THE EFFECTS OF DIFFERENT TYPES OF VERBAL REINFORCEMENT AT TWO AGE LEVELS

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CHAPTER I

INTRODUCTION AND REVIEW OF THE LITERATURE

In attempting to effect behavioral change in children the adult commonly uses verbal approval and disapproval (Stevenson, 1965). This method of effecting change in contrast to the use of material or tangible reinforcement is commonly called social reinforcement. The study of social reinforcement in the past has involved the investigation of the consequences of verbal statements of approval or disapproval given by an adult to a child while he is performing a certain task.

The amount of research on social reinforcement is quite extensive. Stevenson (1965) presents a comprehensive review of the area and notes several variables that have been found to influence results in studies of verbal or social reinforcement. For example, the sex of the subject and the sex of the experimenter has been found to exert an influence on the effects of social reinforcement (Stevenson, 1965). Gewirtz and Baer (1958a) found that social reinforcement delivered by a male experimenter was more effective in increasing performance in girl subjects than in boy subjects. Likewise, social reinforcement delivered by a female experimenter was more effective with boy subjects. Stevenson (1961) found comparable results. Later studies have found that the cross-sex effect is not as consistent as once thought (Hill and Meely, 1969; Rosenhan and Greenwald, 1965; Wright, 1968).

Age of the subject is another variable that relates to the

effectiveness of social approval or disapproval in changing behavior. Stevenson and Cruse (1961) found that five year-olds were more sensitive to social reinforcement and stayed at a task longer than did a corresponding group of twelve year-olds. Allen (1966) found that when compared with silent and supportive conditions, older subjects (fifth grade) spend a longer time at a task when exposed to a verbally critical condition. Younger subjects (kindergarten) spend a longer time at the same tasks when verbally praised. However, Wright (1968) did not find an interaction between age and reinforcement condition in her study of maze learning.

Meyer and Offenbach (1962) found that as the task in a social reinforcement study increased in complexity verbal disapproval was more effective than approval in increasing performance. Allen (1966) offered further evidence concerning task complexity as she found that older children stayed longer in both simple and complex tasks when an adult experimenter made critical comments about their performance while younger children stayed longer in the same tasks when the adult experimenter praised their performance. This author also found that as the task increases in complexity the effectiveness of verbal reinforcement decreases across all age levels. She related this phenomenon to the intrinsic reinforcement value of the more difficult tasks (Allen, 1966).

Gewirtz and Baer (1958a; 1958b) have found that subjects placed alone in a room prior to the experiment performed better under social reinforcement than subjects that had not experienced isolation prior to the experiment. Conversely the authors found that subjects who were exposed to games that resulted in praise by the experimenter prior to

the experiment did not perform as well under social reinforcement as did the children who had not been exposed to praise prior to the experiment.

In most of the preceding studies of social reinforcement the investigators have made little attempt to discriminate among verbal reinforcers in terms of quality other than a dichotomous distinction between positive and negative verbal reinforcement. Verbal reinforcements defined as positive have been assumed to operate with equal effects. Likewise verbal reinforcements defined as negative have been assumed to operate with equal effects.

Zigler and Kanzer (1962) were perhaps the first investigators to take an experimental look at social reinforcement in terms of qualitatively different verbal statements. Verbal reinforcers were divided according to the degree of correctness that each statement related to the subject about his performance. Statements such as, "correct" and "right" were chosen as relating more imformation to the subject about the correctness of his performance than did comments such as, "good" or "fine". The authors labeled the former statements as "Correct" reinforcers whereas the latter statements were labeled as "Praise." Using a simple marble dropping task where one of two holes was reinforced the authors found that "Praise" was more effective in increasing performance in lower class seven year-olds while "Correct" verbal reinforcers were more effective with middle class seven year-olds. Zigler and Kanzer interpreted these findings as attributable to the higher level of development of the middle class children and the tendency for "Praise" reinforcers to lose their effectiveness as the maturity of the subject grows (Zigler and Kanzer, 1962).

Rosenhan and Greenwald (1965) using the same task and types of reinforcers as the previous study failed to replicate Zigler and Kanzer's (1962) interaction between social class and verbal reinforcer type. A second experiment was designed to test the hypothesis that older or more mature children were influenced more by abstract verbal reinforcers (Correct) than by concrete verbal reinforcers (Praise). In comparing second graders to sixth graders no statistical interaction was found although results were in the significant direction ($p<.10$). However, the authors did find a significant interaction between sex and type of verbal reinforcer. Girls were more sensitive to "Correct" verbal reinforcers while boys were more sensitive to "Praise" type reinforcers (Rosenhan and Greenwald, 1965).

McGrade (1966) employing the same task as the above two studies also found no interaction between age and type of verbal reinforcement. She also found no substantiation for an interaction between social class and reinforcement type. Directly relevant to the present investigation is McGrade's attempt to specify type of verbal reinforcement even finer than the previous studies. Her verbal reinforcement conditions varied along two dimensions: (1) content (Correct or Praise), and (2) orientation (Toward the performance or toward the person). Her results indicated that a distinction among verbal reinforcers along the content dimension was useful whereas her distinction between orientations of verbal reinforcing statements was not useful in explaining her results.

Stein (1969) in an investigation of achievement behavior hypothesized that (1) social reinforcement would affect achievement behavior and (2) girls would be more sensitive to external approval (Praise)

whereas boys would be more concerned with satisfying their own standards (more sensitive to "Correct" verbal reinforcements). Subjects performing a coding task similar to the Coding Subtest of the WISC were randomly assigned to four reinforcement conditions: (1) Praise, (2) Correct, (3) Disapproval, and (4) Alone. Stein found that all verbal reinforcement conditions produced better performances than the alone conditions but found no support for the second hypothesis, i.e., girls being more sensitive to "Praise" than boys (Stein, 1969).

A similarity exists among the above four investigations in that all have dichotomized verbal reinforcement along the correctness continuum. However, this distinction has led to some confounding problems when used in conjunction with a specific response contingent reinforcement schedule. For example, in the marble dropping task a verbal reward is contingent upon a specific response, i.e., dropping a marble in the correct hole. Thus, the verbal reward "Good" and the verbal reward "Correct" although representing opposite ends of the correctness continuum may have the same effect since both are contingent upon the performance of a specific act. At this point the two ends of the correctness dimension operationally merge. Both verbal reinforcers seem to relate to the subject the same amount of information about the status of each response.

Likewise, McGrade's (1966) attempt to define verbal reinforcement along two dimensions of content and orientation failed due to the non-independence of the two dimensions. It is theoretically and operationally difficult to make a clear distinction between a verbal reinforcement that emphasizes correctness and a verbal reinforcement that emphasizes performance since a correct person tends to be one who

performs correctly on the task in McGrade's study. Likewise, a verbal reinforcement that emphasizes "Praise" in statements of "Good" or "Fine" may be either performance oriented or person oriented depending upon whether or not these reinforcements are contingent upon a specific response. A possibly more productive way to view these dimensions is to collapse the "correctness dimension" into a qualitative dimension of verbal reinforcement weighted at one end with those verbal reinforcing statements which give to the subject information about his performance or effort. At the other end are those statements which are not directed toward the subject's performance but rather are general evaluative statements about the subject's character or personality. This distinction may be easier to operationally control while at the same time encompass the dimension of correctness.

Ginott (1965) has made a similar distinction within the concept of verbal praise.

> When a boy cleans up the yard, it is only natural to comment on how hard he has worked, and on how good the yard looks. It is highly unrelated, and inappropriate, to tell how good he is. Words of praise should mirror for the child a 'realistic' picture of his 'accomplishments', not a Madison Avenue image of his personality. (Ginott, 1965, p. 45)

Thus, a distinction is made between those praising statements that give information to the child about his performance or effort and those praising statements that are character evaluations.

Dreikur's (1964) theory of child rearing emphasizes the importance of the adult or parent communicating respect and encouragement to the child. The parent is able to accomplish this goal by making a distinction between reinforcement of the act and reinforcement of the actor. This distinction is especially important when negative verbal reinforcing statements are being used.

> . . . we must avoid any word or action which indicates that we consider him (the child) a failure. We must have it clear in our own minds that each 'failure' indicates only lack of skill and in no way affects the value of the person. (Dreikurs, 1964, p. 38)

Thus any negative verbal statement that evaluates the 'value' or relative character of the child is to be avoided in Dreikurs' system.

Both Ginott's (1965) and Dreikurs' (1964) theories give credence to the experimental investigation of differing qualities of verbally reinforcing statements. More specifically they support a baisc dimension along which verbally reinforcing statements may be placed. This dimension appears to be weighted at one end with those reinforcing statements which comment on effort or accomplishment while at the other end those statements which infer a relative character evaluation. Aside from the overlap with the Correctness dimension there has been little research investigating the consequences of differing reinforcement schedules with the above distinction in mind.

CHAPTER II

STATEMENT OF THE PROBLEM

The present study is designed in an attempt to improve upon past investigations of social reinforcement in three major ways.

1. The first objective is to make a clearer operational distinction between types or qualities of verbal reinforcing statements. Thus, both positive and negative verbal reinforcing statements are dichotomized into two classes:

Class I (Reinforcing statements of effort): Those statements that give a maximal amount of information about specific task behavior while making minimal inferences to the subject about his worth, character or personality.

Class II (Reinforcing statements of character): Those statements that give minimal information about isolated task performance while indicating a global character evaluation of the subject.

2. The second major objective of this investigation is to examine the concept of negative verbal reinforcement in terms of the above classification scheme. Although the literature is extensive concerning the differences between positive and negative reinforcement, the concept of negative verbal reinforcement has been quite narrow (Kennedy and Willcutt, 1964; Marshall, 1965). The statement, "Wrong" has been a typical negative verbal reinforcer in most studies. (Walters and Parke, 1967; Wright, 1968; Meyer and Offenbach, 1962). Blame and

disappointment was used by Kennedy and Willcutt (1965). Criticism of performance was used by Allen (1966). Thus, most negative verbal reinforcers used in the recent literature have been in the proposed classification system statements belonging to Class I. Thus, an attempt will be made in this investigation to examine the other class of negative verbal reinforcing statements, i.e., those statements that are evaluative of the subject's character in a negative way.

3. The third major objective is a clarification of the inconsistencies that have been noted in relation to verbal reinforcement effects at different age levels. The proposed classification scheme may shed some light on the inconsistencies of the data.

In an attempt to achieve these three major objectives the present study investigated five conditions of verbal reinforcement, (1) positive verbal reinforcement of effort, (2) positive verbal reinforcement of character, (3) negative verbal reinforcement of effort, (4) negative verbal reinforcement of character and (5) no verbal reinforcement. Rate of performance on a simple task is compared across the five reinforcement conditions and two age levels. In order to maximize the effects of social reinforcement girls were used as subjects in conjunction with a male experimenter.

Since this study was primarily an exploratory investigation, only one general hypothesis was posed: that the data will reflect differences in response patterns among the five reinforcement categories.

CHAPTER III

METHOD

Subjects

The subjects consisted of 120 girls divided into two age levels with sixty subjects at each level. The younger group from ages 6 years-6 months to 7 years-11 months had a mean age of seven years and six months (7-6). While the older group from ages 9 years-1 month to 10 years-10 months had a mean age of nine years and eleven months (9-11). The children were selected from two schools which served predominately middle class areas of a midwestern city of approximately 45,000 in population. Permission was obtained from the parents of each child used in the study.

Apparatus

In order to insure the constancy of each reinforcement for each child E recorded all reinforcing statements on tape. The recording took place on a Model 1570 Woolensak tape recorder. The recorder was then used in conjunction with a Harold two-channel amplifier, a Midland Microphone and Two Telex earphones to complete an audio system. This system insured that the taped reinforcements had the same voice quality as the live instructions given by the E during the experimental session. E's voice and the pre-recorded verbal reinforcements both

were amplified by the same amplifier. Earphones were used as receivers by the Ss to mask extraneous noise and further insure equality of sound from the two different sources. The experimenter also wore earphones as a monitoring device and to help set the subject at ease (See Figure 1).

Performance Tasks

To best distinguish between differing performance levels due to different reinforcement conditions the task should be: of low intrinsic interest; be minimally dependent upon past learning; have no clear criteria for adequate performance and be easily and discretely scored (Stevenson, 1965; Weiner, et al., 1971). For the above reasons the coding subtests of the Wechsler Intelligence Scale for Children were used as performance tasks. A variation of the Coding A Subtest of the Wisc was used by the younger age level while a variation of Coding B was used for the older age level. The two tasks were employed in an attempt to equate the level of difficulty of each task for each age group. Similar tasks have been used in social reinforcement studies in the past (French, 1958; Stein, 1969; Weiner, et al., 1971).

The coding tasks were printed in black ink on 8½ x 11" sheet of heavy gauge paper. On a separate sheet were 10 sample figures which the subject completed before starting the experimental session (See Appendix A).

Procedure

The Ss were individually tested by a male experimenter in available rooms at the child's particular school. All Ss were tested by the

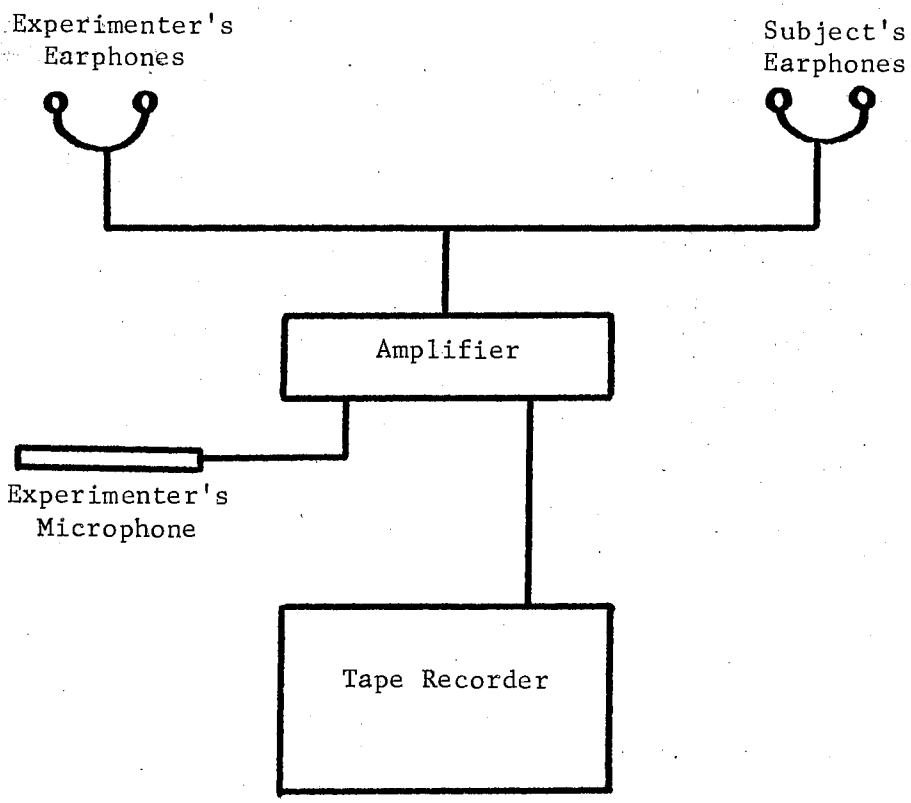

Figure 1. Audio System Layout

same E. Before the Ss were introduced to the experimenter, the children's teachers had prepared them by stating that a man from the university was interested in how children learn and would like the children to help him with a project. The teachers had previously screened out those children who were known to be partially deaf, to have perceptual motor difficulties or to be mentally retarded.

Each day of the study the first S was paged by the school office. The experimenter met the S at the office and escorted her to the testing room, making casual conversation about the end of school and summer plans. After entering the testing room the S was seated at a desk with two pencils, one sample sheet, three coding sheets face down and a set of earphones. E seated himself to the left and rear of the subject so that the Ss could not see the E without physically turning around. To the right of the experimenter was the audio apparatus concealed in a suitcase (See Figure 2).

After the S had seated herself E began,

> My name is David Martin and I'm trying to find out how girls learn, I want you to help me, Ok?
>
> What is your full name and birthdate?
>
> It sometimes gets very noisy around here so we are going to wear earphones to hear with. Here is your pair. From now on I'll speak to you through this microphone so that you can hear me. Let's try. Nod your head if you can hear me. In front of you is what I want you to do.

All further communications from E to Ss were through the microphone.

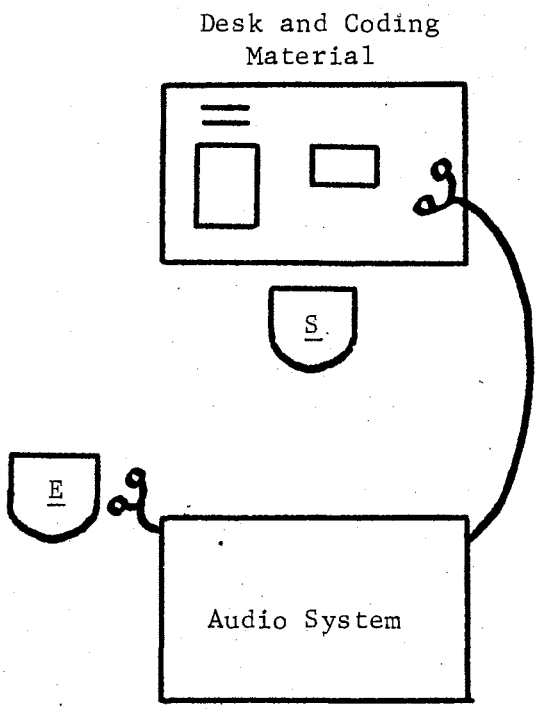

Figure 2. Seating Arrangement During the Experimental Session

Instructions for Younger Age Level

After turning over the sample sheet E began,

> Look here and you will see a star, a ball, a triangle, and other things. See, the star has a line up and down like this (E points), the ball has two lines across, the triangle has one line across like this, the cross has a little circle in the center, and the box has two straight lines up and down.
>
> Now look down below where you will see the balls, the stars, the boxes and the other things all mixed up but without any marks on them. I want you to fill in the things here with the same marks they have at the top. This is the way to do it. Here is a ball. Look up at the top and find the ball. You see it has two lines going this way. So you put two lines in this ball like this (E illustrates in the sample figures). The star has one line going up and down, so you put the same mark in here (E illustrates again). Now you do the rest. (Adapted from Wechsler, 1949)

Instructions for Older Age Level

> Look at these divided boxes or squares. Notice that each has a number on the upper part and a figure on the lower part. Every number has a different figure. Now look here (E points to samples) where the boxes have numbers but the squares beneath have no figures. I want you to put in each of these squares the figures that should go there like this (E demonstrates the first two figures). (Adapted from Wechsler, 1949)

The Ss were then allowed to complete the rest of the ten sample figures at his own pace. Any mistakes were corrected at this time. After the subjects had completed the sample figures E continued,

> Now look here at this page (E turned up the coding task). It is filled with the empty figures (squares) you were doing before. I want you to do as many figures as you can without skipping any before you hear this bell. (E sounded bell) Remember, continue working until you hear the bell. If you finish this page there are others below it. (See?) Are there any questions? Go ahead and start.

At this point E started the tape recorder. In all experimental conditions the verbal reinforcements were pre-recorded by the experimenter. Between the activation of the tape recorder and the first

verbal reinforcement was a 60 second base rate period during which the recorder was running but no reinforcements were given. The first reinforcement following the base rate period initiated the five minute experimental period during which the reinforcements were given on a fixed interval schedule of one reinforcement every 30 seconds. During the experimental period E took note of the number of figures the child had completed at the end of each minute, thus as in the base rate period a rate per minute measure was possible.

Treatment Conditions

At each age level the subjects were divided into four experimental and one control group.

Treatment-PE. This consisted of positive verbal reinforcement of the child's performance. The four reinforcing statements used were: "You're filling in a lot of figures."; "You're doing a bunch of figures."; "You can really do those quickly."; "You're working very fast."

Treatment-PC. This consisted of positive verbal reinforcements directed toward the child's character. The four reinforcing statements used were: "You are a good girl."; "You are a fine girl."; "You're so good."; "You are such a nice girl."

Treatment-NE. This consisted of negative verbal reinforcements directed toward the child's performance. The statements used were: "You haven't filled in many figures."; "You haven't done many figures."; "You aren't working very fast."; "There aren't many figures completed."

Treatment-NC. This condition consisted of negative verbal reinforcement directed toward the subject's character. The statements used were: "You're a slow girl."; "You're not a very good girl."; "You're a lazy girl."; "You're not a hard worker."

Control Group-C. No comment was made during the experimental period.

In each treatment condition the verbal reinforcements were counter-balanced so that the same verbal statement did not occupy the same relative position for every subject.

In both treatment conditions involving negative social reinforcement the experimenter requested the subject complete additional figures for two minutes following the experimental period. During this period E praised the child's performance and told the subject that she was doing much better and that she had finished with a good score.

After completion of the testing period the child and E removed their earphones and the child was sent back to her room with the name of the next subject. This interlude gave E time to reset the correct tape and provide new coding materials before the next subject arrived.

Design

120 subjects were divided into two age levels and then randomly assigned to four reinforcement conditions and one control condition. This procedure resulted in five reinforcement conditions at both age levels with 12 subjects per reinforcement condition. The experimental procedure resulted in base-rate measure during the baseline period plus an average rate per minute measure over five minutes during the experimental period. The independent variables in this study were

the five reinforcement conditions and the two age levels. The dependent variable was the number of figures completed per minute by each subject during the five minutes of the experimental period.

CHAPTER IV

RESULTS

Appendix B gives a summary of each subject's responses in number of figures completed per minute for each reinforcement condition. The data were analyzed to evaluate the general hypothesis of differences in response patterns among the five reinforcement conditions. Table I shows the mean base rate performance and the corresponding overall mean rate of figure completion for each reinforcement condition at both age levels. At each age level a separate analysis of covariance was performed on the mean number of figure completions per minute with the base rate as a covariate. (Winer, 1962) At both age levels the hypothesis of no differences between reinforcement conditions could not be rejected at the .05 level of significance. (See Tables II and III)

Figures 3 and 4 show graphs of base rate performance vs. mean figure completions per minute for each reinforcement condition at the two age levels. To test possible heterogeneity of within-class regression an over all F Test was used at both age levels. (Winer, 1962) The results of this overall analysis did not contradict the hypothesis of homogeneity of within-class regression at the .05 level of significance. (See Tables IV and V) However, the variation among the regression lines for each reinforcement condition especially at the 7-6 age level indicated that a more specific analysis might be appropriate. Therefore, regression coefficients and variances about regression were

TABLE I

MEAN BASE RATE PERFORMANCE AND OVERALL MEAN FIGURE COMPLETIONS PER MINUTE FOR EACH REINFORCEMENT CONDITION

Age 7-6					
	Reinforcement Conditions				
	PE	PC	NE	NC	C
Base Rate Performance	25.2	22.4	23.6	23.2	24.6
Average Performance Per Minute	27.5	21.5	24.4	24.6	24.3

Age 9-11					
	Reinforcement Conditions				
	PE	PC	NE	NC	C
Base Rate Performance	21.75	20.5	20.42	21.25	21.25
Average Performance Per Minute	21.98	19.73	20.88	21.76	22.15

TABLE II

ONE WAY ANALYSIS OF COVARIANCE ON AGE LEVEL 7-6

Source	SS	df	MS	F
Reinforcement conditions (Adjusted)	86.494	4	21.6235	1.5153
Error	770.555	54	14.2695	
Total	857.0490	58		

TABLE III

ONE WAY ANALYSIS OF COVARIANCE ON AGE LEVEL 9-11

Source	SS	df	MS	F
Reinforcement conditions (Adjusted)	21.6454	4	5.4113	1.3334
Error	219.1386	54	4.0581	
Total	240.784	58		

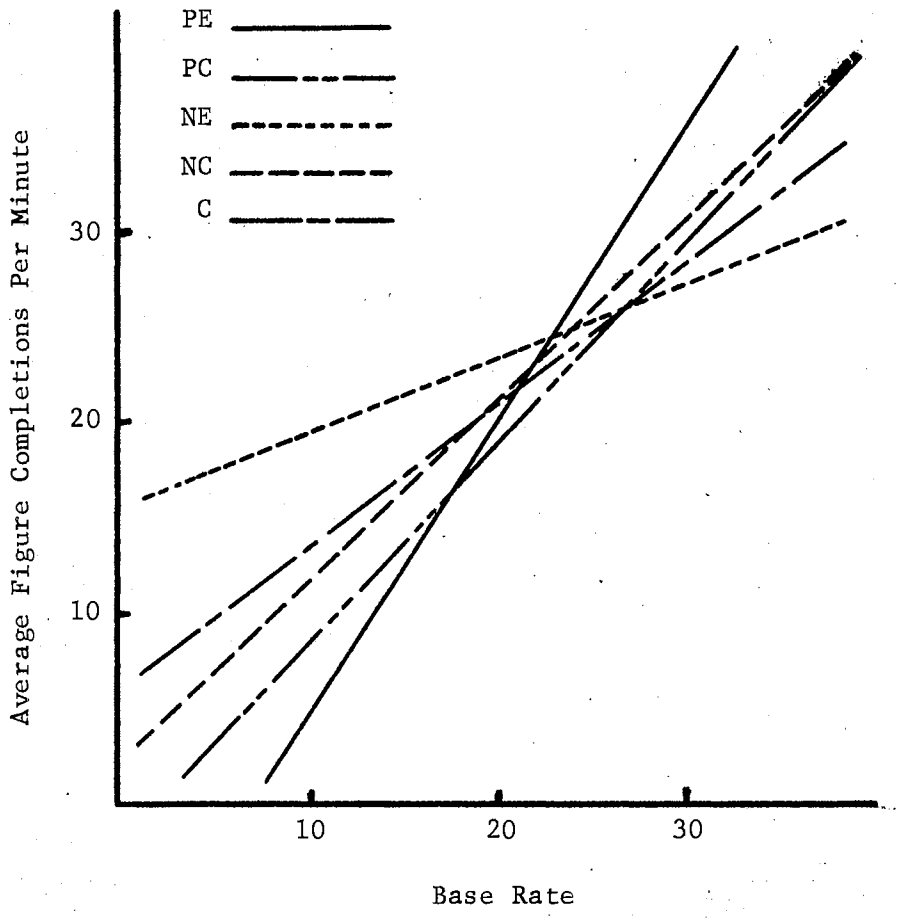

Figure 3. Base Rate as a Function of Average Figure Completions Per Minute for Each Reinforcement Condition at Age Level 7-6

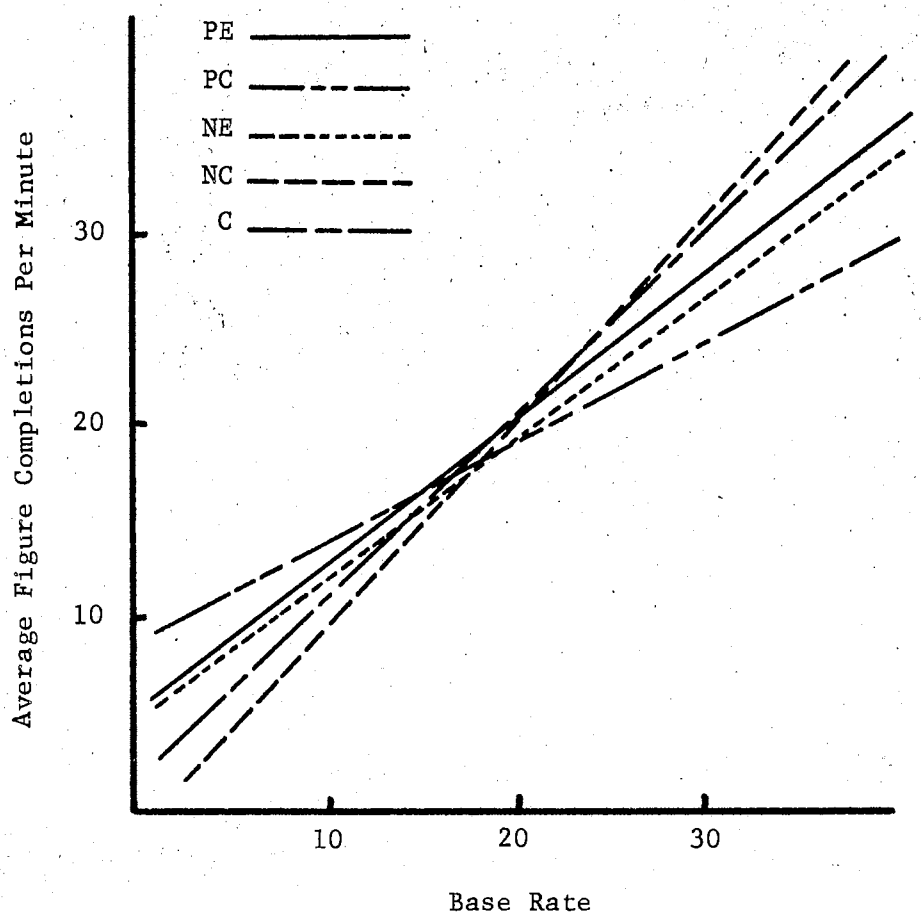

Figure 4. Base Rate as a Function of Average Figure Completions Per Minute for Each Reinforcement at Age Level 9-11

TABLE IV

F TEST FOR COMMON WITHIN-CLASS REGRESSION FOR AGE LEVEL 7-6

Source	SS	df	MS	F
Variation about common regression	38.355	4	9.58	2.37
Error	202.429	50	4.045	

TABLE V

F TEST FOR COMMON WITHIN-CLASS REGRESSION FOR AGE LEVEL 9-11

Source	SS	df	MS	F
Variation about common regression	97.621	4	24.405	1.813
Error	672.934	50	13.459	

calculated for each reinforcement condition as shown in Table VI. A further analysis using multiple t tests was employed to test differences between pairs of regression coefficients. These tests are summarized in Table VII. Differences shown between regression coefficients using the multiple t test procedure should be interpreted carefully due to the non-independence of these tests. However there appears to be some evidence in the younger age group that the regressions for each reinforcement condition should not be considered homogeneous thus suggesting a possible interaction between reinforcement conditions and base rate level. No significant differences emerged in the 9-11 age level.

Difference scores were calculated by subtracting the subject's base rate from the number of figures completed during each minute of the experimental period. This procedure created five difference scores for each subject. Figures 5 and 6 show the average difference scores for each reinforcement conditions as a function of minutes for the two age levels. At the age level 7-6 (See Figure 5) an increase of performance over time in three of the reinforcement conditions, PE, NE, and NC, seems to be reflected by the graph. To test a possible interaction between reinforcement conditions and minutes of reinforcement an analysis of variance with repeated measures on minutes was performed. To account for possible dependence between the responses on successive minutes the Geissner-Greenhouse conservative F test was used. (Winer, 1962) A significant minutes effect was found ($p<.01$) and the interaction between minutes and reinforcement conditions was also significant at the .05 level (See Table VIII). No significant differences were found at age level 9-11. In order to test the confounding that ceiling effects might have had on the above analysis the

TABLE VI

REGRESSION COEFFICIENTS AND VARIANCE ABOUT REGRESSION FOR EACH REINFORCEMENT CONDITION AT BOTH AGE LEVELS

Age 7-6					
	Reinforcement Conditions				
	PE	PC	NE	NC	C
Regression Coefficients	1.53	1.058	.356	.961	.705
Variance About Regression	13.1591	9.5857	19.6973	6.8135	18.0378

Age 9-11					
	Reinforcement Conditions				
	PE	PC	NE	NC	C
Regression Coefficients	.77	.518	.823	1.088	.955
Variance About Regression	2.6859	5.4089	1.8666	4.8990	5.3825

TABLE VII

RESULTS OF MILTIPLE t TESTS PERFORMED BETWEEN REGRESSION COEFFICIENTS AT AGE LEVEL 7-6

Comparison	t Value	Significance Level
PE vs NE	3.49	.01 Two Tailed Test
PE vs PC	1.6	Nonsignificant
PE vs C	2.07	.10 Two Tailed Test
PE vs NC	1.94	.10 Two Tailed Test
PC vs NE	2.2	.05 Two Tailed Test
NE vs NC	1.86	.10 Two Tailed Test
PC vs NC	1.83	.10 Two Tailed Test
NC vs C	.58	Nonsignificant
NE vs C	1.16	Nonsignificant
PC vs c	.98	Nonsignificant

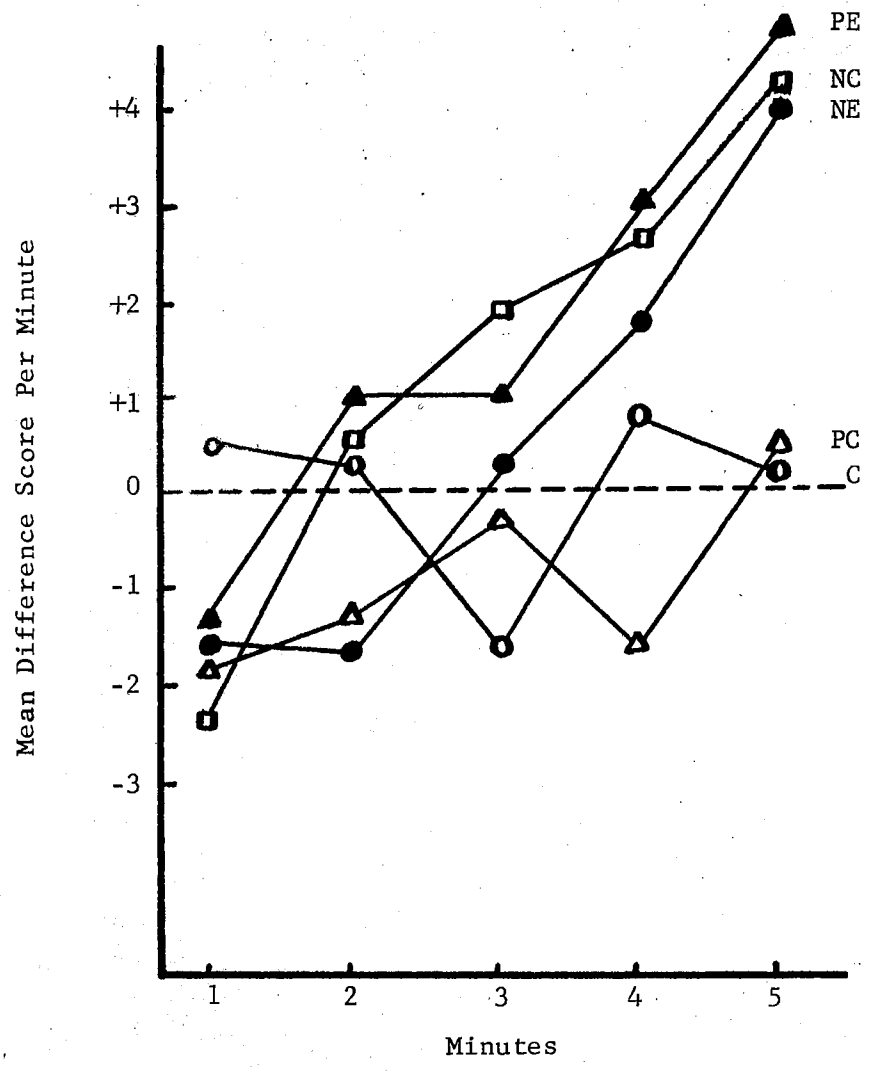

Figure 5. Mean Difference Scores as a Function of Time for Each Reinforcement Condition at Age Level 7-6

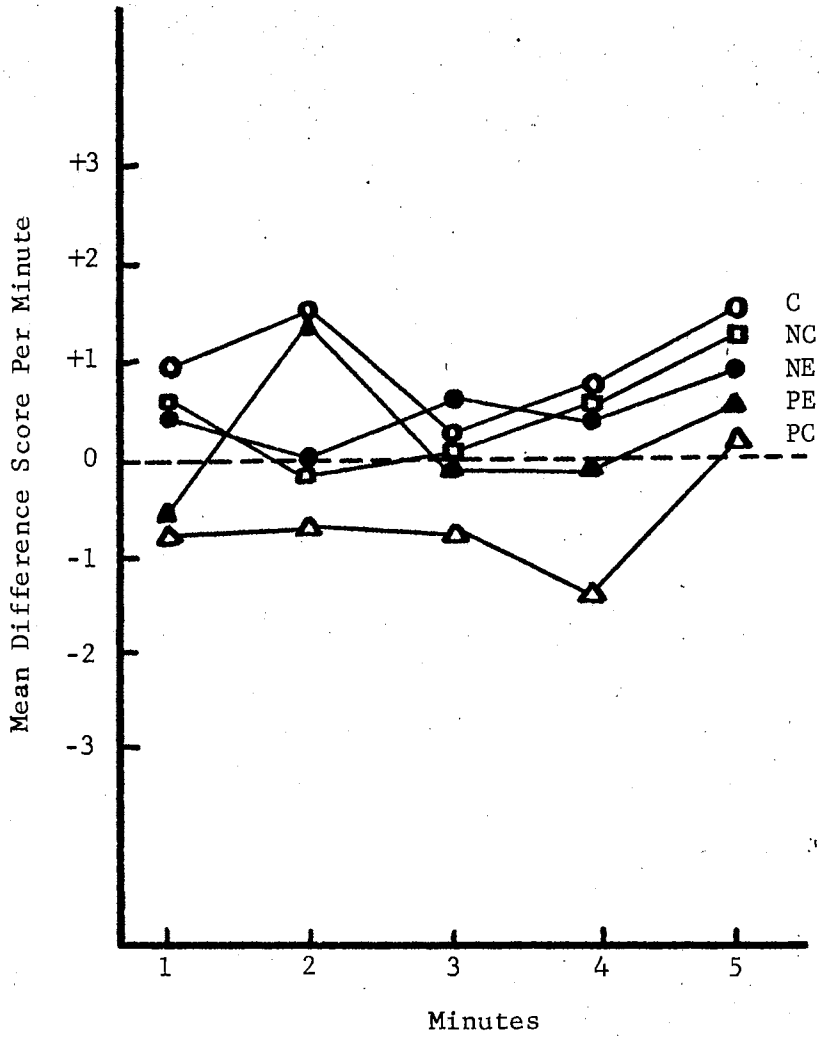

Figure 6. Mean Difference Scores as a Function of Time for Each Reinforcement Condition at Age Level 9-11

TABLE VIII

ANALYSIS OF VARIANCE WITH REPEATED MEASURES ON AGE LEVEL 7-6

Source	SS	df	MS	F
Between Subjects	3882.50	59		
A (Reinforcement Cond.)	281.37	4	70.4	1.07
Subjects within groups	3601.13	55	65.5	
Within Subjects	3785.2	240		
B (Minutes)	595.97	4	148.7	12.95
AB	661.19	16	41.3	3.6
Bx Subj. within groups	2528.04	220	11.49	

base rates were divided at the median and the difference scores associated with the high base rates were tested against the difference scores associated with the low base rates using a Studentized *t*. The hypothesis that high base rate subjects would have higher or lower differences scores than those with a low base rate was rejected ($p<.05$).

Although rate of performance on the coding tasks was the formal dependent variable, the subjects did appear to react to the verbal reinforcements in other noticeable ways. A typical reaction from younger subjects to the first few negative reinforcements was shock as manifested in behavior such as turning around and looking at the *E*. Some would even verbalize agreement by statements such as, "I know." Reactions to the positive verbal statements were usually smiling. The elder children tended to be more verbal during the experimental session. Some of the older girls would nervously laugh after a negative reinforcement. One subject said, "Thank you," after the first three positive reinforcements of character. This evidence suggests that girls of both ages were convinced that the taped reinforcements they received were eminating from the experimenter at that immediate moment.

CHAPTER V

DISCUSSION

The first and primary objective of this investigation was to make an operational distinction between verbal reinforcements directed toward the specific act or effort and those verbal reinforcements directed toward the subject's character or personality. The validity of this operational distinction might be reflected in differing response patterns among the reinforcement conditions of the present study. Therefore, the results were analyzed to give the maximum amount of information concerning possible differences in patterns of response.

The data offered mixed results with varying amounts of significance. At both age levels the analysis of covariance yielded results which supported a hypothesis of no difference between reinforcement conditions. However, an analysis of the within class regressions associated with the reinforcement conditions at the younger age level tended to support the hypothesis that differences did exist between response patterns at some level. These differences may suggest that in this study a subject's performance depended not only on the reinforcement condition she experienced but also her initial level of performance. For example, on the average, subjects having a high level of initial performance respond better under positive reinforcement of effort than negative reinforcement of effort. In contrast, those subjects who had a relatively low initial performance respond better

in the presence of negative reinforcement of effort than with positive reinforcement of effort. This suggestive finding adds support to the importance of avoiding the indiscriminate application of a specific reinforcement type to all subjects. No support for differences in regression was found at the older age level.

The dependent measure in the two analyses of covariance was the average response rate over the five minutes of reinforcement. Since data was collected on a figure per minute basis, the possibility that the previous averaging masked differential changes over time could be explored.

Figure 5 shows that at age level 7-6 the average difference between base rate performance and consequent rate of figure completion does appear to change depending upon the reinforcement condition and the duration of the reinforcement. This graphical evidence was confirmed when the analysis of variance with repeated measures on minutes revealed a significant minutes effect and a significant interaction between minutes and reinforcement conditions. An integration of the graphical data with these statistical outcomes suggests that subjects exposed to positive reinforcement of effort, negative reinforcement of effort and negative reinforcement of character have a greater increase in performance over time than those subjects under positive reinforcement of character or no reinforcement. The relatively poor performance of the girls in the positive reinforcement of character may indicate that positive verbal reinforcement of character during the performance of a task may actually act as an interference by having a relatively high emotional loading thus reducing the subject's concentration on the task. It is also possible that the ambiguous nature of the positive

verbal reinforcements of character makes a connection between task performance and the reinforcements difficult.

Thus, these results seem to give support at the age level 7-6 to a useful distinction between positive reinforcement of effort and positive reinforcement of character. There does not appear to be any support of any kind for a distinction between negative reinforcement of effort and negative reinforcement of character at the younger age level nor is there any support for a distinction among the posited types of verbal reinforcements at age level 9-11 in the present study. In the analysis of difference scores the two negative reinforcement conditions were similar in effect to the positive reinforcement of effort condition, though they may work through different mechanisms.

Results also indicate that when the two age levels were informally compared the younger group had a higher overall variation in their response patterns. There are at least two possible factors which could account for this difference. The task required by the older age level may have been relatively more difficult than the task required for the younger age level. There is some support for this in the data in that the average base rate at the younger age level is greater than at the older age level. Since an attempt was made to equalize the difficulty of the tasks, the expected base rate difference between the two age levels would be zero if in fact the two tasks were equally difficult relative to age. Thus, it seems that the lack of effects or variation between treatment conditions in the older age level is supportive of other studies which have shown that as the task increases in difficulty the effectiveness of social reinforcement decreases. (Meyer and Offenback, 1962; Allen, 1966) A second possible factor is that the

younger girls were affected more by social reinforcement than were the older girls. A combination of these two factors most probably is involved in the present study.

The inability of the present study to show conclusive experimental evidence to support a distinction between verbal reinforcement of effort and verbal reinforcement of character seem to rest in at least five possible factors.

1. There may exist no useful conceptual or operational distinction between reinforcements of effort and reinforcements of character. However, this seems unlikely due to the theoretical distinctions made in systems such as Dreikurs (1964), Ginott (1965), Ellis (1963), and Harvey (1970). There is also a seemingly heavy overlap between the present study's categories of verbal reinforcement and Zigler and Kanzer (1962) categorization.

2. There may exist a useful conceptual distinction but the present study may have failed to operationally distinguish between verbal reinforcing statements of effort and verbal reinforcements of character. For example, in the present study, "You aren't working very fast.", a negative reinforcement of effort, may not be operationally distinct from the statement, "You're not a hard worker.", a negative reinforcement of character. Other operational overlaps may have confounded the detection of any real differences that may exist between the reinforcement conditions.

3. The task may have been too complicated or artificial. Although the task for the older girls appears to have been too difficult to obtain any social reinforcement effects, the task for the younger children seems to have been sufficiently difficult to keep

their interest while simple enough to obtain social reinforcement effects. The artificiality of the situation seems an unlikely explanation due to the spontaneous comments the girls made during the experimental session and the school like task which they were involved in.

4. The full effect of the reinforcement effects may not have been picked up due to the shortness of the experimental period. Since the task used in the present study was more complex than a simple motor task as in most studies of social reinforcement, it may take longer than five minutes for reinforcement effects to emerge. The shape of the graphs in Figure 5 give the impression that the differences between the reinforcement conditions may have been more discrete given more minutes of reinforcement. This conjecture seems plausible only for the younger age level.

5. The past reinforcement history of the subject could possibly have been a confounding influence in the present study. This reinforcement history could predispose the individual to be sensitive to one particular class of verbal statements. Harvey (1967) has presented evidence that families can be separated as to whether they tend to reward effort or reward the character of their children. It follows that the reinforcement value of the differing statements might depend upon their reinforcement value in the family interactions.

In short, further investigation should take a closer look at (1) a more accurate classification of verbal reinforcing statements in terms of the present categorization, (2) variation of the duration of the reinforcements, (3) a better equalization of the task difficulty to the age of the subject and (4) consideration of the reinforcement history of the subject. Investigations which are designed to examine

these four factors may give more conclusive experimental evidence concerning the present study's hypothesis of differences existing between verbal reinforcements that reinforce the effort of the subject and those reinforcements that tend to reinforce the general character or personality of the subject.

CHAPTER VI

SUMMARY

Most studies of social reinforcement have tended to treat all verbal reinforcements as essentially the same. However, several theorists (Dreikurs, 1964; Ginott, 1965) and experimental studies (Zigler and Kanzer, 1962; McGrade, 1966) have suggested that different verbal reinforcements may have different effects on the subject's response. To investigate different qualities of verbal reinforcement the present study attempted to operationally distinguish between those verbal reinforcements which comment on effort or specific acts and those verbal reinforcements that infer a relative character evaluation.

120 girls at two age levels, (7-6 and 9-11), were randomly placed in five groups with each group receiving one of five conditions of reinforcement: (a) positive reinforcement of effort, (b) positive reinforcement of character, (c) negative reinforcement of effort, (d) negative reinforcement of character and (e) no reinforcement. Girls were selected as subjects to maximize the effects of social reinforcement since the experimenter was an adult male.

The subjects were given six minutes to work at a coding task similar to Coding Subtest A and B of the WISC. The first minute was a no reinforcement baseline period while the last five minutes had verbal reinforcements presented by tape every 30 seconds.

An overall analysis of covariance on each age level showed no

significant differences among the reinforcement conditions. However, an analysis of the within class regressions showed significant differences between regressions at the younger age level. These differences appear to suggest that a subject's performance depended not only on the reinforcement conditions she experienced but also the subject's initial level of performance. At age level 9-11 no differences in regression were significant.

At age level 7-6 subject difference scores were derived for each minute in each reinforcement condition and an analysis of variance with repeated measures on minutes was performed on these scores. In addition to a significant minutes effect ($p<.01$) a significant interaction between minutes and reinforcement conditions was found ($p<.05$). These results indicate that subjects at age level 7-6 exposed to positive reinforcement of effort, negative reinforcement of effort and negative reinforcement of character had a greater increase in performance over time than those subjects under positive reinforcement of character or no reinforcement. Thus there appears to be suggestive evidence that at age level 7-6 a useful distinction may exist between positive reinforcement of effort and positive reinforcement of character. However between the two negative reinforcement conditions no differences were found. Although the actual increment in performance was approximately equal under the two negative conditions and positive reinforcement of effort, the changes in performance may emerge through different mechanisms.

No significant differences were found at the 9-11 age level. This finding supports the reported tendency for the effectiveness of the

verbal reward to decrease as the age of the subject and complexity of the task increase.

Most of the results that indicated differences between reinforcement conditions were of a suggestive nature rather than conclusive. Some of the factors that may have affected the results of the present study and are in need of investigation to clarify the mixed results of this study are: (1) finer and more precise discrimination between verbal statements that represent reinforcements of effort and those verbal statements that are reinforcements of character, (2) variation of the duration and number of reinforcements, (3) better equalization of the task difficulty to the age of subject, (4) consideration of the past reinforcement history of the subject.

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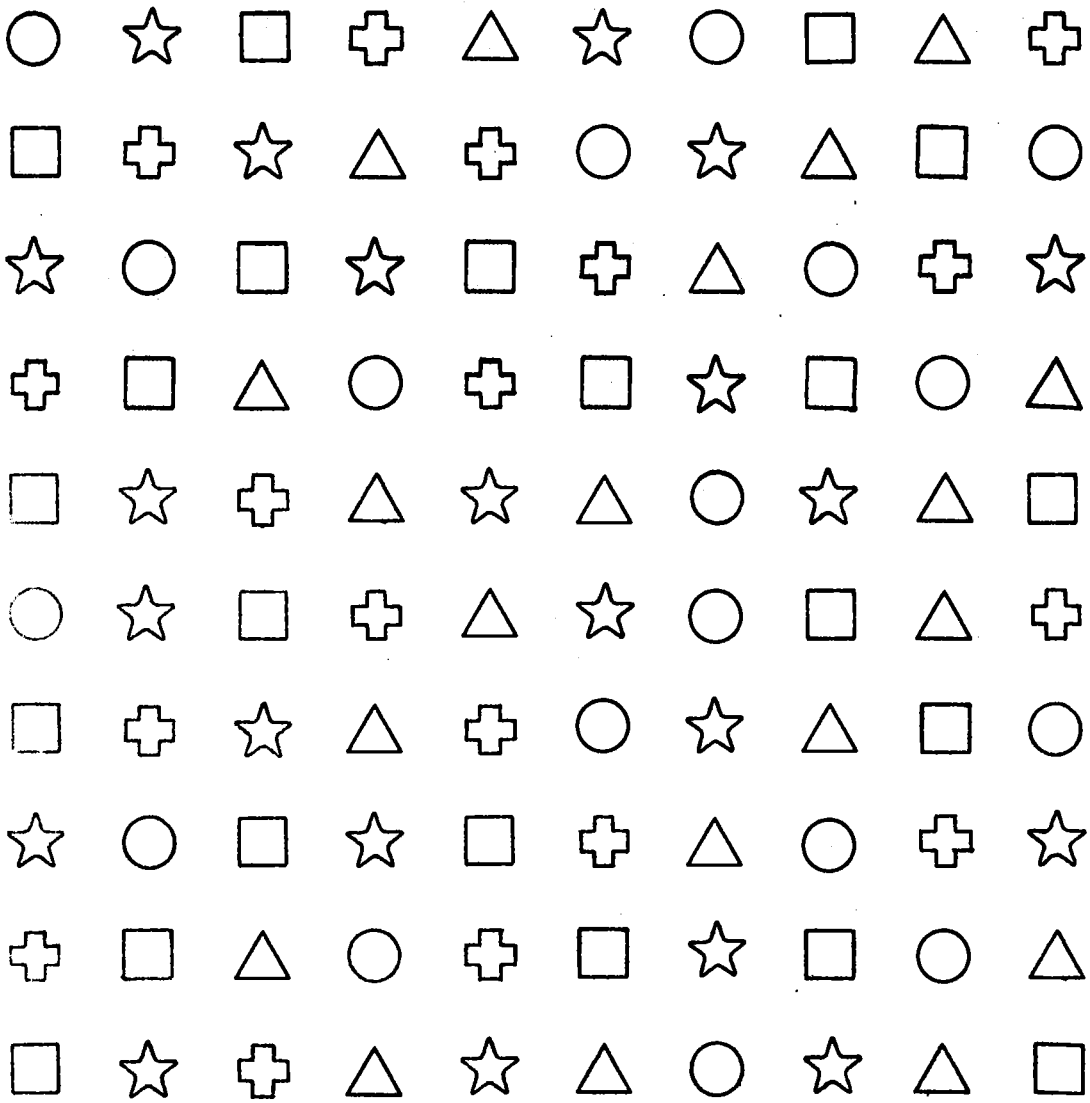
APPENDIX

PERFORMANCE TASK SHEET FOR AGE LEVEL 7-6



PERFORMANCE TASK SHEET FOR AGE LEVEL 9-11

1	2	3	4	5	6	7	8	9
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3	1	5	4	2	7	4	6	9	2	5	8	4	7	6	1	8	7	5	4	8	6	9	4	3

1	8	2	9	7	6	2	5	4	7	3	6	8	5	9	4	1	6	8	9	3	7	5	1	4

9	1	5	8	7	6	9	7	8	2	4	8	3	5	6	7	1	9	4	3	6	2	7	9	3

3	1	5	4	2	7	4	6	9	2	5	8	4	7	6	1	8	7	5	4	8	6	9	4	3

1	8	2	9	7	6	2	5	4	7	3	6	8	5	9	4	1	6	8	9	3	7	5	1	4

9	1	5	8	7	6	9	7	8	2	4	8	3	5	6	7	1	9	4	3	6	2	7	9	3

3	1	5	4	2	7	4	6	9	2	5	8	4	7	6	1	8	7	5	4	8	6	9	4	3

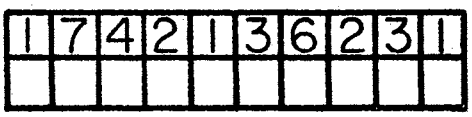
1	8	2	9	7	6	2	5	4	7	3	6	8	5	9	4	1	6	8	9	3	7	5	1	4

9	1	5	8	7	6	9	7	8	2	4	8	3	5	6	7	1	9	4	3	6	2	7	9	3

SAMPLE PERFORMANCE SHEETS FOR BOTH AGE LEVELS

SAMPLES

SAMPLES



APPENDIX B

TABLE IX

NUMBER OF FIGURE COMPLETIONS PER MINUTE
POSITIVE REINFORCEMENT OF EFFORT

Age 7-6

Subject	Baserate	1	2	3	4	5
1	23	20	27	24	22	28
2	26	30	31	27	30	31
3	24	25	29	23	27	27
4	24	23	26	26	18	30
5	34	30	33	35	47	42
6	23	19	14	20	20	23
7	21	21	18	19	21	22
8	25	23	37	30	33	34
9	33	32	36	38	36	34
10	22	15	20	16	21	17
11	22	26	16	31	29	40
12	25	22	29	27	36	34

Age 9-11

Subject	Baserate	1	2	3	4	5
1	21	18	20	19	18	20
2	20	16	20	22	20	17
3	25	25	26	25	23	26
4	19	17	20	21	20	24
5	18	18	18	17	20	16
6	27	27	29	23	25	27
7	19	22	21	17	21	21
8	18	19	21	21	19	20
9	33	30	31	28	29	29
10	17	15	19	19	17	17
11	20	20	26	23	21	22
12	24	26	29	25	26	28

TABLE X

NUMBER OF FIGURE COMPLETIONS PER MINUTE
POSITIVE REINFORCEMENT OF CHARACTER

Age 7-6

Subject	Baserate	1	2	3	4	5
1	21	17	17	16	16	19
2	30	27	30	33	32	33
3	19	19	20	21	19	19
4	18	16	13	15	18	16
5	24	16	17	13	14	16
6	18	19	16	20	17	18
7	25	22	25	25	27	30
8	22	26	17	22	20	24
9	37	34	42	46	35	37
10	22	18	24	21	18	26
11	13	13	12	14	14	19
12	20	20	19	21	20	18

Age 9-11

Subject	Baserate	1	2	3	4	5
1	24	23	23	22	22	24
2	19	15	14	15	14	16
3	20	18	19	20	16	18
4	25	24	23	23	22	28
5	22	22	16	21	19	18
6	18	19	21	22	21	23
7	21	17	22	20	20	23
8	16	16	16	16	17	17
9	17	22	24	23	22	19
10	22	20	20	19	19	20
11	22	22	22	19	15	22
12	20	19	18	16	18	20

TABLE XI

NUMBER OF FIGURE COMPLETIONS PER MINUTE
NEGATIVE REINFORCEMENT OF EFFORT

Age 7-6

Subject	Baserate	1	2	3	4	5
1	24	16	12	21	22	23
2	19	14	17	21	19	20
3	25	21	12	22	20	25
4	18	18	23	27	28	27
5	29	30	24	17	26	31
6	16	19	17	32	30	30
7	27	25	23	25	22	24
8	29	25	29	30	28	32
9	22	30	29	22	30	32
10	26	28	31	28	34	39
11	21	18	19	23	19	16
12	28	22	29	22	28	37

Age 9-11

Subject	Baserate	1	2	3	4	5
1	15	18	18	16	17	18
2	23	23	23	22	18	22
3	23	22	25	26	22	26
4	20	20	18	21	19	20
5	19	19	18	16	23	20
6	25	24	26	24	23	25
7	18	17	20	21	19	23
8	30	33	30	29	32	31
9	14	17	14	19	18	14
10	21	20	18	22	23	21
11	13	15	14	15	14	15
12	24	22	21	22	21	21

TABLE XII

NUMBER OF FIGURE COMPLETIONS PER MINUTE
NEGATIVE REINFORCEMENT OF CHARACTER

Age 7-6						
Subject	Baserate	1	2	3	4	5
1	21	17	22	30	30	36
2	22	21	19	23	23	26
3	27	31	28	32	25	28
4	20	17	18	22	23	25
5	15	15	15	16	19	18
6	26	20	23	28	23	23
7	32	34	34	34	40	34
8	26	25	30	30	29	37
9	27	24	28	28	28	28
10	26	22	31	22	31	31
11	14	14	16	16	20	20
12	22	10	21	22	21	24

Age 9-11						
Subject	Baserate	1	2	3	4	5
1	21	18	18	17	16	21
2	19	24	13	18	15	24
3	22	19	22	22	26	21
4	23	27	29	27	29	28
5	25	30	28	24	29	24
6	19	20	21	22	20	21
7	18	21	19	21	20	18
8	19	9	15	15	17	22
9	19	20	20	22	16	20
10	26	25	22	25	30	27
11	17	18	19	18	16	19
12	27	29	27	26	26	25

TABLE XIII

NUMBER OF FIGURE COMPLETIONS PER MINUTE
NO REINFORCEMENT CONTROL GROUP

Age 7-6

Subject	Baserate	1	2	3	4	5
1	18	18	20	21	19	18
2	27	23	20	23	20	19
3	28	19	23	26	26	25
4	25	25	26	25	30	27
5	18	19	18	21	19	19
6	24	26	24	22	30	22
7	25	23	18	21	20	37
8	20	20	16	16	14	17
9	31	29	33	31	30	35
10	31	24	33	25	27	24
11	26	29	32	23	38	31
12	22	29	29	23	28	26

Age 9-11

Subject	Baserate	1	2	3	4	5
1	16	16	16	16	16	16
2	19	16	21	16	20	18
3	21	27	29	26	28	29
4	23	25	24	21	18	28
5	17	22	21	21	18	20
6	22	24	23	20	21	24
7	26	29	30	24	31	28
8	21	21	21	24	22	24
9	25	25	26	23	23	23
10	19	17	18	20	19	17
11	22	19	22	20	19	25
12	24	25	23	24	27	22

VITA

David Clyde Martin

Candidate for the Degree of

Doctor of Philosophy

Thesis: THE EFFECTS OF DIFFERENT TYPES OF VERBAL REINFORCEMENT AT TWO AGE LEVELS

Major Field: Psychology

Biographical:

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