School Application of Delayed Conditioning Procedures to Modify Home Behavior

David Arthur Vandervelde
Western Michigan University

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SCHOOL APPLICATION OF
DELAYED CONDITIONING PROCEDURES
TO MODIFY HOME BEHAVIOR

by

David A. Vandervelde

A Thesis
Submitted to the
Faculty of the School of Graduate
Studies in Partial Fulfillment
of the
Degree of Master of Arts

Western Michigan University
Kalamazoo, Michigan
December, 1969
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MASTER'S THESIS M-2240

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Psychology, clinical

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INTRODUCTION

The medical model of behavioral disorder is the most widely accepted formulation of maladaptive behavior (Ullman and Krasner 1965). This conceptualization is basic to the traditional psychotherapies and the techniques which they employ. Maladaptive behaviors are considered to be symptomatic of a condition analogous to the presence of disease in the body. Precise delineation of symptom categories is emphasized and symptomatic behavior, falling within one category, is then considered to have been produced by a central, internal, disease-like, cause. It is assumed that effective treatment must alter inner, causal, events. The description and general nature of such events are dependent upon the specific theoretical orientation of the individual subscribing to the medical approach.

A formulation of maladaptive behavior, which developed as an alternative to the medical model, is called the psychological or behavioral model. In essence, this approach says that both adaptive and maladaptive behaviors are learned. Both have been acquired through conditioning processes and are maintained by events within the environment. With appropriate alterations in the learning situation, the psychological approach indicates that predictable changes in behavior will occur. Briefly, behavior is

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under the control of environmental factors. When such factors are behavioral consequences, an alteration of these factors will bring observable changes in behavior. The therapy plan derived from the psychological method of conceptualization is called behavior therapy or behavior modification.

The behavior modification approach has been successfully employed with a wide spectrum of behavioral disorders (e.g., see Ulrich et al, 1966). The baserock of the approach is a technique called positive reinforcement. Rewarding or reinforcing stimuli are dispensed contingent upon the emission of a desirable response. With this technique, the frequency of specified, desirable, responses can be increased and maintained. If the response specified as desirable is not initially in the individual's behavioral repertoire, a shaping procedure is frequently employed. Successively closer approximations to the desired response are reinforced until this response is established.

Many recent studies have demonstrated the effectiveness of behavioral treatment procedures when such procedures have been applied to the behavioral problems of children. The reinforcement procedure has been effective in the treatment of thumbsucking (Baer, 1962); stuttering (Flanagan, Goldiamond and Azrin, 1958); childhood schizophrenia (Hingtgen and Trost, 1964); toilet training problems (Giles and Baer, 1966); autism (Wolf, Risley and Mees,
1964); mutism (Kerr, Meyerson and Michael, 1965); vomiting (Wolf, Birnbrauer, Williams and Lawler, 1965); and severe aggressive behavior (Bostow and Bailey, 1968).

Behavior therapy techniques, when applied to the problems of the classroom, have again proven themselves to be effective. Approving classes of teacher behavior (praise, smiles, contacts, etc.) have been established as successful controllers of classroom behavior (Allen, Hart, Buell, Harris, and Wolf, 1964; Becker, Madsen, Arnold, and Thomas, 1967; Brown and Elliot, 1965; Hall, Lund, and Jackson, 1968; Harris, Johnston, Kelley, and Wolf, 1964; Zimmerman and Zimmerman, 1962). Token reinforcement programs, in which actual tokens are invested with reward value, have offered additional flexibility and control (Birnbrauer, Wolf, Kidder, and Tague, 1965; Hawkins, McArthur, Rinaldi, Gray, and Schaftenaar, 1967; Kuypers, Becker, and O'Leary, 1968; Hewett, 1967; Quay, Werry, McQueen, and Sprague, 1966; Wolf, Giles, and Hall, 1968; O'Leary, Becker, Evans, and Saudargas, 1969.

These studies indicate that operant conditioning techniques can be successfully applied to the classroom. Several report that teachers function well as behavioral engineers. Frequently, however, the improved behavior observed in the classroom does not generalize to situations outside the classroom, and parents report continuing behavioral difficulties in the home.
Of course, it would seem that behavioral procedures could be employed in the home as well as they have been in the classroom. Several studies report the successful training of mothers as behavioral therapists (Wahler, Winkel, Peterson and Morrison, 1965; Hawkins, Paterson, Schweid, and Bijou, 1966; Walder, Cohen, Breiter, Daston, Hirsch, and Leibowitz, 1967; Walder, Breiter, Cohen, Daston, Forbes, and McIntire, 1966; Risley and Wolf, 1966; Hall and Broden, 1967; Zeilberger, Sampen and Sloane, 1968; Allen and Harris, 1966; Holland, 1969). Wahler and Erickson (1969) used non-professional volunteers, trained as visiting behavioral therapists, to alleviate distressing behavior problems occurring in the home. Patterson and Gullion (1968) offer a programmed text which is intended to teach parents operant conditioning techniques. Although the research indicates that parents can be successfully trained as behavioral engineers, many may lack the patience, time, interest and objectivity required.

Even when teachers and parents function well, in their areas, as behavioral therapists, one problem persists. Poor communication between home and school allows only limited control to each sector of the environment. The weight of the entire environment cannot be brought to bear on behavior problems when movement from sector to sector results in changing behavioral consequences. Sluyter (1969) improved communication between the school and home.
Checklists, reporting academic performance, were completed by the classroom teacher and supplied to the parents. With this new information the parents were able to manipulate consequences in the home and these were applied to classroom behavior.

The present experiment was an attempt to determine if, with improved communication between the home and the school, classroom teachers could successfully modify the unacceptable behavior of students in their homes. Since such a study constituted a delayed conditioning procedure it was hoped that, as Brackbill and Kappy (1962) have indicated, response-produced cues would act as secondary reinforcers and mediate control of behavior. It was anticipated that improvements in home behavior would make the subjects better-adjusted members of their families and communities. It was hoped that once experimental contingencies were removed, natural environmental consequences would be adequate to maintain the behaviors.
METHOD

General Procedure

The study was designed to modify several home problem behaviors of each child — behaviors which had proven difficult for the parents to modify. The general technique was to utilize the children's teachers as therapeutic agents. Because the teachers had been highly successful in modifying these children's problem behaviors at school, it appeared that they might also be able to modify problem behaviors at home, despite the fact that they would not be personally present, in the home, to monitor the relevant behaviors. The monitoring was to be done by the parents and their observations communicated to the teachers, daily, in the form of behavioral checklists individually designed for each child. (Fig. 1)

Figure 1

Sample Behavioral Checklist

DATE:
1. Lies (check each occurrence)
2. Talking back (check each occurrence)
3. Responsibilities:

<table>
<thead>
<tr>
<th>Responsibility</th>
<th>Job done</th>
<th>Excellent( )</th>
<th>Good( )</th>
<th>O.K. ( )</th>
<th>Not done( )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dogs:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Time from asking to beginning</td>
<td>Time from beginning to finish</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dishes:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Time from asking to beginning</td>
<td>Time from beginning to finish</td>
<td></td>
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<td>Dressing:</td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Time from asking to beginning</td>
<td>Time from beginning to finish</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
A child's behavioral checklist indicated several behaviors that his parents were to evaluate daily. Each morning the parents were to send a completed checklist to the child's teacher reporting the previous day's behavior. The teacher would then provide appropriate consequences at school. Thus, the checklists could be considered token consequences exchangeable for other, more intrinsically reinforcing consequences. The tokens were dispensed by the parents, the backup consequences by the teacher. It should be noted that a substantial amount of time would pass between the occurrence of the behavior and the dispensing of the token.

The study was conducted in three phases: a Baseline Phase, a Self-Control Phase, and a Consequation Phase. During Baseline, the parents were to fill out checklists, daily, but were to make every effort to conceal the fact that they were making these observations. The checklists were picked up by the experimenter during school hours. These data provided a measure of the selected behaviors under conditions as close as possible to those which had existed prior to the onset of the study.

When an adequate assessment of a child's behaviors had been made under Baseline conditions, the Self-Control Phase was initiated for that child. This phase was designed to allow separate examination of the effect that an awareness by the child that certain of his behaviors were being closely monitored might have. It was named
the Self-Control Phase because, if this information was sufficient to produce a favorable change, it might be attributed to variables that many would label "self-control."

When sufficient data had been collected for assessment of the Self-Control Phase, the Experimental Phase was initiated. The specific behaviors that were being observed were reviewed with each subject and each was informed of the plan for daily delivery of a behavioral checklist to the classroom teacher. All were informed that certain types of checks on the list were considered to be of value and would be rewarded by the teacher. Since all of the subjects had been exposed to "token economy" routines in the classroom, they were familiar with the utilization of poker chips as rewards. They were instructed that the tokens were to be accumulated in a special "savings jar", and that at the end of the school term the tokens would have an exchange value of two cents per token toward the cost of any articles they might select on a "shopping spree."

As directed, the classroom teacher reviewed the behavioral checklists with the subjects every morning. Social reinforcement, as well as the appropriate number of tokens was dispensed. The tokens were placed in special "savings jars". The time required for this process usually ranged from three to five minutes. The subjects frequently asked that they be allowed to count their tokens, and this was allowed during recess periods.
During the first day of the Experimental Phase, each subject mentioned things he or she would like to purchase during the shopping spree. As the study progressed some changes occurred. However, by the end of the first week, all had reported the choice of objects that were eventually purchased on the trip. The variety of desired objects was enormous, and in no case were the number of tokens required for the desired objects attained until the last week of the experimental period. Objects selected at the end of the study included costume jewelry, toys, food, athletic equipment, books, and writing materials.

At the end of the study, Dori had earned 322 tokens with an exchange value of $6.44, and Lenny had earned 437 tokens with an exchange value of $8.74. Wanda earned 227 regular two-cent tokens worth $4.54 and 200 special five-cent weight-reduction tokens worth $10.00, for a total of $14.54.
EXPERIMENT I: DORI

Subject

Dori was ten years old and had been enrolled in a special education classroom because of frequent outbursts of temper and periods of uncooperative behavior. Her inability to participate in an orderly manner, with the normal classroom process had resulted in severe academic retardation. When the study began, classroom problems were no longer evident and school officials were already planning to return her to a regular classroom during the next school term. Despite the child's improvement at school and two years of psychiatric counseling, the parents continued to have problems with Dori at home. Both parents indicated to the experimenter that they were "willing to try anything" to improve the situation that existed in the home. Dori resisted performing all routine household chores and, if she was coerced into performing, she would frequently take inordinately long periods of time to complete relatively simple tasks. Dori also lied a great deal and would "talk back" to her parents when they insisted that she conform to household routines.

Procedure

Three household chores, consisting of dressing, dishwashing, and caring for the family pet, were chosen as target behaviors.
The specific measurements taken were the latency from the time the parents requested that Dori carry out a task to the time she actually began carrying it out and the elapsed time from the beginning of a task to its completion. Measurements of the behavior "talking back" were taken by the parents and recorded only if instances of the behavior fit an operational definition which the parents and experimenter had constructed (see Appendix I). Lying behavior was recorded in a similar manner. Measures of work quality were obtained with a rating scale which offered the alternatives excellent, good, and okay. Although work quality was not one of the consequated variables, the scale allowed the experimenter to examine any changes that might occur in this area - concurrent with changes occurring in the consequated response classes.

**Baseline.** Baseline data were recorded by the parents, in the home, for twenty-six days. As indicated in the General Procedure section, precautions were taken to prevent the subject from knowing that these observations were being made. The parents offered total cooperation and submitted a completed checklist each day when the experimenter came to their home while Dori was in school.
Self Control Phase. On the twenty-seventh day of the study, the checklists were reviewed with Dori. From this point on she was fully aware of the monitoring process and which specific behaviors were being recorded. She was familiar with similar recording processes in the classroom but this was a novel practice in the home. She saw the checklists and she saw her parents record their observations but she was given no indication of how all this was to be utilized. She received the above information without comment.

Experimental Phase. The Consequation condition began on the forty-first day. Dori was informed that the checklists her parents were completing were to be submitted to her classroom teacher each morning. The lists completed during the weekend were all submitted on Monday morning. The criteria for reinforcement (see Appendix II) had been determined through consultation with the parents. These criteria and the reinforcement procedures were explained to Dori.

Results and Discussion

Figures 2 - 4 show the time Dori took to initiate and complete three different daily tasks: getting dressed in the morning, feeding the dog, and washing the dishes. Figure 2 indicates that, during the Baseline Phase, the mean latency, from a prompt to the beginning of performance, was approximately 25 minutes. During the Self-
Control Phase, this latency was 29 minutes and during the Consequation condition, it was approximately 11 minutes. The mean latency from beginning the dressing task to completion was 54 minutes during Baseline, 46 minutes during Self-Control, and approximately 24 minutes during Consequation. Thus, the data would seem to indicate that latencies were significantly lower during the Consequation condition than those recorded during Baseline. The data do not clearly indicate a change during the Self-Control condition, however.
FIGURE 2

Baseline                Self-Control                Experimental

LATENCY IN MINUTES (DRESSING)

LATENCY FROM BEGINNING TO FINISH

SESSIONS (in blocks of two)

LATENCY FROM PROMPT

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FIGURE 3

Self-Control

Baseline

Experimental

LATENCY FROM BEGINNING TO FINISH

SESSIONS

LATENCY FROM PROMPT

LATENCY IN MINUTES (DOG CARE)
FIGURE 6

Experimental

Self-Control

Baseline

SESSIONS (in blocks of two)

TALKING BACK

*single session
Figure 3 depicts the time Dori took to begin and to complete the task of feeding the family dog after being reminded of that responsibility. During Baseline, she took a mean period of 30 minutes, and during Self-Control, 28 minutes, to begin her work. The Consequation condition resulted in a much more appropriate pattern of behavior than that exhibited during the Baseline and Self-Control phases. A mean period of only 14 minutes was recorded. During the Baseline and Self-Control phases, Dori required an average of 74 and 56 minutes to complete feeding the dog. The conditions of the Consequation Phase reduced this time to 33 minutes. In this instance, the data seem to indicate some slight decrease in latencies during the Self-Control Phase. This minor drop was not as dramatic as the one that occurred with Consequation, however.

Figure 4 reveals mean latencies of 24 and 28 minutes, from the prompt to performance, during the Baseline and Self-Control conditions. The mean latency during Consequation was approximately 13 minutes. The data indicated latencies of 44 and 57 minutes, for work completion, during the Baseline and Self-Control phases. The required time dropped to 36 minutes during the Consequation condition. Instead of the slight drop noted in the Self-Control conditions of Figure 3, Figure 4 has a slight increase in latencies. Again, however, variation from Baseline scores, during Self-Control, was minor.
Dori's lying behavior is represented in Figure 5. During Baseline, the parents detected an average of 1.4 lies per day. During the Self-Control Phase, lying increased slightly (mean, 1.9 lies per day). She was not found to lie once during the first three days of this phase and it is possible that this temporary improvement was a result of her being informed of the observation and recordkeeping that was occurring. Three consecutive days without lying was not unusual enough to firmly indicate a cause and effect relationship, however, and this initial decrease in the response rate was followed by an increase. When the Consequation Phase was initiated, Dori's lying completely stopped, with the exception of one instance on the seventh day of that Phase (mean, .1 lies per day).

"Talking back" responses averaged 3.0 and 4.0 per day during the Baseline and Self-Control conditions. They averaged only 1.8 per day during the total Consequation period and only .4 per day during the last seven days of the experiment.

During Consequation, alteration in the dependent variables was readily seen in every instance. The Self-Control condition did not significantly alter the variables under consideration.

Ratings of work quality (see Table I) indicated an improvement of the dressing chore during the Consequation Phase. The quality of other household chores did not significantly change.
**TABLE I**

<table>
<thead>
<tr>
<th></th>
<th>DRESSING</th>
<th>DOG CARE</th>
<th>DISHES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Excell.</td>
<td>good</td>
<td>okay</td>
</tr>
<tr>
<td>Baseline</td>
<td>8%</td>
<td>36%</td>
<td>56%</td>
</tr>
<tr>
<td>Self-Control</td>
<td>14%</td>
<td>72%</td>
<td>14%</td>
</tr>
<tr>
<td>Experimental</td>
<td>10%</td>
<td>90%</td>
<td>0%</td>
</tr>
</tbody>
</table>

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It was the experimenter's impression that, of the three studies, the data of Experiment I were probably the most carefully recorded. Dori's mother was interested from the inception of the study and was enthusiastic about her daughter's improved behavior during the consequence period. Data sheets were neatly completed and were delivered regularly over a 2-1/2 month period. Data were unavailable on only three occasions when illness in the family made conditions difficult for an accurate assessment of the selected behaviors.
EXPERIMENT II: WANDA

Subject

Wanda was an eleven year old Negro girl who had come to the special education classroom because of poor academic achievement and an inability to get along with her peers. At the commencement of the study she was sixty inches tall and weighed one hundred fifty-four pounds. When compared with tables listing the desirable body weight for girls her age (e.g., Cooper et al, 1958), she was fifty-five pounds overweight. Her mother was the sole means of support for four children and reported that Wanda's "fits of temper" and unwillingness to adequately-perform household duties were highly distressing. The classroom teacher felt that better personal hygiene and a reduction in weight might improve her peer relationships. Therefore, it was decided that the dependent variables in this study should be: instances of temper loss, grooming (bathing, combing hair, washing face, and brushing teeth), dishwashing quality, and body weight.

Procedure

Once the dependent variables had been selected, operational definitions of the behaviors were constructed and reviewed with the parent (see Appendix I).
All the behaviors were monitored and then recorded on the checklist by Wanda's mother. Only those instances of temper loss occurring in the home could be observed and therefore those occurring in the community were not considered. The dishwashing data were recorded after the task was completed. Wanda's mother removed the dishes from the drying rack and, while placing them in the cupboards, would judge the quality of Wanda's work according to the agreed-upon criteria. Although the grooming and food consumption response classes by their nature made perfect data-recording difficult, the time period during which these usually occurred allowed more careful observation than other periods might. For example, the grooming tasks usually occurred either in the early morning or late evening. At this time Wanda's younger brothers and sisters were in bed and her mother was less occupied with other matters.

**Baseline.** Wanda's behavior was recorded during the Baseline condition by her mother. The child was not informed that the observations were being made. Her weight was taken periodically in the classroom as part of the normal school procedure. Her mother was instructed to respond to the problems at home exactly as she had done in the past.
Self Control Phase. On the nineteenth day of the study, Wanda was told of the observations that were being made. She was shown the behavioral checklist and told that her mother would be filling out such a list daily. The definitions for the behaviors and the recording process were discussed but no information regarding a plan for utilization of the data was given.

Experimental Phase. On the thirty-first day of the study, the Consequation condition began and Wanda was instructed to deliver the checklists her mother completed to her teacher each morning. The criteria for reinforcement (see Appendix II) and the back-up reinforcers, via the shopping trip, were discussed. As in Experiment I, the lists completed on the weekends were to be delivered on Monday Morning.

Results and Discussion

Figures 7 - 11 depict the dependent variables under the Baseline, Self-Control, and Experimental conditions. Figure 7 indicates that instances of temper loss occurred with an average frequency of 1.0 and 1.0 times per day during Baseline and Self-Control conditions. This rate dropped to an average frequency of .1 temper losses per day during Consequation.

Dishwashing quality is depicted in Figure 8. With each data point representing the total of 3 days, ratings averaged 4.2 and
3.6 points during Baseline and Self-Control phases. Scores of 7.0 points, a marked improvement, occurred during the Consequation phase.

Although informal reports, received from the classroom teacher, continued to indicate a problem in the area of grooming, all the checklist data (see Figure 9), during the Baseline, Self-Control and Consequation phases, indicate that the grooming tasks were being performed at a rate within desirable limits. No significant changes were noted in response rates during any of the conditions existing while the study was in effect.

Body weight was somewhat reduced from the level recorded during the Baseline Phase in both the Self-Control and Experimental Phases (see Figure 10). The mean body weight during Baseline was 152.2 pounds. Means of 146.0 and 146.7 pounds were recorded during the Self-Control and Consequation conditions.

Although the mean body weights indicate a decrease during the Consequation period, examination of individual measurements show that much of the decrease actually occurred during Baseline. Therefore, the change cannot be clearly attributed to any experimental manipulations. It is of interest, however, that the low point in recorded body weight was attained on the last day of the Consequation period and the date for which the "shopping spree" had been planned.
There are many factors that cast doubt on the accuracy of the data reported by Wanda's mother. First, of course, is the problem that was noted earlier. Although it was reported that the four grooming responses were occurring at a desirable rate, Wanda's teacher reported that poor grooming was still a problem in school. Although there were no reported changes in the level of food consumption in the home (Figure 11), Wanda's body weight fluctuated in between 142 and 154 pounds.

The impression of the experimenter, in this case, was that records were not carefully kept. During Baseline, the checklists were picked up at Wanda's home and frequently her mother had to "search" for the lists. They were occasionally food-stained and incomplete. The explicit problems noted with the data should cast doubt on the validity of all the data reported.
FIGURE 7

Baseline
Self-Control
Experimental

LOSS OF TEMPER

SECTIONS (in blocks of three)
FIGURE 8

SESSIONS (in blocks of three)

Experimental

Self-Control

Baseline

DISH WASHING QUALITY

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FIGURE 9

GROOMING

Baseline
Self-Control
Experimental

FACE WASHING
BRUSHING TEETH
COMBING HAIR
BATHING

SESSIONS (in blocks of two)

* single session
EXPERIMENT III: LENNY

Subject

Lenny was a twelve-year old boy who had entered the special education program because of unusual, inappropriate behavior during class periods. It was reported that he bullied other children, crawled on the floor, made animal noises, whined, and refused to cooperate, in any way, with the classroom teacher.

Although these problems were corrected in school and he was performing well in the special education classroom, he continued to be a problem in the home. His mother described his problem as a "failure to assume responsibility". She said that he was sloppy, lazy, refused to do household chores, and had developed a serious dental problem due to inadequate oral hygiene.

Procedure

The first of the dependent variables measured was bedmaking. This chore was to be completed each morning, and the response monitored and recorded on the checklist by Lenny's mother. The second response class was labeled "the proper disposition of unused food." Both the food and utensils used in the preparation of snacks were to be returned to their proper location following Lenny's afternoon snacking period. His clothing was to be properly cared for. He re-

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ceived an excellent rating when all items were hung up or placed in a hamper. An average rating was given when one or two items were not cared for, and a poor rating was given for numbers exceeding two items. Each instance of teeth brushing and garbage removal were recorded on the checklists. The definition of each behavioral category (see Appendix I) was reviewed with Lenny's parents. Procedures were similar to those in Experiment I and II until the beginning of the Consequation condition. At this point an additional behavior was recorded and conseuated. This category was described to Lenny as a category for "nice acts", "above and beyond the call of duty". Since no Baseline data were collected in this area, its inclusion in this study was only to provide requested service to the parents.

Garbage removal and food care responses were recorded as requested or unrequested. There were certain periods of the day in which these behaviors frequently occurred. And, although the prime consideration was to increase the frequency of these behaviors, it was also anticipated that if the behaviors occurred without the necessity of a request for the response, the resulting behavior could be more desirable than similar behavior that followed many parental requests.

Baseline. Baseline data were recorded on checklists for ten days. Every attempt was made to conceal the fact that Lenny's mother was monitoring and recording his behavior. Both parents
agreed to respond to Lenny in their usual manner and to maintain conditions within the home that were as similar as possible to those that existed before the study began.

**Self Control.** On the eleventh day of the study, Lenny was told of the observations and the recordkeeping. He was shown the behavioral checklist and the definitions of the behaviors being recorded were reviewed with him. As in Experiments I and II, the subject was given no further indication as to how, if in any manner, this information would be used.

**Experimental Phase.** The Consequation phase began on the eighteenth day of the study. Lenny was instructed to deliver the behavioral checklists to his classroom teacher and informed of his opportunity to earn tokens for a shopping trip at the end of the school term. The "nice acts" category described above was added at this time to the checklist that Lenny had seen during the Self-Control phase. The criteria for reinforcement (see Appendix II) were reviewed in detail. Weekend checklists were, as in the other studies, delivered on Monday morning and consequated at that time.

**Results and Discussion**

Figures 12 - 16 represent the data collected on the five behaviors selected for experimental examination. Figure 12 indicates that bedmaking occurred at an average rate of 0.0 times per day.
FIGURE 15

CUMULATIVE RESPONSES (PROPER DISPOSITION OF UNUSED FOOD)

Baseline  Self-Control  Experimental

SESSIONS

10  20  25  35

*AT CAMP - NO DATA

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during the Baseline Phase. It increased to a rate of 0.3 times per day during the Self-Control Phase and reached 1.0 times per day during the Self-Control Phase and reached 1.0 times per day under Consequation conditions. The nature of the task (bedmaking) decreed a maximum rate of 1.0 times per day, and this was attained. Under normal circumstances, higher levels of bedmaking could not be considered valuable or a constructive expenditure of effort.

The information recorded on teeth-brushing behavior is plotted on Figure 13. The mean rates of responding, during the Baseline, Self-Control, and Experimental phases were: 0.3, 0.6, and 2.0 respectively. Although a minor increase occurred, under the Self-Control conditions, the major change occurred when Consequation procedures were utilized.

As Figure 14 indicates, a significant change in the number of rating points earned for clothing care occurred when experimental conditions were changed. Baseline and Self-Control phases recorded daily point averages of 1.1 and 1.3. An average of 2.7 points per day was recorded during the Experimental condition. The maximum number of points per day would have been 3.0.

During the Baseline phase, the mean response rate for the proper disposition of unused food (Figure 15) was 0.1 times per day. This response rate was increased to a level of 0.4 times per day during the Self-Control phase and a mean rate of 1.0 times per day
during Consequation conditions. When Lenny's mother reported the low rate of this behavior and requested that it be selected as one of the behaviors to be studied, her description of the circumstances in the home indicated that the opportunity for this behavior to exceed a rate of 1.0 times per day did not exist. A rate of 1.0 responses per day was the desirable maximum and this was attained. During the Consequation phase, nineteen of the responses were unrequested. No unrequested responses were recorded during the Baseline and Self-Control conditions.

A significant increase in the rate of response occurred under Consequation conditions in Figure 16. The rate of responding, per session, for garbage removal, increased from 0.2 times per session, during Baseline, to 0.3 and 0.9 times per session during Self-Control and Consequation. Again, if it is considered that a maximum response rate for such a behavior is 1.0 it would seem that near optimal rates of the desired behavior were recorded under Experimental conditions. Only one unrequested response occurred during the first two phases of the experiment, but nineteen were recorded during the Consequation phase, just as with proper disposition of unused food.

No Baseline data were collected for the "nice acts" category and, therefore, objective comparisons with pre-consequation conditions is not possible. It should be noted, however, that the record indicates twenty-eight "nice acts" occurred during the twenty-day Consequation
period. These included instances of cleaning the basement, changing linens on the family beds, washing dishes, peeling potatoes, and cleaning his room. Lenny's mother was unusually enthusiastic about this portion of the study and expressed her feeling that these acts were the most pleasing result of the study.

The impressions of the experimenter were, as in Experiment I, that the data were carefully recorded and are, essentially, correct. Data were delivered regularly, as specified, and the only break in the record occurred during two days that Lenny spent at camp.
DISCUSSION

The data collected in Experiments I and II do not indicate any consistent changes in response rates when the Self-Control condition is compared with the Baseline Phase. Only minor changes were recorded under Self-Control conditions in Experiment III. Therefore, the large improvements obtained during Consequation cannot be attributed to the child's being made aware that his or her parents felt that the recorded behaviors were important.

It was anticipated that the longer delay of reinforcement that existed over weekends might adversely affect behavior during those periods. Examination of the data does not reveal any such effect, however, and it must be assumed that the checklists, themselves, were fairly efficient secondary reinforcers.

Several problems with the design of the study should be mentioned at this point. The problems that the parents of these children considered important were the ones that were selected for study. In certain instances, this resulted in behavior categories that were difficult to precisely define. If behavioral definitions were precise and inclusive they were cumbersome for the unsophisticated observer. If definitions were brief, they were frequently not inclusive enough.
Back-up reinforcers, other than social reinforcement received in school, were not dispensed until the end of the semester. The checklists were exchanged for tokens but the tokens were not exchanged for back-up rewards until several weeks had passed. Perhaps an improved design would allow for more frequent shopping sprees and reduce this delay.

The nature of this study, with data recorded in the privacy of the home, made reliability difficult to assess. The body weight variable (Experiment II) was the only portion of the study that allowed a parallel measurement for reliability purposes. Certainly, intrusion into the home by outside observers would have been likely to produce behavior from both parent and child that would be very unrepresentative. In addition, some of the behaviors were so infrequent (e.g., lying, losing temper) that an observer would have to be present for many hours a day to adequately check the reliability of data recording. Other behaviors were appropriate at such discreet times (e.g., brushing teeth, dressing) that the parent would be very likely to record data with perfect accuracy during the presence of a second observer, regardless of how inaccurate the parent might be when the second observer was not present. Despite these difficulties in determining the accuracy and objectivity of data recording, it is recommended that further research of this type include some methods of determining reliability.
The data strongly indicate that the design employed in this study was successfully utilized to alter several behavior problems. The classroom teacher, functioning as a therapist, affected significant changes in the behavior of her students during the Consequation Phase.

The attractive qualities of the approach are enhanced by the fact that such procedures require only minimal expenditures of equipment and professional time. The efficiency and economy of these procedures would seem to make their further investigation by educators and researchers a worthy consideration.
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APPENDIX I

EXPERIMENT I

1. Dressing. Both the latency from the time the subject was asked to begin dressing to the point she actually began, and the latency from the point she began to the completion of the dressing task were observed by her mother and recorded on the checklist.

2. Dog Care. The subject was required to feed and water the family pet. The animal run was to be swept clean and waste material removed. Both the latency from the time the subject was asked to begin to the point she began and the latency from the time she began to the completion were measured with a stopwatch and recorded on the checklist.

3. Dish Washing. This task consisted of washing, rinsing, and placing of the supper dishes in the drying rack. Both the latency from the time the subject was asked to begin the task to the point she actually began and the latency from the time she began to completion were measured by a stopwatch.

4. Lying. The information presented had to be inconsistent with the information that both parents possessed. Any statement that was considered questionable was not to be recorded until conflicting information was received from a reliable source.
5. **Talking Back.** Any statement of disagreement or dissatisfaction following, within an estimated two minute interval, a directive from a parent was considered to be an instance of talking back.

**EXPERIMENT II**

1. **Loss of Temper.** The use of loud speech or violent physical activity under conditions that would not ordinarily call for such behavior.

2. **Dish Washing.** A rating of excellent (3 points) was given for dishes that were clean and properly placed in the drying rack. A good rating (2 points) was given when soap suds were left on the dishes or they were not properly placed in the drying rack. An okay rating was given when food was found on the dishes that had been washed.

3. **Grooming.** This category consisted of the fairly explicit behaviors: face washing (soap and water), brushing teeth, and bathing (shower or tub). These behaviors usually occurred during periods that allowed careful observation and recording on the checklists.

4. **Weight.** Measured with the Cuttingham Professional Scale Model.

5. **Food Consumption.** The level of a day's food consumption was rated average, little, and very little. Although the noon meal was received at school, the portions served were similar from day to day.
EXPERIMENT III

1. **Bed Making.** This chore was recorded as completed or uncompleted each morning, on the check list.

2. **Teeth Brushing.** A minimum of thirty seconds spent brushing the teeth with a cleansing substance.

3. **Clothing Care.** A rating of good was given when all clothing was hung up or placed in a hamper. An average rating was given when one or two items were not cared for, a poor rating was given when three or more items of clothing were not cared for properly.

4. **Proper Disposition of Unused Food.** The subject was required to return all the foods and utensils he used preparing snacks to their proper location.

5. **Garbage Removal Refuse** was to be removed from the kitchen container and placed in a container outside the house on a daily basis.
APPENDIX II

REINFORCEMENT CRITERIA

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EXPERIMENT I

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**Dog Care**

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**Dishes**

From prompt to begin

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**Lies**

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REINFORCEMENT CRITERIA

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EXPERIMENT II

Loss of Temper
None
One

Dishwashing
Quality
Excellent
Good
Okay

Grooming

Face washing
Each occurrence to 3 times a day

Brush teeth

Comb hair

Bathing
Each occurrence to once a day

Food Consumption
Very little
Little

Weight
20 special tokens, with a five cent exchange value, were placed in the savings jar for each pound lost and removed for each pound gained.
### REINFORCEMENT CRITERIA

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<td>poor</td>
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