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# Behavior modification in special classes

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BEHAVIOR MODIFICATION

IN SPECIAL CLASSES

by

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CHAPTER I

## Introduction

The purpose of this paper was to encourage the use of behavior modification in special classes as a substantial aid to present-day needs. It briefly reviews the compelling need for improvement in special education, especially in the two areas of social maturity and motivation. It suggests that behavior modification may be the answer to these needs. It briefly treats some of the objections to the use of behavior modification. However, the main part of this paper was directed toward: (1) an examination of principles concerning behavior modification, (2) a review of techniques currently being practiced, (3) a discussion of these techniques in the light of the principles presented, and (4) a suggestion toward solving the problem of internalizing behavior modification gains.

## Reviews of Literature Calling for Motivation and for Social Growth

Recent reviews of literature in special education cite numerous experimental projects which seriously question the efficacy of special classes as presently conducted. Most of the studies cited in Kirk's review fail to show that special education is superior to regular education in helping exceptional children to reach their academic potential. Studies comparing social growth of the two groups were divided--some studies showing no significant differences and some

showing better social adjustment and self-concept among mentally
retarded children in special classes.[1]

Sarason, in his review of studies comparing educable mentally
retarded children in special classes with their counterparts in regular
education, fails to find that special classes help the children to
reach their academic potential.[2]

Dunn, in his review of studies, believes that "a large proportion
of this so-called special education in its present form is obsolete and
unjustifiable from the point of view of the pupils so placed."[3] He
indicates that rather than aiding the child's social development, the
label "mentally retarded" often damages both the child's self-concept
and his social development.[4]

In his review of literature, Lilly recommends that "self-contained
special classes should be discontinued immediately for all but the
severely impaired."[5]

Goldstein, after extensive questionnaire research with employers
of mentally retarded individuals, reports that since the advent of
increased special classes, not only a larger number, but a larger

[1]S. A. Kirk, "Research in Education," in Mental Retardation,
ed. by Rick Heber (Chicago: University of Chicago Press, 1964), pp. 57-99.

[2]Seymore B. Sarason and John Doris, Psychological Problems in
Mental Deficiency (New York: Harper and Row, 1969), p. 111.

[3]Lloyd Dunn, "Special Education for the Mildly Retarded--Is Much
of it Justifiable?" Exceptional Children, 35 (September, 1968), 5-22.

[4]Ibid., 6.

[5]Stephen M. Lilly, "Special Education: A Teapot in a Tempest,"
Exceptional Children, 37 (September, 1970), 43.

proportion of educable mentally handicapped people is coming to the attention of vocational rehabilitation centers. The chief cause is failure to make social adjustment.[1]

Johnson laments that special educators, receiving specialized training and with more money per child than regular education personnel should be educating children "at the same or at a lower level than similar mentally handicapped children" in regular classes.[2]

Suggested solutions to the problem are varied. While Dunn and Lilly recommend discontinuing special classes, other reviewers feel that children assigned to special classes are often so placed because they have needs over and above those of children who remain in regular classes. Sarason expects improvement in theoretical and technological developments.[3] Nelson and Schmidt call for a re-evaluation of educational constructs.[4] Goldstein asks for a social learning curriculum which will supercede but include sensory-motor, academic, and psychological needs of special children.[5]

Some of the strongest appeals, however, are for motivation. Johnson states that lack of motivation is the main difficulty with

[1] Herbert Goldstein, Orientation Lecture on the Social Learning Curriculum, Holy Family Center, Wichita, Kansas, August 18, 1971.

[2] G. O. Johnson, "Special Education for Mentally Handicapped-- a Paradox," Exceptional Children, 19 (October, 1962), 62-69.

[3] Sarason and Doris, Psychological Problems, p. 111.

[4] Calvin C. Nelson and Leo J. Schmidt, "The Question of the Efficacy of Special Classes," Exceptional Children, 37 (January, 1971), 384-385.

[5] Herbert Goldstein, The Social Learning Curriculum: How to Use, Evaluate, and Field Test (New York: Yesheva University, 1969), pp. 1-8.

special education.[1] In his review of literature, MacMillan concludes

that "failure of the EMR classes stems from focusing on cognitive

variables to the exclusion of motivational variables.[2] Zigler has

indicted special education for its lack of motivation.[3] In fact, Zigler

and Butterfield go so far as to emphasize motivation as more important

than cognitive factors.[4] This paper will not attempt to reach a balance

between sensory-motor, cognitive, psychological and motivational factors.

The interested reader is referred to MacMillan and Forness,[5] also writings

of Milgram,[6] authors who attempt to place motivation in proper perspec-

tive with cognitive ingredients.

## The Place of Behavior Modification in the Special Education Curriculum

In order to portray behavior modification as a motivational means

toward an end, rather than as an end within itself; in an attempt to

place it in proper setting with regard to special education needs, a

brief outline of requirements follows:

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[1] G. O. Johnson, "A Paradox," 67-69.

[2] Donald L. MacMillan, "The Problem of Motivation in the Education of the Mentally Retarded," Exceptional Children, 37 (April, 1971), 579.

[3] Edward Zigler, "Research on Personality Structure in the Retardate," International Review of Research in Mental Retardation, Vol. I, ed. by Norman R. Ellis (New York: Academic Press, 1966), pp. 81-105.

[4] E. Zigler and E. C. Butterfield, "Motivational Aspects of Changes in IQ Test Performance of Culturally Deprived Nursery School Children," Child Development, 39 (March, 1968), 1-14.

[5] Donald L. MacMillan and Steven R. Forness, "Behavior Modification: Limitations and Liabilities," Exceptional Children, 37 (December, 1970), 291-297.

[6] Norman A. Milgram, "The Rationale and Irrational in Zigler's Motivational Approach to Mental Retardation," American Journal of Mental Deficiency, 73 (January, 1969), 527-532.

1. A social learning curriculum which embodies:

   a. Better use of behavioral diagnostic procedures to evaluate individual strengths and weaknesses--sensory-motor, social, and academic.

   b. Prescriptive goals for individuals and groups based on diagnostic findings.

   c. Prescriptive programs aimed at using specific strengths and remediating specific disabilities.

2. Effective motivation of groups and individuals, probably through behavior modification principles.

Motivation and goals must go hand in hand. The best of diagnostic and prescriptive procedures, the most adequate grouping, the highest goals, are unobtainable without the pathway to reach them--that motivation through which the child himself is impelled to mature through reaching these goals.

## A Common Objection to Behavior Modification

The most common objection to behavior modification is that is uses bribes. The Mirriam Webster dictionary defines "bribe" as "money or favor bestowed on or promised to a person in a position of trust to pervert his judgment or corrupt his conduct."[1] Behavior modification is not the bestowal of favors to pervert or to corrupt. The child who is behaving appropriately, especially if the action is difficult for him, needs and deserves recognition and reward. Ideally, the child's reward should be social approval and/or the satisfaction of accomplishment. However, where a child is unable to function on the former and lacks

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[1] Webster's Seventh New Collegiate Dictionary, 1969.

the latter, he needs (and justice entitles him to) an extrinsic reward system.

All human beings use behavior modification. A baby is modifying his mother's behavior when his lusty cries bring him the comfort he wants. Parents and teachers use behavior modification each time they praise the action they wish to reinforce. They misuse behavior modification when they habitually give attention to inappropriate behavior without stopping it. In this instance they are reinforcing negative behavior. Many may not be using it scientifically, systematically, or to advantage, but all are using it. Now that behavior modification is in the process of being systematized into a science, it would be well to take advantage of it in a scientific way.

## The Real Deficit in Behavior Modification

Behavior modification is manipulation from without rather than control from within the child, and herein is its inherent deficit. The child needs some control from without because inner controls are lacking or are but partially developed. The problem is to gradually withdraw external control by establishing first a social reward system, and finally an intrinsic reward system whereby the child's self concept is enhanced through realization of his own accomplishments and his growing maturity.

Establishing this intrinsic reward system should result in growth in creativity and spontaniety, not in listless adherence to automatic habit chains. Zigler, however, writes that the retarded child's reliance on encouragement from external sources fails to encourage

creativity:

> To the extent that the behavior of normal children is considered the preferred mode, this study indicates that the outer-directedness of the retarded child results in behavior characterized by an over-sensitivity to external models with a resulting lack of spontaniety and creativity. However, it must be emphasized that heightened outer-directedness is not invariably detrimental to performance on problem-solving tasks.[1]

Similarly, Rusalem asks that attention be given to some of the questions raised concerning behavior modification:

> For example, it has been alleged that the human products of behavior modification emerge as automatons, conditioned to respond in stereotyped ways to an environment that requires increasing behavior flexibility, a wide repertoire of responses, and fine social judgments. Do the subjects of behavior modification, indeed, lose their capacity to function creatively and independently as a consequence of their training experiences? And, if so, do their behavioral gains more than offset such deficits?[2]

If systematic application of behavior modification as presently used does indeed depress creativity and sponteniety from within, it is nothing new. Many people have failed to develop creativity, have become automatons to habit because their creativity was stifled and stereotyped behavior rewarded, while the manipulators who formed this behavior had never heard of the term "behavior modification."

Nevertheless, the warning of Zigler and the questionings of Rusalem are central to the human and moral application of behavior modification. Like any other tool, it can be misused. If it is indeed failing to bring about inner controls, inner creativity, increased self-reliance and social maturity, reasons for this failure and a remedy for it must be sought. Though limited in scope, this paper

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[1] Zigler, "Personality Structure," pp. 100-101.

[2] Herbert Rusalem, Ed., D., "A Capsule Research Review" Rehabilitation Literature, 31 (October, 1970), inside front cover.

will attempt an exploration of the problem of internalization which the practice of behavior modification so urgently calls for.

In summary, this introductory chapter has shown the need for increased strengths in the special class, especially the needs for improved social maturity, and for social and academic motivation. It has shown that behavior modification may be the answer to these needs. It has attempted to place behavior modification in proper perspective to other special education needs. It has shown that behavior modification is used by all, often unconsciously; that modern behavioral science is but analyzing and systematizing its application. Lastly, the paper has discussed the need for progressing from external manipulation of the child's environment to the establishment of internal controls.

CHAPTER II

In this chapter a simplified explanation of terms used in behavior modification is presented, together with general principles and guidelines for its application. The second section is a review of research, giving the reader a variety of studies as an aid to modeling his own approach to the practice of behavior modification. Since methods used with one group of mentally retarded individuals, such as with the severely mentally retarded, are sometimes applicable to other groups, such as the educable mentally retarded, no attempt has been made to select methods for any one group. Also, responses of severely retarded individuals, believed to be basic and primitive, are an aid in the formation of general principles.

## NATURE OF BEHAVIOR MODIFICATION AND DISCUSSION OF TERMS

### The Nature of Behavior Modification

The term "behavior modification" as used in this paper refers to operant conditioning, not to Pavlovian or "classical" conditioning. In the latter, the environment works on the individual, who responds involuntarily to stimuli, as Pavlov's dog salivated involuntarily to the tone which originally preceded presentation of food. Operant conditioning originated with Skinner who distinguished between the automatic response of the nervous system and the voluntary response encouraged by a reinforcing agent presented <u>after</u> a response. The reinforcement increases

the probability that an individual or organism will react the same way under the same circumstances, but does not force the reaction. For example, an autistic child is rewarded with candy for an action which approximates human interaction. The reward increases the probability that the child will repeat the action or a similar one. In Pavlovian conditioning, the environment acts upon the organism. In operant conditioning the individual acts upon his environment.[1]

The core theory of operant conditioning is that behavior is shaped by its own effect upon the environment--by changes which occur following a behavioral act. It is a term applied to a set of techniques based on principles of learning employed to change behavior of others (or of oneself), in a manner that is observable, specific, and predictable, through changes in the consequences of that behavior. It deals with symptoms not as manifestations of repressions and psychic disorders but as evidence of defective learning, of individual differences, and of environmental consequences.

Behavior modification requires identification of maladaptive behavior in specific rather than in general terms. To say that a child misbehaves during class time is not sufficient information for a behavior modification program. To say that in a series of ten-minute periods he has averaged out-of-seat behavior six times, speaking inappropriately four times, and disruption of class learning activities five times furnishes a base for operations. Data should be observed and properly recorded. Environmental manipulation needed to change the behavior must be specifically identified. Continued accurate

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[1]James G. Holland and B. F. Skinner, The Analysis of Behavior (New York: McGraw-Hill, 1961), pp. 14-20.

recording of data help to identify objects or behaviors which work as positive or as negative reinforcers. Consistency in application of reinforcers is essential.

## Reinforcement Contingencies

Because behavior modification terminology is technical and sometimes differs with various texts, the following simplified explanations are offered to the reader. They apply to terms as used in this paper.

Positive reinforcement involves the administration of a reward following a stimulus and response. The reward increases the probability that the same stimulus will evoke the same response again. A reinforcer accelerates the behavior which precedes it. A primary positive reinforcement involves a reward, such as food, which fills a primary need, and therefore needs no previous training in order to be effective. A secondary positive reinforcement, such as money or praise, has been previously paired with a primary reinforcer until it has assumed stimulus value for the primary reinforcer. Its effect resembles that of the primary reinforcer.

Negative reinforcement involves an aversive condition which exists before and/or during a response to a stimulus. Its removal increases the possibility that the same response will follow the stimulus in the future. Negative reinforcement accelerates the behavior which follows and terminates it. A primary negative reinforcement increases a response without prior training. A secondary negative reinforcement acquires its effect by its association with a primary negative reinforcer.

An example of both positive and negative reinforcement can be found in the mother who ends her child's incessant begging for a new toy by purchasing the toy. For the mother, the aversive stimulus--the begging--existed prior to her response. She herself is negatively reinforced to end the next siege of begging by again giving the child what he wants. The child, by being rewarded following his behavior, is positively reinforced to beg incessantly the next time his mother says "no."

Punishment involves an aversive condition which follows a stimulus and its response. It decreases the probability that the stimulus will evoke the same response. A true punishment decreases the behavior which precedes it. A primary punishment, such as physical pain or restraint, decreases a behavior without prior training. A secondary punishment, such as verbal disapproval, decreases a behavior by being previously paired with a primary punishment.

It is important to note that neither physical pain nor verbal disapproval need always be a punishment. Especially with verbal disapproval, behavior preceding the disapproval is sometimes increased. In such case, the disapproval is a reward and a positive reinforcement.

## PRINCIPLES AND GUIDELINES

### Drives

A reward must satisfy or alleviate a drive or need. A basic theory behind much of the use of reinforcement is that of Hull, which states that motivation is a drive to satisfy a need.[1] Related to this is the theory

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[1]C. L. Hull, Principles of Behavior (New York: Appleton-Century-Crofts, 1943), p. 131.

of Miller and Dollard that four fundamental conditions are needed for

any learning:  (1) a drive or need, (2) a stimulus or cue, (3) a

response, either motoric or psychological, and (4) a reward.[1]  Mussen

and Conger define drives as:

> states of tension resulting from conditions of deprivation of
> disequilibrium within the individual, whether physiological or
> psychological in nature.[2]

Drives and needs will thus vary with each individual.

Drives include hunger, thirst, sex, need for sleep, the need to

alleviate pain.  Because these exist in all human beings without training

or conditioning, they are called primary drives.  Food, water, and sleep

are primary rewards because they alleviate primary needs.

A drive is decreased with each reward.  The amount of reward that

can be given at any time depends upon the strength of the drive.  If a

child is not hungry, food will not be a reinforcer.  No two children will

ever have the same needs.  Praise from a teacher may be highly reinforcing

to one child, and aversive to the one who is trying desperately to prove

that he is tough, and neither a "sissy" nor a "teacher's pet."

## Positive vs. Aversive Reinforcement

It is generally agreed that most learning takes place under plea-

sant circumstances where children are eager to learn.  Children sometimes

characterized as having a short attention span can often spend long

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[1]Neal Edgar Miller and John Dollard, Social Learning and
Imitation (New Haven:  Yale University Press, 1941), p. 131.

[2]P. H. Mussen and J. J. Conger, Child Development and Person-
ality (New York:  Harper and Brothers, 1956), p. 114.

periods of time at something they really wish to do. They learn much about activities in which they find satisfaction and enjoyment. Behavior modification is therefore based largely on rewarding positive responses with enjoyable consequences. As discussed above, the retarded child's long experiences with failure have left him in dire need of positive reinforcement.

Nevertheless, aversive reinforcement (in terms of this paper-- punishment, negative reinforcement, or withdrawal of rewards) can still be an incentive to desirable behavior when used appropriately. This does not include lecturing and prodding which usually function neither as punishment nor as negative reinforcement. They neither decelerate unwanted behavior nor increase desirable actions. They so often merely condition a child not to respond to verbal requests.

Modern methods have long objected to use of physical punishment to control behavior. However, in cases of extreme acts of self destruction and sex deviancy, where all methods of positive control have proved ineffective, electric shock is being used to control the behavior. But since this should be used only in extreme cases and under close supervision, the scope of this paper will not cover its use.

Removal of privileges, objects and pastimes has often proved effective in control of behavior. Time out--a period of solitude and of removal from positive reinforcement contingencies--has also been found to be effective in behavioral control. While aversive in so far as it is a denial of reinforcement, it is not intended as a punishment. According to Browning and Stover it is rather the removal of a child from peer reinforcers and other contingencies which are maintaining

disruptive behavior, plus giving the child an opportunity to gain control. The latter authors offer shaping procedures to obtain and maintain effectiveness of time out procedures. Removal of a child to the periphery of a group, such as to the back of the classroom, may still permit him to solicit peer reinforcement for disruptive acts. He may first need to be removed to a room such as a bedroom devoid of entertaining stimuli. A closed door may be necessary in the beginning. From this the child can hopefully progress to time out periods with an open door, to sitting on a chair beside a tree outside the classroom, and finally to periods of sitting on a chair within the classroom but apart from the group.

According to Browning and Stover, time out periods should not extend over fifteen minutes at the most. Extended time out periods are fertile settings for reinforcing stereotyped behaviors, for increasing the asocial behavior of children with schizophrenic tendencies, and even though a child's behavior may at times be appropriate, there is no one to reward him. There is also danger that an untrained staff may use time out vindictively toward a child. Staff should therefore be required not to admonish a child when placing him on time out. It is an extinction program, not a punitive one.[1]

According to Hewett, the classroom program should be stimulating enough that time out procedures should be a removal of rewards, not a reward in itself.[2]

[1]Robert M. Browning and Donald O. Stover, Behavior Modification in Child Treatment (Chicago: Aldine-Atherton, 1971), pp. 149-151.

[2]Frank M. Hewett, "Hierarchy of Competencies for Teachers of Emotionally Handicapped Children," Exceptional Children, 33 (September, 1966), 7-11.

Mere elimination of undesirable behavior, however, is not sufficient. It should be replaced with desirable behavior, preferably activity that is incompatible with the undesirable behavior. W. Gardner, in his review of punishment procedures, found that in most of the studies covered, deceleration resulted well beyond the time of treatment. However, concomitant with the punishment, positive reinforcement was practiced for substitute, positive behavior, usually incompatible with the behavior being treated. It was not determined whether the deceleration was due to the punishment or to the substitute behavior, but this discrimination was not necessary to the treatment program.[1] Bandura also recommends that when aversive reinforcement is used, it should be alternated with abundant positive reinforcers for alternate behaviors.[2]

## Consumables

Consumables such as M & Ms, candied breadfast cereals, peanuts, potato chips, even Metracal and diet cookies have been used with children and retarded individuals as reinforcers. They are primary reinforcers; they need no previous conditioning to make them effective. They have a definite place in behavior modification; they also have limitations. They are of no use if an individual is not hungry. They may train children to overeat when they are older. They can spoil the next meal and otherwise disrupt eating patterns.

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[1] William Gardner, "Use of Punishment Procedures with the Severely Retarded: A Review," American Journal of Mental Deficiency, 74 (July, 1969), 97.

[2] Albert Bandura, Principles of Behavior Modification (New York: Holt, Rinehart and Winston, 1969), p. 344.

Browning and Stover list other disadvantages. Autistic children with unstable eating patterns may have their poor eating habits reinforced by use of consumables. In institutions, hunger drive is sometimes increased by serving only a partial meal. This may place a child's nutrition in jeopardy. If the hunger drive fails to accomplish the purpose intended, it has resulted merely in a damaging punishment for the child. Increase of hunger drive must be performed only under careful supervision with daily care taken to assure that the child does not lose weight.[1]

Food as a reinforcer should not be employed with a child who can readily adapt to other reinforcers, such as token or verbal reinforcement. If children cannot easily respond to other forms of positive reinforcement consumables are probably in order. Browning and Stover specifically state that "primary reinforcers have more universal effects at young ages, i.e., at less than two years of age..."[2] They have been widely used with severely mentally retarded individuals who are unresponsive to social reinforcement. They are often effective in working with emotionally disturbed children. Quay and Hunt found that older disturbed individuals were not responsive to social reinforcement.[3] Levin and Simmons found that praise worked as an aversive stimulus to

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[1]Browning and Stover, Behavior Modification, pp. 129-132.

[2]Ibid., p. 112.

[3]H. Quay and W. Hunt, "Psychopathy, Neurotocism and Verbal Conditioning: A Replication and Extension," Journal of Consulting Psychology, 29 (June, 1965), 283.

disturbed pre-adolescent and adolescent boys, while consumables were effective as a positive reinforcer.[1]

## Token Reinforcement

Token reinforcement refers to use of intermediate, tangible, secondary reinforcements, such as poker chips, marks, or even money, for a variety of back-up reinforcers. The latter may be candy, toys, clothing, privileges, or even preferred activities.

Tokens have certain advantages over other forms of reinforcement. They are superior to consumables in that the individual who can respond to them is capable of delaying full gratification until enabled to "spend" his tokens. They can be easily administered--immediately if the therapist deems best. They can be used to "purchase" a variety of back-up reinforcers, increasing the likelihood that the individual receiving the tokens will be provided with a reinforcer effective to him. Chance of satiation with a single type of reinforcer is decreased.

Browning and Stover discuss other disadvantages as well as disadvantages of a token program. They may be used as an aid to developing social skills by offering social activities among tangible rewards. A child may choose a cake mix which he can enjoy baking with his mother, dinner with a staff member, private time with a staff member, or a token bargain may be offered if two children pool their tokens for a chance to engage in a preferred activity, such as playing with the electric train.

Among disadvantages is that upon an individual's return to society, acceptable behaviors are not going to be maintained on a

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[1]G. Levin and J. Simmons, "Response to Praise by Emotionally Disturbed Boys," Psychological Reports, 11 (1962), 539-546.

token basis. There is danger that a child's maturity may be jeopar-
dized by keeping him dependent upon a token program when he is ready
to outgrow it. Also, it is difficult to maintain a miniature economy
with tokens. Inflation may occur. A youngster may find himself with
more tokens than he can spend, or items he wants may be too highly
priced. Constant change in prices encourages the children to distrust
adults.

Some sophisticated youngsters see tokens merely as staff's means
of manipulating and controlling them. If hastily or poorly planned,
they will work to make the system fail.[1]

It would seem that use of a token economy depends to a great
extent upon circumstances. For reasons just cited, Browning and Stover
used the system only with chosen individuals, never with a group.[2] On
the other hand, Ayllon and Azrin,[3] also Roberts and Perry[4] used the
system throughout their institutions. Ayllon and Azrin give reasons
for their extensive use of tokens. The mean age of individuals in their
hospital is 65 years. Few patients will return to society. The majority
of psychologists and psychiatrists prefer to work with a private clien-
tele than with institutionalized patients whose prognosis is often poor.
In a crowded institution the ratio of patients per psychologist or
psychiatrist may be as high as 1000 to 1. The psychologist or

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[1]Browning and Stover, Behavior Modification, pp. 122-127.

[2]Ibid.

[3]Teodora Ayllon and Nathan Azrin, The Token Economy (New York:
Appleton-Century-Crofts, 1968), pp. 2-4.

[4]Carl L. Roberts and Robert M. Perry, "A Total Token Economy,"
Mental Retardation, 8 (February, 1970), 15-18.

psychiatrist working in an institution is often so overwhelmed with administrative duties that he has little time to work with patients. These authors have therefore indicated (contrary to behavioristic theory) that while psychotherapeutic methods may be preferable, a token economy is more feasible for their circumstances.[1]

As discussed above, emotionally disturbed individuals are often unresponsive to social reinforcement but can be conditioned to respond to a token program. For this reason, Hewett used the token economy with all students entering the Santa Monica special program.

Effectiveness of token programs is evident in Axelrod's review of 16 various token reinforcement programs. The reviewer found positive results in each instance. He felt, however, that a token study should always include a reversal to baseline conditions in order to ascertain with certainty whether the tokens brought about the results. He also felt that teachers should learn to make better use of reinforcements existing in the classroom.

Social Consequences

Of all reinforcement contingencies, response to social reinforcement is probably the most uncertain. The effect of other people on an individual can constitute a potent force in molding acceptance or rejection of social reinforcement, and upon formation of behavior patterns in general.

Hastorf demonstrated that in twenty minutes, social contingencies could change the natural leadership of a college group. After a

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[1]Ayllon and Azrin, The Token Economy, pp. 2-4.

sociometric test administered to participants had identified the group leader, experimenters selected another group member as "target person" to become the next group leader. From an adjoining room and through a system of lights in which experimenter judgment was interpreted only to each successive speaker but not to listeners, they encouraged the "target person" while discouraging the natural leader. The natural leader and other participants were highly encouraged when they agreed with the "target person." After twenty minutes, a new sociometric test showed that test participants were well aware that the "target person" had become the new leader and that all others, including the natural leader, had become followers.[1]

Responsiveness to social stimuli is dependent upon complete past social history, which differs for each individual. If the relationship between parent and child has been warm and rewarding a child will likely respond to social reinforcement. If parent-child relationships have been poor, response to social stimuli may be totally unpredictable. Spraldin and Girardeau state:

> If an adult's comments have, in the past, set the occasion where responses were reinforced, it is quite likely that comments by adults now will be reinforcing, at least for a while. However, if such comments have not been positively backed up or have been associated with aversive conditions, it is quite likely that they will have either no effect or an aversive effect. Thus, comments by adults can be neutral or conditioned aversive stimuli.[2]

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[1]Albert H. Hastorf, "The 'Reinforcement' of Individual Actions in a Group Situation," Research in Behavior Modification, ed. by L. Krasner and L. Ullman (New York: Holt, 1965), pp. 268-285.

[2]J. E. Spraldin and F. L. Girardeau, "The Behavior of Moderately and Severely Retarded Persons," International Research in Mental Retardation (Vol. I, ed. by Norman R. Ellis; New York: Academic Press, 1966) pp. 262-297.

Patterson in his own studies found that delinquent peer culture almost invariably reinforced antisocial behavior while punishing behavior which corresponded to middle-class values. He found girls to be more responsive to parental reinforcers while boys tended to be more responsive to peer culture.

In his review of literature, Patterson found that responsiveness to social disapproval of the opposite sexed parent was related to poor social adjustment. Boys responsive to maternal disapproval were difficult to control while girls responsive to paternal disapproval tended to be anxious and distrustful. His review of literature also led him to evidence that permissive home backgrounds were associated with greater responsiveness to social reinforcers from the same-sexed parent, while restrictive backgrounds were associated with more responsiveness to social approval from the opposite-sexed parent and to social disapproval of either parent.[1]

Ginott reports that children sometimes reject parental praise because it is general rather than specific. If a child is told that he is just wonderful or that "Mother just couldn't get along without her little helper" he is apt to reject the statements through feelings of guilt and imperfections. On the other hand, if he is praised for helping with a specific task, he can generalize for himself that he is a help to Mother. If complimented for lifting a heavy piece, he can generalize for himself that he is growing strong.[2]

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[1]Gerald R. Patterson, "Responsiveness to Social Stimuli," Research in Behavior Modification, ed. by L. Krasner and L. Ullman (New York: Holt, 1965), pp. 157-178.

[2]H. G. Ginott, Between Parent and Child (New York: Avon Books, 1969), pp. 37-52.

Various studies have found that children respond differently to social reinforcement in various situations. Hill found that level of test anxiety affected a subject's reception of verbal reinforcement. Supportive comments were more effective with high test anxiety subjects after failure and with low test anxiety subjects after success.[1]

McConnell, in his study, divided his subjects according to those responsive to social reinforcement and those unresponsive to social praise. He found those responsive to social reinforcement to be more concerned about personal relationships, to show more affective expression, and to view persons as more concerned about each other's welfare. They were more inclined to use their power to encourage socially constructive behaviors in others; they had more guilt, more anxiety over antisocial behavior; and were more concerned with culturally acceptable goals, such as academic progress. Subjects unresponsive to social reinforcement were less inclined to express dependency needs in normal ways because they anticipated rejection.[2]

## Timing

In the beginning of a reinforcement program, for maximum effectiveness, a reinforcer must be presented immediately following appropriate behavior. If even a few seconds intervene, there is danger that the wrong behavior will be accidentally reinforced. Another danger of delaying reward is that of putting desirable behavior on an extinction

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[1]Kennedy T. Hill, "Social Reinforcement as a Function of Test Anxiety and Success-Failure Experiences." _Child Development_, 38 (March, 1967), 723-737.

[2]Owen L. McConnell, "Personality Correlates of Responsiveness to Social Reinforcement in Mental Retardates," _American Journal of Mental Deficiency_, 72 (July, 1967), 45-49.

schedule. Skinner laments that in our school system, minutes, hours, even days intervene between a child's performance and his reinforcement with knowledge of results. According to Skinner, "It is surprising that this system has any effect whatsoever."[1]

Children will work for long periods of time with materials that give them an opportunity to manipulate their environment plus immediate feedback concerning results. They love puzzles, manipulative toys, cutting and pasting, etc. According to Skinner it is impossible for a teacher to dispense rewards quickly enough for this type of needed effectiveness, even if she were to devote herself exclusively to one pupil. He insists that only teaching machines can give back immediate knowledge of results, and therefore only machines can encourage student learning to maximum effect.[2]

## Shaping

Shaping is a procedure by which a target performance is set and successive approximations to this behavior are reinforced until the desired behavior is performed. The mechanics of a shaping program can be extremely complex. The treatment program must be monitored constantly to determine whether a given child be advanced to more complex behavior.

Bricker describes behavior shaping as:

an intuitive, artistic process in which the reinforcible approximations to a defined terminal are not easily identified, and once

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[1] B. F. Skinner, Cumulative Record (New York: Appleton-Century-Crofts, 1959), p. 150.

[2] Ibid., 150-154.

reinforced, are not systematically maintained through schedules of reinforcement other than continuous reinforcement or extinction.[1]

He goes on to explain that shaping needs to be brought out of the realm of art by more careful defining of procedures and by specifying sequences of reinforcible approximations.[2]

Ayllon and Azrin have attempted to present two shaping rules as an aid in this direction. Their "Response Shaping Rule" uses a minimum of verbal reinforcement. It is as follows:

> In developing a desired response chain, begin by reinforcing an existing response that has a component relation to the target behavior; then reinforce variations of the component that are in the direction of the target behavior.[3]

In this procedure, the educator waits for a desired change in a habitual response pattern before beginning reinforcement. However, when a subject is capable of verbal interchange, the authors pattern their shaping after the "Prompting-Shaping Rule" which is as follows:

> In developing a desired response chain, begin by prompting verbally and reinforcing an existing response that has a component relation to the target behavior; then prompt verbally and reinforce variations of the component that are in the direction of the target behavior.[4]

Since these can be best understood by an example, a study by Ayllon and Azrin exemplifying the dirst rule is included in the studies below.

Browning and Stover advise that error responses be ignored. They describe a situation in which the father's corrections of error responses

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[1] Ibid., 150-54.

[2] Ibid.

[3] Ayllon and Azrin, Token Economy, p. 162.

[4] Ibid., p. 169.

induced the child to stop the normal trial and error procedures necessary

to learning the skill he was practicing. If a child decelerates his

attempts, the authors recommend that the therapist: (1) accept rough

approximations to the response desired, (2) back-up to a response

level formerly acquired and begin reinforcing from here, and (3) at

times reinforce error responses in the hope that more appropriate

approximations to the desired response will be emitted.[1]

## Accidental Shaping and Maintaining of Maladaptive Behavior

Pavlov found that experimental neurosis could be induced in dogs

through contradictory activity of the two central processes of excitation

and inhibition. Five principal means could be used to induce persistent

maladaptive behavior:

> (1) the use of intense stimuli (first observed during the Leningrad
> floods of 1924), (2) increasing the delay between presentation of
> the signal and the food, (3) inducing increasingly difficult tasks
> of conditional discrimination, (4) continually alternating positive
> and negative stimuli in conditioning tasks, and (5) physical stress.[2]

This is operant conditioning but for undesirable behavior. With

children, however, it seems that the most common way of shaping and main-

taining negative behavior is by rewarding it with disapproval. Vance

demonstrates how a well-meaning teacher reinforced a child's maladaptive

behavior with constant disapproval. Inappropriate behavior included

refusal to re-enter the classroom after recess, refusal to perform

assigned tasks, and destruction of assigned papers. To ignore his acts

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[1]Browning and Stover, Behavior Modification, pp. 137-139.

[2]Cyril M. Franks, ed., Behavior Therapy: Appraisal and Status
(New York: McGraw-Hill, 1969), p. 8, citing W. H. Bridger, "Pavlovian
Concepts and Human Behavior," Physiological Bases of Psychiatry, edited
by W. H. Gnatt (Springfield, Ill.: Charles C. Thomas, 1958), p. 67.

would cause little harm to himself or to others. When the teacher was persuaded to put his acts on extinction, his most outstanding forms of disruptive behavior came under immediate control.[1]

But not all accidental reinforcement of undesired behavior can be so easily detected. Browning and Stover describe how it happened in a clinical setting, with skilled workers who usually avoided this type of reinforcement. It required observations on video tape to detect why one child was becoming progressively more provocative toward another child. Through study of the tapes it was noted that staff members would gently admonish her for mildly aggressive responses to the other child, but the censure was not impelling enough to curb the behavior. Every seventh to tenth offense, the child was strongly reprimanded, directed to a constructive task, and then profusely reinforced. The child was engaging in her aggressive behavior in order to eventually elicit the staff's positive reinforcement.

## Generalizing Effects

All responses, desirable or undesirable, which an individual has, he has learned. Usually those working with a child outside the home do not know the myriad of situations which have acted as reinforcers of his behavior. Nor must the responses be limited to the situation which first evoked it. Responses, once elicited, can be generalized to a host of environmental conditions. A child who has come to hate his father can generalize his feelings to many male authority figures no matter how

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[1] Barbara J. Vance, "Modifying Hyperactive and Aggressive Behavior," in Behavioral Counseling: Cases and Techniques, ed. by John D. Krumboltz and Carl E. Thoresen (Chicago: Holt, Rinehart and Winston, 1969), pp. 30-32.

unjustified his attitude. A multitude of circumstances can set off chains of previously learned behavior patterns.[1]

## Total Milieu Treatment

Since many environmental stimuli can be responsible for a child's actions, ideally the entire environment should be controlled as much as possible. Just as undesirable behavior patterns can disperse into many areas, in the same manner we can expect that when certain forms of undesirable behavior are extinguished or desirable behavior acquired, improvement will spread to many related areas.[2] Not all children are in a residential setting where this is possible, nor is a residential setting always to be desired.

In arranging the environment, Saslow suggests the following diagnostic questions:

> (a) What are the disadvantageous behaviors that interfere with more socially desirable behavior? (b) What situations (stimuli) elicit these behaviors? (c) What new, socially acceptable responses can be associated with these stimuli? (d) What effective environmental reinforcers are available and can be manipulated?[3]

Within a residential or school setting, the environment should be stimulating enough and rewarding enough that the child feels no desire to escape it. There should be little need for locked doors. Little free time should be allowed a child until he has progressed to a state in which little supervision is required in order for him to

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[1] Browning and Stover, Behavior Modification, p. 210.

[2] Ibid., 20-21.

[3] George Saslow, "A Case History of Attempted Behavior Manipulation in a Psychiatric Ward," in Research in Behavior Modification, ed. by L. Krasner and L. Ullman (New York: Holt, 1965), p. 285.

perform adequately. Until this stage arrives, the entire day should be structured for him.

The children's reactions should be studied in order to select successful reinforcement techniques, and these techniques should be constantly re-evaluated for their effectiveness.

Peer groupings can be used to provide the children with positive social experiences and to promote desirable social responses.

Hewett's Santa Monica Program (described in the studies below) with its "engineered classroom" and dual emphasis on goals plus behavior modification methods, stressed the importance of a total school program. Based on Skinner's empirical learning theory, Hewett included specific arrangements for developing attention span, orderly classroom responses, learning to follow directions, respect for time and space limits, environmental exploration, and learning to appreciate social approval while avoiding disapproval.

Also vital to any treatment program is communication and cooperation among staff members. Browning and Stover further emphasize the importance of humor among staff. Without humor, they feel there is insufficient social reinforcement to maintain optimal performance of staff members. Further, they believe that staff members unable to laugh spontaneously at daily enjoyable situations are likely to lack the personal qualities necessary to make them effective reinforcing agents for children.[1]

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[1]Browning and Stover, Behavior Modification, pp. 26-27.

Parental and Family Participation

Ultimately it is the parents who must be responsible for a child's opportunity to mature, and for this reason they must be brought into the treatment. Relationships and conditions within the home are the strongest reinforcing agents, for better or for worse, for a child's behavior. Consistency in treatment, at home and at school, gives the child greater security and a better opportunity for growth.

Rickard and Griffin report an instance in which a child's soiling behavior was almost eliminated through treatment at summer camp.[1] Once returned to his home, soiling habits were resumed. Authors believed that had therapists and parents worked together, the practice of continence would not have been limited to the camp situation.

Patterson reports success with asking parents to assist in behavior modification in the classroom.[2] After a brief period of instruction, the parent would enter the classroom to record and reward the child's desired responses. Fredericks, et al.,[3] also Terdal and Buell,[4] conducted programs to educate parents in the application of behavior modification in the home (see below). Both sets of authors reported success with their efforts.

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[1]Henry C. Rickard and John L. Griffin. "Reducing Soiling Behavior in a Therapeutic Summer Camp," in Behavioral Counseling: Cases and Techniques (New York: Holt, Rinehart and Winston, 1969), pp. 36-40.

[2]G. R. Patterson, "Teaching Parents to be Behavior Modifiers in the Classroom," in Behavioral Counseling: Cases and Techniques, ed. by John D. Krumboltz and Carl E. Thoresen (Chicago: Holt, Rinehart and Winston, 1969), pp. 155-162.

[3]H. D. Fredericks, et al., "Parents Educate Their Trainable Children," Mental Retardation, 9 (June, 1971), 24-26.

[4]Leif Terdal and Joan Buell, "Parent Education in Managing Retarded Children with Behavior Deficits and Inappropriate Behaviors," Mental Retardation, 7 (June, 1969), 10-13.

## Extinction

The principle of extinction is closely related to that of rein-
forcement. Just as a habit needs reinforcement to establish it, so it
needs reinforcement to maintain it. When a learned behavior is practiced
without reinforcement, it is soon extinguished (ceases to be repeated).
In the words of Holland and Skinner, "A previously acquired operant which
is consistently not reinforced will be extinguished."[1]

Actually, extinction is the most effective way of correcting most
maladaptive behavior. It is more effective with younger children who are
more dependent upon adults than upon peers for their reinforcing contin-
gencies. It is more difficult to effect when peer approval together with
self reinforcers are maintaining behavior. "Time out" as discussed
above is an extinction technique rather than a punishment.

Contingent with "time out" as an extinction measure is the impor-
tance of correcting a child in private whenever possible. A public cor-
rection often encourages the offender to seek and to obtain peer approval
for undesired behavior. While a private correction violates the principle
of extinction in that it is attending to the undesired behavior, it does
not solicit peer approval and peer reinforcement of that behavior.

Initiating an extinction procedure often brings about a temporary
increase in the intensity and duration of the undesirable behavior, but
if behavior is consistently not reinforced, it will decelerate.

It bears repeating here that elimination of undesired behavior
is of little value if not replaced with healthy conduct. Concomitant

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[1]Holland and Skinner, Analysis of Behavior, pp. 120-121.

with an extinction procedure should be profuse reinforcement contingencies for substitute activity.

## Internalizing Learned Behavior

The most difficult part of a behavior modification program is progressing from external manipulation of the environment to control from within the individual. Just as undesirable behavior can be placed on an extinction schedule, so can newly acquired constructive responses. The work of the behavior therapist is to help the individual transfer from external rewards to self-reinforcement--satisfaction in accomplishment, together with that amount of social reinforcement within the normal environment.

Browning and Stover emphasize the importance of beginning behavior modification steps with the long range plan to eliminate them.[1] There are wide differences between (1) beginning a new behavior, (2) maintaining that behavior through external manipulation, and (3) making that behavior self-reinforcing. To instill a new behavior, a 100% contingency is usually necessary, i.e., every response must be reinforced. Once the desired behavior is consistently predictable on a 100% schedule, the program is ready to change to one of maintaining the behavior on an "intermittent reinforcement schedule,"--a gradual fading of reinforcement. The latter is extremely effective in maintaining any behavior, good or bad. Holland and Skinner found that on such a schedule, pigeons exerted far more energy to peck a disk than they were receiving as a

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[1]Browning and Stover, Behavior Modification, p. 123.

reward. Through gradually thinning the reinforcement, some were led to peck the disc as high as 900 times to receive a grain of corn.[1]

If thinning occurs too rapidly, the therapist must back up to a previous high reinforcement schedule in order to re-establish the desired behavior at a preferred rate. It may be necessary to allow a newly acquired behavior to lapse temporarily while a more primitive approximation to it is reinforced. At no time should a child's positive behavior be left on an extinction schedule.

Theoretically, in terms of types of reinforcement, the progress could normally be (1) primary reinforcement such as candy, with praise as soon as the child can accept praise, (2) a token program, with praise, (3) a program of profuse social reinforcement, and eventually (4) self-reinforcing contingencies. This can be and is rapidly accomplished with such behaviors as use of play equipment, learning to dress oneself-- activities in themselves highly rewarding to the learner. It takes longer, perhaps years, in more complex behaviors, such as study habits and social conduct.[2]

## A REVIEW OF STUDIES

Following is a review of recent studies. Many of those with an experimental design were conducted solely to test a principle and are more useful for this purpose than for suggesting techniques. Other studies are reports on attempts to change behavior and are more useful as a study of methods.

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[1]Holland and Skinner, Analysis of Behavior, p. 124.

[2]Browning and Stover, Behavior Modification, pp. 116-135.

Most of the studies involve multiple procedures. Therefore little attempt could be made to group them according to a single procedure. Collectively they include use of consumables, token programs, different types of social reinforcement with different types of individuals, aversive conditioning, shaping, extinction, accidental reinforcement of negative behavior, fading of reinforcement, individual programming and group programming. Some offer a technique for elimination of a single type of behavior while others place emphasis on a combination of goals, academic achievement, and total milieu treatment. Both teacher training and parent training are included.

## Effects of Verbal and Consumable Reinforcement Combinations on Concept Learning in the Mentally Retarded

(Involves consumables, verbal reinforcement, punishment, extinction.)

Insalco employed a concept task study with mentally retarded individuals to compare effects of verbal and consumable reinforcement combinations on learning and on extinction. Subjects were 60 institutionalized retardates, divided into six groups, equated for sex and for chronological and mental age. Mean CA was 19 years, mean MA, 8 years. Three groups involved in verbal reinforcement received Right-Nothing, Nothing-Wrong, and Right-Wrong responses from the examiner. Three groups involved in the consumable reinforcement program received M & Ms according to the same pattern: Give-Nothing, Nothing-Take, or Give-Take.

An analysis of variance indicated no significant difference in the effect of the various reinforcement programs on learning tasks. An analysis of extinction data, however, showed that Reward-Nothing

combinations in both verbal and consumable areas (Right-Nothing, Candy-Nothing) manifested significantly faster extinction than the other combinations.

With reference to lack of significant difference on learning under verbal or consumable reinforcement, the author of the study concluded that for children in this older age bracket, verbal reinforcement was as effective as candy. He also reasoned that another explanation might be found in terms of Zigler's social deprivation theories.[1] In this light, institutionalized retardates, because of their social deprivation, would respond to social reinforcement as readily as to consumables.[2]

## An Experimental Attempt to Reduce Stereotype by Reinforcement Procedures

(Involves consumables, machine dispensed.)

Mulhern and Baumeister attempted to reduce stereotype in two severely retarded male retardates by reinforcement procedures. Subjects were an eighteen-year-old male diagnosed as PKU and a twenty-nine-year-old male lacking a specific etiological classification. Both subjects were ambulatory and neither possessed gross sensory impairment. It was impossible, however, to obtain IQ scores on either. Each engaged constantly in hyperactive, stereotyped behavior.

Conditioning involved a mechanism visible to but not in the same room with the experimenters. The mechanism was so constructed that it automatically dispensed M & Ms on condition the subjects lacked

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[1]Zigler, "Research on Personality Structure," pp. 85-87.

[2]Carl Insalco, "Effects of Verbal and Consumable Reinforcement Combinations on Concept Learning in the Mentally Retarded," American Journal of Mental Deficiency, 74 (March, 1970), 709-710.

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movement. Results were that both subjects learned to become motionless long enough for the machine to reward them. One would bend over, grasp his leg, and hold his head rigid. The other would tightly grasp the arms of the chair or bend and reach far forward with his head on his chest.[1]

## A Total Token Economy

(Involves token program with back-up reinforcers, shaping, lack of cooperation among staff, inconsistencies in treatment.)

Roberts and Perry, without experimental design, conducted a comprehensive "Total Token Economy" in a mental retardation residential center. Population of the center averaged 45 years in age, 17 years in hospitalization, and an average social quotient of 37. The program enlisted the aid of an experimental psychologist who continuously gave instructions and monitored the program. Psychiatric technicians were assigned to various groups in such a manner that two technicians were entirely responsible for each group of patients during their waking hours. The school program included speech therapy, occupational therapy and recreational therapy. It was open to any resident who could get to school.

Any staff member could reinforce behavior at any time by administering tokens. Tokens were given for appropriate behavior and withdrawn for inappropriate acts. Each resident not in the profoundly retarded group was required to earn at least $5.50 in tokens per day to buy his meals, rent his room or bed, etc. Tokens beyond this could be spent for clothing, toilet articles, recreational articles, ground

[1] Thomas Mulhern and Alfred Baumeister, "An Experimental Attempt to Reduce Stereotypy by Reinforcement Procedures," _American Journal of Mental Deficiency_, 74 (July, 1969), 69-74.

privileges, back rubs, concerts given by volunteer performers, talks
with staff personnel, or shopping trips downtown where U.S. money was
spent.

Great emphasis was placed on rewarding desirable behavior and
successive approximations to such rather than on punishment (removal of
tokens) for unwanted behavior. This special emphasis on the positive
aspect of the program was because technicians had come from a punitive
society in which it was easier to notice and to punish undesirable
behavior than to reinforce the positive.

The authors admitted to a number of problems, the most outstanding
of which were lack of cooperation among staff members and inconsisten-
cies in treatment by various staff personnel. They freely discussed
problems yet to be solved. In spite of difficulties, however, the judg-
ment of the authors was that the program had been a definite aid to in-
stilling desired behaviors, and a good beginning had been made. One
evidence of success was that in the judgment of the instructors, two
weeks after initiation of the token program, students were performing
twice the work originally expected of them.[1]

## The Santa Monica Project

> (Involved special emphasis on goals, a structured program, total
> environment, tokens, and removal of tokens, and verbal reinforcement.)

Hewett conducted a behavior modification program consisting of a
rigidly structured classroom design with token reinforcement and tangible
rewards. Control situation for the experimental design permitted the

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[1]Roberts and Perry, "A Total Token Economy," pp. 15-18.

teacher to select any type of program except one requiring use of token and tangible rewards. The study was an attempt to approach the education of emotionally disturbed children with balanced emphasis on goals and methodology. The children possessed both social and learning disabilities.

The experimental study was conducted for one year. The project consisted of six classrooms dispersed throughout the Santa Monica district, each containing nine children, a teacher and an aide. The children were aged 8-0 to 11 years, with IQ scores ranging from 85 to 113 according to the Wechsler Intelligence Scale for Children. Most of the children were two or more years below expected grade level in reading and arithmetic.

Classroom design included three main centers: (1) a mastery and achievement center containing desks and booths, where academic assignments were given, (2) an exploratory-social center in which communication, science, and art activities took place, and an attention-response-order center for practice in following directions.

Classes were conducted for four hours daily. Two hours were spent in language, reading and arithmetic exercises, one in exploratory activities, and an hour in physical activities and recess periods. Each child kept with him a Work Record Card on which he could earn ten check marks every 15 minutes. Completed Record Cards were exchanged weekly for a variety of tangible rewards.

Two additional phases of the program were mentioned but not described. In one phase, Work Record Cards were exchanged for time to pursue activities of the child's choice, and in another for a daily graph of check marks earned.

One Class (E) preserved experimental conditions throughout the year. Another class (C) maintained control conditions for the same period. Class CE began as control but shifted abruptly to experimental conditions at midyear. Two classes (both designated CE) preserved control conditions until midyear, then changed abruptly to experimental conditions. Two classes (both designated EC) maintained experimental conditions until midyear, then changed to control.

Dependent variables were student task attention and gains in arithmetic and reading. According to results, Class C started out with the highest task attention skills and ended with the least. Class E made significant gains in task attention. When Classes CE introduced experimental conditions, they made significant gains over Class C. Task attention for Classes EC was facilitated by dropping the experimental program, and returning to control conditions.

Reading achievement data showed no significant differences between the groups. Gains in arithmetic fundamentals showed significant correlation with the experimental conditions.

The authors noted particularly that the teacher of Class C, which began with a significantly higher task attention score than any of the other classes, was concerned with maintaining task attention with social reinforcement. While this was initially more effective than the check-mark system, the class eventually fell to lowest place in task attention. Authors felt that the token system, while more primitive than social reinforcement, may be better suited to emotionally disturbed children.

In results of Classes EC, authors noted that children could outgrow dependence on a token system and still maintain gains they had made.[1]

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[1]Hewett, "Santa Monica Project," pp. 523-529.

Behavioral and Academic Gains of Conduct Problem Children in Different
Classroom Settings

(Included total environment, academic emphasis, token system,
time out procedures.)

Galvin, Quay, and Werry conducted a two-year study, the second
year of which was patterned after the Santa Monica Project. Subjects
were children referred from public schools because of seriously deviant
conduct.

During the first year, a token program placed emphasis on behavior,
following the theory that behavioral problems must be improved before
academic progress could be made. During the second year, primary emphasis
was shifted to academic gains. The change was due to an entirely dif-
ferent premise--a belief that deviant behavior is often caused by under-
achievement; therefore achievement must be increased to aid with the
behavioral problems. During the second year of the study, the token
program was patterned after Hewett's engineered classroom. Both deviant
and academic behaviors were measured each year. Due to student attrition,
only one student was a repeater in the analysis of academic data.

Analysis of statistical data showed that significantly greater
gains were made in both behavioral and academic areas during the second
year. The authors interpreted this as indicating that conduct problems
of emotionally disturbed children need not be changed before acquisition
of academic skills, but rather that greater gains were made in both
areas under a total program.[1]

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[1]John P. Galvin, Herbert C. Quay, and John S. Werry, "Behavioral
and Academic Gains of Conduct Problem Children in Different Classroom
Settings," Exceptional Children, 37 (February, 1971), 441-446.

Precision Techniques in the Management of Teacher and Child Behaviors

(Involved total school environment, multiple procedures, individual programming.)

Gaasholt presents a method of measuring teacher performance with the aim of changing pupil performance. "Precision teaching," as the author calls it, involves the following basic steps:

1. Pinpointing a pupil behavior.

2. Recording this behavior daily, computing the rate (number of responses over elapsed time), and charting it on a 6 cycle behavior chart.

3. Recording teacher behavior in relation to pupil behavior.

4. Analyzing data to decide what change in teacher performance might affect pupil performance, if a pupil performance rate needs to be changed.

5. Making only one change in teacher performance at a time and then reevaluating.[1]

The system was used in the Engineered Learning Project of the University of Oregon. Six or seven children with behavior problems were referred to the experimental classroom every eight weeks.

To obtain data on teacher-pupil interaction, a chart taped to each child's desk was marked each time the teacher or aide spoke to the child. The chart also showed whether the contact was teacher- or student-initiated, and the subject area concerned. On one occasion data disclosed that on some days one child was requesting and receiving eight times the attention received by the other six students. Another child was rarely receiving teacher attention.

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[1]Marie Gaasholt, "Precision Techniques in the Management of Teacher and Child Behaviors," Exceptional Children, 37 (October, 1970), 129.

Lesson plans were based on an IS description.[1] An example

follows:

1. Program: The activity was scheduled between 9:30 and 10:00 a.m. The child's oral reading rate was sampled for two minutes.

2. Programmed events: The classroom events used to elicit Mark's reading responses were the book Smashuu and verbal instructions such as "Remember to look at the ends of the words" and "Try not to repeat so many passages today."

3. Movement cycle: Oral words read correctly was the behavior to be counted.

4. Arrangement: The ratio between the movement cycle and the arranged event was 3 to 1, the first number referring to the number of sentences read correctly.

5. Arranged event: After Mark read three sentences correctly, the teacher said, "Good!"[2]

Inconsistencies in following the lesson plan (or IS Description)

were marked as teacher errors. Teacher behaviors over and above those

provided for in the lesson plan were recorded. Subsequent analysis of

such teacher actions in proportion to student responses sometimes dis-

closed that actions thought by the teacher to be helpful or necessary

were actually detrimental to student progress.

To discover whether an individual student was ready for an advanced

level of work in a particular subject area, proficiency level was obtained

by taking daily minute or two-minute records of each child's work to

assess rate of correct work and error work. A student's ability to chart

his own work seemed to increase the rate of correct responses.

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[1]Marie Gaasholt, "Precision Techniques in the Management of Teacher and Child Behaviors." Exceptional Children, 37 (October, 1970), p. 129. Citing O. Lindsley, "Direct Measurement and Prothesis of Retarded Behavior," University of Oregon Curriculum Bulletin, Revised Edition, Eugene, Oregon, 1969, p. 25

[2]Ibid., p. 131.

The precision records of teacher planning, teacher action and pupil action showed that teacher behavior differed with different children. They showed discrepancies between what a teacher planned to do and what she did. They showed possible strengths and weaknesses in the teaching plans and implementation. Attainment of a child's proficiency level before assigning more advanced work was thought by the authors to prevent him from struggling with new tasks before he was capable of handling them.[1]

## A Scale to Measure Skill in Applying Behavior Modification Techniques to the Mentally Retarded

J. Gardner, Brust and Watson constructed a "Training Proficiency Scale" to measure the proficiency of persons applying behavior modification techniques to the mentally retarded in institutions. Their breakdown of behavior modification into its component parts identified the following four areas: (1) shaping, (2) reinforcing, (3) communicating, and (4) rapport and miscellaneous. The scale consisted of 28 items, as follows:

### Shaping
1. Gets the Subject's attention.
2. Determines the operant level.
3. Demonstrates the desired behavior.
4. Starts with the correct step.
5. Uses proper sequence of steps.
6. Proceeds to the next step when the subject is ready.
7. Returns to previously successful step if necessary.

### Reinforcing
1. Finds an effective reward.
2. Gives the reward quickly.
3. Gives verbal reinforcement enthusiastically.
4. Gives physical reinforcement enthusiastically.

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[1] James M. Gardner, Donna J. Brust, and Luke S. Watson, Jr., "A Scale to Measure Skill in Applying Behavior Modification Techniques to the Mentally Retarded," American Journal of Mental Deficiency, 74 (March, 1970), 633-636.

5. Gives verbal reinforcement with the primary
   reinforcement.
6. Fades out continuous reinforcement at the proper time.
7. Changes the reward if necessary.
8. Correctly withholds reinforcement.

Communicating
1. Uses correct verbal commands.
2. Uses correct emphasis.
3. Uses child's name before command.
4. Gives correct gesture.
5. Uses physical prompts effectively.
6. Correctly fades physical prompts.
7. Correctly fades gestures.

Rapport and Miscellaneous
1. Gets acquainted before training.
2. Shows adequate patience.
3. Respectfully handles children.
4. Correctly prepares room before training session.
5. Properly ignores "bad" behavior.
6. Trains one task at a time.

### A Group Treatment Approach to Multiple Problem Behaviors of Autistic Children

(Involved total environment, multiple techniques, including con-
sumables, verbal reinforcement, and fading of consumable rein-
forcement)

Graziano performed a three-and-a-half year group behavior therapy

program utilizing social consequences to modify multiple behavior

deficits in six severely psychotic children aged 5 through 9. The

children had no interaction and little or no speech. Behaviors to be

modified included screaming, screeching, destructive outbursts, and

physical attacks using feet, fists, nails, and teeth.

The first step was to discover a reinforcing stimuli. The children

were therefore talked to, touched, held, offered objects, until they

showed their first consistent response. They moved away whenever a

worker approached. The workers now had a reinforcer. They then with-

drew from a child each time the child appropriately reached a hand

toward another person, touched a person, accepted a proferred object, moved toward another person, or approximated words. Within a few weeks the children had acquired a new set of responses but had become increasingly aggressive. At this point, acceptable responses were reinforced while unacceptable behavior was permitted to diminish. More rewards were needed and snack time was introduced. The children at first ignored snacks, but enticed with bits of cookies and small sips of juice, they finally learned to approach the table.

In order to develop reinforcing value of verbal conditioning (a secondary reinforcer), food (a primary reinforcer) was paired with verbal responses. Food gradually decreased as a reinforcer and verbal responses increased.

Once an effective level of verbal interaction had been achieved, maladaptive behavior began to be brought under its control. One technique was to encourage the children in the rote repetition of such phrases as "we don't throw things," "we don't hit," and "we don't bite people." At first the children verbalized the phrases while engaging in the behavior they were speaking about. But during the last year of the program, aggressiveness and destructiveness were practically nonexistent.

When nearly all behavior during sessions was being reinforced, the practice of ignoring maladaptive behavior gave way to stopping the behavior lest it be accidentally reinforced. This was done by such acts as gently but firmly holding a child, removing him from the room (time out from positive reinforcement), withdrawing or withholding positive reinforcement.

When the children were able to sit approximately twenty minutes for snack time, it was assumed that they were ready to begin another

table and chair situation--school. The children were eventually able to cooperate for four hours daily in verbal, social situations involving tables and chairs. Two additional hours in the afternoon were spent in playground activities, exercising, relaxing, fieldtrips, etc.

Increase in verbal growth was measurable. In two years time, appropriate verbal growth of two of the children rose from less than one response per minute to more than three and a half per minute.

Before treatment, the children's prognosis had been diagnosed as poor. After a little less than four years of part-time day care, the children had moved from a state of noncommunicative, destructive behavior to a level of verbal, socially acceptable group behavior. Two had learned to read at second-grade level.[1]

## Verbal Operant Conditioning with Down's Syndrome Children

> (Group study, involving total environment, shaping, social reinforcement with consumables as back-up reinforcers)

Recommendations often are that behavior modification programs be highly individualized. However, MacCubrey conducted a study to determine the effect of group verbal operant conditioning procedures on the intellectual and language development of institutionalized Down's Syndrome children. Subjects were eighteen children ranging in chronological age from 4-6 through 7-10. Administration of the revised Stanford-Binet (Form L-M) showed MAs from 2-0 through 2-10. Besides the Stanford-Binet, language and speech pre-tests and post-tests were administered.

The sample contained eleven boys and seven girls. Groups 1 and 2 consisted of four boys and two girls; Group 3, of three boys and three

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[1]Anthony M. Graziano, "A Group Treatment Approach to Multiple Problem Behaviors of Autistic Children," Exceptional Children, 36 (Summer, 1970), 765-771.

girls. Groups were equated on intelligence, language ability, and sex. Minimal language was possessed by the subjects prior to the study.

For seven weeks, Group 1 remained in the research facility and received five fifteen- to forty-minute sessions daily. Shaping procedures and fading-in of nonverbal prompts were used to elicit naming of objects and pictures, phrases to describe action pictures, and discrimination of colors and the polar opposites. Group 2 remained seven weeks in the research facility but did not receive conditioning. Group 3 remained in the institutional environment without change of routine.

Training materials consisted largely of pictures and objects. Procedure included progressive shaping of speech behavior approximating desired language behavior, fading out of verbal cues as they became less helpful, imitation of motoric and speech patterns, and chaining together with back-chaining. In the latter, children learned to say "T.V.," then "watch T.V.," and finally, "Boy watch T.V."

Social reinforcement--a smile or verbal praise--was given consistently for each correct response or acceptable approximation, for the stage of development the children were in. M & Ms supplanted social reinforcement dependent upon teacher assessment of the need for tangible reinforcement.

According to results, greatest changes occurred in Stanford-Binet scores. The analysis of variance by ranks showed the amount of I.Q. change between groups to be significant at the p .001 level. Five of the six Group 1 subjects improved more than the standard of error. No child in Group 2 or Group 3 made a comparable improvement. Language evaluation post-tests showed significant improvements for all three groups with no significant between-group differences. Any gains that

may have resulted from the operant procedures were not discernable
through the language test. The speech rating scale, which attempted
to assess speech quality as well as quantity, showed that youngsters
in Group 1 had made significant positive changes in rank order.

Worthy of note was that the treatment program affected the
entire 24-hour day living milieu of the subjects. The same teachers
were with the children twenty-four hours, seven days a week. No tangible
reinforcement was given outside conditioning sessions, but for children
in Group 1, certain requests were granted only after the child verbalized
appropriately according to his growth at the time.[1]

## A Behavioral Modification Classroom for Head Start Children with Behavior Problems

(Involved total school environment--academic and behavioral goals,
extinction, shaping, consumables, verbal reinforcement.)

Allen, Turner and Everett conducted a study with headstart children
whose behavior problems were such that they profited little from the
academic program. The class consisted of twelve to fifteen children
referred from other headstart programs. Three teachers conducted the
class. No one single technique was followed. Each child's behavior and
preacademic program was based on individual diagnosis and target behaviors
for each child selected accordingly.

The modification program took place within the confines of a care-
fully structured but flexible daily schedule. Much maladaptive behavior
was extinguished by ignoring it. Extinguishing inappropriate behavior

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[1] Jean MacCubrey, "Verbal Operant Conditioning with Young
Institutionalized Down's Syndrome Children," American Journal of
Mental Deficiency, 75 (May, 1971), 696-701.

would have accomplished little had it not been replaced with target behavior selected on the basis of individual diagnosis.

Teachers were always on the alert for opportunities to reinforce individually selected target behaviors. During a free play period, the teacher could reinforce one child for peer contacts, another for appropriate use of materials, others for verbal outputs, etc. Privileges such as snacks and play opportunities were dependent upon completed assignments, putting away of materials, etc.

A case study of Townsend, one of the children, exemplifies some of the treatment principles. Townsend's frequent tantrums and grossly disruptive acts were extinguished by lack of attention to them. Aggressivity against other children--hitting, kicking, spitting, running off with other children's toys, was eliminated as the teachers gave their attention to the assaulted children while turning their backs on Townsend. Play skills were chosen and sequenced for Townsend. If Townsend refused to participate, he was deprived of all adult attention until he returned to play materials.

Townsend's temper tantrums during baseline conditions were frequent and lasted an average of five minutes each. When they were put on extinction schedule, they were ignored no matter how severe they became. As was expected, his first tantrum minus reinforcement increased in intensity and duration, lasting 45 minutes. When it was realized that the tantrum was going to last for a time, the other children were taken to the playground. An attendant stationed herself just outside the classroom door. When Townsend became quiet, she opened the door to ask in a matter-of-fact tone whether Townsend wanted to go to the playground. At the appearance of the adult, the tantrum re-commenced.

Twice more the attendant waited for Townsend to become quiet and invited him to the playground. Each time, Townsend began his tantrum anew, but with shorter episodes--six minutes, three minutes, and finally one minute.

On the second day of tantrum extinction, Townsend had one tantrum. It lasted 15 minutes with two two-minute prolongations when the teacher re-entered the room. On the third day, Townsend had a mild, four-minute tantrum. He had no further tantrums during his period in the special class, nor did any re-occur after his return to regular head-start class.

Townsend had been banned from the bus for failure to remain seated and keep his seat belt fastened. He attempted to open doors while the bus was in motion, played with the instrument panel, and threw himself against the driver while the bus was in motion. Target behavior was to train Townsend to remain buckled in his seat.

On the first day of the bus shaping program, a teacher accompanied the bus. She buckled Townsend into his seat, rewarded him with a peanut and verbal praise, then dispensed peanuts to all on the bus. Every 30 to 90 seconds she again dispensed peanuts with verbal praise to children in their seats with belts buckled. For the next four days, peanuts were dispensed after longer periods of time. For three days peanuts were saved until the children left the bus.

On the ninth day, Townsend rode the bus without a rewarding adult, other than the bus driver, who was intructed to praise the children for their good behavior as they left the bus, but to ignore Townsend if he had failed to stay buckled in his seat. If the driver praised Townsend, teacher and social worker waiting at the bus stop also verbally reinforced him, and gave him candy as they accompanied him to his home. Candy was

gradually eliminated and verbal praise was reduced to only occasionally

reinforcing Townsend for independently riding the bus.[1]

## A Tactic to Eliminate Disruptive Behaviors in the Classroom: Group Contingent Consequences

(Involved token method, group contingent consequences, extinction.)

Sulzbacher and Houser worked with a group of fourteen educable

mentally retarded children to control disruption originating in one

child. The behavior to be eliminated was the use of the "naughty finger"

(middle finger extended with fist raised). Classroom disruption came

less from the gesture than from tattling and other reinforcing reactions

to it by members of the class.

Following a nine-day baseline on the three behaviors, a set of

cards, numbered one through ten, was placed in the front of the room.

The children were informed that there would be an extra recess at the

end of the day. However, each time the teacher saw the "naughty finger,"

or heard anything about it, a card would be flipped down, taking one

minute from the recess. The undesirable behaviors deceleraged immediately,

and by the end of eighteen days in which the group contingency procedure

was in effect, became almost nonexistent. Following this was a nine -

day period during which the group contingency was removed. The occurrence

of the target behaviors gradually rose to near baseline condition. A

chi-square test showed a statistically significant difference in the

frequency of the behaviors under the three conditions--baseline, group

contingency, and removal of contingency.

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[1]Eileen K. Allen, Keith D. Turner, and Paulette M. Everett,
"A Behavior Modification Classroom for Head Start Children with Problem
Behaviors," Exceptional Children, 37 (October, 1970), 119-127.

Authors believed the study showed the advantage of applying con-
tingencies to an entire group for maladaptive behavior of one individual.
Removal of social reinforcers decelerated the central disruptive
behavior.[1]

## Effects of Teacher Attention and a Token Reinforcement System in a Junior High School Special Education Class

(Involved verbal attention, accidental reinforcement of negative
behavior as well as reinforcement of positive behavior, extinc-
tion, and token reinforcement with back up reinforcers.)

Broden, et al., conducted a study comparing the effects of various
conditions on pupil study behavior in a junior high school special educa-
tion class. Conditions included: (1) teacher attention to both study
and disruptive behavior, (2) teacher attention to study behavior only,
(3) a token reinforcement system for study behavior, (4) a marking
system with reward and a grade for study behavior, and (5) a token system
with varied privileges as back-up reinforcement.

The class was one period of the school day. Subjects were thirteen
seventh and eighth grade students--eight boys and five girls. Each pupil
was several years behind in one or more major academic areas and each had
other problems, including severe reading deficiencies, serious speech
impairment, emotional instability, and delinquent behavior. Classroom
activities included cursing the teacher, refusal to obey the teacher or
to perform assigned tasks, throwing paper, pens, or pencils, fighting,
chasing each other in the classroom, eating during class hours.

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[1]Stephen I. Sulzbacher and Joyce E. Houser, "A Tactic to Elimi-
nate Disruptive Behaviors in the Classroom: Group Contingent Conse-
quences," American Journal of Mental Deficiency, 73 (July, 1968), 88-90.

During baseline procedures the teacher attended to both study and nonstudy behavior. The children averaged 29 per cent of this time in study behavior. For the next eleven days, the teacher reinforced study behavior and ignored nonstudy activities. Study behavior increased to 56 per cent, but much disruptive behavior remained. For the next eighteen sessions a card was taped to each desk, a timer set to sound at random intervals averaging eight minutes, and each child was awarded a mark each time he was in his seat and studying when the timer sounded. Those who earned enough marks were allowed to leave one minute early for lunch. Beginning with the 25th session, pupils were to remain quiet during the entire interval between timer rings if they were to earn marks. In the 31st session, the added condition of a grade (E for excellence) was awarded to each pupil who engaged in study behavior. These last two added contingencies resulted in little effect on study level. The average study rate for all conditions of the timer phase was 74 per cent, and in the judgment of both teacher and observer, disruptive behavior declined noticeably.

For experimental purposes reinforcement contingencies were discontinued with corresponding significant drops in study level. The above reinforcement practices were then repeated. Following this, a token system was established. Under the token system, study level of approximately 90 per cent was maintained for a month and a half after daily monitoring was discontinued and only periodic postchecks were taken.

Conditions of the token system were as follows:

Earn Points:
    5  in seat
    5  quiet
    5  doing assignment
    2  extra credit (after regular assignment is complete)

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3   an "A" on an assigned task
2   a "B" on an assigned task
1   a "C" on an assigned task
0   a "D" on an assigned task
```

Minus Points
```
15   out of seat without permission
 1   talking out of turn:  hand is not raised, teacher hasn't
     called on you
20   out of the room without permission
 5   incomplete assignment (per period)
 3   namecalling, swearing
20   throwing, hitting
20   arguing with the teacher
20   teacher must tell you more than once to stop
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Spend Points
```
 20   five minute pass to the rest room
 50   permission to go five minutes early to lunch
 10   permission to get out of your seat for one minute
 50   permission to move your desk for one period
100   permission to move your desk for one day
300   permission to move your desk permanently
 20   pass to get a drink of water
 10   permission to talk to another person for five minutes
 50   Friday snack
400   field trip
 20   nonacedemic activities approved by the teacher, such as
      knitting, puzzles, games, records.
```

To Earn Off Minus Points:
```
 1   stay after school (per minute)
 1   five earned positive points (earns off one minus point)
 *   teacher assigned academic task
 *   the teacher determines the task and the point value[1]
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To simplify record keeping, the privilege was later granted to

earn back Minus Points with Earn Points on a one-to-one basis.[2]


## A Shaping Procedure

Ayllon and Azrin portray shaping procedures using their "Response

Shaping Rule" described above.  The subject was Wendy, a girl who had

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[1]Marcia Broden, et al., "Effects of Teacher Attention and a Token
Reinforcement System in a Junior High School Special Education Class,"
Exceptional Children, 36 (January, 1970), 346.

[2]Ibid., pp. 341-349.

stopped eating and had subsisted on a diet drink and vitamins for eight
months. In work with Wendy, only a minimum of verbal behavior was
possible. For months Wendy had responded to verbal requests to come
for medication (diet drink and vitamins). She had walked to the atten-
dant and consumed her drink. The first practice was to use these
existing behaviors, and to increase the distance Wendy must walk for her
drink until she had walked all the way into the dining room for it. The
second step was to mix solid food with the drink, but Wendy only tasted
the mixture. A back-up procedure was necessary. Pureed food was mixed
with the drink and placed on a tray with a standard meal. Wendy took the
glass but left the tray. She ate small portions of the mixture with a
spoon. Next came a probe to see whether Wendy needed further shaping.
She was served a standard meal, which she refused to eat. She was
returned to the practice of the diet drink and pureed food served with
a standard meal. She continued to take the glass only. She next learned
to eat the mixture from a cup instead of from a glass. The diet drink
was discontinued and pureed food alone served. Wendy ate the food from
a cup. Another probe was introduced--Wendy was served pureed food in a
bowl and she did not eat. She was returned to the former practice of
eating pureed food from a cup. Next she was served chopped food served
in a cup placed on a tray with a standard meal. She ate the contents with
a fork. Finally the cup of chopped food was discontinued and the standard
meal served on a tray. Wendy ate from the tray and one year later, as the
authors were writing her story, had continued to eat standard meals.[1]

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[1]Ayllon and Azrin, The Token Economy, pp. 162-169.

Failure as Motivation with Mentally Retarded Children

Bailer and Cromwell conducted a study with mentally retarded children to determine the effects of failure and of success on children classified as failure-avoiders or success-strivers. Subjects were 32 educable mentally retarded children of both sexes, with CA ranges from 6-6 to 14-2 and MA ranges from 3-10 to 9-1. Success strivers and failure avoiders were identified with a repetition choice technique constructed by the authors.[1] Within this procedure those who chose to repeat a previously successful experience were considered to be failure-avoiders, while those who chose to repeat an experience in which they had failed were believed to be success-strivers.

In the present experiment, subjects were asked to drop cards into a box for 90 seconds while the examiner gave no indication of success or failure. For the second trial, a failure experience was interpolated. The subject was shown a group of prizes and told he could choose one if he dropped enough cards into the box. At the end of his second trial, he was told he had not dropped in enough cards. Nevertheless, he was asked to repeat the performance a third time, being reminded that he would no longer receive a prize. In the third trial, both groups showed a significant increase, with the increase made by the success-striving group significantly greater than that made by the failure-avoiding group.

The authors interpreted this as an indication that moderate failure experience can be a motivation to mentally retarded children,

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[1]Irv Bailer and Rue L. Cromwell, "Task Repetition in Mental Defectives as a Function of a Chronological and Mental Age," American Journal of Mental Deficiency, 65 (September, 1960), 265-268.

regardless of whether they are classified as success-strivers or as failure-avoiders, but a greater motivation to success strivers.[1]

## Aversive Stimulation as Applied to Discrimination Learning in Mentally Retarded Children

(Involves consumables, aversive noise, no reward.)

Massey and Inalco investigated the effects of different combinations of reward and punishment on discrimination learning in mentally retarded subjects. Subjects were 40 mentally retarded, institutionalized teen-aged girls in regular classes. The Peabody Picture Vocabulary Test was administered to divide the girls into four balance groups of ten each. Mean MA was 5-1 years; mean CA was 16 years.

Group I (control group) for each correct response received candy only. According to results, this group made the most errors.

Group II, for each incorrect response, received aversive noise, and for each correct response received an M & M. This group made fewest errors.

Group III for each correct response received first aversive noise followed by an M & M; for each incorrect response they received nothing. Group IV for each correct response received first aversive noise, then an M & M; for each incorrect response, nothing. These two groups made fewer errors than Group I but more errors than Group II.

The authors interpreted results as indicating that aversive stimulation, under certain conditions, has a positive effect on learning.[2]

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[1]Irv Bailer and Rue L. Cromwell, "Failure as Motivation with Mentally Retarded Children," American Journal of Mental Deficiency, 69 (March, 1965), 680-684.

[2]Phillip S. Massey and Carl Insalco, "Aversive Stimulation as Applied to Discrimination Learning in Mentally Retarded Children," American Journal of Mental Deficiency, 74 (September, 1969), 269-272.

## Anxiety, Praise and Reproof: Their Effects upon Learning and Recall of MR Boys

Lingren conducted a study to determine the effects of anxiety, praise and reproof on learning and recall of mentally retarded boys, some of whom were classed as "low anxious" and others as "high anxious" individuals. Subjects were males, CA ranging from 11 through 14, with IQ scores from 60 through 80. The "Children's Manifest Anxiety Scale" was administered to determine "high anxious" and "low anxious" subjects. All were members of public school classes for educable mentally retarded children.

Within each anxiety group was a subgroup to receive praise and another to receive reproof. Learning material consisted of ten pairs of words to be learned. At the end of each learning trial, subjects were either praised or reproved, according to the group they were in.

Analysis of data revealed a significantly higher learning rate for subjects receiving reproof as opposed to those receiving praise, regardless of anxiety levels.[1]

## Parents Educate Their Trainable Children

Fredericks, et al., conducted a program with parents of retarded children in which the parents learned to use behavior modification techniques. They began with two three-hour session in which the three terms behavior, cue, and reinforcement were explained in simplified terminology and used as the basis for subseqeunt training. The behavior was explained as that which they wanted the child to do or not to do.

[1]Ronald H. Lingren, "Anxiety, Praise, and Reproof: Their Effects upon Learning and Recall of MR Boys," American Journal of Mental Deficiency, 72 (November, 1967), 468-472.

The cue was the antecedent event or that which preceded the behavior. Reinforcement was the subsequent event or response on the part of the parents.

Parents were taught to analyze behavior into component parts, to each one part at a time; they were taught chaining and reverse chaining and were exposed to shaping. Types of reinforcement were explained.

Parent and child then performed before video cameras. After the taping, parent and instructor reviewed the tape. The parents were asked to attend two monthly meetings. At these, selected video tapes were reviewed and the parents discussed their methods of dealing with their children.

The teacher made out lesson plans for the parent to apply at home. Emphasis was placed on keeping parent-child sessions pleasant. If the program was unpleasant for the child, it was changed.

According to parental reports, behaviors learned by the child often generalized to other areas of his life, and some parents learned to apply the techniques to other children in the home.

All data were individualized. Therefore the authors reported no group data. However, they considered gains made by the children to be significant over the period of time.[1]

Parent Education in Managing Retarded Children with Behavior Deficits and Inappropriate Behaviors

Terdal and Buell performed a study in which behavior modification methods were taught to parents in their homes. Aims of the program were

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[1]Fredericks, et al., "Parents Educate," 24-26.

accurate observation of child behavior and of parental behavior, elimination of home behavior problems, and the building up of appropriate child behaviors in areas of self-help, verbal communication, interaction with others and handling of stress.

Personnel included a psychologist, speech therapist, social worker, nurse, occupational therapist, physical therapist, research assistant, and teacher. Observation of child and parent behaviors took place in the home. Situations which served as reinforcers of unwanted behavior were pinpointed. Target behaviors were selected, and the parents trained in reinforcing the desired behavior. Then followed a period in which parents were left without supervision. Following this, it was only after the parents could report success with the program that they discussed with staff members the methods used. Further discussions centered around methods the parents found successful and on behaviors which needed further consideration.

In the judgment of the authors, the program was needed and helpful.[1]

## Introduction and Fading of a Token Program

Browning and Stover describe establishment of and fading of a token program with one child. At admission, Don was overwhelmingly aggressive and destructive. Behaviors included smearing feces, twitching, whining, screaming, smelling and licking foreign objects, uncontrolled silliness, and inability to form close relationships with either staff or with peers. Two years of intensive psychotherapy brought little improvement in overall behavior.

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[1]Terdal and Buell, "Parent Education," pp. 10-13.

Social reinforcement with Don was ineffective. He was therefore placed on a token program in the form of cards on which was written the positive behaviors staff wished to reinforce. The cards contained notes to the effect that Don had helped a friend, had asked for help when it was needed, had handled his anger well, had accepted praise, etc. At the end of each day Don turned in his cards to a staff member who spent about 10 minutes discussing them with him. At the head of Don's self-chosen back-up reinforcers was the privilege of staying up half an hour later to play a game with a staff member.

Part of the plan to eliminate the tokens was letting Don write his own cards. Ultimately he wrote all of his own cards. He was permitted to become increasingly careless in this task, and eventually he decided he no longer needed the tokens.

Time out also produced drastic cuts in Don's hyperactivity. A graph kept on his "uncontrolled silliness" showed that it dropped from 140 daily instances to .6 daily.

Don was discharged from the center and at the time the authors were writing their report, no major behavioral problems had been reported.[1]

## Behavior Shaping in a Classroom for Children with Cerebral Palsy

(Total school program involving consumables, social reinforcement, and a token program.)

Without an experimental design, Stone conducted a study with seven boys diagnosed as cerebral palsied. Intelligence tests manifested mental ages from two to four years beneath their chronological ages.

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[1]Browning and Stover, Behavior Modification, pp. 124-127.

The most inappropriate behavior was refusal to attend to educational material together with motoric and verbal behavior disruptive to any learning process.

Children and instructor discussed their individual inappropriate behaviors. The children were told in specific terms how they would be rewarded for specific positive behaviors. The children chose a brand of cookie they wished as a reinforcer.

The instructor began a program of consistently rewarding appropriate behavior while not rewarding (many times ignoring) inappropriate responses. The tangible reward was accompanied with verbal reinforcement and/or a handshake. (The author emphasized the importance of the tangible rewards falling within the framework of the personal relationships established between pupil and teacher.)

According to teacher judgment, the class responded well to the procedure until about two and a half months before the end of the school year. At this time the children began to lapse into former modes of behavior and no longer wanted cookies. At this, the instructor changed to a token system--dispensing a penny at the end of each period if the children had completed assigned tasks.

The program covered the entire school year. According to the judgment of the instructor, the class showed overall improvement but needed continual reinforcement. The children did not reach the stage in which successful learning experiences were their own reward.[1]

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[1]Martin C. Stone, "Behavior Shaping in a Classroom for Children with Cerebral Palsy," Exceptional Children, 36 (May, 1970), 674-677.

Initiating Socialization Programs for Socially Inept Adolescents

Roos initiated a long term study of a program for socially inept adolescents using primarily a token program and group therapy. The residential facility housing the project served many individuals referred by law enforcement authorities. A dominant feature in the individual behavior dealt with seemed to stem from deep preoccupation with self-gratification and with manipulation of others toward this end. The unacceptable behavior seemed to be a product of each individual's inter-personal history; it stemmed from ignorance, lack of foresight, lack of sensitivity toward needs and feelings of others. Often the objectional behavior such as prostitution or theft was acceptable to one segment of the subculture to which the individual belonged, but unacceptable to the predominate subculture.

The authors stated that often institutions foster behaviors which are easy to cope with in the institution but damaging to the individual upon his return to society. Undesirable behaviors fostered by institu-tional life include passivity, over-dependence, submissiveness, poor self-esteem, and lack of initiative.

The principal aim of the program was return of the individual to the subculture into which he would probably be discharged. The main tool was manipulation of the environment. Inter-staff understanding and cooperation were of paramount importance.

The project included three phases serving approximately 180 residents. Personnel included a specialist in educational psychology as co-director with the superintendent, a clinical psychologist, social worker who specialized in group work, a language specialist and four attendants.

Besides a token program, other techniques included group and individual counseling as well as both group and individual psychotherapy.[1]

## Summary

Chapter II has covered an explanation of terms, a section on principles and guidelines for the application of behavior modification principles, and a review of studies. The next chapter will discuss the studies in the light of the principles presented, with special emphasis on the internalizing of behavioral gains.

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[1]Roos, Philip, "Initiating Socialization Programs for Socially Inept Adolescents," Mental Retardation, 6 (August, 1968), 13-17.

CHAPTER III

Chapter I of this paper emphasized two needs in special

education--motivation and social development. It suggested that

behavior modification could be a definite aid in accomplishing these

two goals. It also presented behavior modification's central

problem--that of interiorizing behavioral gains.

Chapter II presented principles and guidelines for the use of

behavior modification methods, together with studies from various

areas of special training. It demonstrated that behavior modification

can be effective as a means of motivation, and that primary and

secondary reinforcers, paired with abundant social reinforcement,

can condition subjects to accept social reinforcement.

This chapter is concerned with internalizing behavioral gains.

There has been little change with this problem since Sherman and Baer

wrote the following in a 1969 publication:

> The problem of extending the behavioral change produced in his
> office, laboratory, preschool, ward, or clinic to other settings
> in which the subject lives and behaves remains a largely un-
> attacked problem, as far as the printed literature of this field
> reveals. Current systematic investigation of this problem is
> ongoing, but little can be offered to the reader by way of
> inspectable data at this point in time.[1]

It is generally agreed that with the institution of any behavior

modification program there should be included plans for its gradual

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[1] James A. Sherman and Donald M. Baier, "Appraisal of Operant
Therapy Techniques with Children and Adults," in Behavior Therapy:
Appraisal and Status, ed. by Cyril M. Franks (New York: McGraw-Hill,
1969), p. 195.

elimination as the subject develops his own control over himself and

his environment. As discussed above, the program should have imparted

maturity to the subject, not merely conditioned him to respond in a

mechanical, stereotyped way to presented stimuli. Misapplication of

principles, or, worse, an erroneous principle, could seriously damage

correct internatlization of behavioral gains.

The first part of this chapter will be a discussion of studies

presented, together with the extent to which they followed the prin-

ciples presented in Chapter II. It will pay particular attention to

the extent to which they tended toward internalization of behavioral

gains. The second part presents the author's own conclusions concerning

an underlying premise of behavior modification, together with further

suggestions to aid in the application of methods of behavioral change.

## DISCUSSION OF STUDIES

### Consumables

Results of the use of consumables in the studies reported in this

paper are consistent with the principles presented.

In the Allen, Turner and Everett study,[1] use of consumables with

headstart children was appropriate. Not only were the children very

young but many failed to respond normally to verbal requests. Also, use

of consumables was paired with social reinforcement and gradually faded.

In the Massey and Insalco study[2] ineffectiveness of candy as a

reinforcer was consistent for this age group. The mean CA was 16 years,

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[1] Allen, Turner and Everett, "Headstart Children," pp. 119-127.

[2] Massey and Insalco, "Aversive Stimulation," pp. 269-272.

mean MA 5.1 years. There was no indication of emotional disturbance
and no report was given of a social maturity test. Had an SQ of about
2.5 or less been reported, a greater responsiveness to candy would have
been expected.

In the Insalco study[1] with a mean CA of 19 years and mean MA of
8 years, ineffectiveness of consumables as compared with verbal rein-
forcement was again consistent with the age group. Once more, there was
no indication of emotional disturbance and no test of social maturity
was reported.

In the Graziano study[2] with severely psychotic children aged 5
through 9, consumables were introduced as soon as feasible and paired
with strong verbal reinforcement. Consistent with the principle that
autistic children respond poorly to a consumable program, the children
did not accept snacks readily, and food, once established as a rein-
forcer, gradually decreased in effectiveness. Verbal reinforcement,
however, had begun to be effective.

In the Stone study[3] with children of CA's 7 through 9, it is
worthy of note that the children spontaneously outgrew the use of
cookies as reinforcers, almost demanding the more mature token system
(in this case, use of pennies).

These studies, then, are consistent with the principles that
sweets and snacks as reinforcers should be used with the very young,
with individuals possessing a very low SQ, with emotionally disturbed

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[1]Insalco, "Verbal and Consumable Reinforcement," pp. 709-710.

[2]Graziano, "A Group Treatment Approach," pp. 765-771.

[3]Stone, "Children with Cerebral Palsy," pp. 674-677.

children, or with others who respond to them while not responding to more mature means of reinforcement, and that they be faded into a token or social reinforcement program as the subjects are ready for this.

## Token Programs

To enhance effectiveness of token programs, Axelrod has suggested greater use of back-up reinforcers readily available in the classroom.[1] Sulzbacker and Houser[2] used an extra recess. Broden, et al.,[3] made extensive use of many available reinforcers. Daley, with very young children, made use of the many activities the children were observed to engage in naturally when permitted to do as they wished--looking out the window, playing records, talking, sitting, walking around the room, getting a drink, writing or drawing on the chalkboard, etc.[4]

It is interesting to note that in the Sulzbacker and Houser study[5] the token system was used largely to turn peer reinforcement for maladaptive behavior into peer pressure for its cessation.

Passage from the token system into a program of social reinforcement is a key period in the internalizing of behavioral gains. During this period the subject advances into a normal support system. A study of token programs reveals various degrees of fading token reinforcement

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[1]Saul Axelrod, "Token Reinforcement Programs in Special Classes," Exceptional Children, 37 (January, 1971), 371-378.

[2]Sulabacker and Houser, "A Tactic," pp. 88-90.

[3]Broden, et al., "Effects of Teacher Attention," pp. 341-349.

[4]Marvin F. Daley, "The 'Reinforcement Menu': Finding Effective Reinforcers," in Behavioral Counseling: Cases and Techniques, ed. by John D. Krumboltz and Carl E. Thoresen (Chicago: Holt, Rinehart, and Winston, 1969), pp. 42-49.

[5]Sulzbacker and Houser, "A Tactic," pp. 88-90.

and increasing social reinforcement. Browning and Stover report a case study in which an institutionalized boy with multiple disruptive behavior problems was placed on a token program, with gradual fading of tokens while the subject adjusted to normal social reinforcement, gained self control, and eventually returned to home and society.[1] In the Hewett program, students were expected to reach a stage in which mere counting of tokens was its own reward, while social reinforcement had become acceptable to them. It is highly significant that one group outgrew use of tokens to the extent that for half a year following the token program, they made increased study gains on verbal reinforcement alone.[2] In the words of the author:

> Certainly evidence was provided that the use of tangible rewards on a temporary basis does not doom children to dependence on them. On the contrary, it appears such rewards may be extremely useful in launching children with behavior and learning problems into successful learning in school.[3]

In the Broden, et al., study[4] no mention was made whether the token program was being combined with strong verbal reinforcement in order to condition students to properly respond to social approval or disapproval. The use of tokens with this group was demonstrated to be particularly appropriate in that maladaptive behavior increased with teacher disapproval. Here existed both the need and the opportunity to use token reinforcement to draw the students into greater social responsiveness.

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[1] Browning and Stover, Behavior Modification, pp. 122-127.

[2] Hewett, "Santa Monica Project," pp. 523-529.

[3] Ibid., p. 529.

[4] Broden, et al., "Effects of Teacher Attention," pp. 341-349.

In the Stone study,[1] the author states that the children did not

reach the state in which successful experiences were their own reward.

However, the experimenter had progressed with his children from the use

of cookies into the use of pennies. He did not state whether they were

brought into the stage that they were able to sustain their behavior on

a heavy social reinforcement program, and it is presumed they did not

reach this level. From the author's description of the children, pro-

gress from their original state of disruptive behavior into one of

accepting accomplishment as its own reward could scarcely be attained

in a year's time. However, with the author's emphasis on the reinforce-

ment taking place within the confines of personal relationships existing

between teacher and pupils, he was aiming his program toward greater

human development of his pupils.

Social Reinforcement

Because social reinforcement is a natural, normal manner in which

all individuals, from kings and princes on down, can be rewarded, helping

a subject to accept and to give such reinforcement is crucial to helping

him to internalize his behavioral gains. Most of the studies discussed

above included social reinforcement. In many of the studies involving

total milieu or total school program, verbal reinforcement constituted

an integral part of the treatment.

Social interaction in the MacCubrey study[2] is interesting from

several points of view. The tender ages of these subjects (Ca's from

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[1]Stone, "Children with Cerebral Palsy," pp. 674-677.

[2]MacCubrey, "Verbal Operant Conditioning," pp. 696-701.

4-6 through 7-10 with MA's from 2-0 through 2-10) would have justified

the use of candy as a main reinforcer, rather than as a back-up support

for social reinforcement. Yet the effectiveness of social encourage-

ment was demonstrated in the study. The use of consumables was con-

sistent with the principle that secondary reinforcement must at times

be backed up with a primary or tangible reinforcer during the period

in which children are being conditioned to receive social support.

In Santa Monica's Class C,[1] verbal reinforcement brought this

class ahead of others initially, but eventually it fell to lowest place.

Though commendable for experimental purposes, this was an example of the

need for tangible back-up support during conditioning period.

The Graziano study[2] is particularly notable for the experimenter's

having induced the children to progress from a food reinforcement pro-

gram into verbal reinforcement without the intermediary use of a token

system. The children described would probably have had a great deal of

difficulty learning to use and appreciate the use of tokens.

## Use of Aversive Conditioning

All use of aversive conditioning presented in the studies reviewed

appeared, on the surface, to be successful--more successful, in many

instances, than positive reinforcement. However, there are multiple

considerations to be weighed.

In the Massey and Insalco study,[3] for example, use of consumables

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[1]Hewett, "Santa Monica Project," pp. 523-529.

[2]Graziano, "A Group Treatment Approach," pp. 765-771.

[3]Massey and Insalco, "Aversive Stimulation," pp. 269-272.

with children too old for them (as discussed above) contaminated comparative findings on use of aversive conditioning, since children this age would not be expected to respond to candy reinforcers. However, the finding that greatest learning occurred during use of aversive noise for errors and M & Ms for correct responses was consistent with the principle of combining aversive and positive reinforcement for best results.

The Lingren study,[1] also the Bailer and Cromwell study,[2] found aversive reinforcement superior to positive in effecting learning. The token programs all involve withdrawal of tokens for inappropriate behavior. In the Sulzbacker and Houser study,[3] the program was exclusively one of removal of tokens previously given gratis. Consistency of token withdrawal in token programs implies that the practice is effective.

On the surface, these findings would seem to contradict Zigler's theory that failure has been damaging to mentally retarded individuals. Referring to the latter, Zigler wrote: "Individuals whose internal solutions meet with a high proportion of failures will become distrustful of their own efforts...."[4] Basic differences between these studies and Zigler's theories must be considered.

Zigler referred to long term failure, covering perhaps years, definitely accompanied with insufficient positive encouragement, and

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[1]Lingren, "Anxiety, Praise and Reproof," pp. 468-472.

[2]Bailer and Cromwell, "Failure as Motivation," pp. 680-684.

[3]Sulzbacker and Houser, "A Tactic," pp. 88-90.

[4]Zigler, "Personality Structure," p. 104.

other possible deleterious personal considerations. Insalco, Lingren,
also Bailer and Cromwell referred to aversive conditioning covering a
single contact or but several short contacts with the subjects. In the
token programs involving withdrawal of tokens, accompanying positive
reinforcement for acceptable behavior was abundant.

For maximum inner growth, therefore, it is suggested that inter-
action of at least three components be considered: (1) The time during
which aversive conditioning is used should not be extended beyond that
necessary to effect desired change. (2) The amount of aversive rein-
forcement must not exceed that which is necessary. (3) During this
period, positive support for desired behavior should be abundant.

## Total Milieu Programs

Those programs which involved the total living milieu of the
subjects, or at least the total school program, had the best setting
in which to help the subjects to obtain and maintain control. They
covered multiple circumstances rather than isolated situations. They
had time enough to allow their subjects to complete several different
phases of treatment. The Graziano study[1] is an example of a logical,
structured program with step-by-step growth. The children progressed
from removal of the worker as reinforcer to use of snacks paired with
verbal reinforcement, to verbal reinforcement almost exclusively. When
the children had learned to sit at the snack table they were introduced
gradually to academic setting exercises. Evidence of gradual interiori-
zation and maturity were indicated.

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[1]Graziano, "A Group Treatment Approach," pp. 119-127.

Miscellaneous Considerations

The studies covering shaping and extinction followed the prin-
ciples presented in Chapter II. Those covering parental involvement
were concerned with an area vital to any child's welfare.

The J. Gardner, et al., scale,[1] also the Gaasholt precision
techniques,[2] would be most easily employed in a teacher training pro-
gram. However, any teacher could use them as a background for analyzing
his or her own methods. Taping oneself during several class sessions
and rating oneself later can render clues to a teacher's verbal responses
to the children's reactions.

MISSING INGREDIENTS

Lack of Emphasis on Interior Mental States, upon Social-Emotional Goals,
and upon Personal Responsibility

Behavior modification with its emphasis on rewarding positive
behavior is a great need for our punitive society. It has demonstrated
its ability to contribute to human rehabilitation. However, in this
writer's opinion, behavior therapists must develop a philosophy which
considers the whole person--his exterior behavior together with his
interior mental state--if they are to really help individual growth.
In treating an individual, all areas needing help must be considered;
closure must be sought; the therapist must reach out to make whole.
Schools of behavior therapy differ in their views of interior mental
states, personal relationships, personal responsibility, and whether
manipulation of the environment should be temporary or permanent. In

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[1]Gardner, et al., "A Scale," pp. 633-636.

[2]Gaasholt, "Precision Techniques," pp. 129-135.

most of the studies presented, the behavior therapists were openly

placing emphasis on both social and emotional growth and were attempting

to use temporary control of the environment to aid their subjects to

pass from exterior to interior control. However, there are behavior

therapy philosophies which deny the importance of internal growth and

call for complete manipulation of external forces. Eysenck lays a

foundation for this as he explains some of the differences between

Freudian psychotherapy and behavior therapy as follows:

| Freudian Psychotherapy | Behavior Therapy |
|---|---|
| Considers symptoms the visible upshot of unconscious causes (complexes). | Considers symptoms unadaptive CR's (Conditional Responses). |
| ******* | ******* |
| Cures are achieved by handling the underlying (unconscious) dynamics, not by treating the symptom itself. | Cures are achieved by treating the symptom itself, i.e., by extinguishing unadaptive CR's and establishing desirable CR's. |
| ******* | ******* |
| Transferrence relations are essential for cures of neurotic disorders. | Personal relations are not essential for cures of neurotic disorder, although they may be useful in certain circumstances.[1] |

Skinner contributes much to that branch of behavior therapy which

places sole emphasis on external manipulation of the environment.

According to Skinner, man is a victim of his environment to the extent

he neither deserves credit for his accomplishments nor blame for injurious

behavior. He laments that much of behavioral science still attributes

much of behavior to internal forces, while (to his belief) it is

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[1]Cyril M. Franks, ed., Behavior Therapy: Appraisal and Status (New York: McGraw-Hill, 1969), p. 5, citing H. J. Eysenck, "Learning Theory and Behavior Therapy," Journal of Mental Science, 105, p. 67.

attributable only to environmental influences:

> One difficulty is that almost all of what we call behavioral science continues to trace behavior to states of mind, feelings, traits of character, human nature, and so on. Physics and biology once followed similar practices and advanced only after discarding them... Freedom and dignity... are the possessions of the autonomous man of traditional theory, and they are essential to practices in which a person is held responsible for his conduct and given credit for his achievements. A scientific analysis shifts both the responsibility and the achievement to the environment.[1]

The above almost denies all sense of personal responsibility by making the individual the helpless prey of circumstances, without will power, without power of choice, void of any inner strength to control his environment. Skinner advocates that rather than attempt to instill personal responsibility, the environment be controlled (Permanently, it would seem). Using control of alcohol as an example, he writes:

> The real issue is the effectiveness of techniques of control. We shall not solve the problem of alcoholism by increasing a sense of responsibility. It is the environment that is "responsible" for the objectionable behavior, and it is the environment, not some attribute of the individual, that we must change.[2]

Not only does Skinner deny the importance of mental states and the need for personal responsibility, he lays the foundations for de-emphasis on the importance of human relationships and social reinforcement. He fails to distinguish between the reinforcement of a human person and reinforcement of an organism in a laboratory. On this premise, he would also make social reinforcement inferior to machine reinforcement on the bases of quantity and immediacy of delivery:

> In the experimental study of learning it has been found that the contingencies of reinforcement which are most efficient in con-trolling the organism cannot be arranged through the personal

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[1] B. F. Skinner, "Beyond Freedom and Dignity," Psychology Today, 5 (August, 1971), 37.

[2] Ibid., p. 52.

mediation of the experimenter. An organism is affected by subtle details of contingencies which are beyond the capacity of the human organism to arrange. Mechanical and electrical devices must be used. Mechanical help is also demanded by the sheer number of contingencies which may be used efficiently in a single experimental session. We have recorded many millions of responses from a single organism during thousands of experimental hours. Personal arrangements of the contingencies and personal observation of the results are quite unthinkable. Now, the human organism is, if anything, more sensitive to precise contingencies than the other organisms we have studied. We have every reason to expect, therefore, that the most effective control of human learning will require instrumental aid. The simple fact is that, as a mere reinforcing mechanism, the teacher is out of date. This would be true even if a single teacher devoted all her time to a single child, but her inadequacy is multiplied manyfold when she must serve as a reinforcing device to many children at once. If the teacher is to take advantage of recent advances in the study of learning, she must have the help of mechanical devices.[1]

Usefulness of mechanical devices as <u>aids</u> cannot be denied. It is Skinner's failure to distinguish between the quality of human reinforcement and machine reinforcement which is regrettable. Neither the depth of a human relationship nor the effect of social reinforcement can be measured. Social reinforcement cannot be equated with machine reinforcement of an organism in a laboratory. It cannot be equated with machine reinforcement of a human person on the bases of immediate delivery and quantity alone.

Skinner's view of social reinforcement from the teacher is related to Eysenck's assertion (quoted above) that neuroses (often due to disturbed interpersonal relationships) are in no need of healthy personal relationships for their cure. (Imagine attempting to cure ruptured interpersonal relationships with machine-dispensed reinforcement.)

Such beliefs, if religiously adhered to, could lead to such disregard for inner psychological states of individuals, such disregard for

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[1] Skinner, <u>Cumulative Record</u>, pp. 153-154.

social interaction, and to such emphasis on manipulation of the

environment for the sole purpose of effecting desired external behavior,

that results could be dehumanizing. Consider, for example, close

adherence to the following philosophy of Ayllon and Azrin:

> One disadvantage of verbal approval as a conditioned reinforcer
> is that it is momentary and, therefore, does not provide continued
> exposure during the delay interval. Perhaps most important in
> terms of ease of recording is that verbal approval is not stan-
> dardized. That is, the qualitative dimensions (kind or type) of
> verbal approval do not allow for a simple quantitative measure of
> conditioned reinforcement. Also, its transient nature does not
> permit it to be transferred from one individual to another and
> thereby used to control the behavior of others. Further, its
> transient nature does not permit an accurate record of its
> delivery or the degree to which it was followed by actual primary
> reinforcement. Finally, it cannot be used to operate automatic
> reinforcement devices.
>
> Another type of conditioned reinforcement is that of facial
> expressions such as smiles and frowns. This type of conditioned
> reinforcement has all the disadvantages of verbal approval, in
> addition to being more difficult to specify in physical terms
> and to record.[1]

In contrast, the authors bring out the following as advantages

of the token system over social reinforcement:

> Also, the attendants did not have to be concerned about voice tone
> or facial expression as they would if they were delivering a social
> or verbal type of reinforcement. From the patient's point of view,
> the token provided an unambiguous indication of approval independent
> of the attendant's particular mood or whim at the time of delivery
> ...."[2]

It is understandable that with subjects whose response to social

reinforcement is almost nonexistent, subjects whose prognosis is poor

and whose chances of return to society are bleak, the token program is

practical in effecting immediate results. It is deplorable that promi-

nent behavior therapists have abandoned efforts toward social-emotional

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[1] Ayllon and Azrin, The Token Economy, p. 78.

[2] Ibid., p. 270.

growth of their subjects, have de-emphasized care for the individual
person, and have established such reinforcement goals as "continued
exposure during the delay interval," "ease of recording," the practi-
cability of using in order to "operate automatic reinforcement devices,"
and freeing attendants of social responsibilities toward patients.
The entire text in which this philosophy is imbedded repeatedly demon-
strates pragmatic manipulation effecting practical, orderly methods of
inducing patients to accept job assignments, to perform them efficiently,
and to acquire proper feeding and grooming habits. All of this would be
commendable if social-emotional growth were included.

Not only was it demonstrated in Chapter I of this paper that
greater social maturity is the main need of individuals in special
programs, but the Ayllon and Azrin text itself indicates this need for
its subjects. Many of the patients are diagnosed as schizophrenic,
paranoid, psychotic, manic-depressive, etc. Only a part of them are
mentally retarded.[1] Both the pathological diagnoses and the retardation
need a program involving social-emotional growth. Yet the authors see
no need for such.

In the Mulhern and Baumeister study,[2] social reinforcement was
also conspicuously absent. The unnatural physical positions assumed by
the recipients of the machine dispensed reinforcement makes clear the
possibility of results being successful according to the programming of
a machine, but totally unacceptable socially. The experimenters were
concerned with the subjects' stereotyped movements. They should have

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[1]Ayllon and Azrin, The Token Economy, pp. 230, 240-42, 263, 270.

[2]Mulhern and Baumeister, "Attempt to Reduce Stereotypy," pp. 69-74.

been more concerned with the subjects' inability to interact socially.
One can only guess what the result might have been had the M & Ms been
dispensed personally for responses approximating human interaction.

Of somewhat less concern is the Roberts and Perry program.[1]
The report on this undertaking gave no indication of an attempt to wean
any of the patients from the token program into one of normal social
reinforcement. Here again, subjects seemed destined for long term care
with little hope of return to society. Return to society should be of
less concern than human maturity of the subjects. For a beginning pro-
gram it is understandable that concern to fade the token program into
one of social reinforcement (which was obviously defective prior to the
program) could not be of immediate concern. However, at least for some
patients, this should be the ultimate goal. There is hope that the
Roberts and Perry program will develop into one of greater social-
emotional growth because tokens were awarded for appropriate social
behavior, and the awarding of tokens is paired with social approval.

## Using Behavior Modification Toward Social-Emotional Growth

Actually, in practice, most of the behavior therapists in the
studies reviewed stated that social growth was a part of their program.
The administering of M & Ms, tokens, or praise is a social act. Rewards
are not ends in themselves--they are symbols manifesting to the recipient
that in the therapist's opinion, the receiver is maturing. The M & Ms,
tokens, and tangible rewards are not the real needs of the recipients.
If they were ends in themselves, they would be dispensed gratis.

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[1]Roberts and Perry, "A Total Token Economy," 15-18.

In such settings as the Hewett research, the Galvin, Quay, and
Werry study, the Graziano experiment, the Allen, Turner and Everett
headstart program, the Browning and Stover reports, and the Roos study,[1]
gradual progress from lower to more mature forms of reinforcement was
evident.  All of these were total program studies and it is possible
that multiple variables could have been responsible for the maturity
which took place.  The main notable difference, however, between the
studies just mentioned and the Ayllon and Azrin study was emphasis the
former placed on social growth.  In contrast to growth manifested in the
former studies, an Ayllon and Azrin study reports that in the absence of
token reinforcement almost no intrinsic reinforcement for work existed.[2]

The Roos study overtly combines concern for the exterior with
concern for the interior, i.e., concern for social and emotional maturity.
It demonstrated concern for inner growth in aiding subjects to develop a
sense of responsibility, initiative, and independence.[3]

Glasser's "Reality Therapy" contains ingredients resembling both
traditional psychotherapy and behaviorism, and therefore has qualities to
offer to behavior modification principles.  Like proponents of behavior
therapy, Glasser repudiates the necessity of attending to unconscious
causes and thepast history of present behavior.  Like proponents of

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[1]Hewett, "Santa Monica Project," pp. 523-529; Galvin, Quay and
Werry, "Behavioral and Academic Gains," pp. 441-446; Graziano, "A Group
Treatment Approach," pp. 119-127; Allen, Turner and Everett, "Headstart
Children," pp. 119-127; Browning and Stover, Behavior Modification,
pp. 116-135; Roos, "Socialization Programs," pp. 13-17.

[2]Ayllon and Azrin, "The Token Economy," p. 238.

[3]Roos, "Socialization Programs," pp. 13-17.

traditional therapy, he insists upon a personal involvement between

client and therapist:

> At all times in our lives we must have at least one person who cares
> about us and whom we care for ourselves.  If we do not have this
> essential person, we will not be able to fulfill our basic needs.[1]

<div align="center">******</div>

> We know...that at the time any person comes for psychiatric help he
> is lacking the most critical factor for fulfilling his needs, a
> person whom he genuinely cares about and who he feels genuinely
> cares about him....Therefore, to obtain help in therapy the patient
> must gain or regain involvement, first with the therapist and then
> with others.[2]

Glasser does not insist upon a transference relationship, but does demand

a warm and caring one.[3]

## Need for Personal Responsibility

In contrast to Skinner's extreme emphasis on manipulation of the

environment, Glasser insists upon acceptance by the client of personal

responsibility.  Talking about past environmental causes of his behavior

is discouraged because it fosters within the client the proclivity to

blame his environment, to excuse himself of responsibility.  In the

initial meeting, the "reality therapist" asks the client what he intends

to do with his life.  If the client does not have a goal, he is asked to

think about and to formulate one before the next session.  From here the

therapist helps the client to begin immediate work on this goal.[4]

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[1]William Glasser, Reality Therapy (New York:  Harper and Row,
1965), p. 7.

[2]Ibid., p. 13.

[3]Ibid., pp. 7-47.

[4]Ibid.

Behavior modification therapists would do well to incorporate this sense of responsibility into the ultimate goal of a behavior modification program.

## Fears and Phobias

In looking only at external conduct, behavior modification will fail to consider hidden fears which may be the cause or a contributory cause to maladaptive behavior. Desensitization therapy is available for known fears, but traditional therapy may be the only means of locating many hidden fears.

## Reward the Child Also for What He Is

In the use of behavior modification the therapist must be careful not to so limit himself to rewarding the child for what he does that he fails to reward him for what he is. Not all rewards should be contingent upon behavior. Large gifts, such as a bicycle, a stereo record player, two weeks at camp should be freely given as symbols of love and also of the child's worth as a person. If a child is told that he will receive a set of needed clothing at Christmas provided he brings up his poor grades, three damaging results may follow. First, the child may (and probably will) put off studying indefinitely because in his mind Christmas is a long way off. Second, the parents are going to buy the clothing regardless of the child's behavior. Third, the child's self esteem will be damaged when he feels he has received a gift he does not deserve.

## Combining Behavior Modification with Traditional and Other Therapies

In the last analysis, if behavior modification is to bring closure to its treatment by helping the whole person, it must seek means by which

it can include principles from other therapies. Many therapists do this
in part now. The ultimate need of behavior modification is that of
traditional treatment methods--the subject's eventual independent self-
control and appropriate control of his environment (Skinner to the con-
trary). Behavior modification's deficit lies in insufficient emphasis
on interior states. Traditional psychotherapy, while it manifests slower
results, is more concerned with the maturity of internal states and is
therefore in a position to aid toward internalizing behavioral gains.
Of modern therapies, Glasser's "Reality Therapy" has much to offer.

## Future Research

Further research would do well to investigate the results of
treatment programs involving combinations mentioned above. Specifically,
a program involving behavior modification together with group therapy
based on Glasser's "Reality Therapy" would be a worthy contribution.

## Summary

This paper has shown that reviews of literature on the efficacy
of special classes emphasize the importance of motivation and of social
development. It has demonstrated that behavior modification can be a
great aid in both areas. It has stated that in the author's opinion,
those branches of behavior therapy which omit concern for the interior
states of their subjects are in error. Behavior modification therapists
should therefore learn to combine operant conditioning practices with
practices from traditional therapy and/or other treatments. Specifically,
Glasser's "Reality Therapy" has much to offer.

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