THE EFFECT OF DIRECT AND INDIRECT REINFORCEMENT AS AFFECTED BY PERSONALITY VARIABLES UNDER OBSERVED AND NONOBSERVED CONDITIONS

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CHAPTER I

INTRODUCTION

In the past 60 or 70 years, learning theory approaches to behavior have generally been favored by psychologists. Prior to 1950, however, the application of learning theory to problems concerning social behaviors has been deficient, because learning theory relied heavily on support from animal studies and human behavior analysis in one-person situations. The role that reinforcement plays in learning is a topic that has received a great deal of attention. Again, prior to 1950, it was assumed, rather than confirmed, that reinforcement principles apply to complex social situations, and regulate human behavior in those situations in exactly the same manner as they govern the responses of animals or humans in a nonsocial, structured experimental situation.

In the last two decades, researchers such as Bandura and Walters have made efforts to examine human learning in more natural situations, i.e., the social mileau in which it occurs. The issue of reinforcement has also been examined more realistically in the laboratory, as well as in field situations. The use of positive reinforcement to modify behavior is currently experiencing a great deal of popularity, both in psychological and lay circles. The enthusiasm positive reinforcement has generated as a behavior modifier in social situations, had tended to

overshadow the utility of negative reinforcement.

Positive reinforcement, of course, has the potential for increasing learning and performance, but it has been demonstrated that, in certain situations, positive reinforcement has a maintainance effect rather than a facilitative one (Weiner & Hartsough, 1971; Weiner & Weiner, 1973; Drummond, 1973). In all of these studies positive reinforcement has been administered to one member of a group; it was assumed that since both members were engaged in the same task, the second member was indirectly receiving negative reinforcement. It was determined that this indirect negative reinforcement had a facilitating effect on performance. It has been shown that in small groups, under conditions of implicit competition, when performance is not observable, the administration of direct positive reinforcement to one person, serves as indirect negative reinforcement to the competing person, and will motivate this observer to increase his performance. The phenomenon of indirect negative reinforcement has been examined in very limited situations, and has not, as yet, shown if it has utility under a wider range of social contexts. It is the objective of this study to investigate this phenomenon further. Until now, studies in indirect reinforcement kept subjects ignorant of each other's actual performance in the experimental situation. This study proposes to make the subjects' performance mutually observable and determine the effect of reinforcement on the operation of the paradigm. In addition, it intends to investigate certain personality traits as measured by the California Personality Inventory which might be related.

CHAPTER II

REVIEW OF THE LITERATURE

Indirect Reinforcement

The concept of indirect reinforcement is a relatively new idea in the psychological literature. The first study to recognize the existence of indirect reinforcement, but one which did not define it per se, was published in 1958, by Kounin and Gump. They investigated what they termed the "ripple effect". They were concerned mainly with classroom discipline, and were observing the effect that behavior control techniques had, not on the child being disciplined, but on the other children who were watching and listening. Undergraduate psychology students served as the observers in 26 representative kindergarten classes, where they were to note any occurances where a child watched the teacher correct another child for misbehavior. Their assignment was then threefold. They were to report the behavior of the observing child immediately before the incident, the behavior of the teacher and child being disciplined during the incident, and the behavior of the observing child for two minutes after the incident. They found that the observing child's behavior was affected, but the strength and manner in which it was affected differed under different circumstances. For example, the nearer the observing child was to the target, both psychologically and

physically, the stronger the effect. Children who were also engaged in misbehavior showed the strongest reactions, and the clearer the teacher was in specifying the objectionable behavior she wanted stopped, the more likely the observing child was to exhibit conforming behavior.

Gnagey (1960) attempted to explore the "ripple effect" further. Kounin and Gump (1958) had determined that children who were connected in some way with the target child were more influenced by the teacher's reprimand than those who had no such previous connection. Gnagey questioned what the nature of these connecting variables might be and attempted to see if social power status might be relevant. He felt that the overt reaction of the misbehaving child to the control technique might influence the perceptions of the observers, and then their overt actions. He believed that if a high power deviant submitted to a teacher's effort to control, the child's acceptance of the teacher's dominance would spread to the others in the class for whom he was an identifying figure. Likewise, if he was openly defiant of her, this would also spread to his classmates. The effect of a low power deviant on his classmates was not so clear. Generally, he expected little contagion from the behavior of the low status child, but he maintained the possibility that the observers might get a cue from his behavior upon which to base their judgments of the teacher's control effectiveness. These hypotheses were tested using four classes of fifth grade children. Two high status and two low status males were picked from these classes and trained to execute the same deviency. One high status and one low

status pair would be submissive and the other defiant. Each of the four classes was shown a film which was interrupted by one of the cohorts reacting in the prescribed manner. At the end of the film the children were given a questionnaire to fill out. Both hypotheses were confirmed. The deviant's attitude tended to spread to his classmates, and the effects were much stronger when he was high powered than when he had low power.

Broden, Bruce, Mitchell, Carter, and Hall (1970) were interested in the effects of direct positive reinforcement on the attending behavior of two boys who were a disruptive influence in a second grade class. They recorded base rates of attending for both boys, and then began treatment. During the first phase, the teacher gave positive social reinforcement directly to one boy, which would mean the other boy was receiving indirect negative reinforcement. During this phase, there was a large increase in the positively reinforced child's attending behavior, and a smaller increase for the negatively reinforced child. In the second phase the reinforcement was reversed. The attending behavior of the child who had originally received positive reinforcement dropped, but the child who had originally received indirect negative reinforcement showed an even greater increase. Finally, withdrawal of all reinforcement resulted in a drop in attending behavior for both boys. These results clearly show that in matters of discipline, direct positive reinforcement elicits the best results.

Sechrest (1962) stated that too much energy is being directed at

eliciting conforming behavior in classrooms, and too little emphasis is placed on finding out what motivates children to behave in such a way that learning can be maximized. To obtain this information on motivation he chose to interview children at four different grade levels: kindergarten, first, second, and third. He chose ten open ended questions and ten questions that could be answered yes or no. Representatives of the open ended questions were: "How do you feel when your teacher tells another child he has the best paper or has done the best job? How do you feel when the teacher tells another child that his paper isn't neat or isn't done correctly? How do you feel when the teacher tells you that you have a very good paper"? Examples of the questions to be answered yes or no were: "Does your teacher yell at children for misbehaving? Does your teacher give stars for good work"? The results of these questionnaires indicate that one of the most powerful motivating factors the teacher has at her disposal is her own attention to the child, which she may give or withhold at will. He found they were also responsive to other devices, such as stars or marks on their papers. The most interesting finding, however, was that the children were apparently aware of and sensitive to the experiences of other children, but in a rather strange way. Older children in particular, were not so inclined to express positive feelings when another child was given positive reinforcement. Rather, these children tended to express neutral feelings about both reward and reproof administered to a fellow classmate. In regard to positive reinforcement administered

directly to the child by the teacher, they unanimously agreed on its effectiveness. These interview data led to the postulation and definition of the concept of implicit reinforcement.

Sechrest (1963) felt that under certain circumstances an observer could watch another person receive reinforcements and "have his own behavior altered in the opposite direction of the alteration produced for the model". For example, if two children in school are painting a picture, and the teacher comments to one child that his picture is very pretty, but says nothing to the other child, the second child may feel his picture is not as good, and will act as though he has been negatively reinforced. Sechrest (1963) would say that the second child had been implicitly reinforced. His study proposed to examine the effects of these implicit reinforcements on performance. Kindergarten, first, second and third grade children were run in pairs in a game type situation. Each child in the pair was given a different puzzle to work. Following completion of the puzzle by both children, the puzzles were exchanged and worked again. In the interval between working the puzzles the experimenter randomly delivered either explicit positive reinforcement or explicit negative reinforcement to one member of the pair, or gave neither child reinforcement. Thus, in each pair, except the control, two conditions actually existed. In the pair receiving explicit positive reinforcement, implicit negative reinforcement also existed, and likewise, in the explicit negative reinforcement pair, implicit positive reinforcement was also present. The time required for the

children to work each puzzle was recorded and used as the performance measure to indicate changes in motivational level. He found that whether or not the reinforcement was implicit or explicit was of little consequence. Positive reinforcement, however, did seem to have a more facilitating effect on performance than did the negative reinforcers. It was interesting to note that implicit positive reinforcement was significantly more effective in increasing speed on the second puzzle, than direct positive reinforcement.

Sugimura (1966) tested the hypothesis that the implicit reinforcement phenomenon existed in classrooms under competitive conditions, but not under non-competitive conditions. His subjects, 40 fifth-grade children, were divided into two competitive and two non-competitive groups. Each pair of groups was assigned to either the explicit positive implicit negative reinforcement condition, or the explicit negative implicit positive reinforcement condition. The task in this experiment was a digit symbol procedure administered on two consecutive days, with the treatment being applied at the beginning of the second day. The results supported the hypothesis that the implicit positive reinforcement group performed better than the implicit negative reinforcement group in the competitive situation while under the non-competitive condition there were no differences.

Sechrest (1963) stated that the effects of implicit reinforcement were limited to small groups under competitive situations. Sugimura (1965a) demonstrated that the effect did exist in competitive classroom

situations. He determined that children who observed their classmates being subjected to reproof performed as those who had been explicitly praised, and they did significantly better than those children watching their classmates being explicitly praised. As an outgrowth of this study, Sugimura (1965b) examined the implicit reinforcement effect when sociometric status of the target child was varied. He assumed that praise or reproof administered to a high sociometric target will have a greater effect than praise or reproof to a low sociometric target. The experiment was performed with four classes of fourth and sixth-grade children. Ten high status and ten low status children at each level were chosen to receive either explicit positive or negative reinforcement on the second day of a digit symbol task. Results showed that praise and reproof given to high sociometric children had a greater differential effect on the observers than did reinforcement to low status subjects. Children observing the high status target being reproved performed significantly better than children watching the high status target being praised. No significant difference was found in the case of the low sociometric target. Sugimura (1965b) explained the results of his experiment in terms of the probable perceptions of the observing students. The students receiving implicit positive reinforcement from watching the high status classmate being reproved were being motivated by unexpected information about a revered classmate. When the high status child was praised, however, no incongruous perceptions were elicited. He explained the ineffectiveness of the low status targets

in terms of their inability to influence others. Since status is viewed as a measure of the power of influence, the high status child would have much greater power than the low status child, and hence, a greater ability to influence his peer's performance.

In opposition to the previous research reviewed, are studies by Weiner, Weiner, and Hartsough (1971), Weiner and Weiner (1973), and Drummond (1973). These studies have found indirect negative reinforcement to have a more facilitating effect on performance than either direct or indirect positive reinforcement.

Weiner, Weiner and Hartsough (1971) using kindergarten children in pairs and in groups of four, proposed that direct reinforcement to one child would have an indirect reinforcing effect on the other observing children, and because of the minimal information available about the performance, the indirect reinforcement would have an effect opposite to that of the direct reinforcement. Five treatment conditions were postulated: (a) direct positive reinforcement, (b) direct negative reinforcement, (c) indirect positive reinforcement, (d) indirect negative reinforcement, (e) neutral control. The dependent variable was the number of geometric figures the children copied into the provided rectangles in a set amount of time. The experiment was conducted in the school library with the teacher acting as the experimenter. This study encompassed a two day period. On the first day, children were taken to the library either in pairs or groups of four. The children worked for six one-minute periods with a 30 second rest period between trials. In

the dyads the teacher presented direct positive reinforcement to one child during rest period three. In the small groups two of the four children received either direct positive or direct negative reinforcement. In the neutral condition no comment was made to any child. On the second day, the same pairs and groups were brought to the library and worked the same task for three one-minute periods. No reinforcement was given on day two. The analysis showed there was no difference in performance between the dyads and the small groups. There were, however, significant treatment effects, with indirect negative reinforcement being most effective in increasing performance. It was also reported that there was a significant effect over days with the second day's performance being higher than the first day's performance. In opposition to both Sechrest (1963) and Sugimura (1965a), Weiner, et al. (1971) found that both direct and indirect positive reinforcement have a maintainance effect on performance rather than a facilitative one.

Weiner and Weiner (1973) examined the indirect reinforcement paradigm using adult females as subjects. This was the first attempt to examine the paradigm using adults, as in all prior reports children below the sixth grade were used. The subjects were grouped randomly into pairs. They were given a simple manual task to perform, drawing circles onto a sheet of gridded paper. The subjects drew circles for six two-minute trials with a one minute rest between trials. The subjects in this experiment were seated such that they could see each other, but could not see the other's performance due to a barrier in the center of

the table. In the rest period between trials three and four the experimenter pretended to examine the subject's work, and then administered either direct positive reinforcement or direct negative reinforcement to one member or said nothing in the control condition. The analysis showed that subjects in both the direct and indirect negative reinforcement conditions had significantly higher increases in performance than subjects receiving direct or indirect positive reinforcement or no reinforcement. Thus, it appears that the observing subjects did receive a type of reinforcement indirectly and that indirect negative reinforcement is a more powerful motivator than indirect positive reinforcement.

Drummond (1973), in a study which grew out of the Weiner, Weiner and Hartsough (1971), and the Weiner and Weiner (1973) experiments, examined the indirect reinforcement paradigm with groups and non-groups. It was hypothesized that after reinforcement, subjects who received indirect negative reinforcement would perform at a higher level than subjects who received direct positive reinforcement. It was also hypothesized that the performance of both groups and non-groups would be the same over all treatment conditions. Female undergraduate students were used as subjects in the study. Subjects in the group condition knew and had worked with each other prior to the experiment. Non-group subjects were randomly paired with the restriction that they were strangers. All pairs of subjects were given six two-minute trials on a simple manual task with a one minute rest period between the trials. In the experimental condition during rest period two, the experimenter

leafed through the subject's booklets as though she was examining the number of "X's" they had filled in. Direct positive reinforcement was randomly administered to one of the subjects. They were then required to complete the next three trials. In the neutral condition the same procedure was followed, but no comment was made to either subject. Subjects were seated as in the Weiner and Weiner (1973) study, whereby they could view each other, but could not view each other's performance. Performance on the first three trials was compared to performance on the last three trials after reinforcement. The hypotheses were supported. Subjects receiving indirect negative reinforcement performed significantly better than subjects receiving direct positive reinforcement. As expected, there was no significant difference between groups and non-groups. The neutral conditions performance, however, was unexpected. Subjects in this condition were not expected to show an increase in performance over the base rate, but instead acted in the same manner as the indirect negative reinforcement condition showing a significant increase in the post-treatment trials. It was speculated that the experimenter's lack of comment coupled with personal attention in an evaluative situation, acted as a type of negative reinforcement to both members of the pair, thus motivating them to increase their performance.

Thus, there appear to be two divisions of thought on indirect reinforcement. Sechrest (1963) and Sugimura (1965a, b) feel that indirect reinforcement (implicit reinforcement) does exist, but only

indirect positive is effective in increasing performance. Weiner, Weiner and Hartsough (1971), Weiner and Weiner (1973), and Drummond (1973) believe that indirect negative reinforcement is more effective in increasing performance under certain conditions. The question to be answered is, specifically what are these conditions?

The California Psychological Inventory

The California Psychological Inventory (CPI) developed by Gough (1957) was "intended for diagnosis and evaluation of individuals, with emphasis upon interpersonal behavior and dispositions relevant to social interaction" (p. 5). It is this emphasis on interpersonal behavior which makes it a valid test to use in studying personality variables as they interact within the indirect reinforcement paradigm. Generally, this inventory is intended for use with "normal" subjects and has norms for a college population. There are three scales which are of particular interest in this examination of the indirect reinforcement paradigm: the good impression, achievement via conformance, and achievement via independence scales. These are of special utility because the personality correlates they proport to measure may differentially affect subjects in an indirect reinforcement condition.

Good Impression Scale

The good impression scale was constructed as a validity scale to indicate when a subject is trying to "fake good". To validate this

scale Gough (1952) administered it to high school seniors with the regular directions, then later gave it to these same students with the instructions to try to give a favorable picture. The two administrations were analyzed and the "fake good" profiles were easily identified. It is, in essence, a measure of social desirability (Gough, 1957).

Achievement via Conformance Scale

The achievement via conformance scale was developed to identify those factors of interest and motivation which facilitate achievement in any setting where conformance is a positive behavior (Gough, 1957). This scale was developed through studies of academic achievement at the high school level. Gough (1968) states that through working with this scale, and through "individual acquaintance with high scorers it became clear that basically this scale was measuring a strong need for achievement along with a deeply internalized appreciation for structure and organization".

Achievement via Independence Scale

The achievement via independence scale had its origin in studies of achievement at the college level. It is said to identify those factors of interest and motivation which facilitate achievement in any setting where autonomy and independence are positive behaviors (Gough, 1957).

The CPI has been used in hundreds of studies. Thus far, however, there has been no attempt to relate the variables of the CPI to the

principles of social reinforcement. This review of the CPI will be done in order to have a basis upon which to form hypotheses.

Achievement, or the motivation to achieve may be an important determinant in the indirect reinforcement paradigm. The CPI has been used extensively in the study of achievement. In particular it has been used as a means of prediction of success both in a general manner (Holland, 1959), and in more specific ways (Gough, 1964). It has also been used in studies which seek to isolate personality variables of under and over achieving students (Norfleet, 1968; Fink, 1962).

Gough (1964) attempted to use the CPI as a predictor of achievement in a first course in psychology. The achievement via independence scale was constructed against the criterion of achievement in psychology. In developing this scale 150 items were analyzed against course grades in four universities. This was finally reduced to a 22 item scale which was then cross validated on seven new classes. Gough (1964) had reason to believe that he could predict "psychological achievement" more accurately if he used the full CPI, a view which was supported by the results of the study. The achievement via independence was the highest of all 18 scales in correlating with grades. To predict "psychological achievement" ten factors of the CPI were weighted and put into an equation. Achievement via independence and achievement via conformance were positively weighted while the good impression scale had a negative weighting. Since the good impression score is an index of a person's desire to please, the negative weighting in the equation signifies

greater internal directedness and less concern with superficiality. Thus, a person with high scores on the two achievement scales, and a low score on the good impression scale would have a high probability of receiving good grades in an introductory psychology class, if all other scales were in the correct direction.

Holland (1959) attempted to predict college grades from the CPI and the Scholastic Aptitude Test. In contrast to Gough (1964), he found that the good impression scale along with the two achievement scales were positively correlated with high grades. He describes the high achiever as one who "is well controlled, creates a favorable impression, does well academically under direction, but is not as adept in situations demanding independent judgment" (p. 140).

Evans (1969) examined the usefulness of the achievement via independence and conformance, and the intellectual efficiency scales as predictors of GPA in six colleges and their relationship to verbal and quantitative ability. The results indicated that the three scales were of little value in predicting GPA. There were also no significant relationships between the CPI scales and quantitative or verbal ability. Evans explained his results in terms of the subject population he used. He felt that the lack of agreement with prior studies might be due to the fact he used students enrolled in a personal adjustment course.

The seeming lack of consistency in the predictive value of the CPI scales would, as pointed up by Evans (1969), appear to be related to the subject populations evaluated. Each study utilized a more or less

homogeneous group of subjects: Gough (1964)--introductory psychology students, Holland (1959)--National Merit winners, and Evans (1969)--personal adjustment students. Although these were each homogeneous populations within themselves they were very different from each other. It is this intergroup difference then that does not allow one formula to predict for all of these groups.

Norfleet (1968) studied high ability women and was able to isolate some scales of the CPI that characterize achieving as opposed to underachieving high ability students. She found that the achievers scored high on both achievement scales thus indicating that they seem to function well in both structured situations and in those situations which require personal initiative and resourcefulness.

Fink (1962), also working in the area of under achievement, isolated certain questions on the CPI as predictors. He found that there were sex differences in the personality of underachieving males and females.

The CPI has also been well studied as a measure for distinguishing leaders from non-leaders. Whether or not the subject is a leader may have a bearing on performance in the indirect reinforcement paradigm. Liddle (1958), in a study on high school sophomores, found significant correlations between a general elevation on the protocol and high leadership ratings. He also found that if the variable of socio-economic status was taken out the correlation was even higher. Johnston and Frandsen (1962) tested 50 college leaders and 50 non-leaders, with the CPI, and found that on 17 of the 18 scales leaders scored higher

than non-leaders. The largest differences observed were on scales such as dominance, capacity for status, and achievement via conformance.

Recently, Gough (1969) attempted to develop an index to predict leadership by weighting scales from the CPI. Subjects were selected from 15 high schools where the principals were asked to designate leaders. The resulting index weighted achievement via independence, dominance, self acceptance and the sense of well being scales positively, and the good impression scale negatively, suggesting subjects disfavored any manifestation of social desirability. This negative weighting of the good impression scale was also used in Gough's (1964) achievement index.

The use of the CPI as a predictor of conforming or yielding behavior has not been very successful. Under certain circumstances yielding may very well effect performance under indirect reinforcement. Appley and Moeller (1963) compared the CPI scales to the conforming behavior of female college freshmen in an "Asch" situation and found no significant relationship between the scales and yielding behavior. This lack of significance was to such a degree that after the authors reviewed their samples, they suggested that their results cast doubt on the construct validity of the CPI.

Harper (1964) predicted that four scales of the CPI were negatively related to yielding scores in women, one of which was achievement via independence. It was assumed that students possessing the qualities ascribed to high scorers on these four scales would be more able to

resist the distorted group norm. Correlational analysis showed that only two scales, capacity for status and achievement via independence, had correlations significantly above zero. These values were so low, however, that they accounted for only a small fraction of the total variance. Thus, knowing these scores would not be of much assistance in predicting whether women would yield or not. These findings would indicate that the personality correlates of yielding are not those measured by the CPI scales.

There are a limited number of studies reported examining the relationship of the CPI and motor ability. None of these articles has dealt with the type of fine motor co-ordination necessary to execute the writing of alphabetic characters that the present study will require. Merriam (1960) attempted to study the relationship of gross motor ability in the form of athletic ability with CPI scales in high school boys. He found that boys with high-motor ability, as measured by the Philips JCR test, scored significantly higher on ten scales, among them the two achievement scales, than did the low motor-ability children.

Hardyck (1966) measured high and low motor activity in senior dental school student groups by means of an EMG and compared their personality traits as measured by the CPI. Their EMG recordings were taken as they responded to the Rorschach cards and the Guilford Consequences Test. The results of the comparisons were uninformative with one exception. Only the flexibility scale differentiated high and low muscle tension, with a high flexibility score indicating low muscle

tension.

The concepts of social desirability and need for approval might be of importance in predicting behavior in the indirect reinforcement paradigm. Evidence indicates that the three scales that have been chosen to be worked with are correlated with these concepts, and may prove to be strong predictors. Pumroy (1962) reported the relationship between the Edwards Social Desirability scale and the CPI scales. His subjects were 80 undergraduates, both male and female. Separate analysis for the two sexes was not reported, but an analysis for the combined scores showed 12 significant correlations, two of which were negative. Both the good impression and the achievement via conformance had high positive correlations with social desirability while the achievement via independence scale had a negative correlation. Thus, a person with high scores on the good impression and achievement via conformance scales along with a low score on the achievement via independence scale would be one who seeks other's approval and is desirous of being well liked.

Lichtenstein and Bryan (1966) examined the relationship between the CPI scales and the Marloew-Crowne Social Desirability Scale. It has been hypothesized that this social desirability scale is an indirect measure of the need for approval (Crowne & Marlowe, 1964). They found that high need for approval subjects "express more favorable attitudes toward a dull repetitious task, have greater verbal conditionability, and conform more to group-pressure". The subjects in the Lichtenstein and Bryan (1966) study were 216 male college students, half of whom

were used as a cross validation test. Eight of the 18 CPI scales yielded significant replicated correlations, with the Marlowe-Crowne Social Desirability Scale. The good impression scale had the highest correlation. The achievement via independence scale had a negative correlation, but this was not significant.

It is obvious from the Pumroy (1962) and the more recent Lichtenstein and Bryan (1966) studies that the CPI scales are consistantly correlated with the need for approval. This may be an important factor in the motivation of performance in the indirect reinforcement paradigm.

Hypotheses

The present study proposes to examine the effects of indirect reinforcement on the performance of subjects when they can and cannot observe each other's performance. It also seeks to determine the relationship between performance, type of reinforcement received and the following three scales from the California Psychological Inventory: good impression, achievement via conformance, and achievement via independence.

1. It is hypothesized that under both observable and non-observable conditions, subjects receiving indirect negative reinforcement will subsequently increase their performance significantly more than subjects receiving direct positive reinforcement.
2. Subjects receiving direct positive reinforcement will not increase their performance more than the neutral condition

after reinforcement is received in both the observable and the non-observable conditions.

3. Subjects receiving indirect negative reinforcement in the observable condition will perform at a higher level than subjects receiving indirect negative reinforcement in the non-observable condition.

4. Subjects with high scores on the good impression scale will perform better under indirect negative reinforcements than subjects with low good impression scores.

5. Subjects with high scores on the achievement via conformance scale will perform better under indirect negative reinforcement than subjects who score low on the achievement via conformance scale.

6. Subjects with low scores on the achievement via independence scale will perform better under indirect negative reinforcement than subjects who score high on the scale.

CHAPTER III

METHOD

Subjects

The subjects were 60 female college students chosen from undergraduate freshman and sophomore classes. There were 12 subjects in each of the five treatment combinations. All subjects were naive to the experimental hypotheses.

Materials

Three scales of the CPI--good impression, achievement via conformance, and achievement via independence--were reproduced (Appendix B). Each subjects was given an IBM answer sheet and the 110 question test with the following instructions printed on a cover sheet.

> The following pages contain a series of statements. Read each one, decide how you feel about it, and then mark your answer on the special answer sheet provided. If you agree with a statement or feel it is true about you, make a mark in column one. If you disagree with a statement, or feel it is not true about you mark column two. Please make sure that the number of the statement is the same as the number of your answer sheet.

Subjects were seated side by side at a large table. The table was divided in half by a cardboard partition that extended six inches beyond the edge of the table to insure the non-observability of per-

formance during the task. A small table to hold materials was placed between the subjects. This enabled the experimenter to compare performance in the observable condition.

Task

The task chosen to measure performance was a simple paper and pencil exercise. The subjects were asked to mark "X's" in one half inch square boxes. Each subject received one sheet of gridded paper for each trial. The paper was sectioned off into one half inch squares, ten squares per row, with one-eighth inch separating each row of squares. Each row was also numbered in order to insure easy visual comparison. It was decided to separate the rows of boxes in order to make the differences between subject's performance even more noticeable. The task of marking "X's" in each box was chosen in an effort to equalize both ability and to minimize motivation in the beginning.

Procedure

Non-observable Condition

All subjects were given the three scales of the CPI when they arrived. The subjects were placed in separate rooms so they could not make judgments about the other person based on who completed the questions first, or on other irrelevant characteristics. When both subjects finished the questionnaire, they were taken into the experimental room and seated at either position at the work table. The subjects were

seated side by side, but were separated by an extended partition such that they were able to see each other, but were not able to assess the other's performance. The subjects were then given these directions:

> In front of you, you will find a sheet of gridded paper and a pencil. When I tell you to, you will begin to mark "X's" in each box working from left to right. Do not skip any boxes. A complete "X" should be made in each box before you move on to the next box. You will have five one-minute trials with a 30 second rest period between each trial. Once you have begun the task please do not speak to each other or to me. Please work quickly. Are there any questions?

At the end of each one-minute trial the experimenter collected the previously marked paper and issued a new one. After the subjects completed two of the five trials the experimenter randomly administered to one subject the following condition:

> Direct Positive Reinforcement: "This is very good, subject's name. You are doing very well.

The subjects were then told to begin again and to complete trials three to five. It was assumed that in each pair where direct positive reinforcement was administered indirect negative reinforcement was being received by the other subject.

Observable Condition

Each subject was paired with a cohort in this condition. They were given the three CPI scales when they arrived. When the subject had finished the questionnaire both she and the cohort were brought into the experimental room. The experimenter asked the cohort to sit at position

A and the subject to sit at position B. The seating arrangement was constructed the same as in the non-observable condition, and the same instructions were given in this condition.

During the second rest period the experimenter examined the papers of both the subject and the cohort by taking both papers and comparing them side by side on the small table between the subject's chairs. This enabled the subject to evaluate her performance quickly. There were two conditions randomly assigned to the subjects such that one half of the subjects received direct positive reinforcement, and the other half received indirect negative reinforcement. In order to insure conformity in these conditions the cohort had in front of her a number of papers the experimenter could choose from. If the cohort was to receive direct positive reinforcement and the subject was to receive indirect negative reinforcement, the experimenter had the cohort pull the paper on her side of the barrier which was 15-20 "X's" or one and one half to two lines more than the subject had marked. Likewise, if the subject was to receive direct positive reinforcement and the cohort indirect negative reinforcement, the experimenter had the cohort choose a paper with 15-20 "X's" less than the number drawn by the subject. The direct positive reinforcement was administered in the same manner as it was in the non-observable condition.

Neutral Condition

The neutral condition was used as a comparison measure for treatment effects as well as fatigue and practice effects. The subjects were treated in the same manner as the subjects in the non-observable condition, with the exception that no treatment was applied. At the end of each of the five trials the experimenter collected their papers and issued new ones, but did not comment on the performance at any time.

CHAPTER IV

RESULTS

The independent variables in this study were the observable-nonobservable condition, the personality measures and the treatment conditions: direct positive reinforcement, and indirect negative reinforcement, with trials repeated within subjects. The neutral condition was used as a comparison measure for treatment effects as well as a control for fatigue and practice effects. The dependent variable was the number of successive boxes filled with "X's" during the two base rate, and the three post-treatment trials.

The data were analyzed in three steps. First, three five-level simple analyses of variance were done to check for random sampling on each of the personality variables. In this analysis the personality scores served as the dependent variable with the observable-nonobservable condition, the two treatment conditions, and the neutral condition serving as independent variables. Results were not significant indicating that samples were drawn from populations having the same means and making weighted means analysis unnecessary (Tables I, II, and III). These nonsignificant results allowed the personality measures to be divided at the median with one half of the subjects being placed in the high group and one half in the low group.

In the second and third sets of analyses the same covariate was used for each level of the repeated measure, thus the covariance adjustment had an effect only on the between subjects tests. The within subjects tests were identical to a repeated measures analysis of variance.

TABLE I

SUMMARY TABLE FOR SIMPLE ANALYSIS OF VARIANCE FOR GOOD IMPRESSION SCALE

Source	df	MS	F
Between Groups	4	21.19	.790
Within Groups	55	26.82	

The second set of analyses in the series were three 5x2x3 analyses of covariance, one for each personality factor. In these analyses the observable-nonobservable condition and the treatment conditions were combined to constitute the five A levels of the analyses. The B factor was the high or low personality score, and C was the three post reinforcement trials.

In this series of three analyses the good impression scale showed

TABLE II

SUMMARY TABLE FOR SIMPLE ANALYSIS OF VARIANCE
FOR ACHIEVEMENT VIA CONFORMANCE

Source	df	MS	F
Between Groups	4	13.43	.740
Within Groups	55	18.14	

TABLE III

SUMMARY TABLE FOR SIMPLE ANALYSIS OF VARIANCE
FOR ACHIEVEMENT VIA INDEPENDENCE

Source	df	MS	F
Between Groups	4	7.19	1.02
Within Groups	55	7.03	

a significant interaction with trials ($F = 9.2871$, $df = 2,100$, $p < .05$; Table IV). Figure 1 shows that subjects who scored low on the good impression scale performed better than subjects who scored high on this scale. Post hoc analyses using both simple means analyses and Tukey's tests show that the significance is between trials four and five in the high scorer's group. In the analysis using the achievement via conformance scale the personality variable by trials interaction was also significant ($F = 3.1282$, $df = 2,100$, $p < .05$; Table V). Figure 2 illustrates this relationship. The second analysis on the achievement via independence scale did not show any significance (Table VI).

In the third series, each significant personality variable interaction was examined by a 2x3x2x2 analysis of covariance such that the interaction of the personality variables with the observable-nonobservable condition and the treatment conditions could be examined. In these analyses the two levels of A were the observable-nonobservable conditions, B was the three post-treatment trials, C represented the two treatment conditions, and D was composed of high or low scorers on the personality measure. This third series of analyses for the good impression and the achievement via conformance scales utilized the 2x3x2x2 design. Results for both the good impression scale (Table VII) and the achievement via conformance scale (Table VIII) showed a significant main effect over the observable-nonobservable condition, with subjects in the observable group performing significantly higher than subjects in the nonobservable condition ($F = 7.39$, $df = 1,39$, $p < .01$,

TABLE IV

SUMMARY TABLE FOR ANALYSIS OF VARIANCE AND ANALYSIS OF COVARIANCE ON THE GOOD IMPRESSION SCALE WITH DATA COMBINED OVER TREATMENT CONDITIONS

Source	df	MS	F
Between Subjects			
A (observed-nonobserved, direct positive-indirect negative reinforcement)	4	347.1527	.7563
B (personality variable)	1	174.0500	.3792
A x B	4	100.8675	.2197
Subjects within groups	50	458.9650	
Within Subjects			
C (trials)	2	8.6000	.6127
A x C	8	11.3148	.8061
B x C	2	130.3500	9.2871*
A x B x C	8	16.8302	1.1991
C x Subjects within groups	100	14.0350	
Analysis of Covariance			
Between Subjects			
A	4	302.0500	.7296
B	1	151.4414	.0365
A x B	4	392.9611	.9493
Subjects within groups	49	413.9401	

* $p < .05$

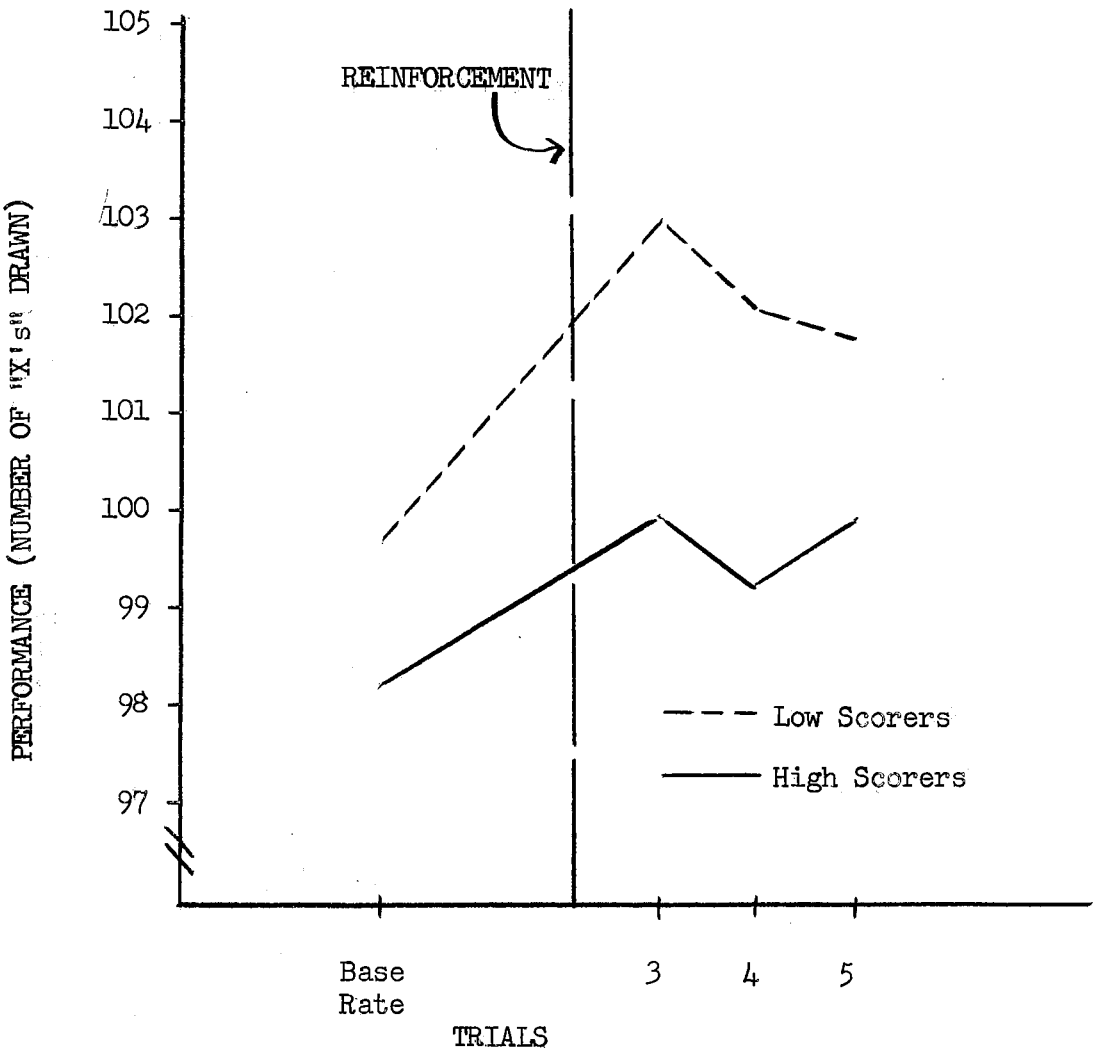

Figure 1. Average Performance of High and Low Scorers on the Good Impression Scale Over All Trials, Combined Over Treatment Conditions

TABLE V

SUMMARY TABLE FOR ANALYSIS OF VARIANCE AND ANALYSIS OF COVARIANCE ON THE ACHIEVEMENT VIA CONFORMANCE SCALE WITH DATA COMBINED OVER TREATMENT CONDITIONS

Source	df	MS	F
Between Subjects			
A (observed-nonobserved, direct positive-indirect negative reinforcement)	4	347.1527	.8019
B (personality variable)	1	.6720	.0015
A x B	4	470.2972	1.0864
Subjects within groups	50	432.8700	
Within Subjects			
C (trials)	2	8.6000	.6882
A x C	8	11.3148	.9055
B x C	2	39.0890	3.1282*
A x B x C	8	17.7351	1.4193****
C x Subjects within groups	100	12.4900	
Analysis of Covariance			
Between Subjects			
A	4	242.9026	2.0676***
B	1	.2216	.0018
A x B	4	114.9113	.9817
Subjects within groups	49	117.5068	

* $p < .05$
**** $p < .25$
*** $p < .10$

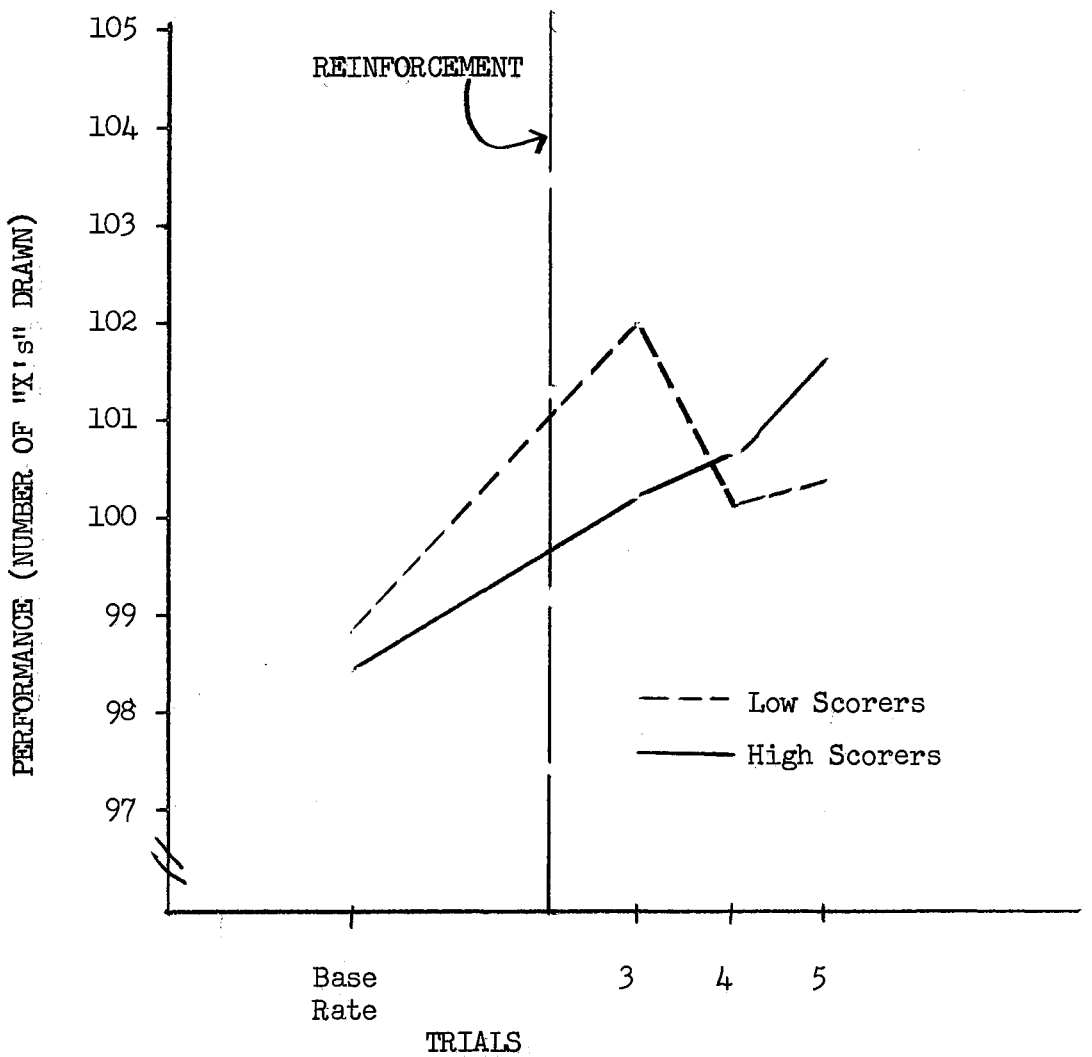

Figure 2. Average Performance of High and Low Scorers on the Achievement Via Conformance Scale Over All Trials, Combined Over Treatment Conditions

TABLE VI

SUMMARY TABLE FOR ANALYSIS OF VARIANCE AND ANALYSIS OF COVARIANCE ON THE ACHIEVEMENT VIA INDEPENDENCE SCALE WITH DATA COMBINED OVER TREATMENT CONDITIONS

Source	df	MS	F
Between Subjects			
A (observed-nonobserved, direct positive-indirect negative reinforcement)	4	347.1527	.8243
B (personality variable)	1	286.2720	.6798
A x B	4	546.1271	1.2969
Subjects within groups	50	421.0989	
Within Subjects			
C (trials)	2	8.6000	.0342
A x C	8	11.3150	.0450
B x C	2	11.0890	.0441
A x B x C	8	8.3187	.0331
C x Subjects within groups	100	251.1086	
Analysis of Covariance			
Between Subjects			
A	4	243.7630	1.9738****
B	1	73.0581	.5915
A x B	4	23.9948	.7771
Subjects within groups	49	123.4979	

**** $p < .25$

TABLE VII

SUMMARY TABLE FOR ANALYSIS OF VARIANCE AND ANALYSIS OF COVARIANCE ON THE GOOD IMPRESSION SCALE FOR ALL TREATMENT CONDITIONS

Source	df	MS	F
Between Subjects			
A (observed-nonobserved)	1	495.0625	1.0291
C (direct positive-indirect negative reinforcement)	1	510.0070	1.0602
D (high or low personality variable)	1	390.0625	.8109
A x C	1	383.5069	.7972
A x D	1	.3403	.0007
C x D	1	85.5625	.1778
A x C x D	1	1.5625	.0032
Subjects within groups	40	481.0180	
Within Subjects			
B (trials)	2	15.4236	1.1388
A x B	2	3.0625	.2261
B x C	2	30.4235	2.2464****
B x D	2	19.5625	1.4444****
A x B x C	2	1.0903	.0805
A x B x D	2	7.3402	.5419
B x C x D	2	15.6458	1.1552
A x B x C x D	2	5.3957	.3984
B x Subjects within groups	80	13.5430	
Analysis of Covariance			
Between Subjects			
A	1	904.7259	7.3998**
C	1	3.3806	.0275
D	1	72.3616	.5916
A x C	1	69.5658	.5689
A x D	1	284.7472	2.3289****
C x D	1	8.4787	.0693
A x C x D	1	36.5713	.2991
Subjects within groups	39	122.2625	

** $p < .01$
**** $p < .25$

TABLE VIII

SUMMARY TABLE FOR ANALYSIS OF VARIANCE AND ANALYSIS OF COVARIANCE ON THE ACHIEVEMENT VIA CONFORMANCE SCALE FOR ALL TREATMENT CONDITIONS

Source	df	MS	F
Between Subjects			
A (observed-nonobserved)	1	495.0625	1.0782
C (direct positive-indirect negative reinforcement)	1	510.0070	1.1108
D (high or low personality variable)	1	154.1736	.3357
A x C	1	383.5069	.8352
A x D	1	85.5625	.1863
C x D	1	370.5625	.8070
A x C x D	1	742.5625	1.6173****
Subjects within groups	40	459.1347	
Within Subjects			
B (trials)	2	15.4236	1.1643
A x B	2	3.0625	.2311
B x C	2	30.0625	2.2693****
B x D	2	20.2986	1.5322****
A x B x C	2	1.0903	.0823
A x B x D	2	12.0208	.9074
B x C x D	2	23.5208	1.7755****
A x B x C x D	2	3.9375	.2972
B x Subjects within groups	80	13.2472	
Analysis of Covariance			
Between Subjects			
A	1	888.6298	7.0340*
C	1	1.0436	.0082
D	1	30.6438	.2426
A x C	1	76.0519	.6021
A x D	1	2.4578	.0194
C x D	1	9.7615	.0772
A x C x D	1	243.1979	1.9256****
Subjects within groups	39	126.2946	

* $p < .05$

**** $p < .25$

good impression; $F = 7.034$, $df = 1,39$, $p < .05$, achievement via conformance; see Figure 3).

In the third series of analyses when no significant interactions were found with a personality measure, as in the case of the achievement via independence scale, the personality measure was dropped from the analysis and a 2x2x3 analysis of covariance was performed with the observable-nonobservable condition constituting the A factor, the two treatment conditions composing the B factor, and trials being the C factor. This 2x2x3 analysis dropping the personality variable resulted in a significant main effect for the observable-nonobservable conditions (Table IX) with the subjects in the observable condition performing significantly better than the subjects in the nonobservable condition ($F = 9.6828$, $df = 1,43$, $p < .01$; see Figure 4).

It was hypothesized that subjects in the direct positive reinforcement condition would not increase their performance except as a function of practice effects as measured by the neutral condition. This was tested and results supported the hypotheses, that the two groups did not significantly differ in performance. Since it was hypothesized that subjects receiving indirect negative reinforcement in the observable condition would perform better than subjects receiving indirect negative reinforcement in the nonobservable condition, an *a priori* *t*-test was performed to examine these differences. Results were significant ($t = 2.336$, $df = 40$. $p < .025$), indicating that indirect negative reinforcement given in the observable condition facilitated performance more

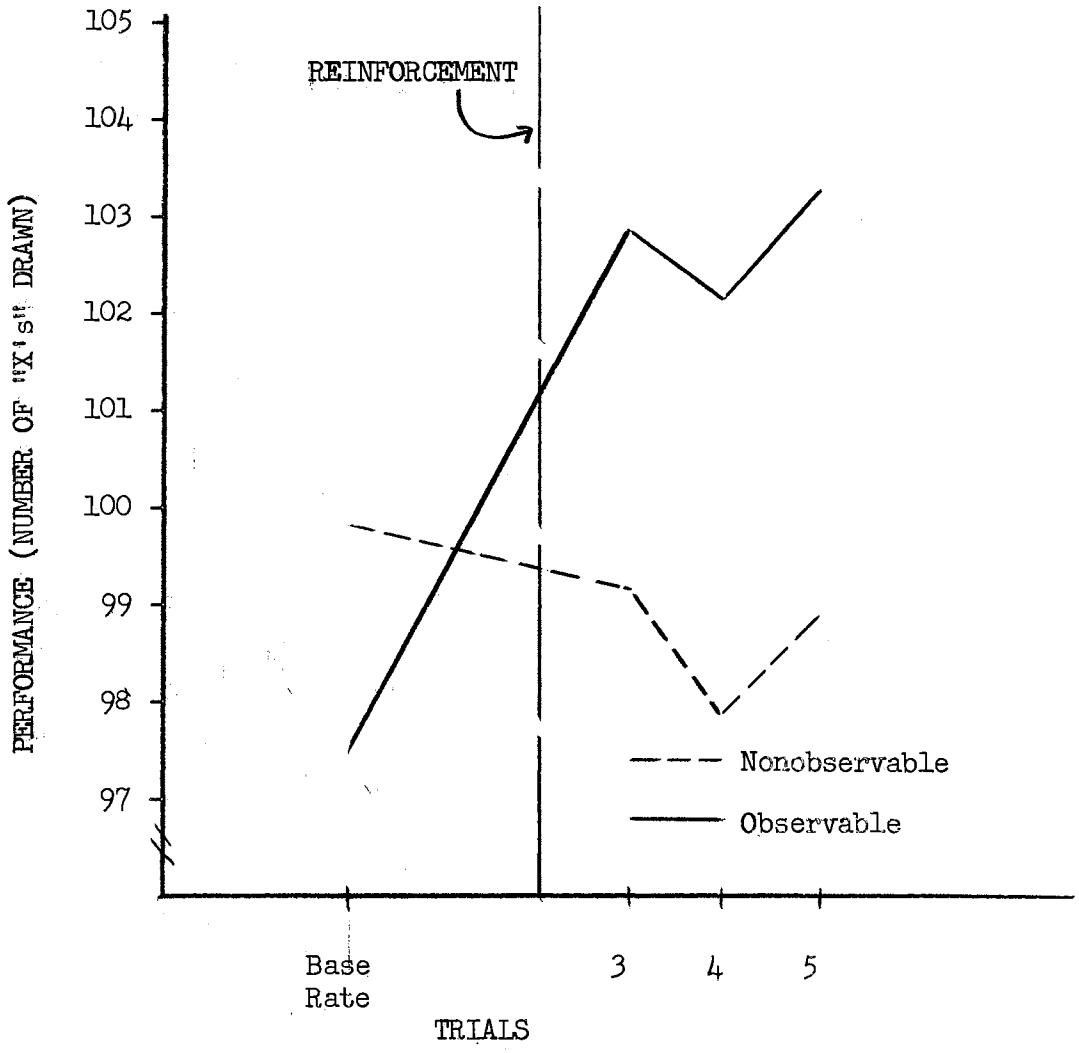

Figure 3. Average Performance of Subjects on the Achievement Via Conformance and Good Impression Scales (Performance was Identical for Both Personality Variables) Under the Observable and Nonobservable Conditions for All Trials

TABLE IX

SUMMARY TABLE FOR ANALYSIS OF VARIANCE AND ANALYSIS OF COVARIANCE FOR COMBINED DATA

Source	df	MS	F
Between Subjects			
A (observed-nonobserved)	1	495.0625	1.1047
B (direct positive-indirect negative reinforcement)	1	510.0070	1.1380
A x B	1	383.5069	.8557
Subjects within groups	44	448.1420	
Within Subjects			
C (trials)	2	15.4236	1.1508
A x C	2	3.0625	.2277
B x C	2	30.4236	2.2701****
A x B x C	2	1.0903	.0813
C x Subjects within groups	88	13.4015	
Analysis of Covariance			
Between Subjects			
A	1	1773.1323	9.6828**
B	1	2.0782	.0171
A x B	1	21.5203	.1776
Subjects within groups	43	121.1561	

** $p < .01$
**** $p < .25$

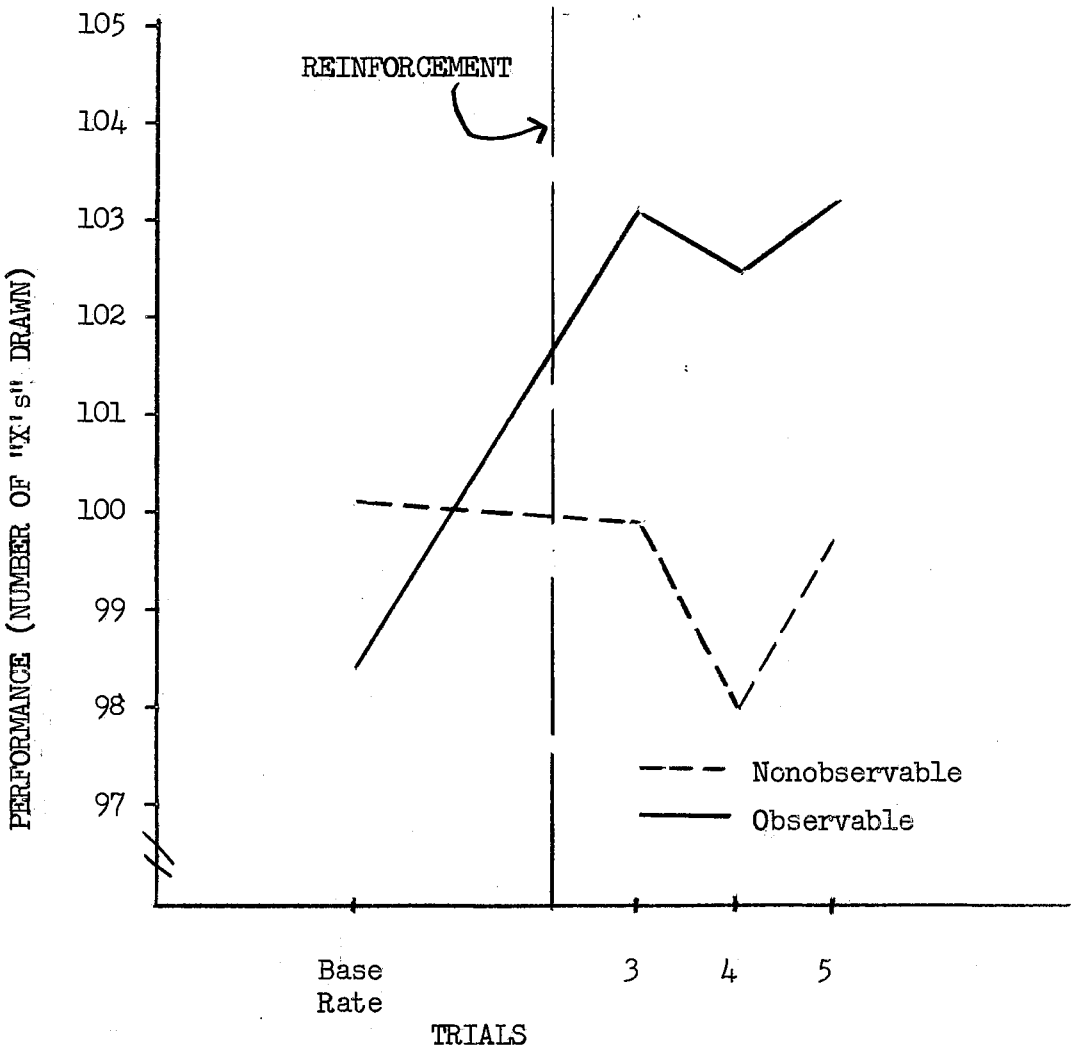

Figure 4. Average Performance of Subjects on the Achievement Via Independence Scale Under the Observable and Nonobservable Conditions for All Trials

than when it was given in a non-observable condition.

It was also hypothesized that subjects with high scores on the good impression and the achievement via conformance scales would perform better than subjects who scored low on these scales. These hypotheses were not supported by the analyses.

The last last hypothesis, that low scorers on the achievement via independence scale would perform better than high scorers under indirect negative reinforcement, was tested using an a priori t-test. The result was also not significant.

CHAPTER V

DISCUSSION

An examination of the analyses of all three personality scales shows a significant main effect between the observable and the non-observable condition. Over the three post-treatment trials subjects who were in the observable condition performed better than subjects in the nonobservable condition (see Figure 4). This could be accounted for in terms of the feedback the subjects received. Subjects in both the observed and the nonobserved conditions received exactly the same verbal feedback on their performance from the experimenter, but in the observable condition there was the added visual comparison feedback. In this condition then, the subject knew exactly how well or how poorly she had performed. The subject in the nonobservable condition, however, lacked this specific visual feedback. The addition of the specific performance information appears to have increased motivation on this task. Another related factor which might have been instrumental in achieving this performance difference was the strength of reinforcement. A combination of verbal and visual reinforcement may be a more potent reinforcer than just verbal reinforcement alone.

It does not appear to matter whether the subject received direct positive or indirect negative reinforcement, but only whether they were

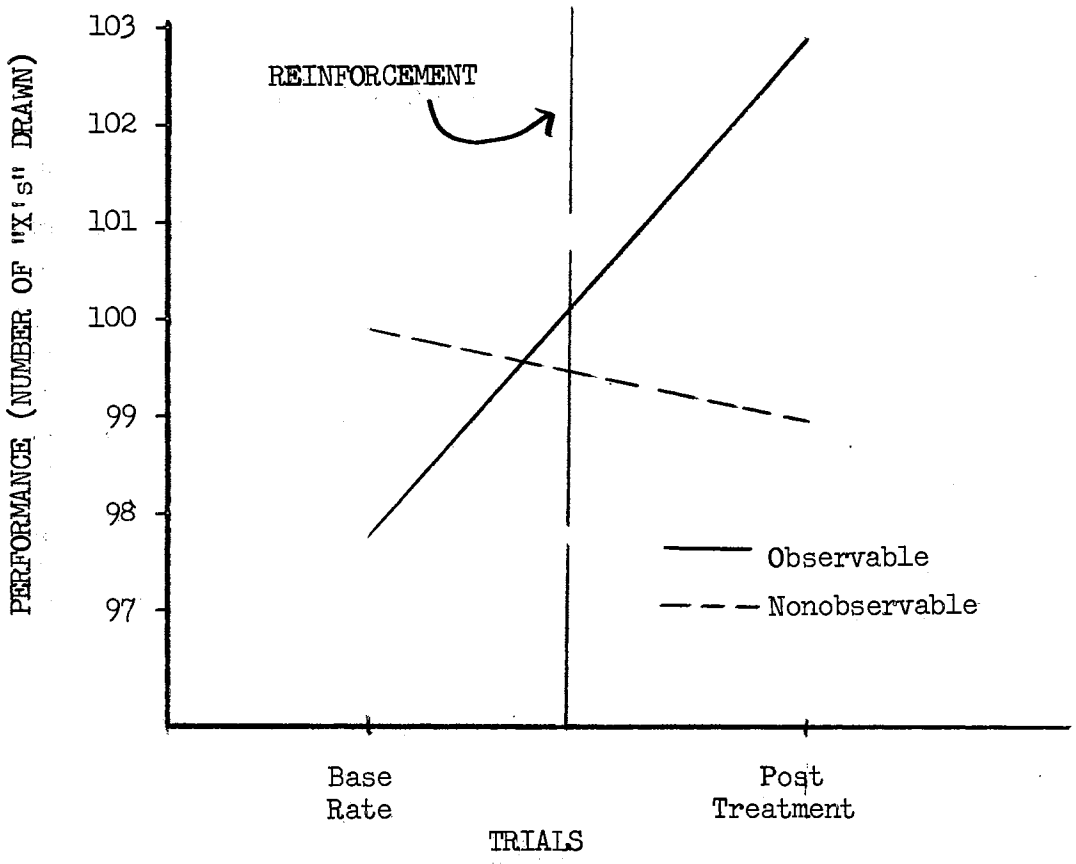

Figure 5. Average Performance Pre- and Post-Reinforcement for All Subjects Under the Observable and Nonobservable Treatment Conditions

in the observable or the nonobservable condition. Figure 6 illustrates that in the observable condition performance increases under both direct positive and indirect negative reinforcement, and in the nonobservable condition, performance seems to decrease under both direct positive and indirect negative reinforcement. This is contradictory to previous studies in the area, at least in the nonobservable condition (Weiner, Weiner & Hartsough, 1971; Weiner & Weiner, 1973; Drummond, 1973). In these prior studies performance increased significantly more under indirect negative reinforcement than under direct positive reinforcement. These differences in effect may be accounted for by the quality of the verbal reinforcement used in the studies. In the present study, the direct positive reinforcement given the subject was vague: i.e., "This is very good, ___subject's name_____, you are doing very well". This was a vague communication which did not specify what aspect of the performance was being praised. While the subjects in the nonobservable condition were being indirectly negatively reinforced, they had no way of knowing it was a result of the quantity of "X's" that they had drawn. Prior studies were more specific as to which responses were being reinforced. In the observable condition the visual feedback added a clue as to what aspect of the performance was being praised or criticized. It was obvious to the subject that the other person had either more or less "X's" than she did. It appears, however, that when performance is observable both direct positive reinforcement and indirect negative reinforcement stimulate subjects to increase their

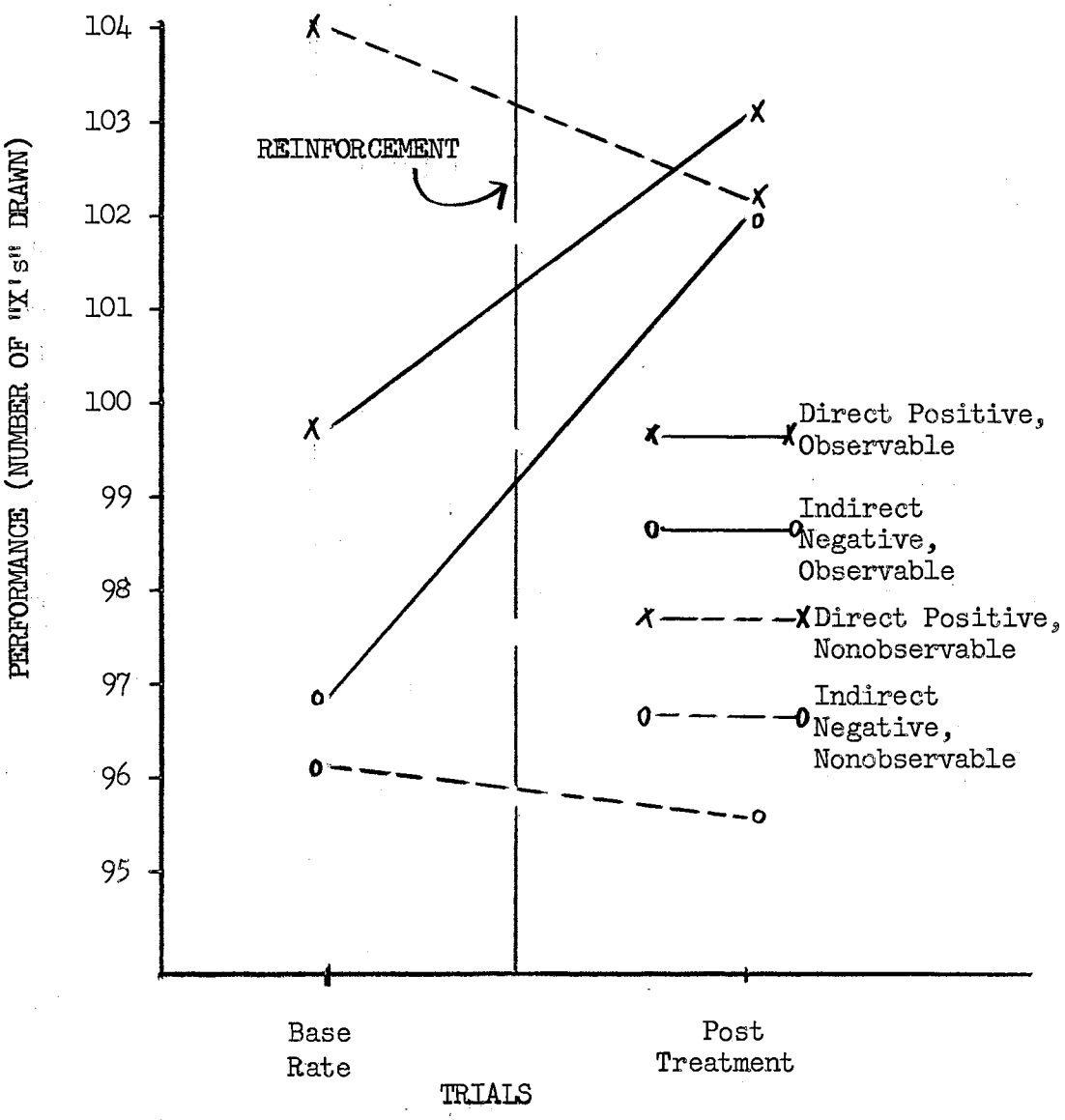

Figure 6. Average Performance Pre- and Post-Reinforcement Under All Treatment Conditions

performance equally well (Figure 6).

Hypotheses concerning the personality variables were not confirmed. This is not surprising in view of the fact that they were formed in conjunction with assumptions about the reinforcement conditions which were also not substantiated. In examining Figures 1 and 2 it can be seen that the subjects who scored low on the good impression and the achievement via conformance scales increased their performance a great deal immediately following reinforcement, but then decreased on subsequent trials. Subjects receiving high scores on these scales continued to increase their performance with only one slight regression on trial four on the good impression scale. While this is not statistically significant, it may be indicative of a trend for subjects who score low on the achievement via conformance and the good impression scales to not be as willing as subjects who score high on these scales to perform consistantly better in order to attain reinforcement for their performance. Even with the inconclusive results as to the relationship between personality variables and performance under various reinforcement conditions, the lack of significance does lend support to the more clinical position that a behavior modification program can be designed to modify any person's behavior regardless of his personality type.

There are a number of important situational variables which can help to account for the results contrary to predictions in this study and outcomes previously reported. This experiment was performed during the last week of the university academic summer session. The attitude

of students attending school during the summer seemed to be that performance was not expected to be at a high level and a "take-it-easy" attitude prevailed. In lieu of this attitude it seemed difficult to motivate students to achieve. This was compounded by the fact that the experiment took place in the last few days of the semester, and may have been looked upon simply as a task which had to be completed before the semester ended. The vague verbal reinforcement may not have been adequate then to increase motivation. It was the experimenter's observation that the subjects did not appear to be motivated at anytime during the tasks. Another factor which may have had an effect on the results was the method of subject solicitation. In at least one of the prior studies (Drummond, 1973) most subjects volunteered to participate without any type of remuneration. In the present study all subjects were receiving a certain amount of extra credit in one of their courses for participation in the experiment. They then could have lacked motivation to increase their performance because they were going to "get paid" no matter how they performed.

A variable in this study which was different from prior research was the seating position of the subjects. In prior experiments subjects were seated opposite each other and had the opportunity to view the other subject as he performed. This ability may have enabled the subject to observe subtle cues about the other subject's performance, and thus may have increased competition. In the present study subjects were seated side by side and only received peripheral cues about the other

subject while he was performing. This may have worked to decrease competition and thus performance.

The fact that each subject took a 100 question test pertaining to himself was also different from prior examinations of the paradigm, and while perhaps interesting may have contributed to fatigue. This, coupled with the fact that the test and the motor task appeared unrelated plus the possibility that the motor task was probably not as interest provoking as the test, may have led to a decrease in motivation.

A final variable that was different in this study from previous studies was the subject population. In the Drummond (1973) study the subjects were chosen from sophomore level classes. The subjects for this study were for the most part freshmen, many of whom had just graduated from high school a few months before. These females may not have been as cognizant of the subtle cues presented to get them to increase their performance, or they might not have been as attuned to competition as are older more experienced students.

The present study found that performance increased under observable conditions and decreased under nonobservable conditions. This decrease under nonobservable conditions is inconsistant with previous findings (Weiner, Weiner & Hartsough, 1971; Weiner & Weiner, 1973; Drummond, 1973). This discrepancy is most likely due to the relative vagueness of the reinforcer used in the study. Repetition of this study seems to be in order using a more explicit, more potent reinforcer. It is possible that using a more explicit and in effect more potent reinforcer

could alter the consequences of the observed and nonobserved conditions such that they would be different from those obtained in this experiment. A repetition of the study altering this significant variable needs to be done before other variables such as status, age, race, sex, and socio-economic class are looked into as possible determinants that can effect the paradigm.

CHAPTER VI

SUMMARY

The purpose of this study was to examine the effects of indirect negative reinforcement on the performance of subjects when they could and could not observe each other's performance. It also examined the relationship of three personality variables as measured by the California Psychological Inventory to performance under the indirect negative condition. Indirect negative reinforcement is postulated as acting on one subject in a dyad when the other subject is receiving direct positive reinforcement. Sixty female undergraduate college students were used as subjects. Twenty-four were paired and placed in the nonobservable condition. Twenty-four were paired with a cohort and run as the observable condition. Twelve pairs were randomly chosen as the neutral condition. The three scales of the CPI were given to each subject when they arrived. When both had completed the test they were taken to the experimental room and given five one-minute trials on a simple motor task. After the second trial the experimenter randomly administered direct positive reinforcement to one person in the dyad. In the nonobservable condition the other subject was not allowed to view the paper of the person receiving praise, thus, judgments about the adequacy of their performance were only speculative in nature. In the

observable condition the cohort would hand the experimenter a paper which had 15-20 "X's" more or less than the subject, depending on whether the subject was to receive direct positive or indirect negative reinforcement. In the neutral condition no comment was made to either subject.

It did not appear to matter whether reinforcement was direct or indirect, but only whether performance was observable or nonobservable. It was found that subjects in the observable condition performed significantly better than subjects in the nonobservable condition. It was proposed that vague verbal feedback alone in the nonobservable condition was a less potent reinforcer than the combination of visual and verbal reinforcement in the observable condition. The hypotheses about the personality variables were not supported.

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APPENDIXES

APPENDIX A

RAW DATA

		Trials				
		Average Base Rate	Post Treatment			Total Post Treatment Scores
	Subjects	X	Y_3	Y_4	Y_5	P_Y
	1.	110.5	111	110	105	326
Nonobservable	2.	131.5	130	130	130	390
Condition	3.	84.5	87	85	87	259
	4.	121	121	115	120	360
	5.	103.5	102	97	93	292
	6.	87	97	97	100	294
Direct Positive	7.	100.5	110	110	110	330
Reinforcement	8.	80	82	78	86	246
	9.	88.5	80	94	94	268
	10.	133	123	117	120	360
	11.	95	91	83	78	252
	12.	109.5	108	103	105	316
	1.	74.5	76	82	85	243
Nonobservable	2.	78.5	79	76	89	244
Condition	3.	100	93	90	98	281
	4.	92	89	76	81	246
	5.	121	111	105	115	331
	6.	89.5	104	106	100	310
Indirect Negative	7.	110	103	107	109	319
Reinforcement	8.	89	91	90	93	274
	9.	110	109	110	110	329
	10.	85	86	87	77	250
	11.	88.5	87	91	96	274
	12.	115	117	117	109	339
	1.	121.5	120	117	110	347
Observable	2.	97.5	100	101	95	296
Condition	3.	103	112	108	105	325
	4.	91.5	90	85	87	262
	5.	88.5	108	103	109	320
	6.	110.5	108	109	108	325
Direct Positive	7.	80.5	83	84	87	254
Reinforcement	8.	102	112	108	108	328
	9.	89	91	94	94	279
	10.	94.5	112	113	110	335
	11.	109.5	115	111	113	339
	12.	107.5	98	99	102	299

		Trials				
		Average Base Rate	Post Treatment			Total Post Treatment Scores
	Subjects	X	Y_3	Y_4	Y_5	P_y
Observable Condition	1.	91	105	105	108	318
	2.	88.5	97	90	94	281
	3.	107.5	108	109	108	325
	4.	106.5	116	113	117	346
	5.	101.5	110	110	109	329
	6.	94.5	96	96	99	291
Indirect Negative Reinforcement	7.	84.5	80	89	86	255
	8.	80	90	93	84	267
	9.	106	109	107	110	326
	10.	98	112	114	114	340
	11.	99.5	95	102	108	305
	12.	99	103	98	107	308
Neutral	1.	101.5	103	100	95	298
	2.	89	97	99	92	288
	3.	117.5	124	118	111	352
	4.	86	82	85	82	249
	5.	79	84	82	83	249
	6.	101	104	104	102	310
	7.	110	106	110	119	335
	8.	110.5	109	110	108	327
	9.	110.5	107	104	110	321
	10.	72	89	94	94	277
	11.	90.5	102	103	105	310
	12.	109	106	107	102	315

APPENDIX B

QUESTIONNAIRE

The following pages contain a series of statements. Read each one, decide how you feel about it, and then mark your answer on the special answer sheet provided. If you agree with a statement or feel it is true about you, make a mark in column one. If you disagree with a statement, or feel it is not true about you mark column two. Please make sure that the number of the statement is the same as the number on your answer sheet.

1. I looked up to my father as an ideal man.

2. Our thinking would be a lot better off if we would just forget about words like "probably", "approximately", and "perhaps".

3. I have a very strong desire to be a success in the world.

4. I liked "Alice in Wonderland" by Lewis Carroll.

5. I usually go to the movies more than once a week.

6. Some people exaggerate their troubles in order to get sympathy.

7. I always follow the rule: business before pleasure.

8. I have had very peculiar and strange experiences.

9. I am often said to be hotheaded.

10. I gossip a little at times.

11. There are a few people who just cannot be trusted.

12. I have very few fears compared to my friends.

13. It is hard for me to start a conversation with strangers.

14. For most questions there is just one right answer, once a person is able to get all the facts.

15. I sometimes pretend to know more than I really do.

16. Sometimes I feel like smashing things.

17. I think I would like the work of a school teacher.

18. Most people would tell a lie if they could gain by it.

19. When someone does me a wrong I feel I should pay him back if I can, just for the principle of the thing.

20. I seem to be about as capable and smart as most others around me.

21. I usually take an active part in the entertainment at parties.

22. I hate to be interrupted when I am working on something.

23. The trouble with many people is that they don't take things seriously enough.

24. It is always a good thing to be frank.

25. Sometimes I feel like swearing.

26. Sometimes I cross the street just to avoid meeting someone.

27. I like to boast about my achievements every now and then.

28. I must admit I often try to get my own way regardless of what others may want.

29. Sometimes I think of things too bad to talk about.

30. I must admit that I often do as little work as I can get by with.

31. I like to listen to symphony orchestra concerts on the radio.

32. I get pretty discouraged sometimes.

33. The thought of being in an automobile accident is very frightening to me.

34. I don't blame anyone for trying to grab all he can get in this world.

35. Planning one's activities in advance is very likely to take most of the fun out of life.

36. I do not always tell the truth.

37. I was always a slow learner in school.

38. I like poetry.

39. There is something wrong with a person who can't take orders without getting angry or resentful.

40. I always try to consider the other fellow's feelings before I do something.

41. Sometimes without any reason or even when things are going wrong I feel excitedly happy, "on top of the world".

42. I feel as good now as I ever have.

43. I wake up fresh and rested most mornings.

44. It is all right to get around the law if you don't actually break it.

45. Parents are much too easy on their children nowadays.

46. I have a tendency to give up easily when I meet difficult problems.

47. I certainly feel useless at times.

48. I enjoy hearing lectures on world affairs.

49. Criticism or scolding makes me very uncomfortable.

50. If I am not feeling well I am somewhat cross and grouchy.

51. I have the wanderlust and am never happy unless I am roaming or traveling about.

52. I feel nervous if I have to meet a lot of people.

53. I am sometimes cross and grouchy without any good reason.

54. My parents have often disapproved of my friends.

55. I do not mind taking orders and being told what to do.

56. Teachers often expect too much work from the students.

57. I often act on the spur of the moment without stopping to think.

58. My way of doing things is apt to be misunderstood by others.

59. I have had blank spells in which my activities were interrupted and I did not know what was going on around me.

60. Most people are secretly pleased when someone else gets into trouble.

61. When I meet a stranger I often think that he is better than I am.

62. I like to keep people guessing what I'm going to do next.

63. The most important things to me are my duties to my job and to my fellow man.

64. If given the chance I would make a good leader of people.

65. When things go wrong I sometimes blame the other fellow.

66. I like to plan a home study schedule and then follow it.

67. I have often found people jealous of my good ideas, just because they had not thought of them first.

68. Sometimes at elections I vote for men about whom I know very little.

69. In school I was sometimes sent to the principal for cutting up.

70. I would like to belong to a discussion and study club.

71. People pretend to care more about one another than they really do.

72. I like to read about history.

73. I am apt to show off in some way if I get the chance.

74. I am so touchy on some subjects that I can't talk about them.

75. The future is too uncertain for a person to make serious plans.

76. Sometimes I just can't seem to get going.

77. I like to talk before groups of people.

78. The man who provides temptation by leaving valuable property unprotected is about as much to blame for its theft as the one who steals it.

79. I am often bothered by useless thoughts which keep running through my mind.

80. I like to plan out my activities in advance.

81. I must admit that I have a bad temper, once I get angry.

82. I must admit I find it very hard to work under strict rules and regulations.

83. I like large, noisy parties.

84. I sometimes feel that I am a burden to others.

85. I have never deliberately told a lie.

86. Only a fool would try to change our American way of life.

87. I always try to do at least a little better than what is expected of me.

88. There have been a few times when I have been very mean to another person.

89. Lawbreakers are almost always caught and punished.

90. I would be very unhappy if I was not successful at something I had seriously started to do.

91. I dread the thought of an earthquake.

92. At times I have been very anxious to get away from my family.

93. I often lose my temper.

94. My parents were always very strict and stern with me.

95. I am bothered by people outside, on the streetcars, in stores, etc., watching me.

96. Sometimes I rather enjoy going against the rules and doing things I'm not supposed to.

97. I often get disgusted with myself.

98. Society owes a lot more to the businessman and the manufacturer than it does to the artist and the professor.

99. There have been times when I have worried a lot about something that was not really important.

100. I think I would like to belong to a motorcycle club.

101. I used to like it very much when one of my papers was read to the class in school.

102. Every now and then I get into a bad mood, and no one can do anything to please me.

103. I feel that I have often been punished without cause.

104. I don't seem to care what happens to me.

105. When I was going to school I played hooky quite often.

VITA

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Candidate for the Degree of

Doctor of Philosophy

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