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AUTHOR LaVoie, Joseph C.
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ABSTRACT

The comparative effectiveness of an aversive stimulus, withholding of resources, withdrawal of love and reasoning, when used alone and combined with praise, was assessed in the standard laboratory punishment paradigm using 120 first and second graders as subjects. Resistance to deviation was used as the measure of punishment effectiveness. Sex of child, use of praise, and type of punisher were combined in a 2 x 2 x 5 factorial design, with a female as the punitive agent. The most stable response pattern resulted from the use of an aversive stimulus. Neither use of praise nor sex of child significantly influenced punisher effectiveness. The practice of grouping various punishment measures under the categories of sensitization and induction measures was discussed. (Author/ST)

THE EFFECT OF TYPE OF PUNISHMENT ON RESISTANCE TO DEVIATION

Joseph C. LaVoie

University of Nebraska at Omaha

March 22, 1973

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Abstract

The comparative effectiveness of an aversive stimulus, withholding of resources, withdrawal of love, and reasoning, when used alone and combined with praise, was assessed in the standard laboratory punishment paradigm using 120 first and second grade boys and girls as subjects. Resistance to deviation was used as the measure of punishment effectiveness. Sex of child, use of praise, and type of punisher were combined in a 2 x 2 x 5 factorial design, with a female as the punitive agent. An aversive stimulus appeared to produce more suppression of deviant behavior, but the effect was not significant for all response measures. The stability of the deviant response pattern varied for each punisher, but the most stable response pattern resulted from the use of an aversive stimulus. Neither use of praise nor sex of child significantly influenced punisher effectiveness. The practice of grouping various punishment measures under the categories of sensitization and induction measures was discussed.

THE EFFECT OF TYPE OF PUNISHMENT ON RESISTANCE TO DEVIATION

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In recent years researchers have relied more extensively on the laboratory analogue to study the effects of punishment on children's resistance-to-deviation behavior. Punishment in this context has provided a means for reducing deviant behavior, which implies that the punisher need not be painful to the subject. Walters and Parke (1967) in their discussions of the laboratory analogue argued that childrearing studies have provided little reliable information on the operation of specific punishment parameters because many aspects of punishment have been confounded. Laboratory studies have a distinct advantage in allowing a more detailed and controlled examination of those factors assumed to influence punishment effectiveness in the naturalistic situation. Resistance to deviation (i.e., the extent of play with prohibited toys) has provided the dependent measure for these punishment studies.

While the major forms of punishment used in childrearing (i.e., physical punishment, withholding of resources, withdrawal of love, and reasoning) have been discussed extensively in the literature, no experimental study to date has assessed their relative effectiveness. However, Parke (1970) concluded from his punishment review that such information was needed. Several studies have evaluated two punishers which provides some data on differential effectiveness but drawing comparative inferences from these studies is a difficult task at best.

An aversive stimulus (i.e., a loud buzzer) and reasoning have been compared by LaVoie (1973) in a study with first and second grade boys and girls. The aversive stimulus was more effective than reasoning, and girls

were less deviant than boys after punishment with the aversive stimulus. However, Cheyne, Goyeche, and Walters (1969) found greater resistance to deviation in second grade boys when reasoning was used, while Parke (1969) demonstrated that addition of reasoning increased the punisher effectiveness of an aversive stimulus.

Withholding of resources and withdrawal of love were about equally effective in eliciting self critical responses from kindergarten and first grade children in the Grusec and Ezrin (1972) study. Reductions in deviant behavior following withholding of resources have been reported in other experimental studies (Aronfreed, 1963; Aronfreed, Cutlick, & Fagen, 1963), whereas similar effects from withdrawal of love have been less consistent. Parke (1967) observed that girls in the nurturance withdrawal condition were more resistant to deviation. but age of the child appears to be an important factor. Saadatmand, Jensen, and Price (1970) found that four-year old girls were more deviant after withdrawal of nurturance while six-year olds were less deviant and eight-year olds showed no change.

Deviant behavior can also be controlled by the use of praise. Parke (1970) has suggested that rewards and punishment are often used in socializing acceptable behavior in children. Although punishment has been more effective than reward in discrimination learning (e.g., Penny & Lupton, 1961), Aronfreed (1969) reported that verbal approval paired with candy decreased deviant behavior in children. The effect of combining praise with a punisher has not been assessed in resistance-to-deviation paradigm.

Sex of child may also mediate punishment effectiveness. Bronfenbrenner (1961) has suggested that mild forms of punishment produce compliance in girls equivalent to that from more severe forms with boys. Love withdrawal was more effective with girls in a study by Parke (1967) and similar

results have been reported by LaVoie (1973) for an aversive stimulus as well as reasoning. Sex differences for other forms of punishment have not been assessed.

Punisher effectiveness is determined by the stability of inhibition over time as well as the effect to which deviation is reduced. A punisher may not be equally effective for both. Parke (1970) has noted that use of reasoning results in rather stable resistance to deviation while inhibition from an aversive punisher decreases over time. There are no stability data on withholding of resources and withdrawal of love, but these punishers, because of their aversive qualities, probably produce less stable inhibition of deviation than reasoning.

The purpose of this study was to compare the effectiveness of an aversive stimulus, a rationale, withholding resources, and withdrawal of love, when administered to six- to eight-year old boys and girls in a resistance-to-deviation test. Each child received one of the four types of punishment for selecting prohibited toys and either praise or no praise for selection of nonprohibited toys. The child was then left alone with the prohibited toy choices and his resistance to deviation was observed.

Three predictions, based on the previous discussion, were made: (a) punishment is more effective with girls; (b) an aversive stimulus is more effective than the other three punishers; (c) use of a rationale produces greater stability in resistance to deviation.

Method

Subjects

The subjects were 120 middle class Caucasian first and second grade boys and girls. All of the children were from intact families. Each subject was randomly assigned to one of five punishment conditions:

aversive stimulus (an 87db buzzer), rationale (a reason which is sufficient in information and legitimate resistance to deviation) withholding of resources, withdrawal of love, or no punishment (control). Half of the subjects received verbal approval for their choices of nonprohibited toys while the nonprohibited toy choices of the other half of the subjects received no praise. Sex of subject, type of punishment, and praise or no praise were combined in a 2 x 2 x 5 factorial design with six subjects per cell.

Experimental Arrangements

Each subject was tested in a mobile laboratory located in the school parking lot. The laboratory was divided into an experimental room and an observation room by a partition containing a one-way mirror. Subjects were seated at a table on which the pairs of toys were presented. The buzzer producing the 87db aversive stimulus was attached to the underside of the table. Timed measures of the subject's behavior were made with a stopwatch.

Procedure

The subject was conducted to the mobile laboratory by a female experimenter, in her early twenties, who served as the punitive agent. During their walk to the trailer, the experimenter interacted in a warm and friendly manner and told the subject that they were going to a trailer in the parking lot where several fun toys were kept. The child was engaged in other conversation, but caution was exercised to insure that the extent of interaction was equivalent for all subjects.

After their arrival in the trailer, the subject was seated at the table and given the following instructions: "I am going to place several pairs of toys in front of you, one pair at a time. I want you to select

one toy from each pair that you would like to play with by picking up that toy. Do you understand what you are supposed to do?" The experimenter then placed the first pair of toys in front of the subject and asked him/her to select the toy he/she preferred. When the subject picked up the toy, one of the following punishment conditions was administered. (a) Aversive stimulus. A 87 db buzzer was sounded for two seconds followed by the verbal prohibition, "Don't play with that toy." (b) Rationale. The subject was told, "You are not to play with that toy because it belongs to another boy/girl and it might get broken and I don't have another toy to replace it." (c) Withhholding of resources. Before administering the punishment training the experimenter gave the subject eight pennies with the following instruction: "I want you to have these pennies for helping me. We will place your pennies on the table in front of you until you finish." When the subject made a prohibited toy choice, he/she was told, "You are not to play with that toy. Now I will have to take two of your pennies away." This procedure was repeated for the three prohibited toy choices so that the subject had only two pennies remaining at the end of the punishment training. However, the other six pennies were returned to the subject at the end of the resistance-to-deviation test. (d) Withdrawal of love. The procedure for this condition was identical to that used by Parke (1967). Prior to the punishment training, the experimenter asked the subject to join her in a corner of the room where some crayons and drawing paper were placed on a small table. The subject was encouraged to draw anything he/she wanted to. During the time the subject was drawing, the experimenter made warm, supportive, and encouraging comments such as: "That is fine;" "Good! You really can draw;" "That certainly is a good

picture;" etc. After five minutes, the experimenter moved to the other side of the room and seated herself with her back to the subject. The subject's attempts to seek attention were ignored for the next five minutes. At the end of this five minute segment, the experimenter asked the subject to join her at the other table for the toy selection. When the subject selected a prohibited toy, the subject was told: "You are not to play with that toy. If you don't touch that toy again, we can play a game together in a few minutes." (e) No punishment. The subject made selections from the five pairs of toys with no comment by the experimenter.

Three of the subject's toy choices were punished regardless of the toy selected, leaving two choices unpunished to prevent the subject from forming a set. Toy choices to be punished were randomly determined. Both the preferred and the nonpreferred toy choices were removed from the table after each selection.

Following their selection of a toy in the two nonpunished trials, half of the subjects were told: "That's good. You are a good boy/girl because you did not select the other toy which you are not permitted to touch." No comments were made to the other half of the subjects for their nonprohibited toy choice.

When the five toy selections were completed, the experimenter placed the three punished toy choices on the table in a manner indicating that another choice was to be made. The experimenter then announced: "Oh! I have forgotten something which I need, so I will have to return to the school. I will be gone for a few minutes. Will you be okay by yourself? Good. When I return I will knock on the door three times so that you

will know it's me. (This instruction was given to the subject to maximize the potential for deviation by assuring the child that he/she would be uninterrupted for a period of time.) I want you to wait here until I return." The experimenter then left the trailer.

During the ensuing 12-minute resistance-to-deviation test period the subject's toy play was monitored through the one-way mirror by a neutral observer. The measures used to assess punisher effectiveness were: latency (time elapsed after the experimenter left the room before a toy was touched), frequency of deviation, duration of deviation (the sum of all deviations), and average duration per deviation. At the end of the 12-minute period the experimenter reentered the experimental room and administered a posttest interview. The subject was questioned about the toys he/she had played with when left alone, asked to repeat the instructions the experimenter had given concerning the prohibited objects, and questioned on the punishment practices used by the parent.

Punishment training objects. The ten toys used in the punishment training consisted of: squeeze man, platform push toy, nervous breakdown, trapeze, wizzer, magnetic man, kaleidoscope, pin ball toy, deely bobbers, and animal noise toy. The toys, previously scored for their attractiveness on the basis of observed play by a group of first and second grade boys and girls, were grouped into five pairs so that the toys in each pair were approximately equal with respect to rated interest value.

Results

A Pearson correlational analysis indicated the four response measures were highly intercorrelated with r's ranging from -.71 to .82. Latency was negatively correlated with all other response measures because a longer latency signifies greater resistance to deviation.

Separate univariate analyses of variance were used to evaluate each of the resistance-to-deviation (RTD) response measures. Since frequency, duration of deviation, and average duration per deviation were recorded over the 12-minute RTD test period, each score was partitioned into three 4-minute blocks and these measures were analyzed with a series of repeated measures analyses of variance. The latency scores were analyzed as a single measure. The F ratios for each of the response measures are presented in Table 1.

Resistance-to-Deviation Test

Type of punishment was a significant factor for the four RTD measures (see Table 1). The Neuman Keuls' analysis of the latency means, presented in Figure 1, showed that first deviation occurred significantly later in the RTD test period for those subjects who were punished with an aversive stimulus. Frequency of deviation was less in the aversive stimulus condition than for withholding of resources or withdrawal of love, but not a rationale. However, the aversive stimulus did not produce significantly more resistance to deviation than the other punishers in the analysis for duration and average duration per deviation. Thus the predicted overall effectiveness of an aversive stimulus in reducing duration was not equivocally supported.

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Insert Figure 1 about here

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Contrary to prediction, sex of child was not a significant factor as noted in Table 1. The punishment treatments appeared to be about equally effective with boys and girls. Use of praise was also a nonsignificant factor in resistance to deviation (see Table 1). Mean differences between use of praise and no praise in the no punishment condition were evaluated with

a t test for each of the four response measures. The resulting t values ranged from .36 to 2.19. The only significant difference was for average duration per deviation ($t=2.19$, $df=22$, $p<.05$).

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Insert Table 1 about here

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Stability of Resistance to Deviation

Although the Punishment x Blocks interactions in the repeated measures analyses of variance (the test for stability of inhibition) for the three response measures were nonsignificant, the F ratios for frequency ($F=1.74$, $df=8/200$, $p<.06$) and duration ($F=1.74$, $df=8/200$, $p<.07$) were of marginal significance. Winer (1962) has argued that "The specific comparisons which are built into the design or suggested by the theoretical basis for the experiment can and should be made individually, regardless of the outcome of the corresponding overall F test" (p. 208). Since an explicit prediction was made regarding stability of inhibition, the frequency and duration of deviation for each of the punishment treatments across the three 4-minute blocks of time were evaluated with trend analyses. The frequency means for each punishment treatment are plotted in Figure 2.

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Insert Figure 2 about here

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Figure 2 shows that the most stable pattern of deviation occurred when the punisher was an aversive stimulus, not a rationale as predicted. The linear trend as well as the quadratic trend were nonsignificant for an aversive stimulus ($F<1$). A significant linear trend, denoting a decrease in deviation, appeared for a rationale ($F=5.26$, $df=2/200$, $p<.01$) and withholding of resources ($F=3.03$, $df=2/200$, $p<.05$). But the quadratic trend for withholding of resources approached significance ($F=2.45$, $df=2/200$,

$p < .10$), indicating that the effectiveness of this punisher diminished over the last four minutes. The linear trend for withdrawal of love was of marginal significance ($F=2.58$, $df=2/200$, $p <$ [illegible] as apparent from Figure 2, subjects in the no punishment conditions decreased in deviant responding ($F=7.54$, $df=2/200$, $p < .01$), suggesting a toy satiation effect. The analyses for duration produced similar results.

Denial Data

Sex was not a significant factor in confession to deviation ($X^2 < 1.00$). A nearly equal number of boys and girls confessed or chose not to confess their deviant behavior. Type of punishment was also a nonsignificant factor. However binomial tests showed that more children in the withholding of resources condition gave complete confessions ($p < .02$), whereas subjects in the other punishment treatments frequently admitted playing with some, but not all of the prohibited toys. Children in the withholding of resources condition may have assumed that a complete confession would result in a return of the withheld resources.

Discussion

In general the results of the present study are congruent with much of the research on discrimination learning employing reward and punishment conditions (e.g., Penny & Lupton, 1961; Spence & Segner, 1967). Punishment was significantly more effective in reducing deviant behavior than use of praise, and combining praise with punishment produced only a negligible increase in punisher effectiveness except in the withdrawal of love condition where the addition of praise increased deviation. Apparently verbally rewarding the child interfered with the suppressive effect of withdrawal of love by partially reinstituting a satisfying relationship which the child may have interpreted as license for deviation. This

fact suggest that in certain contexts positive reinforcement may counteract the suppressive power of punishment. However, subjects in the no punishment condition who received praise for their nonprohibited toy choices were less deviant than those subjects who did not receive praise.

Although resistance to deviation in the aversive stimulus condition was not significantly greater than the other punishers for all response measures, use of an aversive stimulus did result in a more stable deviation pattern over time. Since punishment effectiveness is based on both indices, it appears that an aversive stimulus was somewhat more effective, supporting an earlier study by LaVoie (1973). The suppressive effect of the aversive stimulus probably resulted from its unpleasantness and perhaps a fear of reoccurrence, two characteristics which are also present in physical punishment. However, the stability analyses indicated that an aversive stimulus exerted its greatest effect during the first four minutes. Block comparisons between punishment treatments revealed no significant differences during the last eight minutes of the resistance-to-deviation test. The implication seems to be that punishment, regardless of type, is effective in reducing deviant behavior, but the more aversive the punisher the greater the initial effect. Grusec and Ezrin (1972) also found no significant differences between withholding of resources and withdrawal of love.

A further examination of the stability analyses disclosed some interesting differences. While an aversive stimulus seemed to produce the most stable pattern of inhibition, deviant behavior increased over time, whereas this behavior decreased when a rationale or withdrawal of love were used. It would appear from these differences that inhibition is largely determined by characteristics of the punisher. Deviation

increased in the aversive stimulus condition signifying that inhibition was externally cued to the presence of the punitive agent.

The inhibition resulting from use of a rationale or withdrawal of love was more internally based because of its personal focus on the child and its stress on a rule or specific reason by which the child could guide his behavior. Although the effect of this inhibition was not as immediate as the aversive stimulus condition, inhibition did increase over time. If anxiety mediates inhibition, then this affect is immediately present when an aversive stimulus is used. The anxiety buildup from a rationale or withdrawal of love is much slower because of the time involved for the child to become cognizant of the implications of deviation for him. However, when this cognizance is achieved, the inhibition effect seems to be somewhat more powerful than that present for an aversive stimulus.

Withholding of resources produced a curvilinear stability of deviation pattern. The decrease in deviancy during the first two blocks of time was similar to that resulting from reasoning and withdrawal of love, while the increase during the last block of time resembled the inhibition pattern produced by an aversive stimulus. Thus the inhibition resulting from withholding of resources was midway between that produced by an aversive stimulus and the inhibition resulting from a rationale or withdrawal of love. Douvan and Adelson (1966) reported similar patterns of internalization with adolescents; i.e., internalization from physical punishment was lowest while reasoning resulted in the most internalization and withholding of resources produced an intermediate level of internalization. Apparently the loss of money had sufficient implication for the child, so that deviancy was reduced for a period of time during

which the child may have assessed the consequences of further deviancy, but this punisher did not have sufficient potency to maintain this reduced level of deviancy. When confession is used as the measure of internalization, withholding of resources is more effective than the other punishers. Thus withholding of resources produced low internalization for the resistance to deviation measure, but relatively high internalization in terms of confession. Grusec and Ezrin (1972) reported a similar phenomenon for withholding of resources.

The absence of a predicted sex effect can probably be attributed to several factors. The sex difference reported by LaVoie (1973) was not present for all measures of punishment effectiveness and only two punishment treatments were used. Certain punishment treatments in the present study appeared to be more effective with girls but this effect was offset by those punishers which were more effective with boys. The posttest interviews also indicated that both boys and girls frequently experienced aversive forms of punishment at home for their unacceptable behavior. According to the interview data, 49 boys and 44 girls responded that spanking or other aversive forms of punishment were frequently used. Only six boys and eight girls reported that their parents used reasoning. A similar punishment history was not found for the subjects in the LaVoie (1973) study The extensive parental use of aversive forms of punishment, especially with girls, may have conditioned the child to punishment so that the effectiveness of the punishment treatments was reduced.

The present study suggests that the practice of grouping punishers such as physical punishment and withholding of resources into the category of sensitization measures and reasoning and withdrawal of love into induction procedures needs to be reconsidered. The sensitization punishers

in this study differed from each other in reducing deviation and stabilizing inhibition, although the induction type measures were more similar. Therefore, comparisons between certain sensitization punishment and induction seems acceptable, but caution needs to be exercised in assuming that all sensitization measures function in a similar manner.

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Footnotes

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Requests for reprints should be address to Joseph C. LaVoie, Department of Psychology, University of Nebraska at Omaha, Omaha, Nebraska 68101.

TABLE 1

F Ratios for Four Response Measures in the RTD Test

Source	df	Latency	Frequency	Duration	Average Duration per Deviation
Sex of Subject (A)	1	.03	.008	.40	.12
Praise (B)	1	.03	.10	1.77	3.11
Punishment (C)	4	6.30**	3.75**	5.56**	2.90*
A x B	1	.11	.01	.01	.08
A x C	4	1.34	.48	.52	.28
B x C	4	1.88	.28	1.42	1.64
A x B x C	4	.42	.72	.84	.82

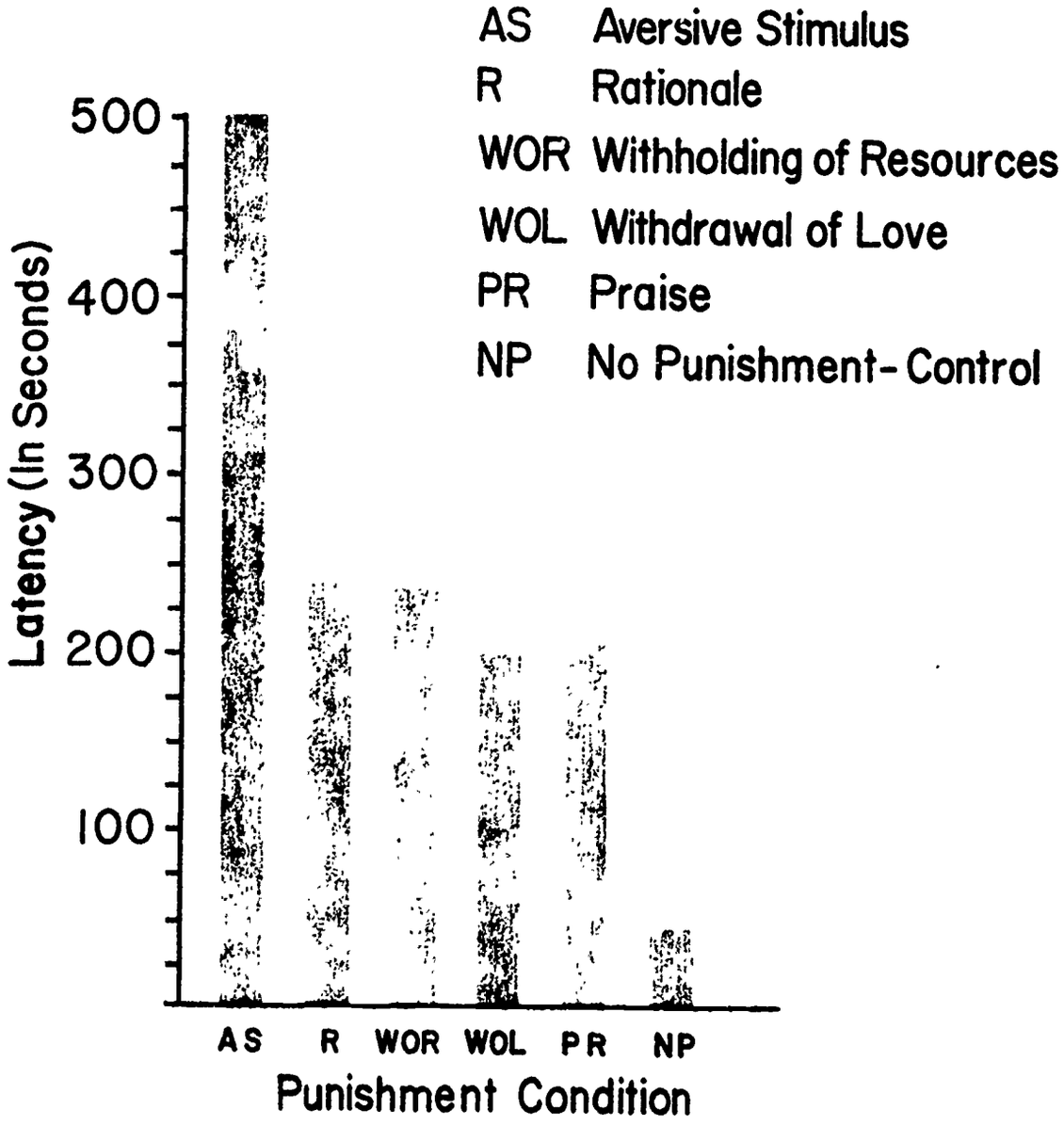
* $p < .05$

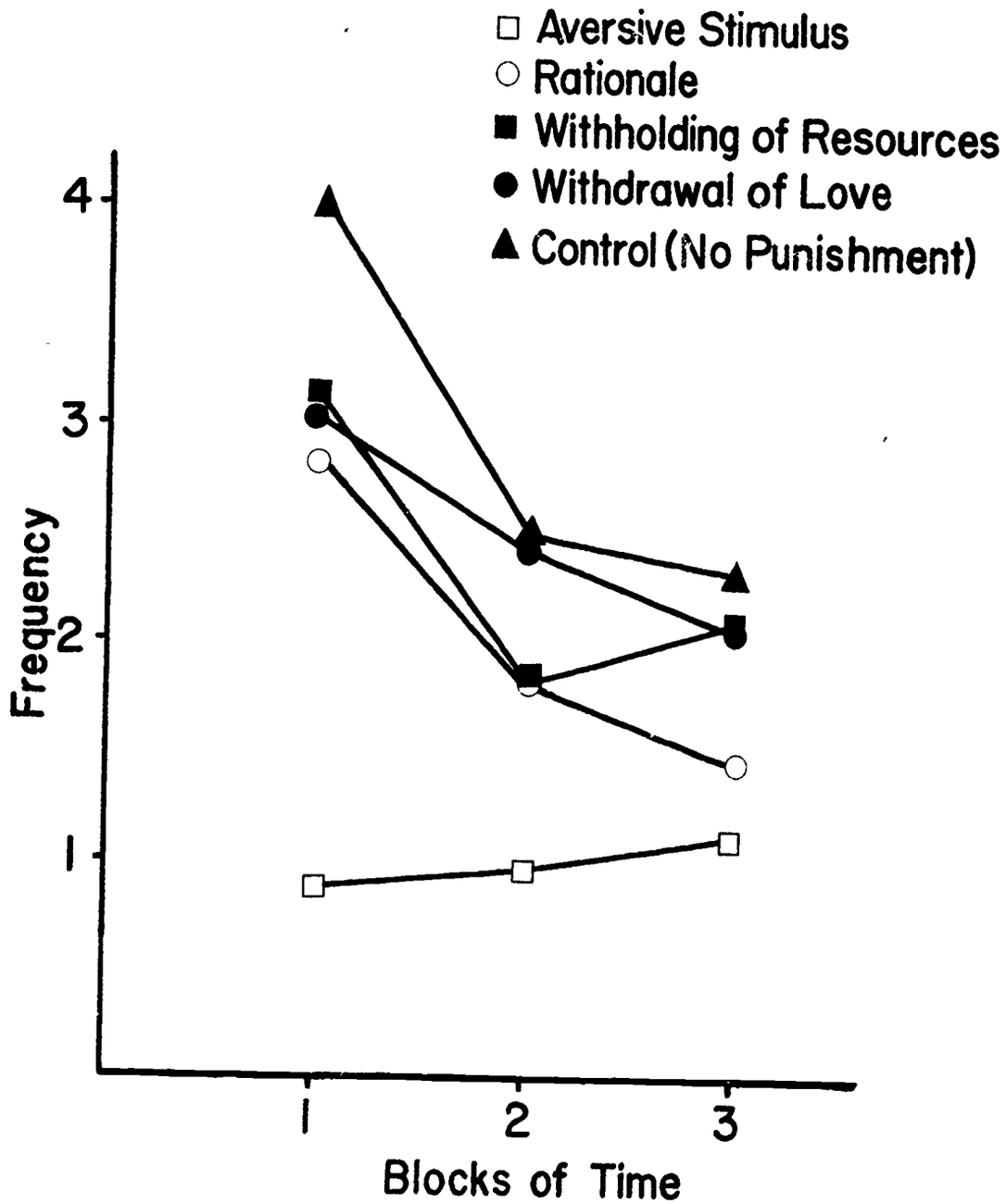
** $p < .01$

"Figure Captions"

Figure 1 Mean Latencies for Punishment, Praise, and No Punishment Conditions

Figure 2 Mean Freq encies of Deviation for the Five Punishment Treatments over Three 4-Minute Time Block


AS Aversive Stimulus
R Rationale
WOR Withholding of Resources
WOL Withdrawal of Love
PR Praise
NP No Punishment-Control
Latency (In Seconds)
500
400
300
200
100
AS
R
WOR
WOL
PR
NP
Punishment Condition


□ Aversive Stimulus
○ Rationale
■ Withholding of Resources
● Withdrawal of Love
▲ Control (No Punishment)
Frequency
4
3
2
1
1
2
3
Blocks of Time