

THE CONSISTENCY OF BEHAVIORAL CHARACTERISTICS
OF HIGH AND LOW SCORING CHILDREN ON
THE PAIRED HANDS TEST

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TABLE OF CONTENTS

	Page
LIST OF TABLES	vi
Chapter	
1. INTRODUCTION	1
THE PAIRED HANDS TEST	2
THE STATEMENT OF THE PROBLEM	4
THEORETICAL BACKGROUND	5
2. RELATED RESEARCH	9
THE HAND TEST	9
Summary	14
DEVELOPMENT OF THE PAIRED HANDS TEST	15
RESEARCH METHODOLOGY	26
SUMMARY	31
3. METHODS	34
SUBJECTS	34
PROCEDURE FOR TESTING	37
PROCEDURE FOR GROUP OBSERVATIONS	37
THE GROUP TASKS	38
PROCEDURE FOR THE ANALYSIS OF THE DATA	40
HYPOTHESIS	42
STATISTICAL ANALYSIS	43

Chapter	Page
4. RESULTS	46
INTERPRETATION OF THE RESULTS	46
Results of Task I	51
Results of Task II	52
Results of Task III	53
Results of Task IV	54
Results of Task V	54
Summary of Results	55
QUALITATIVE DIFFERENCES	56
TEST-RETEST CORRELATIONS	58
DISCUSSION	59
5. SUMMARY	62
REFERENCES CITED	66
APPENDIXES	
A. PAIRED HANDS TEST BOOKLET	69
B. INSTRUCTIONS FOR ADMINISTERING THE PAIRED HANDS TEST	81
C. JUDGES	83

LIST OF TABLES

Table	Page
1. Results of Scaling of Statements by 73 Judges. .	25
2. Characteristics of the Subjects	36
3. Comparison of Means and Variances for Categories of Coded Behaviors	47
4. Comparison of Proportions for Categories of Coded Behaviors	49
5. Number of Statements Made by High and Low Scoring Children	50

Chapter 1

INTRODUCTION

The purpose of this study was to explore aspects of reliability and validity of the Paired Hands Test (PHT). The PHT is an experimental personality assessment technique based on the assumption that children's perceptions of others are related to their behavior in interpersonal situations. Children's perceptions of social interactions on the Paired Hands Test and their actual behavior in group play situations have been interpreted along a friendliness-hostility dimension. The rationale for the PHT is that children who consistently reveal more friendly or more hostile feelings than average children on the PHT behave in a corresponding way with other children. Past studies of validity have dealt with a single observation of each child lasting approximately fifteen minutes. The present study allowed repeated observations of the same children in weekly play sessions, each devoted to a specific task, over a five week period. The degree to which children maintained behavior related to the tasks assigned to the group was also studied.

THE PAIRED HANDS TEST

The Paired Hands Test was developed to assess the quality of children's social perceptions along a friendliness-hostility dimension. In pilot studies the PHT was found to have substantial predictive validity in that children who tended to have more positive, i.e., more friendly, social perceptions also behaved more positively in social situations. The criteria for categorizing behaviors as either positive or negative are explained in Chapter 3.

The Paired Hands Test consists of twenty photographs or slides; each shows one black hand and one white hand in a relationship which implies an interaction between the hands. The pictures are shown one by one and the subject is asked to respond in terms of what he thinks the hands are doing by selecting one statement out of five presented for each slide. The statements (see Appendix A for the PHT statements) describe possible interactions between people which were scaled along a friendliness-hostility dimension. For example, "Lending a good friend a quarter" has a more positive position on the scale than "One hand is angrily demanding money from the other." Many statements were chosen from verbatim suggestions from children in response to the question "What do you think the hands are doing?" These were either modified or edited by the

researchers so that every slide or photograph has five different, plausible alternatives which vary along the scale positions.

The scale was standardized on the basis of an equal-appearing interval scale using Thurstone's scaling technique (Torgenson, 1958). Statements were assigned by judges to a scale position. The average position (or median) assigned to a statement was defined as the weight of the statement, i.e., its score value. In scoring, the weights assigned to the subject's responses to the twenty photographs or slides were summed, yielding the total score for each child. The standardization procedures of the PHT scale are described in Chapter 2.

The PHT has several characteristics which serve to clarify the attributes measured. It has more structure than many projective techniques in that the stimuli are two very realistic hands that obviously, because of the differences in color, belong to two different people. The proximity and position of the hands suggest a state of interaction. The subject is asked to choose the one statement which comes closest to his own perception of what the hands are doing. The responses available as choices represent a sample of commonplace interactions among adults and children such as showing affection, anger, hostility, competition, and cooperation. The PHT, while providing ambiguous stimuli for interpretation as in traditional

projective techniques, attempts to define more clearly a specific avenue of expression by requiring the subject's interpretation of a social interaction and by limiting responses to specific situations of differing social qualities.

THE STATEMENT OF THE PROBLEM

This study is a contribution to an ongoing project in determining the reliability and validity of the Paired Hands Test. Inferences from past studies have been limited by the fact that observations were made on each child only once during a brief play period. The present research provides a more in-depth study of the quality of interactions of high and low scoring children over a five week period in an expanded sample of group tasks.

The hypothesis investigated was that children would interact with each other over an extended period of time in a manner consistent with their PHT score. It was predicted that high scoring children would show more positive qualities in interacting than low scoring children. Four qualities were operationally defined and used as criteria in the classification of behaviors for statistical analysis. The qualities of behaviors were: task relatedness (T), nontask relatedness (N), positive (+), and negative (-). Further details are given in Chapter 3. It was felt that observed behavior which would

differentiate high and low scorers initially would continue to differentiate these groups for the duration of the observations over a five week period. In addition, test-retest results were obtained.

THEORETICAL BACKGROUND

Holzberg (Rabin, 1968:18-58) has outlined many attempts to relate projective techniques to psychological theories. Included are learning theory, psychoanalytic theory, perception theory, cognitive theory, adaptation level theory, field theory, and social action theory. Holzberg summarized his review of the theories by stating that projective techniques do relate to general psychological theories as evidenced by such attempts, but what is lacking is a "single, encompassing theory that can illuminate all aspects of projective testing (p. 58)."

Concepts of social learning, projection, and phenomenology are felt to provide an adequate basis for viewing the PHT and the social situations studied. These concepts follow what Rogers described as the "three broad emphases in American Psychology (1964:109)." The first is the Behavioristic school, characterized by experimental, objective, and operational approaches. The second is the Freudian and Neo Freudian schools, which are concerned with the dynamics of mental life. The third is the Existential school, which is concerned with the experiencing, feeling

individual. Rogers emphasized that psychology can "utilize all channels of knowing (1964:120)." He pointed out the potential value of being able to measure attributes of "self" and being able to relate them to actual behaviors; he feels that measures of internal events correlate well with external events:

. . . when we proceed directly to discover and measure objective indexes of subject inner phenomenological events judged to be significant, we may more readily find lawfulness and order and predictive power than when we limit our conceptualization to external behaviors (1964:124).

The PHT may be considered as a projective technique in that it allows the assessment of responses which are offered to relatively ambiguous stimuli. Although in early writings the concept of projection was associated with the pathological condition of paranoia, in a contemporary context it is used to characterize an "idiomatic way" of responding to situations which allows the inference of personality variables (Rabin, 1968:47). The concepts of both projection and phenomenology are helpful in that projection best explains the transfer or assignment of feelings to an object, and phenomenology describes the significance of the process whereby stimuli can have relatively unique attributes for each experiencing individual.

Bandura (1969) views social learning as a "reciprocal influence process (p. 45)." This concept is useful in explaining the relationship found between children's

perceptions as measured by the PHT and actual behavior in a group situation. This interaction suggests that a person reacts upon and influences his environment as well as being influenced by the environment. For example, an aggressive child may initiate aggressive behavior in a new situation, thereby eliciting hostile actions from others. The PHT provides an assessment of social perceptions which may range from friendliness to hostility. Consistently friendly or consistently hostile responses to the social situations as shown in the PHT stimuli determine how a person feels in a general way about others. In the above example, it is assumed that the aggressive child would initiate actions consistent with his perceptions of a hostile environment even in a new situation, and these perceptions would be confirmed due to the elicitation of hostile behaviors from others. The same relationship would be found between the child with friendly perceptions of others and his initial behavior in a group situation. However, predictions of overt social behavior from social perceptions as indicated by responses to the PHT are restricted because of social conventions and personal inhibitions.

Rotter's Social Learning Theory (1954) explicitly states that one aspect of predicting behavior is expectancy, or the probability held by the individual that a specific

behavior will be reinforced. A person may have generalized expectancy, a result of success or failure in learning situations, or a specific expectancy as in a highly practiced area. It may be useful to think that individuals develop social expectancies about others throughout life which are based in some degree on past experiences with others.

Erikson's concept of the developmental crisis of Basic Trust vs. Mistrust may help in explaining the pervasiveness of socially determined attitudes developed at an early age which have possible verifications throughout childhood and adulthood. Erikson stated:

. . . consistency, continuity and sameness of experience provide a rudimentary sense of ego identity which depends . . . on the recognition that there is an inner population of remembered and anticipated sensations and images which are firmly correlated with the outer population of familiar and predictable things and people (1963:247).

In summary, the PHT is an objectively scored projective technique measuring perceived qualities of social interactions. Several theories were presented which help to explain such social situations as those in the PHT stimulus cards and the quality of a child's interactions in a social situation. That a child's social perceptions are related to his social behaviors may be due to the personal meaning attributed to the stimuli and this in turn is influenced by past, learned experiences with others.

Chapter 2

RELATED RESEARCH

Rabin (1968:473) has outlined the long history of interpreting the hand for the purposes of character analysis in primitive religions and, later, Christianity. Kretchmer (1931) and Wolff (1943) explored the relationship of the structure of the hand to personality variables (Rabin, 1968). Wolff (1943), in attempting to combine the attributes of "depth" psychology and experimental psychology, began a series of experiments in 1925 to determine "whether the inner personality is reflected in external behavior (p. xiii)." Wolff obtained verbatim responses to pictures of hands (and other physical representations) for research in the experimental diagnosis of personality and found that responses to pictures of hands were most important in exploring "temperament" and "vitality" (p. 29). Wolff felt that hands could be partially responsible for the "expression of personality (p. 13)."

THE HAND TEST

Wagner in 1959 originated the Hand Test as a projective technique designed to be predictive of overt

aggression. Originally interested in Rorschach's m response, he conceived of the idea of using hands as projective stimuli (Rabin, 1969:473). Bricklin, Piotrowski, and Wagner (1962) pointed out that "it was reasonable to expect that a projective personality test, employing pictures of hands as visual stimuli, would throw light upon the action tendencies of the individual taking the test (p. 3)." Bricklin, et al., stressed that the hand is linked to "intellectual capacities," "general orientation in space" and "action tendencies close to motor responses (p. 85)."

Wagner constructed the Hand Test by drawing nine single hands on individual 3"x5" cards. A blank card is included as the tenth card, similar to the blank card on the TAT. The subject is handed the ten cards consecutively, in a standard order and orientation, and is asked, "What does this hand look like it might be doing? (p. 3)." For the blank stimulus, the subject is asked to imagine a hand and then describe what the hand is doing.

Bricklin and Piotrowski (1962) were responsible for the scoring system. The subject's free verbal responses to the stimuli are placed in the following categories:

1. Aggression: This category includes hands which are seen as dominating, injuring, attacking, or actively seizing another organism or object.
2. Directs: This category includes hands which are seen as leading, conducting, thwarting, directing, or otherwise actively influencing or domineering, other persons.

3. Fear: These responses reflect a fear of retaliation or aggression from others.
4. Affection: This category includes responses in which the hand expresses affection, a positive emotional attitude, or an affectionately benevolent attitude toward others.
5. Communication: This category includes responses in which the hand is communicating or attempting to communicate with someone else.
6. Dependence: This category includes responses in which the completion of the action tendency depends on a benevolent or helping attitude on the part of the implied other person(s) (pp. 6-9).

Other categories, not directly involved in the assessment of aggressive tendencies are: exhibitionism, crippled, active impersonal, passive impersonal, description.

The principle of prediction of overt aggression is relatively simple: "the probability of overt aggressive behavior increases as dominant and aggressive attitudes (as indicated by categories (1) and (2)) outweigh attitudes indicating social cooperation" (categories (3) through (6)) (p. 5)." Bricklin and Piotrowski felt that responses in the first two categories, Aggression and Directs, "raise the probability of a subject's acting out (p. 6)." Responses in the four categories of Dependence, Communication, Affection and Fear are felt to "contain responses which actively decrease the probability of aggressive overt behavior (p. 7)." The "acting out score is expressed as

the arithmetical difference between the sum of aggressive and domineering action tendencies on the one hand and the sum of cooperative or non-aggressive attitudes on the other (p. 5)."

Bricklin, et al., found that different nosological groups would give consistently larger or smaller numbers of responses to the 10 test stimuli. They felt it was useful to include both the actual number of responses to the test stimuli in the various categories as well as the proportions of responses in each category. For example, it is quite possible for a subject to have a larger number of aggressive responses than another subject, but have less of a tendency to act aggressively. The total number of aggressive responses may be balanced by a substantial number of non-aggressive, social or even friendly responses. Bricklin, et al. (1962) assumed:

. . . that the absolute number of responses in the categories gives us some idea of the amount of psychological activity or total action potential while the percentage terms indicate the importance of the particular area, or action tendency, in the total psychic life of the individual . . . the proportions determine overt behavior (p. 42).

Bricklin, Piotrowski, and Wagner (1962) reported validity based on comparing responses to the Hand Test of different nosological groups known to differ in terms of the tendency to act out. Acting out groups were represented by inmates and aggressive, hospitalized, psychiatric subjects. Non-acting out groups were normal adults,

certain psychiatric patients and indigents. Also, a children's group was included to test the hypothesis that children with reading problems will show passive-aggressive tendencies when compared to a normal control group. Recidivist and non-recidivist groups were also compared with the Hand Test.

A significant difference was found between the acting out score (AOS) of normal adults and that of the acting out cases. It was found that normals had more aggressive responses than the others, but these represented a lower percentage of total responses. Children with reading problems had a higher acting out score and recidivist criminals had a higher AOS than non-recidivists (pp. 27-41).

Wagner and Hawkins (1964) used the Hand Test successfully to identify assaultive from non-assaultive delinquents, and suggested its usefulness for "predicting potentially aggressive delinquents (p. 363)." The AOS differentiated 78 percent of the 60 subjects into either the assaultive or non-assaultive groups (significant at greater than .001).

Brodsky and Brodsky (1967) compared Hand Test AOS of three types of military offenders. Four hundred and sixty-eight subjects were distributed among three groups: (1) avoidance offenders (AWOL, desertion), (2) property offenders (larceny, bad checks), and (3) person offenders (assault, rape, murder). The hypotheses were that the person offenders would have the highest AOS, property

offenders would have the second highest AOS, and the avoidance offenders would have the lowest Acting Out Score. Brodsky and Brodsky found that the person offenders had a higher AOS than the other two groups; other differences were in the expected direction. They also found a minimal relationship between mental ability, as measured by the vocabulary and arithmetic tests of the General Technical Aptitude Area Tests, and responses to Hand Test categories.

Summary

The Hand Test provides a substantial background for the development and understanding of the Paired Hands Test. The previous authors and studies point out the effectiveness of representations of human hands as stimuli for a projective technique designed to elicit responses predictive of how subjects relate with others. Wagner (1962) emphasized the importance of predicting overt aggression from fantasy expressions of aggression as in responses to the Hand Test pictures. Wagner (1964) and Brodsky and Brodsky (1967) demonstrated successful results in validating the Hand Test in this dimension. Bricklin, et al. (1962) suggested in scoring that the frequency of aggressive responses to the test stimuli provides an adequate basis for prediction.

DEVELOPMENT OF THE PAIRED HANDS TEST

In a favorable review of Wagner's Hand Test, Stone (1962) made two suggestions for the further development of this type of instrument. He felt that the test stimuli should include photographs of hands, rather than drawings, and that additional cards be presented showing "two hands . . . in some form of relationship (p. 491)."

Zucker and Jordan (1968), independent of Stone's suggestions, presented the Paired Hands Test which had as stimuli pictures of both single hands and pairs of hands interacting. Another significant innovation was the pairing of black and white hands to establish a biracial stimulus.

Zucker and Jordan (1968) described the PIIT as a technique for "measuring positive qualities in people not presumed to be disturbed (p. 522)." They felt that the PIIT as a modification of Wagner's Hand Test would "provide a sharper discrimination on the dimension of friendliness" which would reflect "deep-seated" attitudes. Friendliness was operationally defined by the frequency of "spontaneous judgments" that the two hands are interacting in a "friendly way." For example, responses were scored as plus that included "giving something to somebody, shaking hands, playing together, or helping someone." Responses were scored as minus if "they represented an action which suggested a feeling of hostility toward another such as

hitting, slapping, pushing, or grabbing." Responses were scored as zero "when it was unclear whether the action was friendly or unfriendly, or when it was aimed at an object rather than a person (p. 523)."

The PHT originated as an attempt to measure attitudes that would in part reflect the goals of the Children's International Summer Village (CISV) organization, whose major purpose is to "provide opportunities for developing friendships across national boundaries (p. 523)." Children from all over the world attend; the children in this study met near Cincinnati in 1966. Also tested were a group of American finalists and an unselected group of American children. Several comparisons were made for the purpose of exploring aspects of validity and reliability.

Zucker and Jordan (1968) found that the PHT scores of the CISV children did not change during the relatively brief (3-1/2 week) experience. They felt that an increase in scores was reflected in a posttest using the PHT would demonstrate that more positive attitudes had developed. Zucker and Jordan did find that PHT scores were related to a sociometric measure with the criterion question being "Who are your special friends at the village?" This finding suggests that children who have more positive perceptions of others, as indicated by the PHT, are chosen more often as special friends. The CISV children higher PHT scores than unselected American public school children,

both before and after the CISV experience. This provided evidence that the CISV children had more positive views of others and this was assumed to be accounted for by the selection process. Popularity, as measured by the same sociometric procedure used with the CISV children, was not found to be related to PHT scores in the public schools. Zucker and Jordan felt that this was probably due to the fact that the intense relationship developed in the CISV experience does not compare with popularity, which may be related to other factors in the schools.

Zucker and Jordan, in comparing the responses to single hands and to paired hands, felt that the paired hands, because they implied a social interaction, would have a "far greater stimulus value than single hands" for their purposes (p. 528). These writers also found that girls scored significantly higher than boys on the PHT.

Zucker (1969) suggested the possible application of the PHT as a screening device that would enable identification of children whose attitudes concerning others might be improved through prescriptive educational experiences. Because the original research attempted to measure qualities found in a group of children selected to be relatively extreme in the way they view others, the focus of the PHT was on the aspect of friendliness. Zucker (1969) viewed the scores "as representing a continuum of feelings toward other people, ranging from hostility at the lower end

through varying degrees of friendliness at the upper end." This established a frame of reference for studying children from the standpoint of both friendliness and hostility.

Zucker (1969) also reported the development of slides of the earlier pictures of hands allowing the PHT to be used as a group administered test. Zucker, with assistance from Jordan, developed a machine scorable answer sheet by selecting alternative responses from verbatim responses found in the previous research. For each slide, two friendly, two neutral, and two hostile responses were presented. The subject, when viewing the slide, was asked to choose the response which came closest to his first impression of what the hands were doing. Zucker also reported experimenting with various sizes and color combinations of hands. Alternative forms of two light hands and two dark hands interacting were developed in an attempt to focus on the attitudes of prejudice, thought to be closely related with the friendliness-hostility dimensions.

Another source of establishing validity of the PHT is suggested by a study by Glick and Meinke (1972). They used the PHT as a pre- and post-measure to evaluate the effects of a curriculum intervention program designed to reduce racism in the schools. A control group consisting of 105 sixth graders was contrasted with an experimental group of 86 sixth graders in another school. The experimental group received a preplanned curriculum designed to

improve interracial understanding. Techniques employed over a two month period included (1) panel discussions with ethnic individuals, (2) filmstrips describing prejudice and unique contributions of ethnics, (3) open discussions, (4) open ended stories concerning prejudice, (5) discrimination day where certain children agreed to be discriminated against, (6) field trips to all black and all white inter-city schools, and (7) parties with other schools of different ethnic populations.

After a period of approximately three months, a posttest was done on both the experimental and control groups. The experimental groups scored significantly higher on the PHT, indicating more positive feelings toward others, presumably due to the intervention.

Barnett and Zucker (1973) studied the relationship between children's scores on the PHT and actual interpersonal behavior. The PHT was viewed as a technique that would allow the measurement of children's perceptions of ambiguous social stimuli along a friendliness-hostility dimension.

In this study, the PHT form showing interacting white hands was chosen to reduce the number of variables present in the other forms. A total of nine slides depicting different meaningful but ambiguous interactions were shown. The PHT was group administered to two fourth grade classes.

Although the slides were the same as used in earlier studies (Zucker, 1969), a change was made in the answer forms. Verbatim responses were collected from children and appropriate choices for each slide were chosen and rank ordered by judges along a friendliness-hostility dimension. The rank order of each statement for each slide was used as a weight. Each statement for each slide had a value of from 1 to 5, the statement having the value of 1 being the most friendly for that particular slide, and the statement with the value of 5 being the least friendly. The children's responses were summed over all slides yielding a total score. The statements were presented in booklet form.

A small group task requiring a cooperative effort at assembling a jig-saw puzzle was used to study social behavior. Four groups of children were formed: high scoring boys, low scoring boys, high scoring girls, and low scoring girls. Groups were composed of three children, all scoring at least one standard deviation above or below the mean for high and low scoring groups, respectively. The children were challenged to do their best in a fifteen-minute time period.

The children were videotaped and transcriptions were made, allowing careful analysis of behaviors considered relevant. Behaviors were coded that would reflect positive or negative attitudes, and task-related attitudes. In viewing task-relatedness, Barnett and Zucker differentiated

between verbal behavior, which included an instruction or suggestion directly concerned with getting the puzzle assembled, and general comments which were task related. Behaviors which were not related to the task were also recorded.

The results supported the hypothesis that social perceptions measured by the PHT are related to actual behavior. Low scoring children (those with more positive responses) were more task oriented and positive, and high scoring children were less task oriented and more negative in their behaviors. It was felt that the PHT enabled the prediction of aspects of interpersonal behavior.

It was noted that children's behavior was situational; for example, all of the children had adequate controls for behaving appropriately in their classrooms as noted by the teacher's responses. Barnett and Zucker felt that the lack of close supervision of the children in this study, and the fact that the children met with others with similar perceptions, may account for the extreme differences found between small group behaviors and classroom behaviors.

Burzynski (1972), in a research project to develop a preliminary adult form of the PHT, attempted to find out whether the PHT could discriminate among adults on the same dimensions as found by Barnett and Zucker (1973). The hypothesis tested was that high and low scoring adults

would demonstrate different behavioral characteristics on the positive-negative dimension and also on the task-relatedness nontask-relatedness dimension.

Burzynski used sixteen slides. Nine were the same poses as in the Zucker and Jordan (1968) study while the additional seven were new poses of black and white hands interacting. From verbatim responses to the slides obtained from sixty undergraduates, five statements were chosen for each slide. A scale value was obtained for each statement by using a Thurstone technique requiring the placing of each statement along a nine point friendliness-hostility dimension. The following three anchoring points were used to help define the scale:

- 1 Friendly, warm, kind, very cooperative, supportive
- 5 Cooperative, competitive, perfunctory, business-like, compulsory
- 9 Unfriendly, hostile, aggressive, destructive, cruel, uncooperative.

Twelve subjects were selected, six high and six low scoring adults scoring at least one standard deviation above or below the mean. All were college graduate or undergraduate students. A group task was used for assessing the quality of social interactions. Three groups of four adults each were asked to work cooperatively at assembling a map puzzle and at using the assembled puzzle in a map race.

The PHT was successful in discriminating among the adults in the positive-negative dimension, but not in the task-relatedness dimension. Burzynski pointed out that the select nature of the adults was such that a high degree of task-relatedness might have been anticipated for all of them.

Zucker and Barnett (1972), with the aid of a research grant from Indiana State University, made final revisions on a form of the PHT suitable for children in the fourth through sixth grades. To improve reliability, the PHT was lengthened to include eleven new poses in addition to the ones in the 1973 study. The new poses were suggested by Burzynski (1972). The present form of the PHT includes twenty photographs or slides of black and white hands interacting. Five choices for each of the new photographs were derived from old protocols of verbatim answers, and from a collection of verbatim responses. Statements for the original nine photographs were also revised. A Thurstone scaling technique was used to place each statement along the friendliness-hostility dimension. After four separate scaling attempts, equal-appearing intervals were obtained between statements included under each of the seven scaling categories. Changes or substitutions were made in the statements to achieve the statistical properties. Zucker and Barnett (1972) felt that this change would improve the PHT's sensitivity by

making fine discriminations possible. Also, the location of the seven points along the dimension of friendliness-hostility were thought to help define the scale. Table 1 shows the results of the final scaling study in which each statement was rated along a seven point scale of a friendliness-hostility dimension. The statements were rated independently by 73 judges, all of whom were graduate students or faculty members in the School of Education at Indiana State University. The close correspondence between the actual mean values for all statements included under the scale positions, and the relatively small standard deviations for the seven categories of statements suggests the feasibility of an equal-appearing interval scale. The scaling study allowed the assignment of a numerical value to each possible statement for the purpose of scoring. For example, more statements chosen of higher scale value would lead to a larger total score. A high score reflects both the frequency of positive statements chosen and also the magnitude of the choices.

Zucker and Barnett (1972) also designed an answer sheet in cooperation with the Computer Center at Indiana State University in an attempt to reduce children's errors in marking appropriate choices. They felt that the small group procedure to observe behavior provided information as to the predictive validity of the PHT, and would also describe a frame of reference for construct validity.

Table 1
Results of Scaling of Statements by 73 Judges

Scale Value	Descriptions provided for judges to anchor scaling	Actual mean value for all statements included under scale position	Standard deviations for statements included under scale position	Number of statements in scale position
7	Very warm; Very kind; Very close feeling	6.83	.08	11
6	Very enjoyable; Helping; Playing together; Very cooperative	5.85	.19	16
5	Pleasant interaction without necessarily close feeling; Working together; Cooperation; Friendly competition	4.90	.28	17
4	Perfunctory; Indifferent; Business-like	4.18	.15	9
3	Annoying; Competition with some hostility; Practical joke	2.92	.25	17
2	Very rude; Competition with strong hostility; Very unpleasant	2.19	.23	16
1	Cruel; Physical hurt; Severe hostility	1.15	.14	14

RESEARCH METHODOLOGY

The construction of the Paired Hands Test demonstrates an attempt to obtain objective measurements from a test considered projective in nature. Zubin and Eron (1965) viewed a projective test as one which presents the subject with an ambiguous stimulus and requires the subject to order or assign meaning to the stimulus. In doing so, the subject draws "on a reservoir of his own needs, emotions, feeling, or . . . level of knowledge (p. 5)." Based on this definition, Zubin and Eron offered the following assumptions relating to an experimental approach to projective techniques:

1. . . . (the) . . . response to stimulation is determined and predictable and not accidental.
2. . . . test behavior is not only a small sample of lawful behavior, but that this lawful behavior directly reflects inner personality and behavior in other situations.
3. . . . (the) . . . indirect approach characteristic of these tests insures a spontaneous and representative response . . .
4. . . . a basic personality structure exists within the individual and expresses itself as the underlying unity of all his behavior (p. 13).

Zubin and Eron (1965:20) further pointed out potential difficulties in the psychometric approach to projective testing. These include difficulties with scorer reliability, standardization, cross-validation, item validity and

reliability. They pointed out that the subject's verbal productivity can potentially confound projective results as well as various interactions between the subject and the examiner.

In developing the PHT, specific attention was given to several of the projective and psychometric assumptions. It was felt by the authors that the indirect approach of projective testing does have value in determining attitudes toward others. It was also felt that the testing situation is a sample of behavior that does have predictive value in other situations. It is implied that the test stimuli elicit aspects of underlying personality structure, which may be predictive of overt behavior. Zucker and Barnett also considered scorer reliability, test-retest reliability, subject's verbal reproductivity, and interactions between subject and experimenter. Perhaps most important was the development of external behavioral criteria which would relate to the personality variables measured; this point was considered by Zubin and Eron (1965:23) to one of the most difficult questions.

Mednick and Mednick (1964) discussed research which was relevant to the development of behavioral criteria on which to base judgments concerning personality variables, especially that of aggression. They cited several studies having the hypothesis that "the frequency of fantasy aggressive acts is an index of aggressive drive and should

be positively correlated with the occurrence of overt aggression," and show that such studies were not uniformly successful (p. 328). For example, Sears (1950) observed the relationship between the severity of maternal discipline for aggressive acts and the observed amount of aggression in the child's free play and doll play. Sears (1950) found that "the most severely punished group was inhibited in overt aggression and was most aggressive in fantasy (p. 6)." Mednick and Mednick (1964) made the point that an evaluation of the subjects "aggression anxiety" improves the ability of a measure of fantasized aggression to predict overt aggression.

Kagan (1956) demonstrated that "prediction may also be improved by narrowing the categories of overt and fantasy behavior that are correlated (p. 390)." He points out that observed aggression is much more restricted in terms of the "goal object and mode of expression (p. 390)." He scored stories offered by boys for the following themes: (1) fighting between boys, (2) destruction of property, (3) stealing, (4) swearing, and (5) physical aggression to an adult. The subjects were also rated by their teacher by assignment to either of the following categories: tendency to start fights at the slightest provocation or tendency to hold in anger (p. 392). The most aggressive boys were the ones who had the highest mean number of themes of boys fighting and who were less inhibited as reported by the teacher.

Difficulties in assessing personality attributes of hostility and predicting interpersonal behavior are evident in a study by Robens (1969). She did a validity study of the Behavioral Interpersonal Personality Test (BIPT), a performance test designed to measure hostility in young children and predict aggressive or hostile interactions. The technique centers on an individual child's interaction with an examiner and some toys and other objects. The child is asked to respond in a forced choice situation to 38 questions similar to the following: "make the spider bite me or the turtle play with me" and "cut me with the knife or examine me with the stethoscope (Appendix, pp. 38-41)." Hostile answers are scored as 1, and nonaggressive responses are scored as 0; these are summed over the 38 situations to provide a total score. Robens (1969) sought to correlate scores with observed classroom hostility in first and second grade children. However, she reported difficulty with obtaining a normal distribution from the test items, and difficulty obtaining validity in that observed aggressive play in the classroom did not correspond to BIPT scores. Appropriate aggressive trends were noted for high scorers to behave with more hostility than low scorers. Observed aggression was significantly higher among the girls only. Roben stated: "Cultural inhibition against the expression of aggression, especially in a school setting, appeared to play an important role in accounting for the disappointing parts of the study (p. 36)." Roben

also noted the possibility of an inhibition factor in that children may avoid choosing the hostile alternatives in the presence of an adult examiner.

Olpin and Kogan (1969), in a study of children interacting with other children, supplied some basic ideas for observing and recording behavior. They studied the interaction patterns of five 8-year-old boys who were strangers to each other and were paired in a standardized play situation. They asked the following questions: (1) Do children who have had no previous interactive relationships with each other develop a systematically patterned way of responding to each other during the course of a single contact? and (2) Do these children exhibit an overall interaction style which is apparent in their transactions with most or all others?

Olpin and Kogan specified that the children did not have any serious adjustment problems, but were not selected on any other basis. The children met in a room equipped with a one-way mirror and microphone, and the children were asked to work on a construction toy. The investigators studied three dimensions of behavior: status, affection, and involvement. Status involved the dimension polarizing exerted and expected control and dominance. Affection ratings included a dimension for warmth, friendliness, personal interest and their negative opposites. Involvement was characterized by a rating of the "extent to which

one person's attention was directed to the other (p. 753)."

The results failed to show "systematically patterned ways of responding to each other during the course of a single contact (p. 753)." Hostility had a low rate of occurrence. It was found that children showed the highest frequency of friendly interaction when paired with another child characterized as friendly. Olpin and Kogan felt that interactive patterns draw on experiences learned in past social situations in their early years.

SUMMARY

The development of the Paired Hands Test has early precedents in the experimental use of subjects' responses to pictures of hands for the purpose of personality assessment (Wolff, 1943), and in the development of the Hand Test (Bricklin, et al., 1962). The Hand Test research is relevant in that it includes the prediction of overt aggression from the expression of fantasy in response to the stimulus cards. Also, there are similarities in the scoring system which include both the frequency of aggressive responses and proportions of aggressive responses in addition to inhibiting factors in the prediction of overt aggression.

The Paired Hands Test was originally designed to be a measure of friendliness (Zucker and Jordan, 1968). Later, the PHT was successfully used as a predictor of

both friendliness and hostility (Burzynski, 1972; Barnett and Zucker, 1973), and as a measure of attitude change in the area of racial relations (Glick and Meinke, 1972).

The psychometric properties of the PHT were improved by lengthening the test and by designing an objective scoring system (Zucker and Jordan, 1968, Burzynski, 1972; Zucker and Barnett, 1972). Experimentation was done with a group administration test procedure (Zucker, 1969; Burzynski, 1972; Zucker and Barnett, 1972; Barnett and Zucker, 1973). Also, validation through observable criteria relating to the dimension being measured was successful (Burzynski, 1972; Barnett and Zucker, 1973). A group play situation for observing incidences of friendly or hostile behavior, which may or may not be related to the task, was designed to establish validity. This was, in part, methodology suggested by Olpin and Kogan (1969). The psychometric possibilities of projective techniques were discussed in relationship to an experimental approach of projective testing (Zubin, et al., 1965).

The point was made that fantasized aggression may not directly relate to observed aggression because of inhibitions due to personal or social controls (Sears, 1950; Kagan, 1956; Mednick and Mednick, 1964; Roben, 1969; Barnett and Zucker, 1973). The limitation of the inhibition of aggression may be partially overcome by grouping children who have similar perceptions, or by narrowing the

categories of observed aggression (Kagan, 1956). This may be a partial reason for the successful behavioral observations made by Burzynski (1972) and Zucker and Barnett (1973) in that they grouped similarly perceiving children together and they included not only negative observations such as aggressiveness but also positive observations connoting friendliness. Task-relatedness was found to be a significant variable when working with children (Barnett and Zucker, 1973).

Chapter 3

METHODS

Children were assigned to either high or low scoring groups on the basis of their PHT scores. Structured observations of the groups of children working together on assigned tasks were made during five consecutive weekly sessions each lasting approximately fifteen minutes. The observations were obtained by recording each play situation and categorizing verbal statements as to their task-relatedness and friendliness. This procedure allowed comparisons between high and low scoring groups on these dimensions. A posttest administration of the PHT was done to obtain a measure of test-retest reliability for a six-week period of time.

SUBJECTS

The subjects in this study were 4th, 5th and 6th grade children in the Laboratory School at Indiana State University. The school counselor and teachers in each classroom made selections from a list of children not identified as such, but who had obtained either high or low scores on the PHT. The choices were made consecutively from an alphabetized list. The total number of subjects

was 24; there were eight from each grade. High scorers and low scorers were defined as children scoring at least one standard deviation above or below the mean, respectively, for their grade level. Table 2 shows the composition of groups by age, sex, and the teacher's estimate of intelligence and socio-economic class. The estimates were made because of the absence of consistent information available on these attributes.

For the child's socio-economic status a "1" indicates an estimated upper or high average status, "2" indicates an estimated average status, and "3" indicates an estimated lower than average status. Similarly, for the child's intelligence estimate, a "1" indicates high or above average intelligence, "2" indicates average intelligence, and "3" indicates below average intelligence. It must be emphasized that all children were a part of the normal school population and were functioning in the regular classrooms. None of the children was classified as retarded or in special education.

There appears to be a trend for high scorers to be estimated by their teachers as coming from a higher socio-economic class and also to be more intelligent. One reason may be that PHT scores reflect social learning of children as discussed in the theoretical section, which would suggest that children from better social environments have more positive perceptions of others. It is generally

Table 2
Characteristics of the Subjects

	High Scoring Children (N=12)				Low Scoring Children (N=12)			
	Age (yrs)	Sex	Soc-Ec*	Int**	Age (yrs)	Sex	Soc-Ec*	Int**
4th grade	10	M	2	1	9	F	3	2
	9	F	1	1	10	M	1	1
	10	F	1	1	10	M	3	2
	9	M	1	1	9	F	2	2
5th grade	11	F	2	2	10	F	3	3
	11	F	2	1	11	M	2	2
	11	M	2	2	11	F	3	2
	11	M	1	2	11	M	2	3
6th grade	12	F	3	2	11	M	2	2
	11	M	1	2	12	F	2	2
	11	F	2	2	12	M	2	2
	11	F	1	1	11	M	2	2

* Socio-economic status: 1 = upper or high average; 2 = average; 3 = lower.

** Intelligence: 1 = high or above average; 2 = average; 3 = below average.

accepted that socio-economic class is also indicative of performance in school and on other standardized tests. Similarly, it is also plausible that children who interact in a more positive way can affect their teacher's perceptions accordingly.

PROCEDURE FOR TESTING

The pretest and posttest of the PHT were conducted by using a group administration procedure (see Appendix B). A carousel projector was used to show the twenty slides. For each slide, the children were asked to choose the statement which came closest to their own idea of what the hands were "doing." They were asked to mark their choices on a specially designed answer sheet and the completed tests were machine scored by the Testing Service at Indiana State University. The actual statements are shown in Appendix A.

PROCEDURE FOR GROUP OBSERVATIONS

In each grade the four high scoring children were assigned to one group, and the four low scoring children were assigned to another. When an absence occurred, groups met with the remaining three children. The groups met for 15 minutes each week for five weeks to work on an assigned task. Each child was provided with a headset containing a unidirectional microphone (Telex model CS-75). The group was asked to work on a small table in a playroom in the

Laboratory School. The experimenter observed the group through a one-way mirror. A tape recorder was used to record the verbatim responses of each child after the task was introduced. The experimenter introduced the first two tasks; the last three tasks were introduced by using an unfamiliar voice on a tape recorded message. This procedure was initiated to reduce experimenter bias after the children had become familiar with the format of the tasks.

THE GROUP TASKS

The following are the verbatim instructions given by the experimenter to all children before starting the first task:

All of you have been asked to help us learn more about children. We are going to watch you and record the things you say as you play and work together on different projects. We hope that we have found interesting things for you to do. We will meet about once a week for the rest of the year. We hope that you will have fun, but we can promise that no one in the school such as your teachers or principal or your parents will ever hear what you say. After we use the tapes, they will be destroyed.

The following are the verbatim instructions concerning each task:

Task I: Tinkertoy Boat Model

I want you to pretend that you are settlers on the Mississippi River about 100 years ago. The neighboring town has made a boat to take their crops to market. Here is model of it. You now realize that you have to build one too, or you won't be able to get supplies for the winter. You have 15 minutes to build one just like this one.

Task II: Dominoes

Today we have something different to do. It won't be hard, but you'll have to do some thinking and planning. You will have 15 minutes to arrange the dominoes so that similar faces will match. I'll show you--to get started. (Give example with three dominoes.) Okay, you can get to work. A hint is that it will help to work together.

Task III: Farm Tractor

We are going to do something different, although you see Tinkertoys again. Here is a model of a farm tractor. First, you must decide how many, working together, you can build in 15 minutes. Write what you think on this piece of paper. Second, see how many you can build working together.

Task IV: Puzzle

We want you to do a puzzle again. But it will be different. You will have a chance to finish it if you all work together. Let's see if you can! You will have 15 minutes as before.

Task V: Poster

You see in front of you some posterboard and some magic markers with all different colors. This is what we want you to do. First, decide upon a poster idea. It may be serious like for ecology or smoking, or it may be funny, or it may be just a design--something attractive. It can be anything you want; but you must all decide what to do.

The tasks were created by the experimenter and were designed so that all the children could participate with interest and enthusiasm. Although the tasks were originally chosen to be similar, it became apparent that there were differences between the tasks as to the interest and enthusiasm generated, and more importantly, as to the challenge they presented, the group processes they elicited,

and the frustrations they generated. Task I, Task III, and Task V seemed to vary from Tasks II and IV among all of the task characteristics. Tasks I, III, and V all required group interaction to maximize enjoyment and a satisfying experience. They were also the most unusual, all having a novelty effect. Tasks II and IV were frustrating in the sense that they both had an imposed time limit, but resulted in a more mechanical procedure of searching through puzzle pieces or dominoes. Group decisions did not have to be made as in Task III and Task V, and "esprit de corps" was not required as in Task I.

PROCEDURE FOR THE ANALYSIS OF THE DATA

A transcription was made of all verbal behavior for each child during each of the five sessions. Noises made were described as best as possible by the typist, and "giggles" or "laughter" were included as such. One word statements like "what" or "yes," etc., were excluded when they were not thought to be meaningful as context was not provided. The transcripts were coded so that individual children were unidentifiable by the judges.

Judges were graduate students in School Psychology or Special Education, or persons having at least a master's degree in these areas. A total of 18 judges helped with the coding of responses, each participating on a voluntary basis.

A judge was required to code each response made by a child on two dimensions. The first dimension was that of being task related (T) or nontask related (N). Task related items were defined as responses which have to do directly with the tasks. They were either instructions, suggestions, or comments. Nontask related (N) responses were those considered to be irrelevant in relationship to the task. They were any kind of conversations, comments or noises which were not concerned with solving the problem or completing the task.

The second dimension required the judging of a statement as being either positive (+) or negative (-). A plus (+) response was one that might be a helpful suggestion or which merited compliance such as agreement or support. It could be either task related (T) or nontask related (N). If nontask related, it would be a comment which was made in a nonabrasive way. A negative (-) statement (or noise) was one which would typically evoke anger, or be generally abrasive or hostile in an actual or implied way.

The following is a list of statements from a previous study which were considered to be examples of the scoring categories and which were given to the judges as a part of the instructions prior to judging. (See Appendix C for complete instructions to the judges.)

"It's kind of hard"	T+
"They can see your white underwear"	N-

"Why don't you put the puzzle into the coke bottle?"	T-
"You love that guy?"	N+
"You better help me"	T+
"Come on, mister, I want to get out!"	N-
"He can see us"	N+
"I'm scared"	N+
"We ain't going to have nothing done"	T-
"That ain't how you do it" (shout)	T-
"I could do it better myself"	T-
"That piece is too little"	T+

Each response from each child was judged by four or five judges until consensus of 3 judges coded the same response the same way. If, for example, three out of five judges coded a response as T+, that response was recorded as a "T+" response for the purpose of the statistical analysis. If a consensus could not be reached (for example, if one statement was coded as T+, N+, T-, T-, N- by five judges, respectively), the response was discarded in the statistical analysis because it was felt to be an ambiguous item.

HYPOTHESIS

The hypothesis of this study was that the differences in the behavioral characteristics of high and low scoring children on the Paired Hands Test which were expected to

be found on the first task would also be found in the other four tasks. The tasks were to take place over a five week period of time. The behavioral characteristics, previously defined, were derived from transcripts of children's statements which have been judged along a task related-nontask related dimension, and on a positive-negative dimension. The first required a consensus by judges as to whether or not a reference to the task was made and the second required a consensus of the mood or effect that a verbal behavior will have on others. In past research, high scoring children were found to be more positive and more task related than low scoring children.

STATISTICAL ANALYSIS

Two separate procedures were used in the analysis of the data as both contribute to the full understanding of the results.

It was intended originally to use only the observed frequencies of coded behaviors to interpret the results. However, it was found that the high scoring children made more responses than low scoring children in four of the five tasks, although the difference was not statistically significant. Thus one would expect that if the frequencies were used, the high scoring children would have made more responses over all categories of coded behaviors for four of the tasks. It is felt that a comparison of high and

low scorers by the frequency of coded behaviors are useful as it indicates more clearly the differences in actual verbal behavior. The frequencies of verbal statements in each coded category (T+, T-, N+, N-, T, N, T, -) made by each high and low scoring child for the individual tasks were summed and the means for high and low scoring groups were obtained. A t test was used for the comparison of the means after an F test was used to determine the requirement of homogeneity of variance. Where significant F values were obtained, the procedure suggested by Cochran and Cox (Ferguson, 1966) was used to test for significant differences between the means.

The second statistical procedure compared the proportions of coded categories of verbal behavior between high and low scoring children for each task. This procedure allowed for the differences between high and low scoring children in the number of statements elicited in the five sessions. The proportions are the frequency of behaviors coded in a particular category in relationship to the total frequency of all behaviors for the high or low scoring children. The differences between proportions were tested by the following statistic:

$$z = \frac{p_1 - p_2}{\sqrt{p_1 - p_2}}$$

where p_1 and p_2 are the proportions of a particular category of coded behavior for a task and for high and low scores,

respectively. Each proportion reflects the performance of all children present for that task. $Sp1 - p2$ is the "standard error of the difference between the two proportions based on independent samples (Ferguson, 1966: 177)."

In summary, both the frequency and proportions of statements coded as T+, N+, T-, N-, and T, N, +, - were studied in separate analyses. The latter categories are the sums of task related (T), nontask related (N), plus (+) and minus (-) categories.

Chapter 4

RESULTS

INTERPRETATION OF THE RESULTS

The results are interpreted separately for each task as the tasks themselves are not directly comparable. Summaries of the results are shown in Tables 3 and 4. Table 3 includes the means of high (Mh) and the low scorers (Ml) on all coded categories of behavior for the five tasks, the standard deviations (SDh, SDl), and results of the t test. F tests were used to determine the requirement of homogeneity of variance for the t test and are reported in Table 3. Where the variance differences were found to exceed the .05 level of significance, the t test was done by the procedure outlined by Cochran and Cox as described in Chapter 3. Table 4 provides a summary of the proportions of all coded categories of behaviors and the z test results.

Table 5 compares the total number of statements which were made by high and low scoring children over all five tasks. The differences were not significant ($t = 1.73$ for Task IV, $p < .05$) for each task, but because the high scoring children usually made more statements, the proportions (Table 4) were included to aid in reporting the

Table 3
Comparison of Means and Variances for Categories of Coded Behaviors

Task	T+	T-	N+	N-	T	N	+	-
<u>Steamboat</u>								
Mh	32.9	11.4	7.6	15.3	44.4	22.9	40.5	25.8
M1	17.5	8.8	9.1	28.3	26.3	36.4	36.8	36.1
SDh	10.2	13.3	5.8	16.4	30.5	16.7	22.6	22.3
SD1	11.7	7.0	4.6	14.3	16.7	11.6	16.2	16.1
F	1.32	3.61	1.59	1.32	3.34	2.07	1.95	1.9
t	2.06**	.76	.27	1.92**	1.66	2.12**	1.59	1.20
<u>Dominoes</u>								
Mh	50.5	5.4	4.9	4.6	55.1	9.5	55.3	10.1
M1	48.4	4.7	4.7	2.8	48.2	7.1	48.3	7.0
SDh	16.7	3.9	3.6	3.3	17.3	5.5	18.5	16.2
SD1	21.6	3.9	5.4	2.9	25.0	7.3	24.7	6.0
F	1.67	1.00	2.25	1.29	2.09	1.76	1.78	7.29*
t	.78	.82	.32	1.37	.75	.89	.76	1.23
<u>Farm Tractor</u>								
MH	26.6	4.1	7.2	18.3	30.7	25.5	33.8	22.4
M1	19.3	9.1	6.2	25.6	28.3	31.8	25.4	34.6
SDh	11.3	2.8	4.7	14.5	11.0	17.2	11.9	15.9
SD1	11.8	6.1	4.2	20.4	17.8	21.5	17.4	21.6
F	1.09	4.75*	1.25	1.98	2.62	1.56	2.14	1.85
t	1.27	2.37**	.47	1.08	.37	.74	1.27	1.46

Table 3
(continued)

Task	T+	T-	N+	N-	T	N	+	-
<u>Puzzle</u>								
Mh	44.3	6.1	8.7	10.1	50.3	18.7	52.9	16.1
Ml	27.7	1.4	5.0	8.6	30.6	13.6	35.2	10.1
SDh	32.0	7.4	5.7	9.6	34.7	14.1	31.1	13.7
SDl	27.2	2.2	8.9	12.9	13.3	19.8	10.0	16.2
F	1.38	11.31*	1.62	1.80	6.81*	1.97	9.61*	1.40
t	1.43	2.11**	1.19	.30	1.48	.70	1.42	1.05

<u>Poster</u>								
Mh	41.0	6.9	9.8	10.7	48.0	20.5	50.8	17.5
Ml	19.9	4.7	11.4	15.7	24.4	26.7	31.4	19.3
SDh	27.7	5.4	10.6	11.0	29.3	17.4	27.3	22.5
SDl	11.0	3.9	7.6	15.3	13.4	19.8	10.0	25.5
F	6.34*	1.92	1.95	1.93	4.78*	1.29	7.45*	1.13
t	2.35**	1.18	.41	.80	2.42**	.78	2.22**	.28

*Significant at the .05 level (F)

**Significant at the .01 level

Table 4
 Comparison of Proportions for Categories of Coded Behaviors

Task	T+	T-	N+	N-	T	N	+	-
<u>Steamboat</u>								
High	.49	.17	.11	.23	.66	.34	.60	.40
Low	.27	.14	.14	.44	.41	.59	.42	.58
Z	4.92***	.60	.60	4.58***	6.66***	6.25***	4.81***	4.65***
<u>Dominoes</u>								
High	.77	.08	.07	.07	.85	.14	.84	.16
Low	.80	.08	.08	.05	.88	.13	.87	.12
Z	1.23	.00	.04	.36	1.50	.19	1.50	.78
<u>Farm Tractor</u>								
High	.47	.07	.13	.33	.55	.45	.60	.40
Low	.32	.15	.10	.43	.47	.52	.42	.58
Z	3.36***	1.30	.57	2.18*	2.00*	1.25	4.50***	4.36***
<u>Puzzle</u>								
High	.64	.09	.13	.15	.73	.27	.77	.23
Low	.67	.03	.11	.19	.69	.30	.78	.22
Z	.91	.78	.37	.78	2.83**	.64	.38	.20
<u>Poster</u>								
High	.60	.10	.14	.16	.70	.30	.74	.26
Low	.39	.09	.22	.30	.48	.52	.61	.39
Z	5.25***	.19	1.60	2.75**	6.64***	5.06***	4.71***	2.84***

*Significant at the .05 level

**Significant at the .01 level

***Significant at the .001 level

Table 5
Number of Statements Made by High and
Low Scoring Children

Task	High Scorers	Low Scorers
I	740	637
II	721	608
III	562	661
IV	830	496
V	754	563

results. It is felt by the experimenter that the frequencies, as reported in terms of the means of categories in Table 3, best reflect what actually occurred, while the proportions as shown in Table 4 best reflect the differences when the actual amount said by each child was held constant. It is felt Table 4 more accurately indicates the mood or an atmosphere created by the group interacting both on the task-nontask related dimension and on the positive-negative dimension.

Results of Task I

The first task, Steamboat, required a cooperative effort in assembling a boat with Tinkertoys as described in Chapter 3. Table 3 shows that the high scoring children made significantly more T+ statements, indicating that more of their verbal comments were task related and made in a positive way. Table 3 also shows that the high scoring children made more task related comments in general, and Table 4 demonstrates that the proportions of T+, T and + categories are significantly different and are in the expected direction.

On this task the low scoring children made significantly more verbal statements which were judged to be both nontask related (N) and made in a negative way (N-) as shown in Table 3. The means of the negative (-) category of coded behaviors were not significantly

different but were in the expected direction. Table 4 shows that the proportions of the N-, N, and - categories are significantly different and are in the expected direction.

In summary, Task I, Steamboat, demonstrated significant differences in behavioral characteristics between high and low scorers in both the task-nontask related dimension and along the positive-negative dimension. The high scoring children were generally more task related and positive than the low scoring group of children.

Results of Task II

The second task was a modified game of dominoes as described in Chapter 3. Table 3 demonstrates, although not significantly, the trend for the high scoring children to have more coded statements in all categories. Table 4 shows that although the high scoring children said more, they reacted similarly in terms of the behavioral categories. In summary, Tables 3 and 4 show that there are no significant differences between the high and low scoring children on this task with respect to the behaviors being studied.

Results of Task III

The third task, Farm Tractor, required cooperation in first deciding on an estimate of the number of farm tractors which could be built out of Tinkertoys within the time limit, and then working together to see how many could actually be built.

The low scoring children made significantly more comments judged to be T- as shown in Table 3. Although not statistically significant, Table 3 also shows that the differences in comments coded as T, N, +, - were all in the expected direction. Table 4 shows that the high scoring children made a significantly higher proportion of T+, and T statements while the low scoring children made a significantly higher proportion of N-, and - categories of coded behavior. The proportions in the T- and N categories, while not statistically significant, were also in the expected direction.

In summary, Task III demonstrated that high and low scoring children would show differing behavioral characteristics in the two dimensions studied: that of being task related or nontask related, and that of being either positive or negative. The high scoring children were generally more task related and positive than the low scoring children on this task.

Results of Task IV

Task IV required the assembling of a jig-saw puzzle of a world map. This task did not require a group process although cooperation in locating pieces was used by some groups. This puzzle had many fewer pieces than the one used in a previous study (Barnett and Zucker, 1973).

Table 3 shows that the high scoring children made a greater number of comments in all categories of coded behavior as reflected in the means of each category. The high scoring children made a significantly greater number of statements judged as task related and negative (T-). Table 4 shows only one significant difference in the proportion of coded categories. The high scoring children made more comments judged to be T.

In summary, the high and low scoring children behaved similarly in this task. The only differences were that the high scoring children made more task related, negative statements and proportionately more comments judged to be task related.

Results of Task V

Task V, Poster, required a group decision about the type of poster which was to be made. Table 3 shows that the higher scoring group made significantly more comments

coded as T+, T, and +. Other trends are in the expected direction. The high scoring children made more responses coded as T+, T-, T, and +, while the low scoring children made more responses coded as N+, N-, N, and -. Table 4 shows that the high scoring children made a significantly greater proportion of comments judged to be T+, T, and +. The low scoring children made significantly greater proportion of comments judged as N-, N, and -.

In summary, the behavior of the children recorded in participating in Task V demonstrated significant differences between high and low scoring children among the dimensions of task related versus nontask related comments and positive versus negative comments. The high scoring children were generally more task oriented and positive while the low scoring children were more nontask oriented and more negative.

Summary of Results

On three of the five tasks the hypothesis of consistent behavioral differences between high and low scoring children on the Paired Hands Test was partially upheld. On Tasks I, III, and V high scoring children's responses were judged to be more task related and positive and low scoring children's responses were judged to be more nontask related and negative. The high and low scoring children behaved similarly in Tasks II and IV

although on Task IV the high scoring children made proportionately more responses judged to be in the T category. The hypothesis would have been better supported if differences between high and low scorers had been found on all five tasks. The behavior predicted by the PHT was demonstrated periodically over the five week period and with a variety of tasks.

QUALITATIVE DIFFERENCES

Although the results of the study are based on an objective analysis of verbal behavior, the observations allowed by the one-way mirror, the content of the verbal material, and the drawings on Task V yielded subjective impressions which may be of interest.

As implied in the frequencies of the coded categories of behaviors, there were large differences in the group atmospheres created by high and low scoring children on three of the five tasks. Tasks I, III, and V showed the greatest differences and, although the differences observed were reported as frequencies of behavior and not in the type of behavior, it was observed that low scoring children used much more abrasive, scurrilous language, and were engaged in many more insulting dialogues among themselves. Other extreme behaviors were demonstrated as in mutism, whereby several low scoring children, on occasion, chose to say little or nothing. Also, some

low scoring children were involved in throwing or hiding various pieces of the tasks. A much lower frequency of some of these behaviors, such as insulting each other, was found in the high scoring groups, and there were no incidences of many of these behaviors. The high scoring groups were much more involved in group planning and discussions, especially evident in Tasks III and V.

In the short time allowed for the tasks, group process held no advantages over individual performances in the completion of the tasks. Therefore, the tasks did not lend themselves to objective criteria for performance as in the number of pieces assembled or pieces completed. However, the poster task (V) did demonstrate observable and dramatic differences in the performances of high and low scoring groups. All of the high scoring groups included a decision process as to what would be made. The fourth grade group made a picture of a circus, the fifth grade group made a carefully constructed and artistic design, and the sixth grade group made a "litter" poster. In contrast, the fourth and fifth grade low scoring groups made designs which did not involve a group process or cooperation. The fourth grade children scribbled with magic markers for the full time period, using both sides of the posterboard. The fifth grade group chased each other's hands over the posterboard, also resulting in a scribbled design. The sixth grade group started in this manner, but stopped in the middle of the time period.

The posterboard was turned over to the clean side, and three members of the group watched one member make a poster design warning against smoking.

In tasks in which high and low scoring children did not differ (Tasks II, IV), it appeared as if the low scoring children were behaving similarly to the high scoring children. In these tasks, both groups were very task oriented and positive, as compared with their performance in Tasks I, III, and V.

TEST-RETEST CORRELATIONS

The sample for the test-retest results consisted of 4th, 5th, and 6th grade children in the Laboratory School at Indiana State University, including some of the children who took part in the experiment. The total N was 83. The time duration between the pre- and posttests was six weeks. The Pearson Product Moment Correlation was used and the coefficient obtained was .47, which was significant at greater than the .001 level and indicates a moderate relationship between test scores of children separated by a six weeks' time interval. This finding is consistent with other test-retest correlations obtained with the same testing procedures and current form of the PHT. The correlation for a one week period was .41 with an N of 34; a two week correlation was .66 with an N of 22; and a three week period resulted in a correlation of .63 with an N of .29.

DISCUSSION

The hypothesis that the behavioral characteristics of high and low scoring children on the PHT would remain consistent over a sample of five group tasks and for each individual task was not upheld in its entirety. Two possible reasons for this are offered. The first has to do with the fact that the tasks were not directly comparable, as discussed in Chapter 3. It is possible that the more demanding tasks brought out more extreme behaviors in both the high and low scoring children.

The alternative explanation is that the differences observed were due to artifacts of having the children from the same classes meet once a week for five weeks. It is felt that because the differences were most often in the expected direction that this is not a likely explanation. It is felt by the experimenter that the differences in response to the tasks indicate that high and low scoring children have the capacity to behave in a similar way but that various situations evoke the differences observed as on Tasks I, III, and V. These tasks all required a group process such as cooperation or decision making and were tasks, which due to novelty effect, were more exciting.

As suggested in past research, the expression of hostility is related to many situational factors such as

social conformity and inhibition. The results of this study further point out that the task in group behavior must also be considered in the prediction of aggression. It may be useful to consider both friendliness and hostility as aspects of personality dealing with interpersonal feeling. These feelings may be determined by socially learned experiences, but are also dependent on cultural, personal, and situational factors for their expression in overt behavior. It is also possible, due to the above considerations and limitations in the expression of hostility and friendliness, that individuals with varying attitudes concerning others can behave in similar ways.

The results should be viewed within the methodological limitations of this study as follows:

1. The tasks. The group tasks were selected from a universe of possibilities. The tasks varied in terms of interest and previous experience for each child in the study, as well as in possible unknown ways. This research explored the interaction between children and tasks more than had previous studies, but it is felt that studying a larger variety of tasks would be a significant area for further research. It appeared that the nature of the task situation

- brought out the hypothesized differences of high and low scoring children on the PHT.
2. Time. This study was limited to weekly observations over a five week period. Results achieved over this time period suggest the interpretation that the PHT measures a significant aspect of personality, but a more longitudinal study might help confirm this.
 3. Subjects. The population of subjects who participated in this study necessarily limits the generalizations which can be made. The groups were not equated for socio-economic class and intelligence. The sample size was also small; a total of 24 subjects were included in the observations.
 4. Unique effects of groups. Children meeting over time in a play situation may have therapeutic effects, for example, it may result in a situation similar to activity group therapy. This may or may not have a unique effect over all children. Also, the children were grouped with similarly perceiving children as based on the PHT score. Different interactions may take place when children are not grouped together by either high or low scores.

Chapter 5

SUMMARY

Research was designed to explore aspects of validity of the Paired Hands Test, an experimental personality assessment technique purporting to measure a quality of interpersonal feeling ranging from the expression of friendliness to to the expression of hostility. Past studies have shown that the PHT has predictive validity in differentiating children and adults who work together in a cooperative, friendly way from those who do not work well together and whose behaviors contain elements of hostility. However, those studies, while using behavioral criteria which support the dimensions of friendliness and hostility being studied, have been based on only one observation period for each subject while this study allowed five observations over a five week period of high and low scoring children in a sample of group play situations.

High and low scoring children, those scoring at least one standard deviation above or below the mean, were assigned to homogeneous groups each composed of four children. This procedure allowed one high scoring and one low scoring group for the fourth, fifth, and sixth grades. It was expected that high scoring children would interact

in a more positive and more task related way than the low scoring children. The statistical analysis compared the verbal comments made by each child for each of the five group tasks. All comments were recorded on individual tape recorders and later transcribed to allow independent judgments concerning the verbal comments. To test for differences between high and low scoring groups, the verbal comments made by the children were assigned to one of four categories by graduate students serving as judges. At least four judges categorized each verbal comment in one of the following categories: task related positive, task related negative, nontask related positive, and nontask related negative. High and low scoring children were compared for the five tasks by the frequency of comments in each category and by the proportion of comments in each category for the five weekly sessions.

A degree of consistency in the behavioral characteristics of high and low scorers was observed in three of the five tasks. In the first, third and fifth tasks the high scoring children behaved in a more positive and more task related way than low scoring children. On the other two tasks, both groups of children behaved in a very task related and very positive way. The hypothesis would have been better supported if behavioral differences had been observed on all five tasks.

The most likely reason for the different results was the inherent requirements of the tasks. The tasks which best differentiated between the high and low scorers were the tasks that seemed to be the most challenging and exciting, and calling for the highest degree of group cooperation. The two tasks in which the high and low scoring children seemed to behave similarly were those which could be completed by more mechanical procedures.

In addition to the differences as represented in the frequencies and proportions of the four categories of behavior, there were qualitative differences in the ways that the groups interacted on three of the five tasks. The high scoring children did more group planning and were more cooperative. The low scoring groups used more abrasive, and at times, scurrilous language. A few of the low scoring children refused to speak, or spoke very little during several of the tasks. These differences are only implied in the behavioral categories. The poster task, which required that the children make a drawing of their choice on a posterboard, vividly demonstrated the qualitative differences in that the three high scoring groups used group planning and made either artistic designs or meaningful pictures or posters. Two of the low scoring groups scribbled for the fifteen minutes allowed, the other low scoring group scribbled for half of the period, and then an individual child made a poster warning of the dangers of

smoking while the other three group members observed.

Past research suggested that the expression of overt hostility is dependent on cultural, personal, and situational factors. This was also suggested by this study. It was significant that both high and low scoring children could work in a very positive and task related way as evidenced by a comparison of behaviors in two of the tasks.

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APPENDIXES

APPENDIX A
PAIRED HANDS TEST BOOKLET

APPENDIX A

PAIRED HANDS TEST BOOKLET

Cover Page

RELAX

This is not part of your schoolwork, and you are not going to be graded on it. We're just trying to find out something about children's ideas.

We have some photographs which we're going to show you. We want to find out what different children think is happening in these photographs. In each photograph you will see hands of two different people doing something. We want you to try to figure out what the hands in the photograph are doing. These are photographs of real people.

RELAX

Inside Cover Page

INSTRUCTIONS

We will show you a photograph of two hands, and then you should look at your booklet. You will see five different ideas of what the hands in the photograph might be doing. We want you to decide which of these ideas comes closest to your own idea of what the hands are doing. Mark your choice on the separate answer sheet with a pencil. Then we will show you photograph 2. You should turn to the next page in your booklet, decide on your choice for photograph 2, and again mark your choice on the separate answer sheet. There will be 20 photographs altogether. We won't spend much time on any one photograph, so check your first idea after you have looked over all the choices.

EXAMPLE

1. Friends climbing a fence.
2. Trying to catch candy at a parade.
3. Keeping the sun out of their eyes.
4. Shoving and reaching for something they both want.

In the example above, the child decided that "trying to catch candy at a parade" comes closest to his own idea of what the hands are doing, so he marked 2 on his separate answer sheet. Now, you mark 2 on your answer sheet in the practice photograph box, and we'll check to make sure you are doing it right.

PHOTOGRAPH # 1

1. Loaning a good friend a quarter.
 2. He thinks he's getting candy, but really it's a bug.
 3. One hand is sticking the other with a pin. It hurts!
 4. One hand is angrily demanding money from the other.
 5. Looking at a stone which the other person found.
-

PHOTOGRAPH # 2

1. Holding onto a jungle gym; they are playing together.
2. Two friends are lined up for a race.
3. Grabbing before the other gets it; they both saw a nickel.
4. Two hands are comparing size before a fight; they're really angry.
5. It's a birthday party, and two close friends are holding a surprise.

PHOTOGRAPH # 3

1. It's a fight, and one hand is scratching the other.
 2. Measuring hand size for gloves.
 3. One hand is feeling the other hand; they love each other.
 4. Checking to make sure the other person's hand is okay.
 5. Scaring the other person--he thinks it's a spider.
-

PHOTOGRAPH # 4

1. It's a happy meeting of two close friends.
2. They are working together on a school project.
3. Getting even by pounding the other person's hand.
4. Pulling at something they both want.
5. Giving a friend some extra candy.

PHOTOGRAPH # 5

1. Getting ready to hold hands and walk together.
 2. They are fighting and one hand is attacking.
 3. One hand is trying to scare the other hand.
 4. One is warning the other that he's really angry.
 5. They are making wall shadows.
-

PHOTOGRAPH # 6

1. Showing the new person where the closet is.
2. Angrily warning the other that he'd better have a good explanation.
3. Trusting a best friend with a secret surprise.
4. They are good friends and one hand is calling for the other to come.
5. One hand is telling the other to do something it doesn't like to do.

PHOTOGRAPH # 7

1. Playing on a hill - one is helping the other up.
 2. They are angry; one caught the other sneaking.
 3. The mean hand is twisting the other and won't stop.
 4. Making sure a good friend feels better - he'll stay with him until he does.
 5. Teaching someone how to use a paper cutter.
-

PHOTOGRAPH # 8

1. One hand is showing love for the other.
2. One hand is making the other touch a rubber snake.
3. Checking to see if the other hand is okay after bumping it.
4. Showing a friend how to make an animal shadow.
5. It's a fight. They're really hurting each other.

PHOTOGRAPH # 9

1. It's a contest; they're getting ready for a tug-of-war.
 2. Two close friends greeting each other. It's been a long time.
 3. The hand is angrily pulling the little hand.
 4. One hand is going to crush the other until it hurts.
 5. One thinks he's stronger than the other and he's going to prove it.
-

PHOTOGRAPH # 10

1. It's a fight and one hand is hitting the other.
2. Two friends are sadly waving goodbye.
3. One hand is making the other go away.
4. They are about to start a game of arm wrestling.
5. Showing a friend how to use the present he just got.

PHOTOGRAPH # 11

1. Giving a friend a cookie.
 2. Refusing to help someone in trouble.
 3. Checking the weather to see if it's raining.
 4. One is attacking; the other is giving a hard karate chop.
 5. One is bothering, and the other is saying, "Stop it."
-

PHOTOGRAPH # 12

1. Helping someone change a tire.
2. One person is fleeing from the other in fear.
3. Reaching out to help someone in trouble.
4. Checking to see if their hands are clean.
5. There is something on the ground and they're both grabbing for it.

PHOTOGRAPH # 13

1. Two people are closing a box.
 2. One hand is trying to steal the ball. He plays dirty.
 3. Giving a painful chop to the other. One called the other a bad name.
 4. They are arguing over whose hand is bigger.
 5. Helping a friend make his bed so they can go out and play.
-

PHOTOGRAPH # 14

1. Crushing the other's fingers.
2. Helping a friend climb up into the tree house.
3. Stopping the other from taking something.
4. Doing a square dance in school.
5. Pulling the other hand away from a new game.

PHOTOGRAPH # 15

1. Showing a friend how to throw a curve ball.
 2. They're raising their hands in class.
 3. Telling the other guy to quiet down.
 4. Throwing the other out of the game for cheating.
 5. They are working together on a bulletin board.
-

PHOTOGRAPH # 16

1. One is giving change to the other.
2. Two angry people. They're each trying to get it.
3. They're trading stamps.
4. It's an ancient torture.
5. Giving a friendship ring.

PHOTOGRAPH # 17

1. It's a fight. One has a gun and the other's going to hit him.
 2. Putting medicine on a friend's burned finger.
 3. It's a bad argument. One called the other a dirty name.
 4. Rehearsing a play for class.
 5. Telling a person to get off the grass.
-

PHOTOGRAPH # 18

1. One hand is trying to pull the other off balance.
2. Saving an injured friend; they've carried him a long way.
3. It's their job to scoop up water.
4. Boosting a friend over a fence.
5. One hand just twisted the other. It hurts!

PHOTOGRAPH # 19

1. Two friends cheering on a third friend.
 2. Holding a board - making something for the class play.
 3. Reaching for a ball and shoving the other person away.
 4. Two students waiting to be called on in class.
 5. Grabbing for something they both want.
-

PHOTOGRAPH # 20

1. They just insulted each other and they're both angry.
 2. Two friends making sand castles at the beach.
 3. Making something for a class project.
 4. One is playing airplane; the other wants to stop him.
 5. A referee signaling at a ball game.
-

APPENDIX B

INSTRUCTIONS FOR ADMINISTERING THE PAIRED HANDS TEST

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INSTRUCTIONS FOR ADMINISTERING THE PAIRED HANDS TEST

1. Check for pencils, close drapes, set up screen for Carousel projector.
2. Pass out answer sheets. Have students write their name on the upper right hand corner, in margin.
3. Read "RELAX," tell the children to read along by themselves.
4. Read "INSTRUCTIONS," tell the children to read along by themselves.
5. Put SAMPLE slide on screen.
6. Say: "THIS IS A SAMPLE OF WHAT WE WILL BE DOING SO WE CAN PRACTICE. I AM GOING TO QUICKLY READ THE FIVE CHOICES OF WHAT THE HANDS MIGHT BE DOING. YOU READ ALONG." Read the choices.
7. Read: "IN THE EXAMPLE ABOVE"
8. Check all children's responses to make certain marks are made in the right place.
9. Stress: "FROM NOW ON WE WILL BE INTERESTED IN YOUR OWN IDEAS, NOT WHAT OTHER PEOPLE THINK. THERE ARE NO RIGHT OR WRONG ANSWERS.
10. Read: "TURN TO PAGE MARKED PHOTOGRAPH 1 AND FOLLOW ALONG SILENTLY." Read responses quickly. "MARK THE ONE THAT COMES CLOSEST TO YOUR FIRST IDEA OF WHAT THE HANDS ARE DOING IN THE SPACE FOR PHOTOGRAPH 1 ON YOUR ANSWER SHEET. DO NOT MARK IN THE TEST BOOKLET'.
11. Repeat for photographs 2, 3, and 4.
12. For photograph 5 say "PHOTOGRAPH 5" and follow with the five alternatives. Remind children of their first thoughts.
13. For photographs 5, 10, 15, say: "REMEMBER, WE ARE INTERESTED IN YOUR FIRST IDEA ABOUT WHAT THE HANDS ARE DOING."

14. Collect pencils, answer sheet.
15. Collect teacher check lists.
16. Thank the class.

APPENDIX C
JUDGES

APPENDIX C

JUDGES

Dear Judge,

Thank you for consenting to help with this research project. It is greatly appreciated. The guidelines are as follows: (please do not hesitate to call me if you have questions).

1. You will be given one or several protocols with numbered phrases which are actual remarks that a child made in a group situation. Each numbered phrase must be assigned two codes (see below). Although some will seem ambiguous or out of context, an item will be used only if good agreement is found among all judges. Obviously, some will be discarded so do not worry. You will also receive a sheet on which to record your judgments.

2. The first code is TASK RELATED (T) or NOT TASK RELATED (N). Each phrase must be judged as following:

a. TASK RELATED (T) items have to do directly with the task. They may be instructions or suggestions or comments. Some examples are:

"Put this one here"
"This might be impossible"
"This hole is too small"
"Good going"
"We're not getting no where . . . come on"
"I wish I were a witch and could get it done
in a second"
"D____, now, shut up and get started" (D____
refers to child's name)
"Our 15' are up"
"You guys quit acting around"

b. NOT TASK RELATED (N) items are irrelevant in relationship to the task. They may be any kind of conversations, comments or noises which are not concerned with solving the problem or completing the tasks. Some examples are:

"Dummy"
 "Arrgh" (some funny noise)
 "I wish we were on T.V."
 "He's watching us"
 "Stop singing, you're making me nervous"
 "You're Johnny Carson"
 "My nose is running"
 "I'm not going to let him hear me"

3. Each phrase should also be judged as a plus (+) or minus (-).

a. A PLUS (+) response is one that is made in a positive way. It may be a helpful suggestion which merits compliance, it may be agreement, or support. It may be either TASK RELATED or NOT TASK RELATED. If NOT TASK RELATED, it would be a comment which is made in a non-abrasive way. Examples are:

"He'll probably think we're retarded"
 "Does this fit"
 "Oh, there's a coke bottle"
 "We got one more minute"

b. A Negative (-) phrase is one which was made in a negative, or abrasive way. It would evoke resentment or anger, or would be a statement (or noise) which would be ignored by others. Examples are:

"You guys quit acting around" (shouted)
 "Don't cough in my ear"
 "J_____ pooped in her pants"
 "Blaa, Beep, Arghh"
 "Whistle" or whistle
 "Whoopie whoopie, ding dong"

4. The following are examples which are judged correctly:

"It's kind of hard"	T+
"They can see your white underwear"	N-
"Why don't you put the puzzle into the coke bottle"	T-
"You love that guy?"	N+
"You better help me"	T+

"Come on, mister, I want to get out!"	N-
"He can see us"	N+
"I'm scared"	N+
"We ain't going to have nothing done"	T-
"That ain't how you do it" (shout)	T-
"I could do it better myself"	T-
"That piece is too little"	T+