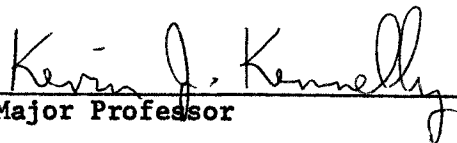



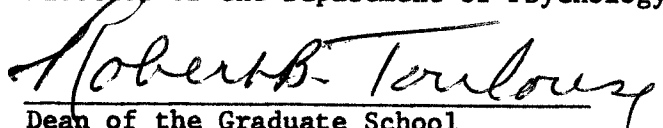
THE RELATIVE EFFECTIVENESS OF PARENTAL POSITIVE REINFORCEMENT
AND PUNISHMENT IN REDUCING OPPOSITIONAL BEHAVIOR IN CHILDREN
AND IN INCREASING THE FREQUENCY OF PARENT-CHILD INTERACTION

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THESIS

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Fulfillment of the Requirements**

For the Degree of

MASTER OF SCIENCE

By

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Detrich, Ronnie, The Relative Effectiveness of Parental Positive Reinforcement and Punishment in Reducing Oppositional Behavior in Children and in Increasing the Frequency of Parent-Child Interaction. Master of Science (Clinical Psychology), December, 1970, 18 pp., 1 table, bibliography, 17 titles.

It was hypothesized in this study that punishment would be more effective than reward in controlling oppositional behavior, but that reinforcement would be more effective in increasing child-initiated interaction with the parents. The subjects were six girls and four boys who were assigned to either the punishment or reward group in such fashion as to create two groups who were matched on the rate of oppositional behaviors during the baseline period. Then a four-week period of treatment was introduced. One group received punishment for oppositional behaviors. The other group received reward for non-oppositional behaviors. The response rates for each group during the fourth week of the treatment were compared, using the t test for matched groups. The number of child-parent interactions during three $\frac{1}{2}$ hour observation sessions were also compared. Neither of the comparisons was significant at the .05 level, although both groups demonstrated some decrease in the number of oppositional behaviors and some increase in the number of child-initiated interactions with their parents.

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In a recent study by Wahler (1969) it was found that a combination of positive reinforcement and punishment applied appropriately was effective in eliminating oppositional behavior in two children. A clinical observation made was that the children appeared to approach their parents more frequently during the treatment and follow-up sessions than during the baseline sessions. The present study was an attempt to investigate the relative effectiveness of positive reinforcement and punishment on modifying the oppositional behavior of children, as well as examining the effects on the parent-child interactions.

Certain assumptions concerning human behavior form the underlying basis for this study. It is assumed that human behavior is controlled by the consequences that the behavior produces. It is argued that behavior is maintained by its effect on the environment and consists of those activities which change the external environment, which in turn changes the subsequent state and behavior of the individual (Whelen & Haring, 1966).

A second assumption is that behavior can be modified by changing the consequences of that behavior. This is the basis for behavior therapy. When the consequences of the behavior are changed, the behavior itself will change for as long as the expected consequences are maintained.

One problem in therapeutic approaches, including behavior therapy, is the successful transference of the changed behavior from the artificial, structured environment of the clinic or hospital to the subject's natural environment. This transference is frequently hindered because the consequences applied to a certain behavior in the subject's home differ from those applied by the therapist in the clinical setting. Patterson (Patterson, McNeal, Hawkins & Phelps, 1967) states that members of the child's social environment are the final arbiters in determining the practical outcome of the intervention program. It is the parental environment which must maintain the child's behavior, and behavior reinforced in the clinic will be extinguished if parents do not provide the contingencies necessary to maintain that behavior (O'Leary, O'Leary & Becker, 1967). In recognition of the important role parents play in the behavioral development of the child, more and more therapists are training the parents to modify the child's inappropriate behavior (Allen & Harris, 1969; Hawkins, Peterson, Schwald & Bijou, 1966; O'Leary, et al., 1967; Patterson, Littman & Hinsey, 1964; Patterson et al., 1967; Wahler, 1969; Zeilberger, Sampen & Sloane, 1968). The study described herein was based on the recognition of the importance of this parental role.

The study described herein had two major hypotheses:

(1) Punishment is more efficient than positive reinforcement in eliminating oppositional behavior. (2) Positive reinforcement increases the amount of social interaction between parent and child to a greater degree than punishment. The first hypothesis is based on several research reports which have found that punishment and negative reinforcement were more effective in eliminating undesirable behavior than was positive reinforcement (Kelly & Stevens, 1964; Marshall, 1965; Penny, 1967). The second hypothesis is based on the previously mentioned observation by Wahler (1969) and a similar hypothesis by Bandura (1969).

The main effects of punishment and reinforcement were studied because, as Baer (1961) has stated,

In the laboratory the study of punishment has been effected in a very precise manner. Reinforcement was withdrawn immediately consequent to a response in a very consistent way. The fact that this procedure is effective may not guarantee that in a more typical situation, where punishment is offered to a child late, inconsistently and perhaps incomprehensibly, the effect would be the same (p. 73).

In the natural situation this explanation could also apply to positive reinforcement. Bandura (1969) has stated that most residential treatment programs are conducted on a contingent-punishment, non-contingent reward basis. The same probably holds true for most children's environments, except that they may be even less consistent. The children have available to them the rewards of the environment, non-contingent upon their good behavior; however, rewards and privileges are withdrawn when the children behave inappropriately.

Before punishment and reinforcement can be applied in a practical way, the components of each and operational definitions must be offered. Punishment was defined within the context of the present study as any act which reduces the probability of a response occurring. The removal of positive reinforcers is a very common form of aversive control. Bandura (1969) has shown that brief reinforcement withdrawal can function analogously to an aversive stimulus in reducing instances of undesirable behavior. Bandura (1969) has also stated that stimulus events that signal the advent of reinforcement withdrawal do not appear to generate disruptive emotional arousal.

This disruptive emotional arousal is one of the primary arguments against using punishment techniques with children. Ferster (1967) has stated that many of the ills of human behavior have come from aversive control.

Despite their immediate control, aversive stimuli make us uneasy because they produce by-products such as anxiety and other disruptions of the operant repertoire. Aversive control leads to avoidance of the controller and general aggressiveness. Furthermore, it substitutes avoidance and escape for productive behavior. The problems that come from aversive control are not so much the behaviors that the controller intends to produce as the behaviors that are produced unintentionally. The same stimuli influence both (p. 342).

Azrin and Holz (1966) have defined the components necessary to achieve maximum effectiveness from punishment as

- (1) The punishing stimulus should be arranged in such a manner that no unauthorized escape is possible.
- (2) The punishing stimulus should be as intense as possible.

(3) The frequency of punishment should be as high as possible; ideally, the punishing stimulus should be given for every response.

(4) The punishing stimulus should be delivered immediately following the response.

(5) The punishing stimulus should not be increased gradually, but introduced at maximum intensity.

(6) Extended periods of punishment should be avoided, especially where low intensities of punishment are concerned. Where mild intensities of punishment are used, it is best to use them for only a brief period of time.

(7) Great care should be taken to see that the delivery of punishment is not differentially associated with the delivery of reinforcement. Otherwise, the punishing stimulus may acquire conditioned reinforcing properties.

(8) The delivery of the punishing stimulus should be made a signal or discriminative stimulus that a period of extinction is in progress.

(9) The degree of motivation to emit the punished response should be reduced.

(10) The frequency of positive reinforcement for the punished response should be similarly reduced.

(11) An alternative response should be available which will produce the same or greater reinforcement as the punished response.

(12) A reduction of positive reinforcement may be used as punishment. Punishment by withdrawal of positive reinforcement may be accomplished in such situations by arranging a period of reduced reinforcement frequency (time-out) or by arranging a decrease of conditioned reinforcement (response-cost). Both methods require the subject to have a high level of reinforcement in the beginning; otherwise, no withdrawal of reinforcement is possible. (pp. 426-427).

In this study, time-out from positive reinforcement (TO) was used as punishment. Willoughby (1969) has found that TO has a suppressive capacity as long as an unpunished response is available to the subject in the situation. Time-out then met the requirements of the definition of a punishing stimulus.

Bandura (1969) has listed several points vital for the successful application of TO procedures. They are

(1) Behaviors that are considered unacceptable and the consequences they produce are clearly explained in advance.

(2) When social exclusion is employed as the negative outcome, each transgression results in brief social withdrawal that is carried out immediately, naturally, and in a firm but non-hostile manner.

(3) If, during the time-out interval, the subject continues to display obstreperous behavior, the period of exclusion is extended until cessation of the behavior.

(4) Since social attention accompanying a disciplinary intervention may reinforce the preceding deviant behavior, the change agent minimizes social and verbal interaction as much as possible while the negative sanction is being applied (p. 341).

For this study reinforcement was defined as any act which increases the probability of a response being made. In this study positive reinforcement was employed to increase the probability of an incompatible response being made instead of oppositional behavior.

Bandura (1969) has outlined three essential features in the successful application of reinforcement procedures.

First, one must select reinforcers that are sufficiently powerful and durable to maintain responsiveness over long periods while complex patterns of behavior are being established and strengthened. Second, the reinforcing events must be made contingent upon the desired behavior if they are to be optimally effective. Third, a reliable procedure for eliciting or inducing the desired response pattern is essential; if they rarely or never occur, there will be few opportunities to influence them through contingent reinforcement (p. 225).

Results from a number of studies have shown that when the stated conditions of reinforcement and punishment are met, they can be effective in producing behavior changes. The purpose of this

study was to determine the relative effectiveness of these two techniques in the natural environment, and the effects of their use upon the social interaction between parent and child.

Method

Subjects

The subjects were four boys and six girls between five and nine years of age who had displayed some oppositional behavior to parental requests. Oppositional behavior was defined as any behavior that did not comply with parental instructions within 1 minute after the instructions were given.

The subjects were observed in the natural environment. Gelfand and Hartman (1968) found that it is often easier to achieve the necessary environmental control in the homes and schools than in the clinic.

Procedure

A matched group procedure was used in assigning the subjects to two groups. The subjects were matched on the basis of baseline rates of oppositional behavior. The t score between the baselines for each group was 1.45, which was not significant at the .05 level. It was assumed that the groups were equal at the beginning of the treatment. The positive reinforcement group received only positive reinforcement for their cooperative behavior; their oppositional behavior was ignored. Allen and Harris' (1969) definition of ignoring was used: "giving no attention, positive or negative, to the child when he is actually participating in the undesired behavior" (p. 178).

Positive reinforcement for this group was a gold star, given for every cooperative effort. When three gold stars were earned, a reinforcer, usually candy or a privilege such as television viewing time, was given to the child. Warm praise and affection for the child accompanied each presentation of a gold star. A necessary requirement for this technique's success was the stipulation that the back-up reinforcers could not be obtained in any way other than by "purchasing" them with the gold stars. A similar approach has been used to successfully eliminate a young girl's excessive scratching (Allen & Harris, 1969). It was anticipated that differential reinforcement of the cooperative responses to parental instructions would cause an increase in the probability of the occurrence of the cooperative responses to the point that any oppositional behaviors would be almost extinguished.

The following instructions were given to the parents in the reward group:

- (1) When the child displays oppositional behavior to a request, make the request again. When the instructions are followed, award the child a gold star and give him verbal praise.
- (2) When three gold stars have been earned, reward the child with a treat or a privilege that can be obtained immediately.
- (3) Award the stars in the presence of the child.
- (4) Follow this program 24 hours a day.

The punishment group received TO from positive reinforcement each time the child demonstrated oppositional behavior by not

complying within 1 minute after parental instructions were given. It was anticipated that to avoid the TO, the child would display more cooperative behavior.

The following instructions, similar to those used by Zeilberger et al. (1968), were given to the parents of children in the punishment group:

(1) When the child displays oppositional behavior, immediately take him into the TO room (a place where he is completely isolated from everyone and everything that might provide a positive reinforcement to him).

(2) Following the oppositional behavior, say, "You cannot stay here if you do not cooperate," and take the child to the TO room.

(3) Place the child in the TO room swiftly and without additional conversation.

(4) Place the child in the TO room for 5 minutes. If he still refuses to cooperate, extend the period by intervals of 5 minutes until he does cooperate.

(5) When the time is up, allow the child to go back to his regular activities, once he has carried out the instructions.

(6) Follow this program 24 hours a day (p. 49).

The parents of children in each group were asked to keep a daily record of the child's behavior. The recording sheet (see Appendix) was similar to the one used by Wahler (1969). This sheet was used because it was simple enough for the parents to use easily, yet it provided all of the needed information. Allen and Harris (1969) have successfully used parents to record the child's behavior.

Before the treatment program was introduced, there was a 1-week baseline period in which the child's behavior was recorded, but no treatment was applied. At the end of the baseline period, the treatment

program was introduced for a period of 4 weeks. The two groups were compared at the end of the baseline period and again at the end of the treatment period. A t test for correlated means was used for the statistical analysis. The subjects were matched on the basis of oppositional responses made during the baseline period. The level of significance was set at the .05 level.

The rate of social approach behavior was also studied during this program. Social approach behavior was that defined by Wahler (1969):

Verbal or physical behavior that clearly involves the child's parents. In addition, this category will require that the behavior not be parent-initiated; it must be interaction that is not immediately preceded by some parental action involving the child (p. 162).

To compile these data, an observer recorded the instances of social interaction between parent and child in three $\frac{1}{2}$ hour sessions during the baseline period, and again during the fourth week of treatment. A t test for correlated means was used to determine which method was more effective in increasing the social interaction.

Results and Discussion

The results from this study indicate that neither reward nor punishment was more efficient as a control technique to be used by parents. Neither of these techniques appears to be better for increasing child-parent interaction as it was defined in this study. The results are shown in Table I, in which it can be seen that none of the t scores was significant.

TABLE I
EFFECTIVENESS OF TECHNIQUES

	BASELINE					TREATMENT				
	REWARD		PUNISHMENT		<u>t</u>	REWARD		PUNISHMENT		<u>t</u>
	M	S.D.	M	S.D.		M	S.D.	M	S.D.	
OPP.	23.4	12.63	27.4	7.86	1.45 ^{ns}	6.8	8.7	4.6	2.79	.5 ^{ns}
INT.	7.0	3.34	10.2	4.4	2.44 ^{ns}	11.6	4.92	12.4	5.39	.39 ^{ns}

ns - non-significant

Both techniques seemed to be very effective in reducing the amount of oppositional behaviors from the baseline levels, but neither was significantly more efficient in reducing the behavior. Also, both techniques seemed to have some effect on child-parent interaction, since both groups increased the number of child-initiated interactions with parents from the baseline rates. However, it cannot be concluded that the changes between baseline and treatment rates were a result of the treatment techniques. The changes may have been the result of the regression to the mean effect.

Neither of the hypotheses of this study was supported; however, the techniques produced certain important results. In this study, the use of punishment did not lead to the child's avoiding the controller (the parent, in this case); instead, it may have increased the number of child-initiated interactions, and none of the undesirable by-products that often occur with the use of other means of aversive control were evident. One explanation may be that time-out

is not in the same category as other aversive techniques such as physical punishment and verbal reprimands. Bandura (1969) has stated that TO maintains approach tendencies toward change agents. The results from this study seem to support this statement.

Time-out, it seems, could be a useful tool for parents in controlling a child's behavior, without the need for a more aversive means of punishment, which may produce undesirable side effects. The results from the punishment group in this study seem to confirm this idea. The child's behavior was brought under parental control without any apparent adverse effect on the child-parent relationship.

Several of the parents of children in the punishment group reported that they considered TO an excellent procedure because it allowed them to punish the child without becoming extremely angry with him. In earlier instances, the parents had allowed the child to display more oppositional behavior because they preferred not to spank him except as a last resort. The TO procedure allowed them to punish every instance of undesirable behavior without feeling guilty about it. In effect, the child was changed from a variable-interval schedule to a continuous reinforcement schedule. As has been reported repeatedly, the continuous schedule is more effective than the variable interval schedule in controlling behavior.

Another important result of this study was that the parents found that they could use rewards as effectively as punishment to control the child's behavior. These results suggest using reinforcement procedures to a much greater extent than they are

being used in most homes and residential centers to control the child's behavior. One parent of a child in the reward group reported that through the use of this technique he had learned to appreciate his child much more. Now he pays attention to the child's good behavior rather than the bad, and he felt that the bad behavior has decreased as a result.

The results of this study suggest that parents may be effectively used as behavior change agents, and that there are techniques available to parents which can produce change without any disruption in the child-parent interactions. In fact, this interaction may be increased by employing such techniques.

Summary

It was hypothesized in this study that punishment would be more effective than reward in controlling oppositional behavior, but that reinforcement would be more effective in increasing child-initiated interaction with the parents. The subjects were six girls and four boys who were assigned to either the punishment or reward group in such fashion as to create two groups who were matched on the rate of oppositional behaviors during the baseline period. Then a four-week period of treatment was introduced. One group received punishment for oppositional behaviors. The other group received reward for non-oppositional behaviors. The response rates for each group during the fourth week of the treatment were compared, using the t test for matched groups. The number of child-parent interactions during three ½ hour observation sessions were also compared. Neither of the comparisons was significant at

the .05 level, although both groups demonstrated some decrease in the number of oppositional behaviors and some increase in the number of child-initiated interactions with their parents.

APPENDIX

SAMPLE PARENTAL RECORDING FORM

(Attached)

	SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
NUMBER OF PARENTAL INSTRUCTIONS							
NUMBER OF OPPOSITIONAL BEHAVIORS							
REINFORCEMENT APPLIED							

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