Differential Reinforcement of Incompatible Behavior to Eliminate the Undesirable Behaviors of Two Severely Retarded Adolescents

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DIFFERENTIAL REINFORCEMENT
OF INCOMPATIBLE BEHAVIOR TO ELIMINATE
THE UNDESIRABLE BEHAVIORS OF TWO SEVERELY
RETARDED ADOLESCENTS

by

Glenn Flaska

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Glenn Flaska
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INTRODUCTION

This study was constructed in an attempt to test the efficacy of differential reinforcement of incompatible behavior (DRI) to eliminate the disruptive and self-stimulatory behaviors of two severely mentally impaired youngsters.

The techniques used to reduce the undesired and inappropriate behaviors of the retarded have been as varied as the behaviors themselves. Analytic scholars have proved a number of conceptual theories of self-destructive and self-stimulatory behaviors. Such explanations have ranged from internal guilt reduction and aggression turned inward (Dollard, 1939) to functional explanations (Goldfarb, 1945) providing compensatory stimulation for unstimulating or sterile environments.

The approach taken by most researchers in the area of behavior modification has been to examine the functional relationship between behavior and certain environmental events that are immediate antecedents or consequences of the behavior. Tate and Baroff (1966), Corte, Wolf, and Locke (1971), and Lovaas and Simmons (1969) all reported successful modification procedures using response contingent aversive stimulation (shock) to eliminate self-injurious behavior. Using over-correction procedures, Azrin and Foxx (1973) and Ollendick and Matson (Unpublished) reported the suppression of self-stimulatory and aggressive behaviors of autistic children.

Other less severe behavior contingent consequences have been
effective in reducing excessive behaviors. Timeout for positive reinforcement has been used successfully to eliminate tantrumming behavior (Wolf, Risley, and Mees, 1964). Tate and Baroff (1966) have shown timeout to be as effective as aversive stimulation for reducing self-destructive behaviors with a blind retarded boy. Two studies by Kazdin (1971, 1973) used a response cost paradigm to reduce dyslexia and eliminate "psychotic talk" with retarded adults. Extinction has served as a consequence for a number of undesired behaviors with a resulting reduction in behavior rates (Jones, Simmons, and Frankel, 1974; Sajwaj, Twardosz, and Burke, 1975).

Contingent aversive stimulation, over-correction, response cost, and timeout from positive reinforcement have been closely reported to be effective means of eliminating undesired behavior. Though successful applications of response contingent punishment abound in the literature, administrative problems and restrictions prevent its use in many schools and institutional settings. To be effective, punishment must often be intense (Azrin and Holtz, 1966). Also, investigation shows the remediation of inappropriate behavior via punishment is specific to the setting or discriminated circumstances (Risley, 1968; Corte, Wolf, Locke, 1971; and Lovaas and Simmons, 1969).

Because of the initial increases in responding, extinction has proven impractical as a modification tool for many behaviors, e.g., self-injurious, aggressive, and destructive behaviors.
(Ferster and Skinner, 1967). Increased monitoring and a prohibitive atmosphere of many institutions have made the forementioned techniques unfeasible in many settings (Repp and Deitz, 1947), (Corder, Haizlip, and Spears, 1976).

Alternative procedures that avoid administrative entanglements and may be at least as effective in the reduction of inappropriate behavior include differential reinforcement of other behavior (DRO) and differential reinforcement of incompatible behavior (DRI). These procedures contain none of the potential difficulties of aversive control techniques and have some positive aspects. The potential advantages, i.e., application of all school, home and institutional settings; limited classroom disruption; potential for ongoing learning throughout the procedure; and the amelioration of many undesirable behaviors at one time, enhance the efficacy of those behavioral approaches.

Using a DRO procedure, Shafto and Sutzbacher (1977) successfully reduced a preschool child's uncooperative behaviors during treatment conditions containing recommended stimulant medication and conditions without medication. The intervention procedure included the reinforcement of 15 second intervals of cooperative behavior and the withholding of reinforcement for uncooperative behavior. The study's results showed significant improvement during both intervention phases, with medical stimulant and without, when DRO was used.

Reinforcement of one-minute intervals without disruptive
behavior (Caspo, 1971) reduced disruptive behavior of 12 emotionally disturbed children. Three groups (home intervention, school intervention, and home and school intervention) reported a significant reduction of disruptive behavior when tokens were available for non-disruptive behavior. A fourth group showed no change in the rate of disruptive behavior in either home or school setting. No measurement of increased adaptive behavior or comparison of other procedures was attempted.

Goetz, Holmberg, and LeBlanc (1975) manipulated the rate of compliance and noncompliance in a disruptive elementary school girl using DRO. Social and verbal interaction was made contingent upon both compliant and noncompliant behavior. Results showed increases and decreases of compliant behavior was a function of attention.

Repp and Deitz (1974) used DRO paired with mild punishment ("No", as a verbal punisher and 30 second timeout intervals) to effectively reduce the aggressive and self-injurious behavior of four retarded children. The DRO intervals in this study were increased from five seconds to ten minutes within a short period of time, adding credibility to the DRO technique as a viable and practical mean of eliminating undesired behavior.

Lovaas, Freitag, Gilbert, Gold, and Kassorla's (1965) work with a nine-year-old retarded female showed reinforcement of incompatible responding (singing songs and clapping hands) was effective for eliminating self-destructive behavior. Conclusions reached by these researchers were:
1. "Frequency of self-destructive behavior to be a function of the presentation and withdrawal of reinforcement for other behaviors in the same situation."

2. "...behaviors alternate in a relative magnitude with the alternations of conditions of reinforcement for the response."

Thomas, Neilsen, Kuypers, and Becker (1968) reduced the disruptive classroom behaviors of a six-year-old male in a normal classroom by reinforcing on-task (studying and attending) behavior. Thomas et al. reported a dramatic decrease of inappropriate classroom behaviors (86 percent of the baseline observation intervals contained disruptive behavior compared to 17 percent for the last six sessions of treatment). The investigation succinctly showed contingent reinforcement of specific on-task behavior and ignoring of all other off-task behaviors to be an effective scheme for reducing disruptive behavior.

In a similar study (Becker, Madsen, Arnold, and Thomas, 1967), reinforcement of incompatible responding and extinction of disruptive behavior was demonstrated to be successful with seven of ten youngsters in a normal school setting. The researchers instructed teachers to ignore disruptive behavior and systematically and consistently dispense positive social reinforcement for appropriate behavior. Contingent social approval was sufficient for controlling disruption for most of the school-aged children.

Ayllon and Roberts (1974) reported the elimination of disruptive classroom behavior of five fifth grade boys by reinforcing accuracy for assigned classwork problems. Points given to the boys for
accurate homework assignments were traded for special privileges and recess time. The incompatible behavior selected for reinforcement (accuracy of reading assignment) suggests the desirability of using positive reinforcements for the elimination of disruptive behavior.

A number of studies have reported the inefficiency of positive reinforcement as a method for reducing excessive behavior. Foxx and Azrin (1973) describe DRO procedures as the least effective means of eliminating self-stimulatory behavior in that specific study. However, these researchers did not report the number of sessions employing the DRO procedure. It may be the case that the DRO procedure was terminated before it was possible to effect a change. Corte, et al. (1971) compared DRO procedures under two conditions (food deprived and non-food deprived). Only in the food deprived condition was DRO effective in reducing self-injurious behavior. The study further compared shock with both conditions of DRO. Aversive stimulation was shown to be superior in terms of immediacy over DRO procedures and was also effective with one retardate that failed to respond to the DRO treatment.

Risley (1968) used eye contact as a competing activity for the climbing behaviors of a retarded girl. Reinforcement of the incompatible response failed to reduce climbing when furniture was available. This researcher would suggest that the competing behavior, sitting in a chair making eye contact with the therapist, was so restructive as to be aversive in itself. Again, results

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indicated shock was the most effective procedure for reducing the climbing behavior.

A number of questions concerning the use of differential reinforcement of incompatible behavior remained to be answered. Foremost was the need for data to determine the efficacy of those procedures as capable and practical alternatives to punishment and extinction for eliminating undesired behaviors.

This project was conducted for the purpose of collecting data which would allow close examination of the use of differential reinforcement of incompatible behavior as an effective and practical scheme for eliminating behavior and to determine which classes of behavior were most amendable to change under those conditions.
METHOD

Subjects

The subjects were two youngsters enrolled in the Kalamazoo County Program for the Severely Mentally Retarded, a day school program for the retarded under the auspices of the Kalamazoo Valley Intermediate School District. Both youngsters had been assigned to a classroom for individuals whose behavior interrupted normal class routine and required special monitoring.

Janet was a 15-year-old female and a resident of a state home for the retarded prior to her admission to the day school program, eight months earlier. A Stanford-Binet test reported an I.Q. score of 23; the Vineland Social Maturity Scale placed Janet's social age at two years, seven months. Janet was labeled profoundly retarded, the result of unknown prenatal influence and secondary microcephaly. Janet was referred to the special classroom by her teacher and staff psychologist because of a high rate of self-stimulatory behaviors, including rocking, hitting herself, and smelling objects.

The second subject, an 11-year-old male, had been in the (day) program since age two. Results of a Stanford-Binet administered to Jed yielded an I.Q. reported as untestable. The Vineland Social Maturity Scale suggested an age equivalent of 1.62. Jed was described as extremely hyperactive and having very poor attending skills. Excessive behaviors reported by the teacher
included aggressive behavior, out of seat, and task misuse.

Setting

Janet and Jed were in a classroom with five other severely retarded adolescents, ranging in age from 9 to 24 years. The general curriculum included fine motor development, self care skills, and language acquisition. Remedial programs were implemented by the teacher with assistance from university students for one-to-one tutorial sessions throughout the day. The experimental study consisted of two-half-hour sessions each morning. During the sessions, Janet and Jed were seated on opposite ends of a table, so that they were approximately four feet apart. Available university students acted as therapists for the sessions. The students seated themselves between the subjects facing the observers.

Preliminary Observations

Observations were made before the study to determine general classroom conditions and to specify the behavior to be modified. The behaviors selected were those identified by the researcher and observers as being the most disruptive or those which occurred at such a high rate as to interfere with the child's ability to learn. A list of undesired behaviors was compiled for each child along with definitions of appropriate or on-task behavior. The behaviors designated as inappropriate were coded, and a list was posted in
the classroom visible to the observers. The response definitions for each child were:

**Janet**

1. Hair flipping--(F) was recorded when, using one or both hands (hands open or closed) the youngster repeatedly touched the end of her hair.

2. Hitting--(H) was recorded when the child struck any object or her own body parts with any portion of her hands.

3. Mouthing--(M) was recorded when any object not considered edible under normal circumstances entered the oral cavity, or made contact with the child's tongue or teeth.

4. Out of seat--(OS) was scored when the child's buttocks were more than an inch off the face of the chair, not contingent upon the SD's "Come here", "Go to the ...", "Stand up", or without asking permission to stand.

5. Rocking--(R) was recorded when, in a sitting position the child rotated the upper half (waist up) of her body in a repetitive forward and backward motion.

6. Smelling--(S) was recorded when any object made contact or was held within one inch of the child's nose or lips for more than one second.

**Jed**

1. Grabbing--(G) was recorded when the child enclosed between his fingertips and thumb, another person's body parts or clothing, any materials on the floor or table unrelated to his task, or room fixtures and furniture (not including the child's own chair or work table).

2. Kicking--(K) was recorded when any contact between the child's heel or toe and another object produced an audible vibration that could be heard more than ten feet away; placing foot on another person or object.

3. Mouthing--(M) was recorded when any object nor considered edible under normal circumstances entered the oral cavity or made contact with the child's tongue or teeth.
4. Out of seat--(OS) was recorded when the child's buttocks were more than one inch off the surface of the chair, not contingent upon the SD's, "Come here", "Go to the...", "Stand up", or without asking permission to stand.

5. Task Misuse--(TM) was recorded when the child dropped or threw any portion of the task, pushed the task across the table, placed the task on or against the body, i.e., on head, between legs, sits on task, puts task under his clothing, or hit the therapist or other objects with task.

**Appropriate behavior**

1. No occurrence of inappropriate behavior (0) was recorded when the child emitted none of the designated inappropriate behaviors but was not engaged in on-task behavior.

2. On-task--(X) was recorded when child was observed engaged in appropriate task behaviors (manipulation of the task which facilitated its completion, i.e., assembling puzzle board, placing peg in pegboard, etc., without the emission of any inappropriate behavior.

**Materials**

The stimulus materials consisted of four separate tasks for each youngster. The tasks were selected from materials found within the classroom. Each task was available for approximately 15 minutes. The task materials were arranged and presented in the same order throughout the study. The task materials and a brief description of each are given below.

**Janet - Session No. 1 -- 9:30-10:00 a.m.**

A. Match to sample. An 11" x 14" stimulus sheet containing 12 pictures per sheet and 12 corresponding picture cards were placed before the child. Following completion (matching the 12 cards to the correct pictures), different stimulus sheet and set of cards was placed before the child.
B. Size and shape discrimination. A plastic stimulus board containing 12 geometric shapes and 12 corresponding polygons were placed before the child. Following completion (correctly placing the 12 polygons in the stimulus board), the polygons were removed and again placed before the child.

Janet - Session No. 2 -- 10:20-10:50 a.m.

A. Sorting colored beads. A six-compartment muffin tin with each compartment painted a different color was placed before the child. A box containing approximately 200 colored beads (red, green, blue, yellow, purple, and orange) was given to the child. The child placed the colored beads in the corresponding compartment of the muffin tin during the 15 minute period.

B. Puzzles. A variety of puzzles containing 10-25 pieces were used. A puzzle board and its pieces were placed before the child. Following completion of the puzzle (correctly placing the puzzle pieces in the puzzle board), a second puzzle was presented.

Jed - Session No. 1 -- 9:30-10:00 a.m.

A. Sorting colored beads. A three-compartment muffin tin with each compartment painted a different color was placed before the child. A box containing approximately 30 colored beads (red, green, and blue) was given to the child. The child placed the colored beads in the corresponding compartments.

B. Size and shapes discrimination. A stimulus board containing six geometric shapes and sizes with corresponding polygons was placed before the child. Following completion (correctly placing the six polygons in the stimulus board) the polygons were removed from the board and again placed before the child.

Jed - Session No. 2 -- 10:20-10:50 a.m.

A. Pegs and pegboard. An 8" x 12" pegboard and 20 pegs were placed before the child. A painted white line was used to indicate which peg holes were to be filled. Following completion (placing the pegs in the designated peg holes), the pegs were removed and again placed before the child.
B. Puzzles. A variety of puzzles containing three to five pieces were used. A puzzle board and its puzzle pieces was placed before the child. Following completion of the puzzles (correctly placing the puzzle pieces in the puzzle board), a second puzzle was presented.

Reinforcers

Prior to the experimental sessions, observations were made to discover the types of reinforcers most appropriate for each child. The observations indicated that for Janet, edible reinforcers, i.e., cereal, raisins, grapes, and pieces of apple were powerful motivators. For Jed the list included orange juice, soda pop, access to squeeze toys, and wearing a hat. During the final phase of the study, a second reinforcement menu was presented. For Jed, marshmallows, olives, and orange juice were the most often selected.

Recording

Experimental sessions consisted of two half-hour periods separated by a 20 minute period of free play. Each 30 minute experimental session was divided into 180 ten-second intervals. The ten-second intervals were continuously measured via pretaped recording, each interval completion was signaled by a "beep". An observer recorded the behavior of the child assigned to him on a recording sheet. The recording sheet was divided into 360 units, one unit for each 10 second interval. The observer recorded those inappropriate behaviors which occurred during a particular interval in the corresponding unit of the recording sheet. More than one
inappropriate behavior could occur and be recorded during an interval, but each occurrence of an inappropriate behavior could only be counted once and recorded once within an interval. On-task (X) and no occurrence of inappropriate behavior (0) could not be recorded within an interval containing another symbol.

Reliability

Observer reliability checks were made approximately once every ten sessions and at least once during each experimental condition. Reliability of the recording technique was computed by dividing the number of agreements by the number of agreements and disagreements for the session.

Therapist reliability was measured by marking a + or - to indicate whether reinforcement was given following three successive ten-second intervals recorded as on-task.

Six reliability checks to determine the percentage of observation and recording agreements showed observation reliability ranged from 72.9 percent to 91.4 percent. The mean percent of agreement was 82.5 percent. Daily checks to determine the therapist reliability for dispensing reinforcers never fell below 90 percent.

Experimental Design

The experiment was divided into four phases. Baseline, was conducted to assess the frequency of the inappropriate behaviors
and to determine the rate of on-task behavior. Phase 1 consisted of the contingent presentation of edible reinforcers for on-task behavior with corresponding failure to emit inappropriate behavior during 30 second intervals. Phase 2 was a return to baseline in order to assess the effects of the experimental condition. Phase 3 consisted of the contingent presentation of reinforcement for on-task behavior, but included a change of the reinforcement menu for both subjects. During Phase 3, the interval of on-task behavior required for verbal and edible reinforcers for Janet was increased from 30 seconds to one minute and finally to two minutes at the end of the study.
RESULTS

Figures 1 and 2 show the percentage of intervals coded as on-task (X), inappropriate behavior (-) and other behavior (0), during baseline and experimental condition. Sessions one through fourteen describe the baseline performance of both subjects. Following session 14, edible reinforcers were made available to Janet for intervals of on-task (X) behavior. Eight sessions later the same experimental conditions were implemented for Jed.

Figure 1 depicts no significant change in Jed's behavior through phase one. The mean percentage of on-task (X) intervals during baseline was 23.47 percent, while during the experimental condition the mean percentage was 31.8 percent. The percentage of intervals recorded as inappropriate (-) during baseline was 55.62 percent, the mean percentage of inappropriate intervals for the first experimental phase was 54.82 percent.

Phase 4, change in the reinforcement menu, resulted in an increase of intervals recorded as on-task (X) and a decrease in the number of intervals scored as inappropriate. The mean percentage of on-task intervals was 57.16 percent. For intervals recorded as inappropriate the mean percentage was 27.8 percent.

Figures 3, 4, 5, 6, and 7, describe each observed behavior for Jed.

Figure 2 shows the contingent use of edible reinforcers with Janet resulted in an immediate increase of on-task (X) behavior.
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PERCENT OF ON-TASK, (JANET)

INAPPROPRIATE, AND OTHER BEHAVIOR

NUMBER OF SESSIONS

ON-TASK

INAPPROPRIATE

OTHER BEHAVIOR

KEY

BASELINE

PHASE ONE

PHASE TWO

PHASE THREE
Fig. 3

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Fig. 6

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Fig. 7

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and a significant decrease of inappropriate behavior. The mean percentages of on-task (X) intervals through the four phases were; baseline, 26.28 percent; first experimental phase, 76.50 percent; second baseline, 68.18 percent; and second experimental phase 82.88 percent.

The mean percentage of intervals recorded as inappropriate for each phase was; baseline, 69.57 percent; first experimental condition, 15.50 percent; second baseline, 20.64 percent; second experimental condition 9.18 percent. Sessions 36-41 clearly show the effect of differential reinforcement of incompatible behavior (DRI) to be reversible. When experimental conditions were reinstated (session 41), on-task (X) behavior increased, with a resulting decline in inappropriate behavior.

Two changes in Janet's schedule of reinforcement, from 30 seconds to one minute, (three intervals to six consecutive intervals) and one minute to two minutes (twelve intervals) did not appear to effect a change in Janet's behavior. Figures 8, 9, 10, and 11 show individual analysis of each inappropriate behavior.
Fig. 9

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Fig. 10

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Fig. II

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DISCUSSION

The data obtained from this study are compatible with the hypothesis that DRO and DRI schedules will reduce the rate of self-injurious and inappropriate behavior. Although the study was concluded prematurely, and those data obtained from one subject are unclear, the present results indicate differential reinforcement of incompatible behavior to be partially effective for reducing inappropriate behavior with severely and profoundly retarded adolescents.

Examinations of the data for Janet revealed an increased rate of on-task behavior, accompanied by a subsequent decrease of inappropriate behavior. These data are supported by the findings of Ayllon, et al. (1974) and Young and Wincze (1974). When reinforced for engaging in a specific activity that was incompatible with certain inappropriate behaviors, the frequency of appropriate behaviors increased, thereby reducing inappropriate behavior. Under conditions in which reinforcement for incompatible behavior was withheld, the frequency of appropriate behavior dropped and inappropriate behavior increased.

For Jed the DRI condition resulted in little change of inappropriate behavior during the first experimental condition. The second experimental condition was terminated before a stable response rate could be determined. A partial explanation for the ineffectiveness of the first treatment condition might be that
the selection process for determining appropriate incompatible behaviors and types of reinforcers did not foreclose all the behaviors specified as inappropriate i.e., grabbing, mouthing and out-of-seat.

In the second experimental condition, the reinforcement menu was changed. It was observed that several of the reinforcers used in the first experimental condition had no natural termination. Unlike edible or social reinforcers, manipulative reinforcers, i.e., hat, stuffed dog, had to be removed. Removing the reinforcers often resulted in a variety of inappropriate behaviors. Instead of reducing inappropriate behavior it appeared that removal of the reinforcer was setting the occasion for inappropriate behavior. Data from the second experimental condition suggest that the changes made in the reinforcement menu, which eliminated the manipulative reinforcers, were sufficient for increasing on-task and reducing undesired behaviors.

Because of the nature of DRI, the undesired behaviors are never directly consequated; rather, appropriate behavior is increased as the result of contingent reinforcement. As a practical alternative to procedures requiring aversive control for eliminating undesired behavior the possible secondary benefits of DRI weigh heavily in it's favor.

In this study, nine distinct inappropriate behaviors were observed. Of the nine behaviors, Janet displayed six, Jed five. The topography and magnitude of the behaviors ranged from minor
(smelling and mouthing) to major (out-of-seat and hitting). For Janet the decrease in inappropriate behavior extended to each identified behavior and in each case the behavior was maintained at a near zero rate.

It appears that another strength of DRI may be its application in settings requiring the elimination of a number and variety of undesired behaviors. Thomas et al. (1967) reported a decrease in a number of disruptive classroom behaviors which included talking out, out-of-seat, and hitting, as a result of reinforcing incompatible behavior. As in this study, the researchers found no correlation between the topography of the response and the rate of decrease when experimental conditions were in effect. In other words, all the undesired behaviors appeared to be equally modifiable when the DRI condition was in effect.

Though not clearly supported by the data in this study the advantages of DRI in settings involving a number of individuals should be noted. In hospitals and other institutional settings, staff availability often makes it impractical for the one-to-one monitoring needed by many behavior control programs (Ullman and Drasner, 1975). Also, the problems of staff training, implementation, and record keeping of individualized procedures complicate large scale programming. DRI eschews many of these problems. With the exception of specifying frequency and menus of reinforcement, DRI can be used without modification for a large
number of individuals and for a variety of behaviors. It is only necessary to select an incompatible behavior appropriate to the whole group.

The most appealing advantage of DRI for eliminating undesirable behavior is the potential for teaching or shaping more appropriate behaviors. Although no measure of improved task manipulation or task accuracy was attempted in this study, nevertheless, the possibilities are apparent. The selection of incompatible behaviors(s), accuracy for assigned homework (Ayllon et al., 1974), and studying and attending (Thomas et al., 1968) suggest the unlimited potential of DRI as a therapeutic agent for eliminating undesired behavior.

No attempt was made to isolate or assess the specific components required for selecting an incompatible behavior; however, observation would suggest several guidelines. Probably the most important consideration when selecting an incompatible behavior is whether the individual can successfully engage in the behavior. The topography of the incompatible behavior must be within the individual's ability to perform the incompatible response; attention should be paid to the minimum duration of incompatible behavior required for reinforcement. In this study, it might be argued that the 15 second interval of on-task behavior was too long for Jed. A shorter interval would also allow more opportunities for reinforcement. For both topography and duration minimum requirements should be set to allow a high probability of success.
A second consideration when selecting an incompatible behavior is the secondary benefits of increasing the behavior. Allen, Henke, Harris, Reynolds, and Baer (1967) and Ayllon et al. (1974) used incompatible behaviors which served to enhance academic performance while reducing inappropriate behavior. Selecting an incompatible which has some secondary reinforcers i.e., attending, task manipulation, etc., increases the probability that the learned behaviors will be maintained by the natural environment and generalize to other settings.

Lastly, the behavior selected as incompatible to the undesired behavior must be just that. Whether by mechanical impossibility or by definition, the incompatible behavior must entirely exclude the undesired response.

Though it is generally agreed that aversive control procedures are the most effective techniques for reducing undesired behavior, (Corte, et al. 1971; Lovaas and Simmons, 1968; Foxx and Azrin, 1973) research in the use of non-aversive control is of primary importance. Many facilities i.e., schools, hospitals, and other institutions which employ behavioral technology have become hedged about with restrictions and guidelines governing the use of aversive consequences (Repp and Deitz, 1974).

The data from this study and previous research (Smolev, 1971; Madsen et al., 1968; Ayllon and Roberts, 1974; and Allen et al., 1967) demonstrate that differential reinforcement of incompatible behavior is an effective alternative for reducing inappropriate
behavior. Further research on this aspect of DRI is definitely warranted. Questions which remain unanswered include the role of the incompatible behavior, the long-term effect of DRI, and the ability of DRI effects to persist across different settings.
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