon of spicy food were introduced. The children had to eat the "hot and spicy" food before eating the rest of their food.

Is this an appropriate intervention strategy? Should attention have been directed toward the mother's insistence on serving "hot and spicy dishes" rather than the children's seemingly appropriate reaction? Is accelerating the number of tablespoons of "very hot and spicy dishes" children are forced to eat before their preferred food an appropriate activity for the consulting psychologist?

Christopherson and Arnold (1971) provided another example of an ethical issue. In their study an 11 year old underachiever was put on a token economy system in his home. Adaptive behaviors earned points which were exchangeable for
watching TV, playing with friends, riding his bicycle, etc. In order to go to the movies, to the park, or to take weekend trips he was required to perform extra tasks. Such a system raises the question of the essential humanness of the subject. Are there some things people deserve as a function of being human, rather than as a function of having earned the right to do something?

Ethical concern for the type of techniques used is raised in the work of Hamilton et al (1969). In that study, stereotyped screaming by an institutionalized retarded woman was decelerated by electric shock. In almost all cases, electric shock has been used to decelerate self-injurious behavior (Elliott & Tate, 1968; W. Gardner, 1969). The rationale for using shock has been that such punishment in the short run was better than the potential long term consequences of self-injurious behaviors. Moreover, shock was considered more humane than continuous confinement and restraint, the usual method for dealing with self-injurious behavior.

While the application of electric shock to self-injurious behavior is not universally accepted (Gardner, 1972a; Buddenhagen, 1971), its use to decelerate other forms of behavior is questionable at the least. What limits are to be placed on the use of shock? Who will use it, and on whom? What checks can be instituted to monitor the use of electric shock? Once electric shock is introduced and the efficiency
of the results demonstrated, will this discourage thinking of other ways to decelerate undesirable behaviors? All these questions need to be answered. At the least they need to be asked.

Another very serious ethical question concerns the extent to which effective reinforcement systems in the home or the school will eliminate exploratory or limit-testing behavior by children. For example, if a given behavior modification program was extremely successful, a child could begin to take a passive-accepting attitude toward authority. As the program increases in effectiveness, attempts to circumvent reinforcement contingencies would be increasingly punishing. The establishment of a passive-accepting attitude toward authority by the child has great implications for the management of societal changes. Take for example the Viet Nam war. In the mid 1960's the war in Viet Nam was accepted as a moral, righteous adventure. By the end of that decade, however, the moral certitude was in question, and within the next decade (the 1970's) the question of U.S. involvement in Viet Nam had run the full circle and was seen as morally reprehensible by a large majority of the populace. This complete reversal in attitude and behavior occurred largely due to the efforts of a very small group of people who in the mid 1960's began to organize what was later to be called the "peace movement." Sam Brown, Martin Luther King, Allard Lowenstein, and others were responsible for
what can be interpreted as an example of non-compliance with the establishment. What would have happened to the world today had Martin Luther King been brought up using behavior modification techniques?
SUMMARY

Five levels of the behavior modification worker have been distinguished. At the most elementary level, there is the behavior modification applicator who is trained to apply simple techniques under structured conditions. Next, there is the behavior modification technician who can apply a small number of techniques under structured conditions. The next level is the behavior modification specialist who is highly trained in a specific area. The behavior modification generalist is not as highly trained in one area as the specialist, however, he is trained to apply a wide variety of techniques to a large number of areas. Finally, there is the behavior modification consultant who trains the others.

The importance of theory, techniques, and personal qualities in training curricula is related to the level of skill of the trainer. In turn, the level of skill required by the behavior modification worker is related to the demands of the environment, the organization structure (if any), the client characteristics, and the technology. In general, it can be said that the role of parent-trainer is the most difficult role for nonprofessionals and requires
the highest level of skill training, preferably at the level of a behavior modification generalist.

Despite the fact that there are hundreds of behavior modification training programs, there appears to be little communality between programs in terms of curricula content and practica experiences. However, some basic elements are present in most programs. These include emphases on behavioral measurement and observation, discussions of reinforcement, shaping, stimulus control, and deceleration techniques, and some kind of practicum training.

While there is fairly high agreement that training should take place in the natural environment, this is not always possible. Therefore, alternative methods have been developed such as role playing and critical incident modeling. In some cases, on-the-job modeling is used. Under experimental conditions, various kinds of feedback mechanisms are used to increase the trainer's level of skill. These include signaling systems, bug-in-the-ear systems, and audiovisual tapes.

Few workers have drawn attention to the consequences of various training models in terms of a functional analysis of the model. This functional analysis has been discussed in relation to the five models listed above in terms of the kinds of reinforcement employed, the nature of the responses which are shaped, and the issues of stimulus control and generalization.
Finally, a variety of ethical issues have been raised in relation to training nonprofessionals (particularly parents) in behavior modification techniques. It was noted that more concern should be given to the kinds of problems dealt with, the kinds of techniques used, the major agent of change, and the institution of limits in training.
III. RESEARCH ON TEACHING BEHAVIOR MODIFICATION

INTRODUCTION

USE OF REINFORCEMENT WITH TRAINERS

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  Client Related Behaviors
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  Ease of Data Collection
  Data Collection at the Institution Level
  Specification of System and Client Related Behaviors
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Quality of Research
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TRAINER VARIABLES

Education
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Success by Population
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SUMMARY
The purpose of this chapter is to review research on teaching behavior modification principles and techniques. This review will center on: (1) the use of reinforcement with trainers, (2) effects of different methods of instruction, (3) trainer variables, (4) the effects of feedback on trainer performance, and (5) manpower developments. While there are numerous films, manuals, and training programs in behavior modification, there has been little attention to research in this area. This is a paradox since the majority of professional time is spent in teaching behavior modification and not in application. In 1967, Poser noted: "Despite the recent spate of publications on behavior modification there is little in the literature to guide those responsible for the training of behavior therapists (p. 37)." In 1972, Poser's lament is still true!

USE OF REINFORCEMENT WITH TRAINERS

Introduction

Since behavior modification techniques were effective
in changing the behavior of various client populations (mentally retarded, autistic, emotionally disturbed) it was only a matter of time before the same procedures were applied to the trainers. Salzinger et al (1970) noted: "Parents' no less that their children's behavior is subject to reinforcement contingencies (p. 20)." As early as 1964 Ayllon and Azrin stated: "Any procedure that uses attendants to modify the behavior of patients must also provide operant consequences for the attendant (p. 330)."

The rationale for using reinforcement for training trainers can be advanced in terms of efficiency and effectiveness. In terms of effectiveness, if reinforcement is necessary for responses to occur, then reinforcement should be applied to trainers as well as to clients. In terms of efficiency, reinforcement techniques conceivably could optimize the learning conditions while increasing the utilization of manpower. Also, the use of reinforcement with trainers provides the trainers with experiential background for the use of the techniques; that is, when reinforcement techniques are used on staff, the staff receive direct information in terms of what it is like to function under formally stated reinforcement contingencies. This experience should be of significance later when the staff themselves are applying reinforcement techniques to their clients.
Studies of the effects of reinforcement on trainers are summarized in Table 3. It is clear that in isolated cases specific reinforcement contingencies have resulted in modifying divergent trainer behaviors. There is nothing revolutionary in this finding: industrial psychologists have reported similar effects in analyses of business practices. The unique contribution of the studies listed in Table 3 is that they extend the literature into the delivery of mental health and mental retardation services.

In the next section research on the use of reinforcement with trainers in parent training and institutional behavior modification programs will be reviewed. Following that, the general quality of the research will be assessed.

**Parent Training Programs**

One of the most common areas in which reinforcement is applied to trainers is in parent training programs. Though comprehensive research has not been done, a number of parent training programs have built-in reinforcement systems which are designed to maintain the parent's involvement in the program. Generally, the reinforcement contingencies are associated with data collection and/or attendance at meetings. Patterson's (1969) system provides a good example.
### TABLE 3

**REPRESENTATIVE STUDIES OF THE EFFECTS OF REINFORCEMENT WITH NONPROFESSIONAL BEHAVIOR MODIFICATION TRAINERS**

<table>
<thead>
<tr>
<th>STUDY</th>
<th>DEPENDENT VARIABLE</th>
<th>CONTROL</th>
<th>REINFORCEMENT</th>
<th>RESULTS&lt;sup&gt;b&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bricker et al</td>
<td>I Time spent with retardates</td>
<td>Pre/Post</td>
<td>Green stamps</td>
<td>+</td>
</tr>
<tr>
<td>Panyan et al</td>
<td>I Number of training sessions held each day with residents</td>
<td>Multiple</td>
<td>Posting number of sessions conducted</td>
<td>+</td>
</tr>
<tr>
<td>Gardner 1970a</td>
<td>I Lateness and absence</td>
<td>Group 1 vs 2</td>
<td>Time off for good attendance; response cost for poor attendance</td>
<td>+</td>
</tr>
<tr>
<td>Gardner 1972f</td>
<td>I Data collection</td>
<td>ABA</td>
<td>Time off for most data</td>
<td>+</td>
</tr>
<tr>
<td>Tatton 1972</td>
<td>I Test scores</td>
<td>ABA</td>
<td>Contingent teaching</td>
<td>+</td>
</tr>
<tr>
<td>Horner</td>
<td>I Data collection</td>
<td>None</td>
<td>Time off</td>
<td>?</td>
</tr>
<tr>
<td></td>
<td>I Test scores</td>
<td>None</td>
<td>Time off</td>
<td>?</td>
</tr>
<tr>
<td>Tharp &amp; Wetzel</td>
<td>P Use of token economy</td>
<td>None</td>
<td>Extra clothing</td>
<td>+</td>
</tr>
<tr>
<td>Patterson 1969</td>
<td>P Progress through training program</td>
<td>None</td>
<td>Contingent teaching</td>
<td>+</td>
</tr>
<tr>
<td>Hirsch &amp; Walder</td>
<td>P Attendance at training sessions</td>
<td>None</td>
<td>Loss of $50 deposit for absence</td>
<td>+</td>
</tr>
<tr>
<td>Howard</td>
<td>P Attendance at training sessions</td>
<td>None</td>
<td>Enroll child in special class</td>
<td>+</td>
</tr>
<tr>
<td>Surratt et al</td>
<td>S Class grades</td>
<td>Pre/post</td>
<td>Use of behavior modification techniques in study</td>
<td>+</td>
</tr>
<tr>
<td>Fielding et al</td>
<td>I Pushing and tugging residents</td>
<td>Pre/post</td>
<td>Posting dramatic sign for staff</td>
<td>+</td>
</tr>
</tbody>
</table>

<sup>a. </sup>I = institution attendants, P = parent, S = school child

<sup>b. </sup>When results indicated that the dependent variable was successfully modified, + is listed.
First, the parents were required to collect baseline data for two weeks. After collecting data, they "earned" the opportunity to study programmed material on behavior modification. Contingent on completing this phase, the parents received one hour of professional time in setting up an intervention program. After several days of "consistently good data," the parents were admitted to a group of three to five families where programming continued. While such an extensive and highly programmed design seems desirable, there is no data on the drop-out rate nor the levels of achievement of the trainers using this method versus another method. Nonetheless, it does offer interesting possibilities.

Of more substance is the study by Hirsch and Walder (1969) who required each of 30 mothers to deposit $50 prior to training. Return of the money was contingent upon perfect attendance for nine 1 1/2 hour sessions over a five week period. Remarkably, they reported 100 percent attendance for all parents. No data is readily available, however, from other programs to compare with this high attendance rate.

While Patterson and Hirsch and Walder offered some information on parent training, the dependent variables in both cases were restricted to system-related behaviors. In essence, both studies centered on ways to maintain the parent's interest and involvement, and ignored the potential
results of the intervention program on the client. Such designs were based on the assumption that the parent's interest and involvement must be shaped before effective results can be obtained. Though this is certainly one possibility, this basic assumption carries certain implications which have not been examined thoroughly. The strongest implication of this approach is that the parents are not "really" interested in assisting their child; rather, external reinforcement must be used to maintain their interest. If this is the case, how is the intervention program to succeed once these external supports are removed?

One alternate approach to maintain parent's involvement would be to assume that people have a drive to manipulate and control their environment (or in other terms, the exercise of selective control over one's environment is a highly rewarding activity for most people). Behaviors associated with or leading to this activity are likely to increase, just as high probability behaviors increase the occurrence of low probability behaviors when the two are associated (Premack, 1959).

A number of strategies for training can be derived from this assumption. First, training should be designed to produce some behavior change as quickly as possible. Second, once the behavior change occurs, it must be recognized and the relationship between the intervention and the behavior change must be identified. Third, low probability behaviors
(reading a text, attendance at meetings, collecting data) should be related to the behavior change. If in fact they are not, there is no need for including them in the training program in the first place.

How might such a system operate? First, the training would revolve around the expected behavior change. Particular program content would be introduced once the trainer expressed the need to solve a problem which required that content. Subsequent success would reinforce the acquisition of program content and also reinforce a generalized positive set for learning.

Second, the system should be based on behavior modification principles, reflecting a successive approximation approach. The earliest interventions should require a minimum of effort and produce a maximum of change in a short time. Specific target behaviors and techniques can be selected to achieve this goal. As training increases, more complex behavior changes should be attempted. In each case, training should lead to the gradual acquisition of principles and techniques which assist in continued progress.

Other system considerations include the need for accurate data collection, analysis of failure experiences, concern for total family interaction, and the availability of professional time. All of these can be incorporated into the basic model outlined above.

What advantages would such a model have over existing
models? First, this model avoids the subtle (and sometimes not so subtle) implication that the trainer really does not care about the client. The basic interest and involvement of the parent is accepted. Second, this model recognizes the trainer as a mature individual. Third, and most important, the model has a built-in system for problem solution in the absence of the consultant. That is, the trainer increasingly relies upon his own resources. This process is facilitated since the consultant is likely to be as invested in the trainer's growth as he is in the client's behavior change. Finally, in the model outlined above, the client's behavior change remains the critical focus throughout.

**Institutional Programs**

The earliest formal study of the effects of reinforcement on trainers took place in traditional mental health institutions (Ayllon, 1960; Ayllon & Michael, 1959). In the decade following those early investigations, the frequencies of a wide variety of trainer behaviors have been increased or decreased as a result of the systematic application of reinforcement contingencies (see Table 3). Staff behaviors investigated have included collecting data, conducting behavior modification training sessions, lateness and absence, pulling and tugging residents, as well as various behaviors associated with inservice training (studying, passing exams). The kinds of reinforcement used in these studies
have included time off from work, extra lunch periods, green stamps, and recognition.

One of the most comprehensive series of studies of the effects of reinforcement on trainer behavior in institutions was the work of Gardner and Watson (Gardner, 1969c, 1970a, b, 1971a, 1972b, c, d, e; Watson, 1970; Watson, Gardner & Sanders, 1971). In a series of studies over four years they investigated the effects of reinforcement on such trainer behaviors as collecting toileting incidents, arriving at work on time, and scores on exams. Perhaps the greatest achievement during this period was the development of a behavior modification inservice program designed using principles of systems analysis and behavior modification (Watson, Gardner, and Sanders, 1971). The terminal goal of instruction was the behavior modification generalist. Behavior modification skills were broken down into two major systems: verbal and motor. Verbal skills were broken down into three major subsystems: reinforcement, stimulus control, and successive approximations. The motor system was broken down into four subsystems: administering rewards, shaping responses, communicating, and miscellaneous. The outline of this analysis is presented in Figure 1.

Following the analysis of behavior modification skills
FIGURE 1
SYSTEMS ANALYSIS OF BEHAVIOR MODIFICATION SKILLS

Principles of Reinforcement
Stimulus Control
Successive Approximations
Administering Rewards
Mis. Shaping Responses
Communicating

Verbal Skills
Motor Skills.

Behavior Modification Generalist

Goal
System
Subsystem
outlined above, the instruction process was designed using operant conditioning principles. In the verbal system, attendants were required to learn small bits of information which successively approximated the terminal goal in each major subsystem. Advancement from one subsystem to another subsystem (eg., from reinforcement to successive approximations) was contingent upon completing a written exam with a grade of 90 percent or higher. Failure to complete the exam with the required score resulted in having to repeat the antecedent steps. Within each subsystem, variety in the presentation of the material was used to reinforce acquisition of information and high scores on exams. Thus, students were required to pass a test on written material which admitted them to a slide show designed to supplement the written material. The entire sequence is described below:

Trainees learn both principles of behavior modification and their practical application in the classroom phase of training, which lasts approximately three weeks. Teaching is accomplished through a contingent textbook-lecture-discussion series. There are nine such units. The trainee starts by receiving her first textbook assignment. In order to be admitted to the corresponding lecture, she must make a high passing grade (90% correct) on an examination that evaluates her understanding of the textbook assignment. If she passes, she can proceed to the lecture; if she fails, she must repeat the textbook assignment and take a second examination. If she fails the exam a second time, she is required to repeat the reading-text procedure, and if she fails it a third time she is tutored until she
understands the material, and then progresses to the lecture.

Lecture material is presented by tape recorder along with 35 mm. slides that illustrate the recorded subject matter. The lecture is an extension and further illustration of the material presented in the text, designed to clarify and amplify the text. The same contingencies required for progressing from the textbook assignment to the lecture are also required for moving on to the corresponding discussion. The trainee must pass a lecture examination at the 90% level. The purpose of contingent examinations is to prevent trainees from progressing to subsequent steps of the program until they have satisfactorily understood previous steps. A score of 90% is used as a criterion in order that she understands each program component well. The discussion is designed to clarify any material that was not understood in the lecture. Lecture examinations are evaluated to determine areas of ambiguity, and these areas are then covered in the discussion. After the trainee completes the discussion, she receives her next textbook assignment on a noncontingent basis. There is no discussion examination... (Watson, Gardner & Sanders, 1971, 40-41)

In addition to teaching the verbal skills system using operant conditioning principles, the motor skills system was also programmed. The procedure is outlined in the following passage:

After all nine textbook-lecture-discussion units are successfully completed, the trainee progresses to actual behavior shaping training. She begins by seeing a movie and a demonstration of teaching self-help skills to severely and
profoundly retarded children. Next she attempts to apply behavior modification skills herself with a fellow trainee in a role playing situation. One trainee plays the role of a behavior modifier while the other plays the role of a retardate; then their roles are reversed. When the trainee can pass a behavioral test that assesses how well she can actually apply behavior modification techniques (at a 90% level), she is assigned a severely or profoundly retarded child and attempts to teach him self-help skills. When she passes a second behavioral test in the one-child situation, (again at a 90% level), she has completed classroom training, receives her ward assignment, and begins an internship (p. 41).

The behavior modification lecture series outlined above was evaluated with four groups of subjects: institution attendants ($N = 8$), Neighborhood Youth Corps Workers ($N = 5$), mothers of autistic children ($N = 7$), and Foster Grandparents ($N = 6$). The first three lecture units were presented non-contingently; i.e., the subjects could advance from one unit to the next without achieving a 90 percent or higher score on the unit test. Following the first three units, the next three units were administered contingently, i.e., progress to the next unit was contingent upon a 90 percent or higher score on the previous unit test. Finally, the last units were presented non-contingently.

The four groups differed widely on their unit test scores during the non-contingent phases, however, under contingent conditions, there were no significant differences
between the four groups. The performance of the mothers remained high throughout the study, while the contingent phase resulted in significant gains for the other three groups. This result demonstrated the importance of the contingent teaching format for the institution attendants as well as the other two groups which responded to the contingencies.

The results of other investigations by Gardner and Watson as well as other researchers are summarized in Table 3. Suffice it to say that human beings, regardless of their position in the delivery system for mental health and mental retardation services, can be manipulated through the contingent use of reinforcement. It is clear that with certain kinds of reinforcers, certain kinds of behaviors in certain kinds of people can be increased or decreased. While it has been demonstrated that trainer behavior can be modified, it remains to be seen whether a comprehensive management system utilizing behavior modification principles and techniques can be designed and made operational. Such systems exist on a microscopic level in complex token economies for client populations (eg., Ayllon & Azrin, 1968).

1. **System-Related Behaviors**

The design of a comprehensive behavioral management system should incorporate a number of features. First, those aspects which maintain the system are important. These may include (1) attendance, (2) promptness, (3) correct dress and language, (4) appropriate interstaff rela-
tions, and (5) use of proper channels. These behaviors are critical because they are necessary to maintain the system. Thus, it is not a concern with lateness, but rather the importance of lateness within a specific setting which is paramount. In some settings (e.g., research projects) lateness may be an extraneous variable, and need not be included in the management system. In school systems where classes are scheduled, lateness would be a significant variable and should be included in such a system. Obviously, the construction of a comprehensive management system must be based on a functional analysis of the behaviors necessary to maintain and subsequently change the system.

At the first approximation, consequences for adherence to the system related rules should be based on easily identified behaviors. That is, the behaviors in question should be easily identified by both management and employees. In general, the use of discrete behavior categories will facilitate such identification. It is insufficient to talk about "good appearance" without specifying the components of good appearance. These may be such things as shaving, care of uniforms, shoes, etc. One system for making these behaviors known to all concerned is the kind of posting typical in token economy systems and in traditional institutional systems.

Not only must the behaviors be easily identified and known but the consequences must be negotiable. There is
now a considerable wealth of literature concerned with the efficiency and effectiveness of contingency contracts. This research suggests that the individual's contribution to his own management is a significant variable in determining the success of a given program. In addition, there is considerable literature to indicate that rewards should be administered immediately following the response, should combine both positive and negative consequences, and should be based as much as possible on natural reinforcers in the system.

Consider Figure 2. When a person appears at work on time (decision point #2) he is rewarded by proceeding. Should he be sick, he can avoid severe punishment by notifying someone in advance (decision point #1); if he does not call in, his pay can be withheld. This particular system bears resemblance to traditional personnel policies. However, in terms of reinforcement theory, it can be added that more positive and immediate consequences for appearing at work should be developed. One example of a positive consequence currently in use is "sick leave" which is based on the accumulation of credits against absence (based on attendance).

In terms of lateness (and other variables as well),
FIGURE 2

ILLUSTRATION OF COMPREHENSIVE CONTINGENCY MANAGEMENT SYSTEM

**DECISION POINT 1:**

WAKE-UP

Plan to be — **YES** there?

<table>
<thead>
<tr>
<th>NO</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Call in? — <strong>YES</strong> Excused Absence?</td>
<td>Dock Pay</td>
</tr>
<tr>
<td><strong>NO</strong></td>
<td></td>
</tr>
</tbody>
</table>

**DECISION POINT 2:**

ARRIVE AT WORK

On Time? — **YES**

Accumulate Credits

<table>
<thead>
<tr>
<th><strong>NO</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1-15 min YES late?</strong></td>
<td>Fill Out Late Slip</td>
</tr>
<tr>
<td><strong>NO</strong></td>
<td>Accumulate Debits</td>
</tr>
<tr>
<td><strong>16-30 min YES late?</strong></td>
<td>Fill Out Late Slip</td>
</tr>
<tr>
<td><strong>NO</strong></td>
<td>See Area Supervisor</td>
</tr>
</tbody>
</table>

Fill Out Late Slip

Send Home
some decision must be made to define parametric variations. For example, if a person is 15 or less minutes late he might fill out a late slip (which could be accumulated to deduct from his pay). If he is more than 15 minutes late, a more severe punishment could be used; perhaps, seeing the supervisor. Various alternatives are diagrammed in Figure 2. The important point is that the severity of the consequence should increase in proportion to the magnitude of the deviation from the expected behavior. Furthermore, the "expected behavior" should be derived from a functional analysis of the variables which effect the major outcome indicators. If wearing a white uniform results in differentially high rates of "acceptable" behavior by clients, with no corresponding undesirable side effects, then wearing a white uniform should be a requirement of that particular system.12

If the person is in proper dress, he should be allowed to proceed. Again, more positive consequences should be developed. If he is not dressed properly, he could rent (at a minimal cost) the proper uniform. If a man is not shaved, he could rent shaving materials. All of these credits and debits can be accumulated and his pay modified accordingly.

One of the advantages of a comprehensive management system would be the ability to relate performance in one
area to another area. For example, one aversive consequence of not being in uniform could be to deduct the pay for the time the employee requires to meet the standard. An employee could avoid this by building up credits through good attendance.

For purposes of explication, suppose that an employee earned one minute of credit-time for each day he is present and on time. After one month, he would accumulate approximately 20 minutes. Suppose that he appears one day unshaven. According to the example outlined above, he would have to "rent" shaving materials and shave before signing in. This could mean a loss of ten minutes, however, he could use his credit-time (earned for good attendance) to offset this loss. Moreover, the credit-time could be translated into credit-earnings (a person who makes $3.00 per hour would receive $3.00 in credit-earnings for each hour of credit) and this could be used to "pay" for "renting" the shaving materials.

There are obvious considerations concerning the proportion of positive and negative consequences in any reinforcement system. One of the factors is the level of pay of the staff involved. If the position is one in which salary is low, then the number of punitive financial consequences in the system may generate undesirable side effects. For example, the loss of $5.00 per week for an institution attendant may mean that he cannot afford the gas to get to work.
On the other hand, if the level of pay of the personnel involved is high then punitive financial consequences are not likely to be as effective. It is clear that the kinds of positive and negative consequences must strike an appropriate balance. Such a balance would imply that the person is neither too fearful nor treats the aversive consequences too lightly. One way to establish the appropriate balance between positive and negative consequences is to determine this factor experimentally. In other words it would be possible (once the system is operational) to determine compliance or noncompliance rates at any decision point. Thus, what proportion of individuals are likely to be eligible for what kinds of consequences at decision points 1, 2, 3, etc.? Once this is determined, different magnitudes for the consequences can be selected until some desired level of compliance is achieved.

As the relative changes in frequency of compliance and noncompliance are noted, such a system requires that the experimenter be sensitive to side effects. For example, highly aversive consequences at decision point 2 may lead to increased absence: while subjects may be found to conform more at decision point 1 and more at decision point 2 (i.e., they call in, and show up on time), the actual increase in absence could be construed as nonadaptive in terms of system maintenance. It is evident that the effective operation of such a system is dependent upon determined levels of accept-
able behavior. To continue the example cited above, some
minimal level of acceptable attendance should be stated: if
this level is exceeded the system can be said to be operat­
ing at maximum efficiency. However, if the limit is not
reached, though other major components of the system may be
considered maximum, the entire system would not be operating
at an optimal level. Naturally, priorities would have to be
set for acceptable levels at each decision point. Then the
manner of intervention would be dictated by the achievement
of the various predetermined levels for the various decision
points.

2. Client-Related Behaviors

The second major aspect of a comprehensive management
system involves client-related behaviors. These include:
(1) time spent with client, (2) data collected, (3) level of
trainer's skills, and (4) client progress. Obviously, some
of these variables are easier to quantify than others. In
each case, however, accurate and reliable data are of para­
mount importance.

A. Accuracy of Data

One way to obtain data on client-related behaviors is
to rely upon data provided by the trainers. When this sys­
tem is used it is important to validate the information.
The basic question concerns the accuracy of the information
provided by the trainers. First, it is likely that devia­
tions will be in the direction of the system-based
contingencies. That is, in a system that rewards client progress, trainers are likely to "error" in the direction of overestimating progress. Similarly, in a system that rewards quantity of data collected, over-estimation in terms of response frequency is likely.

The problem of accuracy is highlighted in a study by Robbins (1963). She compared the original records kept by parents (44 mothers and 39 fathers) of three year olds with responses to interviews given periodically over the course of three years. Information was obtained for quantitative (e.g., birth weight) and qualitative (e.g., did the child thumb suck) items. The parents were predominately white, Jewish, professionals, from a uniformly high socio-economic group, in the Greater New York area. The likelihood of accurate recall was facilitated by their participation in the longitudinal study, making them more aware of various facts and figures. On the quantitative items, both fathers' and mothers' retrospective reports differed significantly from the original records for the child's age of weaning, beginning of bowel and bladder training, and cessation of the two a.m. feeding. The fathers also were inaccurate in their recall of the introduction of the cup and the child's age when he first stood up. For the qualitative items, both parents differed significantly in recalling the occurrence of thumb-sucking and schedule vs demand feeding. The extent of these differences ranged from +14.2 weeks (mother's recall of
bowel training) to +25.5 weeks (father's recall of bladder training). To determine the direction of these inaccuracies, Robbins differentiated nine clear child-rearing recommendations in the lay literature. She found that the mothers erred in the direction of the expert's advice on all nine items while the fathers tended to be less affected by the expert opinion (also reporting less knowledge of what the experts' opinions were).

Thomas, Chess, Birch, Hertzig, and Korn (1963) on the other hand, reported that behavioral descriptions by parents corresponded to independent rater's evaluations, but they reported only significance level, and gave no indication of the degree of relationship. In addition, the parent's behavioral descriptions were mediated by judges' ratings; i.e., a parent's description of the child was transformed into scale scores by judges, and these scores were compared to the independent ratings. On the negative side, Crandall and Preston (1955) and Zunich (1962) compared parents' self-ratings of their behavior with ratings of the same behaviors by psychologists, and found little correspondence.

These studies illustrate that rater bias is a critical factor in obtaining data. However, even when rater bias does not exist, there is the general problem of the accuracy of information. Numerous studies have been addressed to this question. For example Vestre and Zimmerman (1969) compared information provided by relatives and ward nurses.
Though they found significant relationships between the two sources of information, the low magnitudes (r's ranged from .19 to .42) of the relationships question their usefulness. Other investigators report higher agreement as a result of intensive training. For example Breyer and Grieger (1970) trained paraprofessionals to a criteria of 80 percent agreement on behavioral items after 15 hours of training.

Meacham and Wiesen (1969) attempted to determine the influence of independent raters within the classroom. They compared the production of appropriate responses of a deviant child in English class when a graduate student or the high school principal was present. In both cases the percentage of appropriate responses was approximately equal. Of course, this demonstration simply illustrates that there are no differences as a result of the presence of various kinds of observers in the classroom, and it does not answer the question of the effects of the observer's presence.

B. Ease of Data Collection

The ease of obtaining an accurate measure of the validity of client-related information is in proportion to the number of clients, the complexity of the relevant behaviors, and the setting. For example, in an out-patient community mental health center, it may be relatively easy to monitor a client's behavior. Phone calls to relevant individuals, periodic trainer-client contacts, etc. provide an easily monitored data system. When the intervention involves a
third person (mother-child; teacher-child) problems of validity increases. However, to the extent that the client's behavior constitutes a significant part of the trainer's environment, and the trainer is interested in the client's behavior change, the task is made easier.

C. Data Collection at the Institution Level

The most difficult task of insuring accuracy of information is in the traditional mental health and mental retardation institution. Here, all circumstances mitigate against success: the client/trainer ratio is large, the institution's operation system does not reinforce the approach, and the number and range of problem behaviors may be large. Nonetheless, there are a variety of ways to deal with the validity of trainer data in an institution setting.

Horner (1971) provided a method of data collection which has great potential in terms of an appropriate validity model. Developed at Wheatridge State Home and Training Center (Colorado), this model called for precise behavioral programs and daily data reports from trainers as to resident success in each program. For each skill taught, the trainer followed a detailed series of steps. Then, this input was used to construct means and standard deviations for each program. For example, Horner reported that on the average severely and profoundly retarded residents required 162.8 trials to reach criteria in eating neatly with a spoon. Further, the range was from 8 to 666 trials.
Though this system was developed to establish standardized procedures and expectations for behavior modification programs, it easily lends itself to the question of validity. Obviously, the enormity of the task of checking all the data provided by all trainers on all residents is an impossible one. Therefore, the expectations established through standardization could provide a guide for follow-up. Thus, a range of plus or minus one or two standard deviations could be selected, and achievements which fall outside this range would be subject to close scrutiny. Concurrently, checking a random selection of data within the normal range would provide increased coverage. This approach would provide information as to which data to scrutinize; however, it would not indicate the manner in which the data is to be analyzed.

The basic question relates to how accurately the trainer's data reflects the client's behavior. The simplest approach to determining accuracy would be to have another person evaluate the same residents under the same conditions. This method eliminates bias based on the trainer's investment, and is important particularly if a contingent system for staff is in operation. However, the presence of a new trainer would alter the stimulus conditions, and discrepancies between the two evaluations could be affected by this difference.

Another method would be to have the independent rater
sit in with the original trainer and record data based on the training sessions. In this case, the alteration in stimulus conditions would be considerably less. However, the expenditure of staff time would be considerably greater, requiring twice the manpower.

A third alternative would provide a standard testing situation controlled by independent raters. In this system trainers would work with clients until they felt that they had reached a certain level of achievement. Then the client would be evaluated in a standardized test condition, and the results recorded. Such a method would make data collection an integral part of the system.

Alternative system three practically parallels one aspect of the current education system: teachers teach children, who later take achievement tests administered by "independent raters." Unfortunately, there are no consequences to the teacher for poor performance in that system. In fact, the typical education system places the responsibility upon the client rather than the trainer. Thus, poor achievement is most likely to be interpreted as the result of a "poor student" rather than a "poor teacher."  


One significant issue which is rarely raised concerns the specification of either client or system-related behaviors. How are these behaviors determined? In the typical social system, regulations concerning system related
behaviors are specified by management. This usually means that typical management practices, modified by the personal preferences of the executive, are in force. Goodwin (1969) put it more succinctly:

Changes... are often initiated by administrative fiat... In an environment devoid of frequent or even apparent rewards,... practices may have come about by close attention to established custom, administrative preference, and a careful avoidance of community disapproval (p. 8).

Changes in various requirements, as indicated by Goodwin, can be enacted by persuasion. That is, if exceptions are to be made in any area, permission of the executive must be obtained. This is done generally by using the tactic: "So, what would it hurt?" In this case, the person requesting the exemption or change offers arguments that there will be no aversive consequences. The initiator is then committed to an avoidance model; that is, the new system is constructed so that aversive stimuli are avoided as much as possible.

There are alternate methods for changing system-related behaviors. One method is based on an empirical demonstration of cause-effect relationships. In this case, it would be up to the executive to demonstrate that the inclusion of any particular requirement is related to some outcome variable. Or, in the case of change, it would be up to the initiator to demonstrate that the change would result in improvement in some outcome variable without corresponding
decrements in other indicators.

Though empirically sound, this approach does have certain drawbacks. First, some changes may not have direct effects on certain variables which though unmeasured are nevertheless important. Moreover, it may be difficult to specify outcome variables which would be related to these changes. An example would be changes in self-worth that may occur as a result of changes in job title. Within recent years in many institutions for the retarded, the name of the attendant has been changed to "child care worker" or some other similar name. Although such name changes may not be translated into decreased turnover, they may result in a significant change in some currently unmeasured variable.

A similar approach can be taken toward client-related behaviors. Some of the major variables concerning the trainer in this case include time spent with client, nature and number of reinforcers dispensed to client, client related contingencies, etc. Other major variables include the physical environment, trainer:client ratios and types of supplies. Some of these variables will be related directly to behavior change of the client while others may not have direct bearing. In still other cases, deviations within small ranges of a given variable may result in no significant change in client behavior, while larger variations will result in such change.

The trainer:client ratio provides a good example of the
latter phenomenon. The American Association on Mental Deficiency has listed various recommendations for trainer: client ratios in institution settings. For example, the recommended ratio for work with severely and profoundly retarded residents is 1:8 (trainer to client) during the first shift. Other ratios are listed for other shifts and for different levels of adaptive behavior. Despite the exact nature of the various ratios, there is no research to indicate the kinds of results which can be expected when a given ratio is used as compared to a larger or smaller ratio. Gardner (1972b) employed ratios ranging from 1:5 to 1:7 and reported no significant differences in social age change as a result of the ratio differences.

The question of trainer:client ratio has relevance outside the institution. In the home, for example, the number and ages of siblings could have an important bearing on the outcome of any intervention program. Also, the existence of other problems in non-identified siblings could effect the course of a given program. To date, there is no information concerning these variables. Should parents of six children begin an intervention program in the same manner as parents of one child? Are volunteer helpers necessary when the number of siblings increases? Can intervention programs for two children proceed in the same manner as programs for one child? These are critical questions which need to be answered.
4. **Implementation**

It is obvious that the design of a comprehensive management system which incorporates both client- and system-related behaviors is a difficult task. Moreover, prior to the implementation of such a system both staff and clients need to agree on the specifications for desirable and undesirable behaviors. In the case of system-related behaviors it is entirely possible that a good deal of disagreement could evolve as to the importance of a given area. For example, many people (including school and institution administrators) feel that the physical appearance of a trainer is a significant variable. The typical "white shirt, black pants, black shoes" appearance of institution attendants bears witness to the significance given personal appearance in many institution systems. In recent years there has been a good deal of liberalizing of such policies. Clearly, in order to effect a comprehensive management system, agreement would have to be reached as to whether or not any particular variable was important.

The problems involved in designing comprehensive management systems are not alleviated by adopting a functional analysis model, because decisions still have to be made as to the importance of different variables. For example, staff dress codes may not be related to **client** outcome variables, but the staff's dress may be related to **administrative** outcome variables. These administrative concerns may relate
to factors such as the need to distinguish staff from clients and the need to receive approval from touring dignitaries.

This problem is even more difficult when the question of client-related behaviors is raised. The traditional debate between experientially and behaviorally oriented individuals is highlighted in this case. What are the major goals of mental health and mental retardation interventions? Are they to effect behavior change? Are they to effect attitude change? Are they to effect feeling change? Are they to effect thinking change? High levels of agreement could be reached when the client population is extremely deviant as in the case of profoundly retarded children. Few people would disagree that these children should be able to dress themselves, be toilet trained, be able to take care of their basic daily needs, etc. However, even at this level there may be some question as to the appropriateness of other behaviors. For example, is it appropriate for severely and profoundly retarded people to sit around on benches rocking in stereotypic fashion? A number of individuals would say "definitely no" since this is "meaningless" behavior. However, how much more meaningful is it for the resident to sit down and put together a puzzle? Questions such as these which are clearly value judgments are compounded in difficulty when higher functioning individuals are treated. What is the appropriate response for a forty year old university
professor who feels his life is meaningless? Is it to alter the feeling? Is it to alter the behaviors which result in that feeling? Is it to accept the meaninglessness of life?

Quality of Research

1. Choice of Dependent Variables

The kinds of investigations undertaken to date in parent training and institutional behavior modification programs have been relatively superficial. The dependent variables, in almost all cases, have been system-related discrete behaviors, only indirectly related to client progress. Though much attention has been paid to absenteeism, lateness, scores on tests, or amount and type of contact with clients, little attention has been paid to the characteristics of the client-trainer interaction (which is at least theoretically of greater significance). Only in rare cases has reinforcement to trainers been provided for adaptive behavior change in clients. For example, Watson (1970) attempted to reinforce institution aides by using an "Attendant of the Month" award; however, his criterion for excellence (supervisor's judgment) was completely subjective.¹⁵

One of the few objective studies in this area was reported by Lindsley (1968). He described a point system by which teachers were able to earn points for accelerating (2 points) or decelerating (1 point) target behaviors of their students. Weekly ($10.00 dinner for two), monthly ($60.00
in merchandise), and yearly ($500.00 trip to California) rewards were provided to the teacher with the most points. Lindsley reported that the number of "improved" behaviors increased from 12 to 42 during the first month of the program, and that the success rate for behavior change improved from eight to 30 percent of the behaviors noted.

Though extremely interesting, Lindsley's "data" are anecdotal. Not only was the report second hand, but Lindsley failed to deal with some major methodological problems. For example, he reported that after introducing behavioral principles to the teachers in that school system for the first time, 27 behaviors improved and the success rate was 25 percent. However, after only one month, the rate of improvement had decreased to 12 behaviors and eight percent. Thus, the initial high success rate could be a result of placebo or attention effects. Nevertheless, Lindsley reported the first month's data for another "new" program, and suggested that its success was demonstrated.

Given the kinds of data collection systems utilized in most behavior modification training programs, the paucity of research in this area is striking. The failure to use information on changes of client behavior in evaluations of the broader system in order to evaluate trainer performance is a major deficiency.

2. Nature of Reinforcement

The nature of the reinforcement in most studies has
been relatively unimaginative. In almost every case, material reinforcers have been used with little or no regard for subject preference. That is, green stamps, time off, etc. have been dispensed to everyone, without regard to their relative value.\textsuperscript{16} (In defense of this tactic, it can be noted that these are generalized reinforcers and should allow for variety of use.)

In those cases where other rewards such as providing the opportunity to make money, trips to hair dressers, or driving lessons (Patterson, 1969) have been used, adequate data is lacking. For example, Surratt et al (1969) reported an interesting and provocative use of reinforcement with staff. In an attempt to modify the classroom behavior of a young child they employed a fifth grade student as a behavior modification applicator. As the student came to enjoy this role, the experimenter used this activity to alter the student's behavior. Being a behavior modification applicator was made contingent on good performance in his classroom resulting in subsequently improved academic performance.

Reinforcement for trainers was used extensively by Tharp and Wetzel (1969). In one project parents with a semi-delinquent daughter were able to earn extra clothing every few weeks for maintaining a token system. There was also an attempt to use the consultant's attention as a way of shaping the trainer's behavior. For example, one parent enjoyed talking about sports. In this case the discussion
of the progress of the child's intervention program preceded any discussion of sports. Unfortunately no attempt was made to analyze the effect of the consultant's attention on the trainer's behavior, although much success was reported.

McNamara (1971) presented a rather unusual approach to reinforcing staff. In his study a teacher was instructed to pay attention to hand raising and to ignore students who called out. The teacher was able to earn points for the number of correct responses (i.e., ignoring calling out or paying attention to hand raising). In this way he accumulated points which were exchangeable for cans of beer (cans of beer were chosen because this was the teacher's preference). In order to maximize the potential reinforcement value of the cans of beer, an agreement was reached with the teacher to drink only the beer that he had earned as a result of his performance in the classroom. The contract to engage in this behavior was witnessed by another teacher.

Another interesting finding was reported by Brown et al (1968). Two teachers were instructed in the use of behavior modification techniques to increase the in-the-seat behavior of a nine year old retarded boy. Emphasis was placed on positive reinforcement. They demonstrated that the teacher's rate of positive reinforcement was related to the reinforcement (attention provided by the behavior modification consultant. This result has dramatic implications
for any type of intervention program. It clearly points to the utility of developing "built-in" reinforcers rather than relying exclusively on external events (e.g., attention, time-off). In any case, it is possible to alter trainer behavior. However, methods of maintaining trainer behavior remain to be studied.

Patterson (1969) noted:

It is necessary to not only arrange reinforcement schedules provided by the parent, teacher or peer group which will alter the deviant behavior but in addition it is necessary to arrange reinforcing contingencies for simultaneously maintaining the behavior of these dispensers (p. 2-3).

This statement implies that the kinds of intervention techniques used should be compatible with the trainer's response style. That is, trainer responses to stimuli provided by the client should be relatively high in the trainer's response preference hierarchy. It makes little sense to train an individual in the appropriate application of electric shock when giving a shock to a client is an aversive stimulus to the trainer. This could create conflict for the trainer which would be counter-productive.

Furthermore, the kinds of stimulus conditions created for the trainer through the application of the behavior modification techniques should be compatible with his goals (as well as the goals of the relevant social system). For example, a particular trainer may enjoy a great deal of
interaction between his clients, while another trainer may prefer a "silence is golden" policy. Due to the reinforcing value of the different stimulus conditions to the trainers, different techniques would be appropriate. In the case of the trainer who enjoys client interaction, the application of group contingent consequences would be a preferred method, since this method maintains order and fosters interaction. On the other hand, a signaling system in a token economy such as the one developed by Patterson (1965) could be more appropriate for the other trainer. In this case, order would be maintained while group interaction would be minimized. In this regard, Lindsley (1968) noted:

One teacher may pin-point foot tapping. She's got sensitive ears and just can't stand that horrible tapping. A boy could have his finger in his nose, but it wouldn't bother her at all. But this other teacher is a nose nut. She can't even start on math until she gets the fingers out of the noses (p. 44).

Of course, the potential of behavior modification techniques to alter the trainer's response style should not be overlooked. Behavior modification techniques can be used to offer constructive alternatives for problem solution to people who may appreciate the assistance. For example, Madsen et al (1968) reported the case of an elementary school teacher who "generally maintained control through scolding and loud critical comments (149)." Following a behavior modification program in which she applied rules, praise,
and ignoring, she became impressed with the results obtained by praise. "I was amazed at the difference the procedure made in the atmosphere of the classroom and even my own personal feelings...I became convinced that a positive approach to discipline was the answer (149)."

3. Cost Effectiveness

Another major deficiency in the quality of research on the use of reinforcement with trainers has been the dearth of information on cost effectiveness. Benson (1969) made a strong case for the use of cost effectiveness techniques in evaluating behavioral programs. He suggested that the magnitude of current mental health and mental retardation needs is such that the expenditure of professional time must be taken into account. He noted:

Observation data must be provided showing reductions in rate of deviant child behaviors...Rate must also be provided which specifies the amount of staff time required to produce the change (p. 10).

Patterson, Shaw, and Ebner (1969) felt that cost effectiveness is a prime consideration in any intervention program. They prophesized that within a relatively short period of time investigators will not be faced with the question of effectiveness, but rather of efficiency.

Such a utilitarian emphasis would require that, for each individual case, we specify the cost as in terms of the amount of professional time required to bring about some particular magnitude of change. The question of cost
should also be evaluated against the question of the generalization and the persistence of the effect brought about (p. 16).

Lovitt (1970) made the point that behavior modification systems in particular are amenable to cost effectiveness analysis. He noted that "Today is the age of accountability" and that the public is demanding to know how large sums of money are being used. In traditional educational, institutional, or psychotherapeutic endeavors this is difficult to specify. Because of the emphasis on concrete, measurable behaviors, cost effectiveness is a natural tool of the behavior modifier.

The use of reinforcement with staff generally involves increased project costs. For example, green stamps, and time off from work cost money (Bricker et al., 1968; Gardner, 1970a, Horner, 1971; Watson et al., 1971). It is possible that the cost of rewarding the staff is greater than the savings gained by doing so. In Gardner's study, the amount of time saved by decreased absence and lateness was equal to the time off given the attendants using the reward system. Clearly there needs to be considerable research in this area.

Work at Johnny Appleseed School (Lindsley, 1968) illustrated an innovative approach to reducing cost factors. Rewards for teachers were obtained through volunteer contributions from the community. Thus, a weekly dinner for two
was given to the teacher who had earned the most points for that week (for accelerating or decelerating target behaviors of her students). This dinner was contributed voluntarily by local businessmen. Though this approach reduced cost factors in this particular program, there is some question as to whether such an approach has wider application (Gardner, 1970a).

Concerns with cost effectiveness can be related to the need for natural reinforcers built into the management system. This need has been noted previously. Thus, while the reliance on external sources of reinforcement may be less efficient and effective, it is likely to be more costly as well. The extra cost is all the more reason why natural reinforcers should be identified and used.

An example of the use of natural reinforcement has been proposed by Gardner (1972d). On one ward trainers worked on basic self-care skills with severely and profoundly retarded residents. The trainers were provided with the necessary supplies to accomplish the skill training. This included toilet paper (for toilet training), soap, towels, face cloths, and wash basins (for personal hygiene), shorts and undershirts (for dressing). No other supplies were given during this initial phase. As the clients progressed, more desirable supplies were made available to the trainer. For example, once a resident was dressing himself, attractive colored shirts were introduced. Once the resident was
toilet trained, attractive pants, socks, and shoes were introduced. At each critical point, assessment was accomplished by independent raters. In this way, natural events in the environment (wearing colorful clothing) were programmed to reinforce the trainer's progress with the client, and project costs were kept at a minimum.

**Humanistic Consequences**

There needs to be considerable research concerning the humanistic consequences of using reinforcement with staff (Gardner, 1969a). Human beings are not tires or potato chips. There is some evidence now that training in behavior modification may have undesirable side effects. For example, (Gardner, 1972b) reported that after training, the brightest students chose not to work in behavior modification areas, while less bright students were almost unanimous in selecting behavior modification as their work placement. Similarly, Watson (1972) experienced the greatest resistance to his behavior modification program from his brightest students. In a parent training program, Edlund (1969) noted that people with "some philosophical objection" to behavior modification were very difficult to work with. In addition Sheppard and MacDermot (1970) reported an unusually high (17 percent) drop out rate from their university course when it was converted to a contingent teaching format.

There are a number of reasons for the existence of
these kinds of undesirable effects of behavior modification training. In the first place, behavior modification often is construed as a mechanistic system, devoid of feeling and emotions. Note, for example, this paragraph from Wahler (1969a):

The above instructions were provided after the parents were given a brief explanation of reinforcement theory. Marked emphasis was placed on the importance of rigid adherence to the treatment procedures. In fact, the parents were told to think of themselves as mechanical reinforcement and punishment dispensers, operable by specific actions of their children (p. 162, italics added).

Second, behavior modification can be interpreted as an extension of the socio-political-economic technocracy which permeates much of contemporary Western culture. This technocracy is described by Roszak (1968) as "that society in which those who govern justify themselves by appeal to technical experts who, in turn, justify themselves by appeal to scientific forms of knowledge. And beyond the authority of science, there is no appeal (p. 8)." He goes on to note three interlocking premises of the technocracy:

1. That the vital needs of man are (contrary to everything the great souls of history have told us) purely technical in character. Meaning: the requirements of our humanity yield wholly to some manner of formal analysis which can be carried out by specialists possessing certain impene-
congeries of social and economic programs, personnel management procedures, merchandise, and mechanical gadgetry.

2. That this formal (and highly esoteric) analysis of our needs has now achieved 99 percent completion. Thus, with minor hitches and snags on the part of irrational elements in our midst, the prerequisites of human fulfillment have all but been satisfied. It is this assumption which leads to the conclusion that wherever social friction appears in the technocracy, it must be due to what is called a "breakdown in communication." For where human happiness has been so precisely calibrated and where the powers that be are so utterly well intentioned, controversy could not possibly derive from a substantive issue, but only from misunderstanding. Thus we need only sit down and reason together and all will be well.

3. That the experts who have fathomed our heart's desires and who alone can continue providing for our needs, the experts who really know what they're talking about, all happen to be on the official payroll of the state and/or corporate structure. The experts who count are the certified experts. And the certified experts belong to headquarters (p. 10-11).

It is clear that behavior modification is one of perhaps two major technological contributions of psychology to the entire technocrasizing of the culture.

A third basis for possibly dehumanizing effects of behavior modification is its close association with animal research. The contribution of animal research to behavior modification is clearly acknowledged by almost every behavior modifier. In many cases, however, the relationship
goes beyond simple acknowledgement, and a number of investigators make the assumption that information learned in studies of animals can be translated directly into work with human beings (Meacham and Wiesen, 1969).

Thus, closely allied with animal research, the sociopolitical-economic technocracy, and the increasing mechanization of society, behavior modification is sometimes in the uncomfortable position of "turning off" the very people who may require these services, as well as those who could operate the services. Bright, intelligent, and creative individuals often find behavior modification contradictory to the values which they profess. The solution to this problem cannot lie in the humanization of behavior modification, since by its very nature, it is mechanistic and technical. How does one make a more human computer? Without extrapolations into 2001, one answer may lie in changing the attitude of the consumer and the technician, rather than trying to alter the basic nature of behavior modification. In this case, behavior modification could be presented as one of many possible tools to use; a way of extending an individual's creative talents.

A change in the orientation of the behavior modification consultant would be desirable also. Rather than describing man in terms of his behavior, an approach which recognizes the existence of thoughts and feelings would be preferable. Patterson's (1969) comment is most relevant
Most investigators working within the operant framework assume that the behavior of the child is primarily under the control of reinforcing contingencies supplied by the environment. This is not to say that a child does not think, that he does not "feel," or that some of these "inner variables" do not control some of the child's behavior.... most investigators seems to believe that reinforcement is neither necessary nor sufficient, but that it is a rather significant variable.... (p. 1):

Other positive trends in this same direction include work by Lazarus (1971) and Meacham and Wiesen (1969):

While work with animals can illustrate fundamental principles, it should not be forgotten that behavior therapists are often confronted by patients who suffer from crippling disturbances which are exclusively human (Lazarus, 1971, p. 370).

...there appears to be a growing recognition that while we are observing behavior, the individual that is behaving must not be disregarded as an experiencing human being (Meacham & Wiesen 1969, p. 182).

METHODS OF INSTRUCTION

Introduction

Research on methods of instructing trainers in behavior modification has included studies of the teaching process as well as the effects of various teaching processes on factors such as the size of the group instructed.
Contingent Teaching

A number of investigators have examined the effectiveness of contingent teaching in behavior modification courses. Briefly, contingent teaching requires that students demonstrate proficiency (by high scores on exams) in elementary areas before advancing to more complex areas. As indicated in Table 4, this procedure has been found to result in greater proficiency than traditional approaches.

Lloyd and Knutzen (1969) presented a different approach to contingent teaching. Under their system students earned points which accumulated for grade equivalencies. The activities required to earn different points were listed before the semester began, and the students were allowed to earn points in whatever way they chose, proceeding at their own pace. Examples of activities included: reports on books (24 points), reviews of movies (36 points), field trips (10 points), etc. As compared with the traditional contingent teaching format used by other authors, Lloyd and Knutzen built a considerable degree of freedom into their format.

A major methodological problem in research on contingent teaching is the variable of "test taking." Generally,
TABLE 4

REPRESENTATIVE STUDIES OF INSTRUCTIONAL TECHNIQUES

<table>
<thead>
<tr>
<th>STUDY</th>
<th>DEPENDENT VARIABLE</th>
<th>POPULATION</th>
<th>CONTROL</th>
<th>RESULTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>McMichael &amp; Carey (1969)</td>
<td>Final exam</td>
<td>Undergraduates</td>
<td>Contingent vs traditional</td>
<td>Contingent teaching group superior</td>
</tr>
<tr>
<td>Lloyd &amp; Knutzen (1969)</td>
<td>Exam</td>
<td>Undergraduates</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>Sheppard &amp; McDermott (1970)</td>
<td>Objective and essay exams</td>
<td>Undergraduates</td>
<td>Contingent vs traditional</td>
<td>Contingent teaching group superior on both tests</td>
</tr>
<tr>
<td>Watson, Gardner, &amp; Sanders (1971)</td>
<td>Exams</td>
<td>Teachers parents attendants</td>
<td>ABA</td>
<td>Groups performed higher under contingent conditions</td>
</tr>
</tbody>
</table>
contingent teaching courses involve considerably more testing than traditional approaches. Sheppard and MacDermot (1970) attempted to control various extraneous effects in comparing the contingent teaching format with a control condition. Despite their attempt to equate time spent speaking, listening, writing and conversing with the teaching assistants, the experimental group was given 36 tests using an interview technique prior to the final examination, whereas the control group received no such tests. In addition to the 36 tests by interview, written exams were given at the end of every two or three interviews, totaling the equivalent of ten written exams for the experimental group. Obviously, this type of preparation is a confounding variable. A similar inequity in testing experience is illustrated by McMichael and Carey (1969). In their study the control subjects were tested three or four times during the term while the experimental subjects were tested 12 times.

Due to the increased contact between student and instructor in the contingent teaching format, it is not clear whether the increased scores also could be a result of increased student motivation. Lloyd and Knutzen for example noted that as a result of their contingent teaching format the students were interacting with the staff throughout the semester.

Finally, some concern needs to be registered about the cost factors in contingent teaching. Though this system
results in higher test scores, it is at a greater cost than traditional systems, involving considerably more time in testing, grading, and feedback (not to mention paper and pencil costs). There is also considerable question as to whether test scores are relevant to everyday performance (Gardner, 1970b) or whether they simply reflect test taking behavior. The increased project costs probably should be justified by more than high scores on tests (eg., work performance).

**Instructional Variation**

In addition to contingent teaching, a number of investigators have studied various aspects of the instructional process. Horner (1971) varied the traditional classroom format by using more contemporary methods. In one case attendants were required to complete crossword puzzles rather than formal tests. In addition, he used a "Jeopardy" game model where attendants competed against each other in speed and accuracy of responding. Unfortunately there was no attempt to evaluate this system experimentally.

Gardner (1972c) studied the effects of role playing and lectures on training proficiency and knowledge of behavior modification. The measures of behavior modification ability were The Training Proficiency Scale or TPS (Gardner, 1969c) and The Behavior Modification Test or BMT (Gardner, Brust, and Watson, 1970). The TPS is a 30 item five-point
rating scale which measures proficiency in applying behavior modification techniques. Examples of test items are: "Gives rewards quickly," "Uses reinforcement correctly," and " Ignores inappropriate behavior." The test is administered by a behavior modification generalist who observes trainers working with other trainers in a role-playing situation. Rating sessions usually last from 15 to 20 minutes for each trainer. During these sessions, trainers are asked to perform simple tasks such as teaching a client to dress himself, eat neatly with a spoon, and play with a ball. The BMT is a 229 item true-false test that measures knowledge about behavior modification principles and techniques. Examples of test items are: "Extinction means removing reinforcement," "Punishment accelerates behavior," and "A fading procedure is used to help maintain stimulus control under changing environmental conditions." Gardner, Brust, and Watson (1970) reported that scores on the BMT and TPS correlated highly (r = .89).

Gardner (1972c) matched twenty female attendants in terms of socio-economic status, knowledge of nursing, mental retardation, and behavior modification and then randomly assigned ten to each of two groups. Group L attended a series of lectures followed by role playing, while Group R entered role playing and then the lectures. The difference between role playing and lectures was compared and the effects of the different sequences (i.e., which came first)
were also analyzed. The basic behavior modification education used in this study has been described in detail elsewhere (see pages 196 to 200). Briefly, it consisted of a series of lectures followed by role playing. The purpose of the lectures was to present the major principles of operant conditioning in everyday language. The lectures covered three major topics: (1) reinforcement, (2) successive approximations and (3) stimulus control. Role playing consisted of six one-hour sessions in which various behavior modification techniques were demonstrated, and each attendant had the opportunity of training another attendant who assumed the role of a resident. Feedback was provided by experienced behavior modification generalists. The time for the total program was approximately 15 hours.

The attendants were tested with the TPS and BMT at three points: pre-course, following the first phase (role playing for Group R and lectures for Group L) and post-course. The mean scores for both groups at all the stages are presented below.

| INSERT TABLE 5 |

In terms of training proficiency (TPS scores), there were no differences between the two groups on pre- or post-tests; however, Group R exceeded Group L following phase one. The opposite pattern emerged for knowledge of behavior
<table>
<thead>
<tr>
<th>Training Proficiency Scale</th>
<th>Behavior Modification Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>R</td>
<td>L</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Pre-Course</td>
<td>45.5</td>
</tr>
<tr>
<td>Following Phase One</td>
<td>94.8</td>
</tr>
<tr>
<td>Post-Course</td>
<td>108.3</td>
</tr>
</tbody>
</table>

* .05
** .001
modification (BMT scores); no differences on pre- and post-tests while Group L exceeded Group R following phase one.

The primary purpose of this study was to examine the differential effects of role playing and lectures on training proficiency and knowledge of behavior modification principles. As predicted, role playing was more relevant to training proficiency while the lectures were more relevant to knowledge of behavior modification. Perhaps the most parsimonious explanation is that performance skills are best taught within a teaching framework that emphasizes performance skills, while verbal skills are best taught in a framework emphasizing verbal skills. Results from this study clearly indicate that different instructional methods lead to different outcomes. This finding is important in view of the different goals of instruction outlined in Chapter 3. Obviously, lectures would be an inappropriate way to teach the behavior modification skills required of a technician.

Group Training

1. **Group vs Individual Training**

One of the significant variables in behavior modification training is the approach to training. Over the course of two years Salzinger et al (1970) used two different approaches to behavior modification instruction. In the first year, the consultants met with parents separately, while in the second year group meetings (all eight parents in the
project) were held. In addition, behavior modification consultants visited the homes of the first year group. This produced two different approaches to instruction even though the content of the courses was identical.

Two findings should be noted. In the first year, "success" was reported for four of seven clients, while in the second year, the "success" rate was less (three of eight). It might have been expected that the second year's group would achieve greater success due to improved methods following feedback from the first year's experience. This reversal of expected results could be caused, in part, by the different procedures. The suspicion that the two procedures resulted in different outcomes is supported by the second finding: education level was significantly related to outcome in the second year, but not in the first year. Such a finding suggests that individualized instruction can be used with a wide variety of populations. Group instruction, on the other hand, which is more constricted in time and focus, is effective only within a more narrow range of educational achievement. Hirsch and Walder (1969) reported no significant relationship between parent's IQ and reported gains of their children, an outcome which may be due to the restricted range of educational achievement in their sample. The group contained "white mothers, primarily from upper-middle class professional families (p. 561)," and hence, restricted in IQ range, making them at least equivalent to Salzinger's
highly educated group. Moreover, the instructional method used was similar to Salzinger's second year procedure, i.e., group training.

Paradoxically, Mira (1970) found that it was more costly to work with parents in groups than on a one-to-one basis. During the first six months of the project, most parents were trained in group sessions, however, some were trained individually. It took an average of 3.9 hours of the psychologist's time for each "successful" behavior modification for the parents trained in a group, but only 2.1 hours for the individually trained parents. In addition, three of the five individually trained parents successfully modified a problem behavior with only 1.1 hours of instruction. In this case success was defined as a change in behavior which could be expected by chance in one out of 1,000 cases. Independent raters were used to insure accuracy.

2. Size of Group

Little research has been done on the effects of varying sizes of groups. Hirsch and Walder (1969) reported no significant differences between a group of five or ten mothers in terms of reported gains by their children.

Summary

Clearly, further research is needed in the area of instruction, particularly with respect to the selection of
various instructional methods for given populations. In terms of the content of the training program and the instructional methods chosen to present the content, as well as the person being instructed and the population to be trained, it is clear that all instruction methods are not suited for all purposes. A careful consideration of the nature of the client and trainer characteristics, as well as the job demands must precede the selection of the training methods.
Research on characteristics of people using behavior modification is scant indeed. The available studies are summarized in Table 6.

**Education**

In studies by Patterson, Shaw, and Ebner (1969) and Salzinger et al (1970), significant differences were found between highly educated and less educated parents; i.e., the highly educated parents were able to achieve greater success with their children. In Watson's (1972) study, under ordinary teaching conditions, highly educated trainers performed better on test scores than less educated trainers, although under contingent teaching conditions differences between the groups disappeared.

Research reported in the previous section indicated that highly educated individuals learned behavior modification techniques under a wide variety of conditions; i.e., programmed texts, individual training, and group sessions.
<table>
<thead>
<tr>
<th>INVESTIGATION</th>
<th>DEPENDENT VARIABLES</th>
<th>GROUPS COMPARED</th>
<th>RESULT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gardner (1972c)</td>
<td>TPS scores</td>
<td>Low income poverty group and regular attendants</td>
<td>No differences</td>
</tr>
<tr>
<td></td>
<td>BMT scores</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gardner (1972a)</td>
<td>BMT scores</td>
<td>Experienced and new attendants</td>
<td>No differences</td>
</tr>
<tr>
<td>Watson (1972)</td>
<td>Class tests</td>
<td>Parents, teachers, and attendants</td>
<td>No differences under contingent teaching conditions</td>
</tr>
<tr>
<td>Patterson et al, (1969)</td>
<td>Increased adaptive behavior in children</td>
<td>Higher and lower educated parents</td>
<td>Higher educated did better</td>
</tr>
<tr>
<td>Salzinger et al, (1970)</td>
<td>Success in behavior modification programs with children</td>
<td>Higher and lower educated parents</td>
<td>Higher educated did better</td>
</tr>
<tr>
<td>Gardner &amp; Giampa (1971)</td>
<td>BMT scores</td>
<td>Statistical study of institution attendants</td>
<td>People with high BMT scores spent significantly more time in resident contact</td>
</tr>
</tbody>
</table>
Less educated people (high school or less) on the other hand, profited only from individual instruction.

There are undoubtedly a number of reasons for the finding that highly educated individuals profit from a wider variety of techniques, than less educated people. Two possible reasons are: (1) the ability to abstract may be greater among highly educated people, and (2) basic scholastic skills are higher for highly educated people. In terms of abstract ability, the use of both texts and group instruction requires a considerable proficiency in abstraction. That is, the individual must generalize from verbal stimuli as input in one setting to verbal and motor responses as output in a second setting. The situation in individualized instruction, on the other hand, is concrete. The individual simply has to generalize from one situation to another. Second, both texts and group sessions require reliance upon standard scholastic skills. The individual has to "study" the material in the traditional academic sense. It can be expected that across groups, highly educated people will be more skilled in this area almost by definition.

Patterson, Shaw and Ebner (1969) reported that highly educated mothers were able to alter significantly the reinforcement contingencies within their homes following the simple presentation of programmed material. Further, they interpreted Ray's (1965) study to indicate that parents
from lower socio-economic levels were least assisted in training their children by reading programmed texts.

Three other studies relate to the issue of education and skill in behavior modification. As mentioned earlier, Hirsch and Walder (1969) reported that there was no significant relationship between parent's IQ and reported gains of children. Staats et al (1970) reported that three different groups of trainers (high school students, housewives with one year of college, and ghetto welfare mothers with a 12th grade education) achieved equivalent results after a 40 hour reading training program for disadvantaged children. The dependent variables, in this case, were assessed independently, by standardized tests. In a home training program Mira (1970) reported that teachers, social workers, or psychiatrists were no more successful than nonprofessional parents. While 18 percent of the trainers were professionals, they managed only 12 percent of the successful cases. As noted earlier parents trained during the first six month of Mira's study were trained largely in groups while parents trained during the remaining 15 months were trained largely with individual methods. Thus, the bulk of the parents were trained individually, and significant differences between professionals and nonprofessionals were not found.

While the latter three studies appear to be contradictory to the studies of Salzinger et al, Patterson et al,
and Watson, the differences can be explained by a careful analysis of the trainer population. In the studies of Hirsch and Walder, and Staats et al the trainer population was homogeneous. In the case of Hirsch and Walder, the population corresponded closely to the "highly educated" group, while in the case of Staats et al, the trainers resembled the "less educated" group. Hirsch and Walder and Staats et al found no significant difference when the comparison was within the populations. Between such populations, however, Salzinger et al and Patterson et al found significant differences when group training methods were used. When individual training was used (Salzinger et al, Mira, Patterson et al) or when the format was highly controlled (Watson's contingent teaching), the differences between the groups disappeared. Thus, less educated people performed best when the instructional methods were highly structured, or when instruction was individualized. Highly educated people, on the other hand, performed well under a variety of instructional methods, including contingent teaching, individualized instruction, group instruction, and programmed text training.

Experience

A major problem reported in numerous applied settings is the resistance of "older" employees to behavior modification programs (Baumeister and Klosowski, 1965; Watson,
1970). A number of reasons have been hypothesized for this: the rigidity of "older" employees, possibilities of status loss as a result of new programs, experience with other "new" programs which failed, and minimal investment in the behavior modification program. Though the stereotype of the passive-resistant experienced employee who sabotages new programs exists, there is little research evidence to support it. Johnson and Ferryman (1969), for example, reported no significant relationship between years of experience and attitude change as a result of inservice education. In two related studies, Gardner (1972b) examined the relationship between years of experience and a number of variables. In the first study, attendants at three different levels of experience (new, one to two years, and two plus years) were tested following an inservice education program in behavior modification. There were no significant differences between the groups in terms of knowledge of behavior modification (using the BMT) or attitude toward working in a behavior modification area. In the second study, two groups of attendants were differentiated: new (less than one year) and experienced (one or more years). The experienced employees had significantly less absence and requests for transfers than newer employees when a behavior modification program was initiated in an area in which they were already working. To control for differences in base rate between new and old employees, Gardner used an own-subject design: rates of
absence or transfer were compared for each subject for four months preceding and following the change. It is fairly clear, then, that the research evidence to date does not support the hypothesis that experienced employees are "poor risks" for behavior modification programs.

It should be noted that the dependent variables in Gardner's study were system-related behaviors. It is conceivable that other factors (beside attitude toward behavior modification) account for the differences in absence and requests for transfer between new and old employees. It is possible that those variables accounting for these differences are counter-productive in terms of behavior modification training. For example, individuals who are resistant to change are not likely to request a transfer nor are they likely to adjust to the new training program. Here is another example of the importance of assessing client-related behaviors.

**Socio-Economic Status**

There are three studies which report the effects of training trainers from different socio-economic status groups. In the first study, Gardner (1972c) trained two groups of institution aides; a high unemployment exclusively black inner city group and the regular institution aides. After 20 hours of training which included principles of behavior modification and role playing experiences there were
no significant differences between the two groups in terms of knowledge of principles (measured by the BMT) or training proficiency (measured by the TPS).

In the second study, Staats et al (1970) trained three groups: a high unemployment inner city welfare group (comparable to Gardner's group), a middle class housewife group, and high school students. The three groups achieved comparable levels of success after 40 hours of remedial reading training with disadvantaged children.

One possible interpretation of the lack of significant differences between the different groups in both of these studies is that the prescriptive nature of education in behavior modification, combined with the novelty of the subject matter, eliminates the creative potential of the individual. In essence, programs such as those described above produce a highly trained technician, regardless of the initial talents of the individual. Another possible reason for this finding is that mastery of behavior modification skills at the level of the applicator or technician is such a simple task that trainer differences are not meaningful.

Substantiation for both of these hypotheses is presented in the work of Galloway and Galloway (1970). They conducted a parent training program in which the individual creativity of the parent was stressed. This was markedly different from the prescriptive approach by Staats et al and Gardner. Moreover, the level of skill training by
Galloway and Galloway was at the generalist level, while Staats et al and Gardner aimed for the applicator or technician level. Galloway and Galloway (1970) found that when compared to white collar workers or professionals, blue collar workers were less likely to attend an initial meeting (by invitation) of parents of potential client populations. However, once the parent had attended the first meeting, blue collar workers were more likely to be successful than were white collar workers or professionals. It should be noted that 100 percent of the blue collar workers (11 of 11) achieved success while only 66 percent of the white collar workers (six of nine) and 50 percent of the professionals (one of two) were successful ($\chi^2 = 2.75, p < .10$).

Apparently, at the level of the behavior modification technician or applicator, the socio-economic status of the trainer is not a relevant factor in determining performance, whether measured by various tests of trainer ability (Gardner) or actual results in terms of client change (Staats et al). When a higher level of training (i.e., behavior modification generalist) is the goal, there is some suggestion that socio-economic status may be inversely related to training proficiency.

**Success by Population**

Another area of importance is the relative success rate
of different trainer and client populations. The effects of any form of mental health intervention are defined, in part, by the potential resources of the trainer and client populations. Watson's (1928b) naive dictum stressing the male-ability of human behavior is no longer tenable.

At the first level, outcome is limited by the client's potential. Few profoundly retarded children will graduate high school. If an autistic child has not developed speech by the age of five he is not likely to live an independent life as an adult. Other limiting characteristics are the resourcefulness of the trainer and the availability of environmental supports. Therefore, if the effectiveness of mental health interventions is determined in part by trainer and client characteristics, it is instructive to examine the kinds of successes achieved to date.

1. **Trainer Characteristics**

Gardner (1972b) reported the only study which related the personability of the trainer to the progress of the client. The purpose of this study was to investigate staff characteristic correlates of client behavior change. The clients were 39 severely and profoundly retarded children, adolescents, and young adults ranging in age from 7.4 to 23.8 (mean = 15.6) and in social age from 0.18 to 8.90 (mean = 3.33). All the clients were male and all were institutionalized. Prior to this investigation none of the clients had been involved in any type of clinical or
research study.

The seven trainers were all employees of the institution, and all had been trained recently in behavior modification techniques (see p. 197). The trainer's characteristics are presented in Table 7.

The following personality and vocational tests were given to the trainers: (1) Minnesota Multiphasic Personality Inventory or MMPI, (2) the Edwards Personal Preference Schedule or EPPS, and (3) the Strong Vocational Interest Black or SVIB. All these tests are widely used paper-and-pencil measures. Standard subscales from these tests totaled 74 variables.

The Vineland Social Maturity Scale (Doll, 1935) was used to evaluate overall behavior change in the clients. The dependent variable was change in social age score. The scale was administered before the study began and at two to three month intervals after that. To insure accuracy, information provided by the trainers was supplemented by critical incident testing and behavioral observation and measurement by a staff psychologist.

During an intensive training program in behavior modification techniques, trainers were placed on a unit and instructed to familiarize themselves with the residents.
TABLE 7
CHARACTERISTICS OF TRAINER POPULATION (GARDNER, 1972b)

<table>
<thead>
<tr>
<th>TRAINER</th>
<th>SEX</th>
<th>AGE</th>
<th>MARITAL STATUS</th>
<th>EDUCATIONAL BACKGROUND*</th>
</tr>
</thead>
<tbody>
<tr>
<td>PH</td>
<td>M</td>
<td>26</td>
<td>M</td>
<td>2</td>
</tr>
<tr>
<td>TF</td>
<td>M</td>
<td>23</td>
<td>M</td>
<td>1</td>
</tr>
<tr>
<td>JH</td>
<td>F</td>
<td>20</td>
<td>S</td>
<td>2</td>
</tr>
<tr>
<td>DJ</td>
<td>F</td>
<td>21</td>
<td>M</td>
<td>1</td>
</tr>
<tr>
<td>MR</td>
<td>F</td>
<td>41</td>
<td>M</td>
<td>1</td>
</tr>
<tr>
<td>SJ</td>
<td>F</td>
<td>23</td>
<td>M</td>
<td>1</td>
</tr>
<tr>
<td>CF</td>
<td>F</td>
<td>37</td>
<td>M</td>
<td>1</td>
</tr>
</tbody>
</table>

*1 = high school graduate
2 = some college training
Following the training course, the trainers were instructed to choose a group of residents with whom they would work. The reason for allowing staff a choice was to insure, as much as possible, staff involvement in the hope that the trainers would be maximally motivated.

For purposes of the study, two conditions were imposed upon the trainers. First, each client group should contain residents of varying degrees of retardation. That is, each group should contain both severely and profoundly retarded children and adults. Second, the provision was made that group size should be approximately equal for all trainers, though some variation would be allowed.

The final groupings are listed in Table 8 for each trainer. This table contains the number of residents and information as to life age, social age, and social quotient.

All residents were involved in an intensive training program for two months. The trainers initially worked on a one-to-one basis with the profoundly retarded residents until they were able to work in small groups. Severely retarded residents were worked with in small groups from the start. Training for each group was scheduled eight hours per day, five days per week.

During the course of the study, the residents continued
<table>
<thead>
<tr>
<th>TRAINER</th>
<th>MR</th>
<th>JH</th>
<th>TF</th>
<th>CF</th>
<th>SJ</th>
<th>PH</th>
<th>DJ</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>5</td>
<td>6</td>
<td>6</td>
<td>5</td>
<td>5</td>
<td>7</td>
<td>5</td>
</tr>
<tr>
<td>MEAN CA</td>
<td>16.2</td>
<td>14.1</td>
<td>17.2</td>
<td>14.6</td>
<td>16.3</td>
<td>17.3</td>
<td>13.9</td>
</tr>
<tr>
<td>MEAN SA</td>
<td>3.4</td>
<td>4.5</td>
<td>3.7</td>
<td>2.5</td>
<td>2.9</td>
<td>2.7</td>
<td>3.6</td>
</tr>
<tr>
<td>MEAN SQ</td>
<td>24</td>
<td>33</td>
<td>26</td>
<td>17</td>
<td>18</td>
<td>23</td>
<td>30</td>
</tr>
</tbody>
</table>
to live on their home ward. They were removed from the ward for training in small rooms, and returned to the ward following each session. In addition, the trainers worked with the residents during meal time.

At the end of the two month period, the program changed from an intensive small group "off the ward" emphasis, to an on-the-ward program. At this point, a number of different people worked with each resident, so that the particular phase of the study reported here was terminated.

Only three of the 74 test variables were significantly related to client progress. These were: need for achievement \( (r = .82, p < .05) \), need for affiliation \( (r = .76, p < .05) \) and need for intraception \( (r = .77, p < .05) \). All three scores were from the EPPS. Thus, the personality correlates indicate that a person who is likely to facilitate adaptive behavior change in severely and profoundly retarded residents using behavior modification techniques can be described as follows: high need to succeed, to do things for friends, and little need to analyze own or other's motives.

It is clear that the need for achievement plays a crucial role in determining outcome, however, the relationship of behavior change to the other two variables (ie., low need for intraception, high need for affiliation) is less clear. In fact, the finding that people with low needs to analyze their own or other people's motives make significant
progress with clients, is antithetical to traditional educational stereotypes in regard to behavior modification. Many authorities feel that the analysis of behavior is a crucial element in achieving success. This finding stands in contradiction to that opinion (assuming that it is not a chance finding).

2. Client Characteristics

In a study by Salzinger et al (1970) a total of 15 families were seen. For the 15 children, 23 problems were identified: seven involved increasing adaptive behaviors (eg., language, play) while 16 involved eliminating deviant behaviors (eg., tantrums, hyperactivity). The success rate for increasing behavior (two or seven) was less than for decreasing behavior (nine of 16). One reason for this difference may be the nature of the behaviors under study. The behaviors to be increased (eg., language, homework) were somewhat more complex than the behaviors to be eliminated (eg., throwing things, crying, sniffing people). Another possibility concerns the population. For example, in both years of the Salzinger et al study, highly educated parents chose to work on accelerating behavior more often than did the less well educated parents. This finding is even more striking when the high association between education level and success is noted. While brighter parents experienced considerable success in decelerating behaviors, even they were not successful in accelerating behaviors.
On the other hand, Thorne and Shinedling (1970) found that volunteer college students working with nine residents in an institution for the retarded successfully accelerated five of five behaviors, but were not successful in decelerating any of six behaviors.

The findings of the latter two studies, sharply contrasted as they are, point to the need to consider the entire context in which training is likely to occur. In both studies, the nature of the target behaviors were similar. The undesirable behaviors in both studies involved aggressive (hitting), asocial (tantrums) and destructive (destroying objects) behaviors. The desirable behaviors involved language and following directions. Therefore, differences in outcome were not likely to be a function of the different target behaviors.

At least three significant differences between the Salzinger et al and the Thorne and Shinedling studies can be listed. First, the nature of the interventions were markedly different. Thorne and Shinedling's study involved an institutionalized population while Salzinger's parent group worked at home. Second, the client populations were different. Salzinger's subjects ranged in age from three to 12 while Thorne's subjects were significantly older (CA range seven to 20). Finally, the parents were able to spend significantly more time with their children. While any of the factors listed above could have been crucial in
determining the difference between the two studies perhaps what is of principle significance is the relationship of the target behaviors to the context in which training occurred. These studies suggest some general principles which may come to govern the use of behavior modification techniques.

First, the choice of accelerating or decelerating behaviors must be dictated by the context of the environmental setting. When the behavioral intervention is likely to take place over a limited period of time (eg., 10 hours per week) in a specialized setting (eg., a classroom) these conditions dictate one approach. In terms of a more complete environment (eg., home), other approaches might be preferable.

Second, the potential for generalization is a key factor in dictating the kind of intervention. This potential depends in large part of the degree to which events in the environment can shape and maintain the desirable behaviors, as well as decelerate the undesirable behaviors.

Behaviors which are modified in special settings for limited time periods (eg., one hour per day, three times a week) should be selected so that the behaviors will generate reinforcement in the everyday environment. Language is a good example. If a client can be taught to speak in a special setting, this behavior can generalize to other settings in which the client is likely to be reinforced. On the other hand, behaviors which rely upon special materials are poor targets because the possibilities for generalization
are limited. Moreover, problem behaviors (headbanging) are poor targets in the special setting if no provision is made to bring the behavior under stimulus control in the everyday environment. The practice of modifying maladaptive behaviors in special settings but failing to bring the behaviors under stimulus control in the everyday environment has been the core weakness of many mental health and mental retardation intervention programs.

Third, the focus of the intervention must be determined by the environmental demands. For example, many authors (eg., Boulieu, 1971) feel that the typical institutional environment produces and maintains various forms of maladaptive behaviors (eg., headbanging, window breaking). If this is the case, the nature of the intervention should be aimed at the environment, rather than the individual.

A fourth guideline is that the nature of the inter-personal environment must be considered. Patterson and Reid (1969) provide a conceptual framework within which to view the situational context of the school, the home, and the institution. They rely on two major constructs: reciprocity and coercion. In their words:

Reciprocity describes dyadic interaction in which the persons A and B reinforce each other, at an equitable rate. In this interaction, positive reinforcers maintain the behavior of both persons. Coercion, on the other hand, refers to interaction in which aversive stimuli control the behavior of one person and
positive reinforcers maintain the behavior of the other. Both reciprocity and coercion are held to be stable patterns of dyadic interaction...
(p. 1-2).

Psychological Ownership

Psychological ownership, as defined by Siegel (1970) refers to:

...the extent to which you as an individual feel that an idea belongs to you - that you own it - it's yours to work with - yours to have - yours to commit yourself to (p. 5).

There has been much emphasis recently on the trainer's selection of their own goals for intervention programs (Colarelli & Siegel, 1966; Gardner, 1971a), rather than being assigned goals by consultants. For example, Galloway and Galloway (1970) reported:

...individual parents make the ultimate decisions regarding the movement cycle that is of concern to them and the change that they consider most likely to affect the rate of the movement cycle in the direction that they desire. The advisors only serve to guide their selection of both the movement cycle and the change plan (p. 16).

There is very little research to substantiate the validity of this approach. However, Rose, Parson, Jaman, & Hetchenthol (1971) reported a parent behavior modification intervention program in which different goals were set by consultants, groups of trainers, or the parents themselves. The three families involved in the program differed
considerably in the number of siblings as well as the problems of the clients within the families. A total of 12 problems were worked on, four within each family. Of the 12 projects seven were initiated by the group, two by individual parents, and three by the behavior modification consultant. All of the programs initiated either by the consultant or the parents were successful, however, only four of the seven programs initiated by the group were considered to be successful. Though these differences were not statistically significant, this study suggests that the participation of individuals in their own decision making in programs may be of great significance.

Gardner (1971a) conducted a behavior modification training program in which the trainer's psychological ownership was one of the major variables. Behavior modification techniques were offered only as a last resort, and then only as suggestions. Over the course of six months, residents in that program made mean social age gains of 1.4 years which represented a social quotient increase of ten points. In this setting, 12 trainers worked with 55 residents. The gains made using this method are far in excess of the gains reported in any other behavior modification study using comparable trainer and client populations.
FEEDBACK TO TRAINERS

Introduction

To date, the full potential of information feedback systems has not been explored. When used in many training situations information feedback takes the form of the "bug-in-the-ear," audio-visual taping, and signaling devices (see pp. 148 to 154). However, the effectiveness of these approaches has not been determined empirically.

Simple Counting

The significance of behavioral measurement and feedback has been noted by a number of authors. Salzinger et al (1970) reported that one necessary condition for success in their program was that "the successful parents all showed themselves capable of very good behavioral descriptions (p. 24)." Moreover, there is some evidence that the simple matter of recording data is a mildly aversive consequence and results in reduced maladaptive behavior (Herbert, 1970; Lindsley, 1968; Patterson, 1969). For example, Tharp and Wetzel (1969) reported that assessment alone prompted significant behavior change in six of 83 cases in which parents
worked with their delinquent children.

Herbert (1970) demonstrated both a decelerating and an accelerating consequence of "simple counting." During baseline, parent attention followed appropriate child behavior 53 percent of the time, while parent attention followed inappropriate (ritual) behaviors at approximately the same rate. During phase one, a wrist counter was introduced and appropriate behavior and attention were defined. Immediate increases in attending to appropriate behavior resulted in subsequent increases in appropriate behavior and decreases in inappropriate behavior. These rates were maintained and the counting was removed. Gaasholt (1970) offered similar evidence. Charts of teacher and student behavior were maintained over an 80 day period. Even though material reinforcement was not used, teacher errors (i.e., failure to reward appropriate student behaviors) decreased from 3.0 per minute during the first five days to zero during the last five days.

Thomas (1971) provided an excellent demonstration of the effects of simple counting on the number of tokens delivered and the amount of praise used by teachers conducting behavior modification training sessions. In his study teachers operated under a variety of conditions: no feedback, counting tokens, counting praise, counting prompts, and counting praise and tokens simultaneously. Except for the no feedback condition, the teacher viewed her own
video-tape performance following training sessions, and was instructed sequentially to count the number of tokens, praises, prompts, or praises and tokens. Each of these conditions was non-overlapping; that is, while the teacher counted tokens she was instructed to count only tokens; when she counted praise, she was to count praise only. A 14 day no feedback condition was used to obtain baseline data on the dependent variables (number of tokens and amount of praises). When the teacher was instructed to count the frequency of tokens given during the video tape session, the number of tokens administered during training increased by approximately 100 percent and no change was noted in the frequency of praise. Subsequently, when the teacher counted the amount of praise, the amount of praise increased while the number of tokens administered decreased. During the counting prompts phase, both tokens and praise decreased in frequency. Finally, during the last five sessions which involved counting praise and tokens, frequencies of both behaviors increased.

At periodic intervals, Thomas instructed the teachers to estimate the frequency of tokens and praise administered during the actual training session. This estimate was later compared with the teacher's count while viewing the videotape. Though statistical data were not presented, visual inspection of Thomas' graphs revealed a high degree of agreement between the teacher's estimate and the actual
frequency. Since teachers were able to estimate accurately the frequency of the two behaviors under study, the audiovisual feedback component may have been irrelevant; the significant factor may have been the attention (i.e., counting) to the response to be altered.

**Simple Feedback Systems**

Cooper et al (1970) developed a verbal feedback system for training preschool teachers to respond appropriately to children's behavior. They used four kinds of information: (1) definitions of appropriate behaviors, (2) success rate per 10 minute period, (3) daily success rate, and (4) failure rate. By successively introducing these different kinds of information, they were able to increase significantly the rate of attending to appropriate behavior by the teacher. Similarly, McNamara (1970) demonstrated equal effectiveness through the use of either an elaborate bonus payoff token system or simple instructions to the teacher. In this case the independent variable was the teacher's attention to calling out behaviors by the students.

In a series of three studies, Hall, Panyan, Rabbin and Broden (1968) demonstrated that teachers were able to carry out various operant procedures after initial explanatory sessions of 15 to 30 minutes plus daily feedback. Each day the teacher was shown daily class study rates as well as the frequency of attention to these behaviors.
Panyan, Boozer, and Morris (1970) developed a feedback system to provide information on the number of behavior modification training sessions completed each day by institution attendants. In this case, feedback consisted of posting each week the number of behavior modification training sessions conducted by attendants in different wards. The data were provided by the attendants on a daily basis, and summarized by the consultant on a weekly basis. Under non-feedback conditions attendants completed less than 75 percent of the possible training sessions, while under feedback conditions, the completed sessions increased to nearly 100 percent. One finding of considerable importance was that the longer the attendants remained without the feedback conditions, the longer it took for the staff's performance (i.e., number of training sessions conducted) to increase.

Fielding, Errickson, and Bettin (1971) reported an interesting study in an institution for the retarded. Their goal was to get attendants to stop pushing and tugging severely and profoundly retarded residents, and to train the residents to respond to verbal commands (e.g., "come to me"). The initial training for attendants was ten 10-minute periods each day. While pushing and tugging were not present during these ten periods, during the rest of the day attendants still pushed and tugged. To correct this failure of stimulus control, the investigators posted a large sign with a picture of a tow truck dragging a helpless female. The
This is a tow truck. The truck is moving a resident. Staff move residents too. Tow trucks can't think. Are you depriving a tow truck of employment (p. 551).

Within ten days, the rate of pushing and tugging declined from a range of three to 18 per day to zero, and remained at that level for two weeks (after which recording stopped).

C. Complex Feedback Systems

Working from a communication theory framework, Martin (1967) and Kaswan, Love and Rodnick (1971) reported significant changes in family interactions (and teacher's ratings) resulting from relatively brief (six and 12 sessions respectively) training in behavioral observation and rating. As described by Kaswan et al (1971):

One technique requires that people rate and compare their perceptions of themselves and others while viewing video-tapes of their interactions. Other procedures require people to observe and evaluate a wide range of behaviors (p. 1).

After 12 sessions under such conditions, 87 percent of the subjects studied by Kaswan et al showed improvement in school behavior.22

Conceptual Basis

Information feedback is an important concept from both a theoretical and practical viewpoint. Figure 3 illustrates
conceptual relationships between information feedback and behavior modification.

As indicated in Figure 3, information feedback can be considered as just one of many aspects of a comprehensive behavior modification system. Behavior modification as viewed here is not simply the application of principles of reinforcement, but it is an entire system encompassing: (1) observation, measurement, and recording of data, (2) application of reinforcement to target behaviors identified and plotted using (3) a successive approximations format, and (4) feedback into the system. Feedback is an essential ingredient because it provides information about the effectiveness of the rewards, the appropriateness of the specific successive approximations, the time to alter reinforcement contingencies and the appropriateness of the original target.

As illustrated in Figure 3, each of the components of behavior modification programs (e.g., reinforcement, successive approximation) has separate and distinct antecedents in the history of psychology. For example, the use of reinforcement derives from the law of effect and operant conditioning studies, while the use of successive approximations derives from associationism.

Just as the various components of behavior modification
FIGURE 3

CONCEPTUAL RELATIONSHIP BETWEEN INFORMATION FEEDBACK
AND BEHAVIOR MODIFICATION

SCIENCE (INPUT)       COMPONENTS OF BEHAVIOR MODIFICATION PROGRAMS       TECHNOLOGY (OUTPUT)

INFORMATION THEORY ——— INFORMATION FEEDBACK ——— AUDIOVISUAL TRAINING

ASSOCIATIONISM ——— SUCCESSIVE APPROXIMATIONS ——— POPULATED INSTRUCTION

OPERANT CONDITIONING LAW OF EFFECT ——— REINFORCEMENT ——— POPULATION CONTROL

EMPIRICISM ——— DIRECT OBSERVATION, MEASUREMENT, AND RECORDING OF BEHAVIOR ——— BEHAVIORAL INSTRUMENTATION

Direct Influence

Indirect Influence
programs have different antecedents in science, distinct technological consequences have developed from each. Programmed instruction, for example, is a technological consequence derived from successive approximation, while population control efforts are related largely to reinforcement.

The importance of the relationships diagrammed in Figure 3 is that the four major components of behavior modification are distinct and separate components. Thus while information feedback is an integral part of a comprehensive behavior modification system, information feedback also can be considered separately. Thus, information feedback is a necessary (though not sufficient) part of behavior modification systems while neither principles of reinforcement nor successive approximations are necessary or sufficient in terms of information feedback (see Figure 3). However, information feedback (like behavior modification) does rely upon behavioral observation. Indeed, some recent work (Kaswan, Love, & Rodnick, 1971) suggested that information feedback when combined with precise behavioral measurement is sufficient for adaptive behavior change. This finding is difficult to incorporate within the operant conditioning framework, wherein reinforcement is considered to be a necessary condition for behavior change. In a review of this nature it is not possible to discuss the full implications of this discrepancy with the operant conditioning conceptualization. It should be clear, however, that there are profound
theoretical and practical consequences of the controversy concerning the role of reinforcement, and further research is needed.

One of the key issues in the controversy centers on the operational separation of reinforcement and information feedback. Even though they can be separated conceptually (see Figure 3), it is difficult to specify conditions under which the application of reinforcement is not information to the client. "Good boy" means not only does the client get an M & M, but the trainer is saying: "You did it right!" On the other hand, it is difficult to specify conditions under which the application of information feedback does not contain reinforcement value. When the trainer says "You did it right" with no "Good boy" or M & M, the client is still subject to the generalized reinforcing value of obeying authority figures and following directions. The confounding of information feedback and reinforcement is not eliminated by relying on the non-directive role employed by Kaswan et al. For example, the client:trainer setting is one in which the client has a defined level of maladaptation. Thus, change is expected. When the consultant chooses to focus on the entire family interaction the message is that change is expected in that interaction. By the very nature of the information which is selected as the focus of intervention, the consultant to some extent, determines the direction of change. True, the elements of reinforcement are not the
overt materialistic reinforcements used in token programs and self-care training, nor even the more subtle nods and "humm humm" characteristic of the verbal conditioning studies of the 50's. Nonetheless, elements of reinforcement can be found in the interpersonal relationship between client and consultant, progress through the program, and the kinds of information selected for consideration.

In the Kaswan et al program, an innovative use was made of behavior rating scales. However, the demonstration that counting certain behaviors led to decreases in response rate was not necessarily an illustration of behavior change in the absence of reinforcement. It may rather have been a demonstration that a definition of a given behavior could be brought under the verbal control of the client. For unknown reasons, the behavior is emitted at a rate or intensity which is objectionable. Since in Kaswan's setting the definition of the situation derives from a third party analysis, the information feedback system can be thought of as effective because it provides an accurate baserate for the client, and permits the exercise of self-control (see Cautela, 1969) behavior. Furthermore, audio-visual tapes provided a new dimension: they allowed the client to compare his behavior to the behavior of models which he (the client) may have wanted to resemble. The techniques used by Kaswan et al provided an excellent medium for comparing one's behavior to some ideal thus allowing for the exercise
of self-control. To maintain that behavior is under the verbal control of the client is to present a more complex stimulus-response relationship than the typical behavior modification approach, however, the analysis of self-control behavior is very much a part of the current behavior modification literature.
Training Retardates as Behavior Modification Technicians

One of the most innovative approaches to teaching behavior modification is the recent work on training retardates as behavior modification applicators (Henker and Whalen, 1969; Whalen & Henker, 1969, 1971). Though high level retardates have been used as custodial and maintenance personnel in traditional large institutions, this study is the first case of a well-controlled and researched investigation.

The training program used for this study differed from other training programs in a variety of ways. First, the program was longer (4 1/2 months) than most programs, despite the fact that the program omitted data collection, instrumentation, architecture, films, manuals, token economies, and contingency management. Second, modeling was used extensively, and program content was concentrated on the basis of reinforcement, shaping, and deceleration techniques. The authors were able to demonstrate significant improvements in adaptive behavior in less adequate residents as
a result of the training provided by the retarded applica-
tors. It remains to be demonstrated, however, whether or
not these changes could have been produced without the
time-consuming instruction in behavior modification, and
were simply the results of increased attention.

Parents

One effective utilization of manpower would be to in-
volve parents in the training of other parents. Such a pro-
cedure would serve a number of important functions. First,
it would maintain and improve the parent's level of skill by
interaction with naive subjects who would press them con-
tinually for information. Second, it could relieve some of
the professional's time needed to train the parents. Third,
it could provide a source of emotional support to both
trained and untrained parents.

School Systems

One promising way of alleviating future manpower de-
ficiencies is the use of paraprofessionals within various
applied settings, particularly in elementary school classes
(because of the importance of the establishment of basic
self-care and social skills during this period). There are
a variety of potential uses of paraprofessionals within the
elementary school setting. One example is the work of
Risley et al (1972) in which children's mothers were used as behavior modification applicators. This approach has various advantages. In the first place, the program involved both parent and teacher in close interaction, with a focus on the improved behavior of the student. Further, secondary gains may derive to parents who become interested in the learning process and actually learn some of the material. Third, there may be significant carry-over into the home.

In a study reported by Surratt et al (1969), a fifth grade student helped modify the behavior of four first grade students. The use of students as behavior modification applicators has the advantages which apply to the use of mothers. However, there is also a distinct disadvantage to the use of students as behavior modification applicators. This disadvantage involves the basic sociometric status of the child within the school system. Certainly a great deal of research needs to be done on the implications of identifying and training students who are placed in power positions relative to other students.

One form of manpower currently used in traditional school settings is the teacher's aide. Typically this person is an undergraduate college student majoring in an area of particular relevance to that teacher's course. Often neighborhood mothers or volunteers are also used. In this case the nonprofessional serves as an assistant for a semester to an experienced teacher. Behavior modification.
techniques are generally not applied under these circum-
stances. However, teacher's aides would offer another oppor-
tunity for the creative use of manpower in applying behavior
modification techniques.

Self Management

One of the most significant recent trends in terms of
manpower development is the use of clients to manage their
Obviously, the task of obtaining daily measures on an entire
class of children for various subject areas as well as so-
cial skills is an enormous task. The successful completion
of such a task would require more than one or two teacher's
aides plus the regular teacher. However, recent research
has shown that students may be capable of recording some of
their own data. In addition, Lovitt and Casperson (1969)
reported that children were taught to calculate time spent
on certain programs as well as perform the necessary arith-
metic to translate this data into more usable form. More-
ever, some children graphed their performance rates and
evaluated the data.

One of the major issues in regard to self-management is
the ability of the individual to accurately measure and re-
cord his own behavior (Simkins, 1971). In the study by
Thomas (1971) it was reported that teachers were able to
estimate accurately their frequency of administering tokens
and praise during training sessions. In a study by Herbert (1970), however, agreement between parents and independent observers on the parent's frequency of attention to appropriate behavior ranged from 29 to 74 percent, indicating extremely poor reliability of self-recording. There is a possibility that educational level may affect accuracy of self-recording. However, in view of the many differences in the two studies, such a possibility is, at best, mere speculation.
SUMMARY

In summary, a number of points need to be made. First, almost every study reported in this review has involved a piece-meal approach to research in teaching behavior modification. In all, there have been no systematic or comprehensive attempts to explore the areas discussed in this chapter. This deficiency is unfortunate because until such attempts are made it is difficult to identify or analyze the variables which contribute to efficient and effective mental health and mental retardation programs.

Second, none of the studies reviewed involved follow ups. Many of these studies were conducted within the last few years and the lack of preparation for adequate follow up is a disturbing fact. What are the long term results of training nonprofessionals in behavior modification techniques? Do parents who are trained in behavior modification have more children after training than parents without this experience? What happens to families five years after the parents were trained in behavior modification? What happens to institution attendants who are trained in behavior modification techniques? Do they have a higher rate of turn-
over? Do they go back to school for more education? Do they stop using the behavior modification techniques? What happens to ghetto-mothers who work as behavior modification applicators and technicians? Does the quality of their home life improve or deteriorate? Do their other children benefit or suffer? Does the neighborhood benefit or suffer? These are important questions. At present, there are no data which permit even the most remote extrapolation.

Third, there is the problem of the dependent variable. In many cases researchers have relied upon test scores. Tests ranging from objective exams to essay exams to scores on tests in behavior modification techniques and in training proficiency have been used. Are scores on tests, regardless of the type of test, a useful dependent variable for this type of research? The major dependent variable should be the adaptive behavior change in the identified population. A person can be said to have been trained adequately at any level when he is able to effect positive change in another individual. Salzinger et al attempted to measure adaptive behavior change in his client population, however, they relied upon parent's reports rather than direct measurement. Considering the fact that brighter parents reported greater change, the accuracy of these data is subject to question. Clearly there is need for independent behavioral measures to establish the effectiveness of the behavior modification techniques as well as the methods of teaching these
techniques.

In addition, there has been little concern for the personality and attitude variables which may contribute to success in training. Techniques do not exist in isolation: people work with people. To be concerned with effective ways of teaching people requires concern with the total person, not solely the techniques involved in the training. In this regard, the humanistic consequences of the total training situation should be considered. Do we teach someone that behavior modification is one efficient and effective way of changing behavior, or do we teach that man is his behavior, and behavior modification is the way to deal with him. In the answer to this question lies the full growth potential of behavior modification.

At this point, the reader may wonder "What do we know?" Despite deficiencies in methodology, measurement, and the selection of research topics, there is presently a considerable amount of information concerning research in teaching behavior modification. For example, it is clear that under varied conditions with different clients and trainers, reinforcement techniques have been able to produce, at least temporarily, marked improvement in the behaviors of the trainer. That is, institutional attendants, classroom teachers and aides, volunteers, students, and parents have responded to the application of behavior modification principles and techniques to their behavior in the same fashion
as their clients responded. Though total contingency management systems are not in operation, neither is the implementation of these systems in the distant future. The capability is present; implementation awaits the energy of the investigator.

Further, it has been demonstrated that different techniques of instruction lead to different results. While every possible instructional method has not been studied, there is considerable evidence concerning the effects of role playing vs lectures, group training vs individualized instruction, and programmed texts. Moreover, research cited in this chapter has indicated that methods of instruction, levels of training skills, and trainer characteristics interact significantly. For example, group training was found to be effective in teaching the behavior modification skills necessary for behavior modification technicians and applicators, regardless of the trainer's socio-economic status or experience. However, at the level of the behavior modification generalist, group sessions were effective only with highly educated people. In addition, the trainer's participation in goal setting ("psychological ownership") was found to be significant, whether the level of training was the technician or the generalist, and whether the setting was the institution or the home. This research has illustrated the complexity of the nature of training in behavior modification. As indicated in an earlier section, training in
behavior modification has been more a reflection of the preferences of the consultant than a logical outgrowth of an analysis of the situation as well as a purview of the research literature. At this point, such criteria are no longer defensible. While more research needs to be done, many of the fundamental relationships between client, trainer, setting, and time have been identified, and research is available now to permit more than an educated guess. The time is past when the behavior modification consultant can "do his own thing." The accountability which behavior modification brought to the mental health and mental retardation field can be brought to bear now in the area of behavior modification.
"LET HIM EXTRAPOLATE WHO WILL..."

A journey of 1000 miles begins with the first step, and it ends with the last step. Behaviorism began with the goal of providing a means for improving the human lot. This goal was not unique; however, the behaviorists strove for a uniquely psychological method for achieving that goal. Over the years the early primitive techniques and theories have expanded greatly. Watson's work with baby Albert bears little resemblance to Huxley's *Brave New World*, Orwell's *1984*, or Kubrik's film, *A Clockwork Orange*.

In the course of the development of behaviorism in the United States a curious interplay between American and European philosophies can be noted. At the turn of the century, American psychology was dominated by two major European influences: British empiricism and German physiological psychology. The British empiricism was reflected in the animal laboratory, the mental testing movement, and the concerns of American pioneers such as William James, James McKeen Cattell, G. Stanley Hall, and James Baldwin.

On the other hand, many of the early American psychologists who were educated in Europe before 1900 studied
under the eminent German psychologist Wilhelm Wundt. Wundt's physiological psychology was experimental and associationistic, and he has been credited as starting the era of scientific psychology.

While the German and British roots of psychology had many similarities (eg., associationism, experimentation), they were based largely on different views of the mind. Wundt's psychology can be traced to the philosophies of Plato (427 - 347 B.C.) and Descartes (1596 - 1650). These philosophies approached the mind-body issue from a dualistic framework. Plato came to the conclusion that there are two worlds: one real, the other a shadow of the real world. The real world was the world of ideas, while the material world was merely the shadow. Plato felt that man could never know the real world since he learns about it through the material world.

Centuries later, Descartes stated: "I think, therefore I am." He extended the mind-body dualism of Plato to include the concept of innate ideas. Again, sensations were treated as secondary; what was of prime importance was the analysis of the conscious states of the mind. These ideas (eg., innate ideas, consciousness as a method of studying the mind) were to find expression later in many trends, including rationalism, intellectualism, introspectionism, and subjectivism.

On the other hand, British empiricism can be traced to
the monism\textsuperscript{24} of Democritus (460 - 370 B.C.) and later Hobbes (1588 - 1679). Democritus proposed that the whole world, body and soul, was composed of matter. Though the form of the matter was different for body and soul, everything was composed of the same essential elements. This materialistic view allowed for the reduction of mind to physical properties. Democritus' materialism was represented by the work of Thomas Hobbes in the 17th Century, Julien LaMettrie in the next century, and Jacob Moleschott and Ernest Haeckel who were contemporaries of Wundt.

The two major European imports shared a common dependence upon associationism. While associationism was a major philosophy (even in the work of Aristotle) there was contrasting viewpoints such as the Scottish school represented by Thomas Reid (1710 - 1796). While accepting the need for an empirical framework, the Scottish philosophers rejected the extreme associationism and materialism characteristic of the British empiricists (notably, Hume). Prior to William James (1904), the Scottish school had been a major force in America.

As a result of these divergent influences, the start of psychology in America during the late 19th Century was marked by deep philosophical contradictions: between dualism and monism, between materialism and spiritualism, and between associationism and Scottish empiricism. Little wonder then that the early part of the 20th Century was
marked by a lack of clear identity and purpose in the new psychology.

Behaviorism first appeared in conflict with structuralism. Structuralism was the American adaptation of Wundt's psychology, represented in the United States by Titchener. As the controversies between behaviorism and structuralism disipated, behaviorism appeared in competition to psychoanalysis, another European import. During the 1920s, psychoanalysis stole much of the thunder from the behaviorists. However, both psychoanalysis and behaviorism were associationistic (as was structuralism). In the 1930s Gestalt psychology offered a different view of psychology, emphasizing the wholeness of behavior as opposed to the elementistic approach.

This counterpoint, American:European, has been a major feature in the development of American psychology, particularly behaviorism. The history of behaviorism has been marked by continued competition with European ideas and philosophies. This counterpoint exists today in the fields of mental retardation and mental health. Behavior modification has been a leading influence in mental retardation during the past decade. Yet even while behavior modification programs grow in scope and sophistication, a new concern among professionals has emerged. This new concern is with the quality of the experience that the retarded person has. Imported from Europe (more particularly, Scandinavian) this
new concern is expressed by the term "normalization."

Briefly defined, normalization is a philosophy which takes as the major point of departure the congruity between the everyday world and the world of the retarded. The best approach to working with the retarded, according to the normalization principle, is to provide experiences which are as normal as possible.

At present normalization and behavior modification are not seen as incompatible philosophies, but a closer inspection reveals some competing ideas. How normal is it, after all, to be "trained" in the formal sense? By the very nature of the formalization (i.e., mechanization) of behavior modification, it is not "normal." People are programmed incompletely; whether this is good or bad is irrelevant; inconsistent programming is normal. How normal is it for each response to have a clearly identified consequence? Yet this is the goal of a comprehensive behavior modification program.

At this point behavior modification and normalization are seen as complementary. Normalization is a humanistic goal and behavior modification is seen as a method of achieving that goal. However, the full expression of behavior modification and normalization cannot co-exist, because they are based on dramatically different philosophies. As both of these trends become sufficiently delineated, these differences will become apparent. One is reminded
of the ironic slogan: "Kill for peace."

The situation of American-European counterpoint is the same in the mental health area. Behavior modification is one of the leading systems in psychology today. Yet even as behavior modification expanded in the 1960s humanism became a more dominant part of the American scene. Again, the basic philosophies of humanism (essentially a European import) and behaviorism are incompatible: the methods are different, the conclusions are different, and even the basic kinds of questions which are asked are different. Humanism represents the internalized, subjective view of the universe; behaviorism represents the external, objective view. This counterpoint, between materialism and spiritualism, is as old as recorded history.

It can be said that any philosophy or theory has as an essential part of its constitution, those elements which will be counterproductive to the full expression of that theory. As in the "thesis-antithesis-synthesis" theory of history, forces in dominant cultures produce competing forces which come to oppose the established culture, conflict follows, and a new culture, with elements of the two previous cultures, emerges.

In a similar sense, behavior modification is viewed here as a socio-political-economic force. Even a naive examination of contemporary psychology reveals the cultural components associated with behavior modification; i.e., the
extreme jargon, the folk heroes, the repeated demonstrations of superiority over opposing cultures, the separate journals, professional meetings, and associations, and the growth of various centers for behavior modification.

Behavior modification has assumed a position of importance in contemporary psychology as a function of the congruence of the behavior modification culture and forces within the broader American culture. The distinctly American origins and leadership of behavior modification are consistent with a country that has been through four major wars in this century alone, and which looks upon foreign involvement with suspicion. We can note, for example, the decline of the German-influenced structuralism following World War I, and the disappearance of the German-originated Gestalt psychology in the 1940s.

Americans always have placed value on works of the glands in distinction to works of the mind. The United States was founded by men who plodded ahead, good-intentioned, without careful planning. The pioneers packed their gear and headed West, settling where it seemed best to settle at the time. Intellectualism has always been foreign to the American people, whether manifested in the Jacksonian era of democracy, the stereotype of the strong but silent frontiersman promulgated by Cooper, the nationwide reaction against Woodrow Wilson's intellectual background, or the more recent opposition to the "egghead" Adlai Stevenson.
With rare exceptions Americans have relied upon brawn instead of brains. Almost every American folk hero, from Washington (honesty), Davy Crockett (bravery), and Abe Lincoln (honesty, integrity) to Teddy Roosevelt (energy), Sargeant York (courage) and Audie Murphy (courage) have been "regular guys." Americans cannot point to the tradition of intellectual genius which characterizes England (eg., Galton, Darwin, James and John Stuart Mill, Berkeley) and Europe (eg., Freud, Einstein, Descartes, Galileo, DaVinci).

Parallel with the American penchant for doing, rather than thinking, the American culture has been number conscious. This was represented early in the head counts of the pioneers, the mass production of the industrial revolution, and the "figurin" of the midwesterners. Americans are quick to point with pride to the fact that they have more of everything: more TVs, more cars, and more telephones. Even on a professional level, the "publish or perish" atmosphere in many American universities is well-known.

In this atmosphere behavior modification has flourished. The behavior modifiers have avoided the complex intellectual speculations of the psychoanalysts. Behavior modification makes sense. It relies upon overt behavior; something you can touch; something you can count. In keeping with the American culture, behavior modifiers have advertised their product as "bigger and better" than the competition. Behavior modifiers have gone out among the poor and down-
trodden and tried to increase their lot. When psychoanalysts were in their offices extracting high fees, behavior modifiers were on back wards trying to get chronic patients to care for themselves. Behavior modification has been part of the American mainstream. Above all, behavior modifiers have been doers, and above all else, Americans love doers.

There is a curious paradox in the American culture which is reflected in the development of behavior modification. While Americans have been doers, they have always been awed by the thinkers. When Freud visited the United States in 1909 his reception was tremendous. Newspapers and magazines were filled with articles, and Freud was in everyone's conversation. Moreover, the American respect for intellectualization is seen in the great concern for public education. Education was felt to be of such value in fact, that until recently young men could avoid military service by enrolling in college.

Few events so altered the American culture as did the launching of Sputnik by the Russians in the mid 1950s. This accomplishment alarmed the American people who wondered: "What's wrong?" The public school system came under close scrutiny, and critics asked "Why can't Johnny read?" The concept of "egg heads" changed over night, and within four years, the country that elected Dwight Eisenhower (instead of Adlai Stevenson) by the greatest majority vote in history, was to elect the intellectually oriented and polished John
Kennedy instead of Eisenhower's vice-president.

It was during this period of transition (i.e., the increased concern with intellectualization) that behavior modifiers enjoyed a set of most fortuitous circumstances. On the one hand, behavior modification represented the best in the American tradition - the doer, the counter, the common sense approach. On the other hand, behavior modification had all the "suits and trappings" of science - laboratory research, documentary evidence, "scientific" principles, and the respectability of the white-coat image. Americans, happy with the material advantages of this country which resulted from the vast technology, would now look to their technology to solve their problems of living.

The heritage of the past two decades has not been insubstantial. Behavior modification has been a major force in American psychology and has wrought significant changes. If behavior modifiers were too concerned with external behavior, this emphasis served to tip the theoretical scales and bring behavior into proper perspective. If behavior modifiers were over-zealous in their evaluation of the effects of psychotherapy, the activity served to point up deficiencies which have been remediated substantially since that time. If behavior modifiers were chauvinistic in their claims, they did provide an identity for psychologists which was distinctly psychological.

Returning to the major thesis of this chapter (i.e.,
that any theory, philosophy, or culture has as an integral part of its makeup, stimuli which will result in responses which are counterproductive to the full expression of that theory), it is time for an examination of behavior modification in terms of the potential for continued expansion and significance within the broader cultural scene.

Within the field of psychology, it has been noted that at present behavior modification is being challenged by the humanistic influences of the normalization principle (mental retardation) and a revival of existentialism (mental health). History recycles ideas and events. While existentialism grows in popularity, behavior modifiers try to account for thoughts and feelings in terms of "coverant control" and "self-control behavior." In a similar fashion, Watson attempted to explain thought as sub-vocal speech. The humanistic challenge is not a new one. It can be viewed as a re-emergence of the mind-body problem. One resolution of the challenge seems plausible - there is no resolution of the mind-body problem; it is part of the heritage of man.

Within the broader cultural forces in operation in America, behavior modification is very much alive. One of the fundamental characteristics of a technocracy is that all problems are dealt with from a technological perspective. So, if pollution is a major problem, what we need is better devices and instruments to control pollution. If overpopulation is a problem, what we need is better methods
of birth-control, and increased incentives for people to remain single, or to have less children. If crime is a problem, what we need is a better system for identifying criminals, and a better system for dealing with them once they are apprehended. Even as the "flower children" protest the mechanization of American society, the technocrats mechanize the protest. Even as sensitivity groups strive to increase the individual's ability to experience himself as a unique human being in relationship to other human beings, sensitivity training is standardized, packaged, and put on the shelf for quick sale.

Success has consequences, both positive and negative. The American dream has been successful beyond the wildest imaginations, yet those very characteristics which brought about that success now threaten disaster. One cannot have two cars in the garage without air pollution; the rich without the poor; freedom without anxiety. In terms of behavior modification, the basic mechanistic approach cannot solve the problems of existential identity which are increasing in a world of mechanization. If the problems were behavioral, they could be solved by behavior modification. But the problems are not, in many cases, behavioral. Rather, these problems represent a more fundamental quality of human experience, which has been identified variously as relatedness to the world, God, soul, and other metaphysical concepts. As the issues of behavioral control and management
are solved by behavior modification techniques, the issues
themselves lose whatever significance they may have had.
In the same way, the "flower child" generation turned their
backs on the material gains of their parents.

The inevitable success of behavior modification as a
method for achieving behavior change will be the inevitable
failure of behavior modification as a distinct system. Even
now, more than any current psychological system, behavior
modification has found application in nearly every existing
social and behavioral science, including education, re-
habilitation, anthropology, and sociology. Moreover, the
range of topics in which behavior modification is included
is enormous: speech and hearing, social work, vocational
training, industrial management, nursing, language, popu-
lation control, driver education, as well as mental health
and mental retardation.

This growing acceptance and utilization of behavior
modification is likely to result in decreased identity and
form: in a similar manner Gestalt psychology and func-
tionalism became relatively indistinguishable elements of
contemporary psychology. The results of this diffusion
could be to bring the basic tenets and techniques of behav-
ior modification under the control of other agents (ie.,
non-behavior modification agents). Within these many
separate frameworks behavior modification could assume the
function of a tool or technique, to be used when criteria
apart from the techniques and principles dictated its application.

History recycles ideas and events. The "Jesus revolution" harks back to the early 19th Century spiritualism which characterized much of American culture and American psychology. The cries of Dorothea Dix are echoed today as many states move toward the painfully slow "destruction" of state hospitals and institutions for the retarded. The rugged individualism and closeness to nature of generations long past returns in the form of communes and concern for ecology. East meets west once more, and behavior modification meets existentialism just as behaviorism met psychoanalysis and Plato met Democritus. And all the while the winds of change whisper of quieter days and gentler times.
FOOTNOTES

1 The Census Bureau (AP story, 2-27-72) reported that in 1960 2.3 million women and 0.9 million men 64 and older were not living with their children. By 1971 the figures had risen to 4.2 million women and 1.2 million men.

2 A more complete account of the history of animal psychology can be found in Boring (1950).

3 Alexander & Selesnick (1966) noted that, "Thorndike's observations about trial and error and the repetition of successful actions have remained the basis of all later learning theories (p. 311)."

4 Koch (1964) described peripheralism as the attempt "to show that processes formerly conceived as determined primarily by the brain could be better understood if allocated mainly to receptors, effectors, and their most direct nerve connections (p. 8)."

5 When the details of a love affair with one of his students were revealed, Watson was forced to resign from Hopkins. When no other university would hire him, he entered the advertising field where he was immensely successful.

6 A noted exception to this is the work of Ferenczi (Reisman, 1966).

7 "Filial therapy involves the training of parents of emotionally disturbed youngsters up to 10 years of age to conduct play sessions with their own children with a set of very specific guidelines and controls (Fidler et al, 1969, p. 47)."

8 It should be noted that the areas of learning research with which behavior modification was compared are largely theoretical areas of interest.
9In their extensive treatment of current behavior therapies, Kanfer and Phillips (1969) suggested four basic forms of psychotherapy. In this review three of those four forms of therapy are discussed. These are: interactive therapy which is represented by psychoanalysis in this review, replication therapy as represented Wolpe here, and intervention therapy which is represented by operant conditioning. The method not included here is instigation therapy which Kanfer and Phillips defined as: "joint planning of a program which the patient executes in his daily environment in the absence of the therapist (p. 453)."

10It should be noted that this is one of the rare cases of negative results which have been reported.

11Naturally, adaptations can be made by creative experimenters so that these techniques can be employed in the natural environment, however, as practiced they are not!

12One of the few studies concerning system-related behaviors was the work of Jones, Kahn, and Wolcott (1964). In their study attitudes of patients and staff on two matched psychiatric wards were compared. On the experimental ward, all hospital personnel wore street clothes while on the control ward they wore their usual hospital uniforms. The results indicated that the patients on the experimental ward favored the change and felt that the staff's street clothes facilitated communication with the staff and made the setting more lifelike. Similarly, the staff expressed preference for street clothing. It is interesting to note that the only opposition to the change came from the medical-administration staff. Unfortunately no data is presented in terms of patient's improvement based upon this change, nor is there any reason to believe that the phenomenon of change itself was not the major factor.

13Many consultants (eg., Hirsch & Walder; Salzinger et al) approach the problem of validity in a naive fashion: the behavior of the client is what the trainer reports the behavior of the client to be! This approach of course, means that the consultant is dealing with trainer data as his major variable. The extent to which trainer data is related to client behavior represents the extent to which intervention will be meaningful in terms of behavior change.
Schafer and Polk (1967) noted: "First, responses invoked by teachers and others are by and large based on the assumption that misbehavior results almost entirely from the motivation or deeper personality system of the child, or from defective family values and relationships. As a result, it is either assumed that the way to change such behavior is to direct sanctions, counseling, or therapy at the individual pupil himself; or that there is little that the school can do as long as family conditions remain unaltered (p. 251)."

The use of supervisor's judgment is suspect since supervisor's judgments were found to be reliable, but not valid. That is, trainers rated as consistently "good" or "poor" in Watson's setting did not, in fact, behave differently (Gardner & Giampa, 1971).

It should be noted that there may be curious consequences to using time off as a reinforcer. In essence, the use of time could create an aversive view of the position. In other words, if supervisors felt they can change behavior by offering time off from work, the message might be that work is not enjoyable, and time off from work is rewarding.

Sheppard and MacDermot reported that the greatest difference in performance between the two groups was on the essay examination. This is to be expected: the experimental group received three times as much training in the interview as they did in the written test exams (36 interviews; 10 tests). The control group was not trained in either area.

In defense of Salzinger's failure to point to this finding, it can be noted that the differences are not statistically significant. On the other hand, the lack of significant differences is based on the assumption that results of the first year should have been the same as the second year. If the assumption were made, however, that the improvement rate should have increased in the second year, then the decrease in improvement rate in the second year is striking!

Unfortunately, the dependent variable (i.e., client progress) was not measured independently.

It should be noted that three significant findings in 74 searches could be expected by chance.
This also was not noted by Salzinger.

This compares favorably to 67 percent and 50 percent improvement for psychotherapy and parent counseling groups used in this study.

Routh (1970) reported that the highly educated fathers of mentally retarded children had higher than normal K scores on the MMPI. The K score is considered to be indicator of "faking good." That is, people with high K scores are trying to answer the questions so that they appear favorably in the eyes of the examiner. Thus, more highly educated fathers were found to fake good significantly more than fathers of normal or emotionally disturbed residents.

Monism refers to a view of man as a unified whole; dualism refers to a view of man as consisting of two distinct and different elements (eg., body and mind).
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