

CREATIVITY IN EARLY CHILDHOOD: THE RELATION-
SHIP BETWEEN SEX-ROLE IDENTIFICATION
AND BEHAVIORAL INDEPENDENCE

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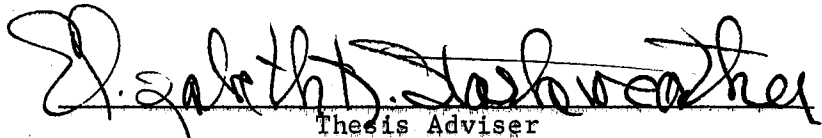
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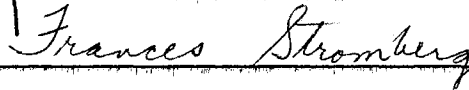
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TABLE OF CONTENTS

Chapter	Page
I. INTRODUCTION	1
Purpose	1
Sex-Role Identification	1
Behavioral Independence	3
Problem	3
II. REVIEW OF LITERATURE	6
Development of Instruments	6
Measurement of Sex-Role Identification	6
Measurement of Behavioral Independence	8
Research Findings	9
Sex-Role Identification	10
Behavioral Independence	11
Relationship Between Independence and Sex-Role Identification	13
Implications for Research	13
III. METHOD AND PROCEDURE	14
Subjects	14
Testing Program	16
Data Analysis	17
IV. RESULTS,	18
Analysis of M-F Test Data	18
Refinement of the M-F Scoring	19
Reliability	21
Validity	29
Sex Differences in M-F Test Scores	29
Sex-Role Identification and Behavioral Independence	34
Sex Differences in M-F Test Scores	34
Sex-Role Identification Illustrated	36
Relationship Between Sex-Role Identifi- cation and Behavioral Independence	38
Summary of Findings	40

Chapter	Page
V. SUMMARY AND IMPLICATIONS	42
Implications of the Study	44
Recommendations for Future Research	45
A SELECTED BIBLIOGRAPHY	46
APPENDIX A.	49
APPENDIX B.	57
APPENDIX C.	68

LIST OF TABLES

Table	Page
I. Age Distribution of Children Participating in Sex- Role Identification Research.	15
II. Age Distribution of Children Participating in Behavioral Independence Research.	15
III. Number of Pages in the M-F Test Booklet on Which the Pictures do not Scale	22
IV. Reliability of the Starkweather M-F Test: Split- Half Correlations Based on the Responses of the More Stable Children in the Study	28
V. Ranges and Medians of Scores for Children Partici- pating in the Validation Study.	30
VI. Spearman Rank Correlations Between M-F Test Scores and Validation Test Scores.	30
VII. Distribution of Refined M-F Test Scores	32
VIII. Distribution of Starkweather M-F Test Scores for Boys and Girls (Form-A)	32
IX. Distribution of Stability Scores.	33
X. Sex Differences in the Distribution of M-F Test Scores (Form-A).	35
XI. Distribution of Test Scores Indicating Sex-Role Identification and Behavioral Independence.	37
XII. Spearman Rank Correlations Among M-F Test Scores, Stability Scores and Independence Test Scores	39
XIII. Descriptive Data and Test Scores of Individual Children Participating in a Study of Sex-Role Identification and Behavioral Independence.	50
XIV. Test Scores Based on the Original Analysis and the First Refinement of the Starkweather M-F Test	51

Table	Page
XV. Score Values of Individual Pictures in Form-A of the Starkweather M-F Test as Calculated in the Original Analysis and in the First and Second Refinements.	52
XVI. Score Values of Individual Pictures in Form-B of the Starkweather M-F Test as Calculated in the Original Analysis and in the First and Second Refinements.	53
XVII. Calculation of Scores for Individual Pictures in Form-A of the Starkweather M-F Test.	54
XVIII. Calculation of Scores for Individual Pictures in Form-B of the Starkweather M-F Test.	55
XIX. Descriptive Data and Test Scores of Individual Children Participating in a Validation Study of the Starkweather M-F Test.	56

LIST OF FIGURES

Figure	Page
1. A Page From the Starkweather M-F Test Booklet on Which the Pictures Scale and a Page on Which the Pictures do not Scale.	20
2. Form-A, Page 10, of the Starkweather M-F Test Booklet.	23
3. Form-A, Page 17, of the Starkweather M-F Test Booklet.	24
4. Form-A, Page 14, of the Starkweather M-F Test Booklet.	25
5. Form-B, Page 12, of the Starkweather M-F Test Booklet.	26

CHAPTER I

INTRODUCTION

Purpose

The purpose of this study was to refine the scoring of the Starkweather M-F Test and to examine the relationship between sex-role identification and behavioral independence in early childhood. The refinement of the M-F test scoring was achieved by reanalyzing the test responses of 184 preschool children. The relationship between sex-role identification and behavioral independence was examined by comparing the responses of 64 preschool children to whom the M-F test and the Starkweather Independence Test were administered.

Sex-Role Identification

There are several theoretical views of identification (1) Identification as behavior implies that a child behaves in the manner of a model. (2) Identification as motive refers to the disposition of a child to act like a model. (3) Identification as process refers to "the sequential interplay of forces internal and external which impel the child to take on the characteristics of the parent." (Bronfenbrenner, 1960, p. 22).

Sex-role identification involves learning to behave and feel like a male or a female. In the study of children, regardless of the

mechanism involved, the evidence of identification is found in the overt behavior of the child, which is the product or result of his identification. The overt behavior may be the imitation of another, or it may reflect the dispositional traits or the values and feelings of another. (Goldsmith, 1970).

When the product of identification is the imitation of a model's behavior, the child behaves like the model. For example, a little girl may attentively rock her doll after observing a woman rock her baby or she may choose chocolate ice cream when her mother chooses chocolate ice cream. In both cases she is showing identification.

. . . When the product of identification reflects the dispositional traits of a model, the child's behavior is not necessarily an imitation of the model's behavior, but it reflects the qualities or traits that are expressed in the model's behavior. The child may reflect the qualities as they actually are or as he distorts them in his perception. If a parent is kind and considerate in his relationships with elderly people, the child who identifies with him may behave in a way that reflects this same kindness and consideration.

. . . When the product of identification reflects the model's values, feelings, and aspirations, the child must first perceive these values and expectations and then attempt to model his behavior in that direction. A little boy may perceive that his father admires force and aggression, even though his father himself is not forceful. When the little boy then relates to others in a forceful and aggressive manner, he is showing identification.

. . . In theory, the process and the product can be separated; however, in any study of sex-role identification, the product, i.e., the child's overt behavior, must be considered. (Goldsmith, 1970, pp. 3-5).

The process of sex-role identification is in need of greater clarification. Theories that have been proposed are in need of support.

Theories have grown all out of proportion to the facts. They offer elaborate and intricate explanations for phenomena presumed to be common if not universal; yet, the evidence for the prevalence or even the sheer existence of these phenomena is extremely sparse. Thus, to the

writer's knowledge, there have as yet been no attempts to investigate empirically the presence of a generalized motive in the child to become like one or the other parent. (Bronfenbrenner, 1960, p. 39).

Behavioral Independence

Behavioral independence is exhibited when a child initiates his own activities and copes with difficulties without seeking help. For the creative individual, situations in which independence of thought and action are required provide a more stimulating environment. (MacKinnon, 1965).

Behavioral independence, in the context of a child's initiating his own activities and coping with difficulties without seeking help, is considered a positive quality; but when the child's independence is compulsive and he cannot permit himself to accept help even in difficult situations, his behavioral independence is considered negative.

When instrumental independence is compulsive and the child cannot permit himself to accept help even in difficult situations, instrumental independence is considered a negative quality. . . . Creative theory suggests that free rather than compulsive behavior is necessary for creative expression, therefore, neither the compulsively dependent nor the compulsively independent person has the freedom necessary for optimum creative living. (Patton, 1969, p. 2).

Problem

In a constructive attempt to deal with some of the problems existing today, the behavioral sciences have sought to find ways of developing the positive characteristics of the human personality. One focus has been on the development of the creative potential of young children. Guilford (1965) has defined creative potential as the collection of

abilities and other traits that contribute to creative thinking; and therefore, the encouragement of the development of a child's creative potential means the fostering of these abilities and traits.

Several steps are involved in the encouragement of a young child's creative potential. First, the characteristics which are related to creativity (creative learning and creative expression) must be identified, and ways of measuring them must be devised. When methods of measurement are available, the relationship among these characteristics can be studied and the influences that help or hinder in their development can be examined.

The identification of traits and abilities related to creativity began with the study of creative adults. MacKinnon (1965) defined creativity as a process extended in time and characterized by originality, adaptiveness, and realization. This definition of creativity determined the specific course that research was to take under the direction of MacKinnon at the Institute of Personality Assessment and Research at the University of California. Intensive work was done with creative adults from various professional groups, and personality characteristics that these individuals had in common were identified. Some of these were characteristics that could be observed in the behavior of young children--for example, independence, openness to inner experience, originality of thought, and adaptability. MacKinnon's observations provided the starting point for the study of the creative potential of the young child.

The method of studying creativity in adults is not applicable in studying creativity in young children. At the Berkley Institute creative adults were identified by their creative products--products

characterized by adaptability, originality, and realization.

In studying creativity in children, it is not possible to identify subjects by their creative products. Children are capable of creative production. Their products can be identified as original, . . . but their products are not characterized by the adaptiveness and realization which are essential criteria for judging the products of adults. . . . These particular criteria are dependent on maturity. One cannot start with creative production when one is interested in studying creativity in early childhood; instead, the focus of attention must be on creative potential, . . . the collection of abilities and other traits that contribute toward creative thinking.

In studying creativity in young children, . . . the researcher should look for behavioral evidence for the characteristic under study. (Land, 1971, pp. 13-14).

The creative individual is able to give expression to aspects of inner experience, such as femininity in the case of the male and masculinity in the case of the female; and he is able to think and act independently. (MacKinnon, 1965). For both of these characteristics, one can find behavioral evidence in early childhood; and to the extent that the present research contributes to an understanding of the relationship between sex-role identification and behavioral independence in the early years, it will lead to an increased understanding of the young child's creative potential.

CHAPTER II

REVIEW OF LITERATURE

The review of literature includes a discussion of the development of research instruments designed to measure sex-role identification and behavioral independence. Research focused on these two characteristics and the relationship between them is also presented.

Development of Instruments

Measurement of Sex-Role Identification

The measurement of sex-role identification began with the development of an instrument designed to measure masculinity-femininity. The study of masculinity-femininity seems to be a logical part of creativity research. Highly creative men have been described as less masculine than their peers, and highly creative women have been described as less feminine than their peers. (Barron, 1957; Roe, 1959; Torrance, 1962). One possible explanation for this finding lies in the fact that creative expression requires both sensitivity and independence; and in our culture, sensitivity is a feminine quality and independence is a masculine quality.

The Starkweather M-F Test was originally designed as a measure of masculinity-femininity, and has, over a period of years, evolved into a test of sex-role identification. The test measures the masculine and

feminine preferences of young children and is designed so that the evaluation of what is masculine and feminine is based on the actual choices of the children being tested. The assumption underlying this design is that the behavior of boys is boy-behavior (masculine) and the behavior of girls is girl-behavior (feminine).

The materials for the Starkweather M-F Test include two comparable picture booklets of 20 pages and individually mounted pictures, identical to those used in the picture booklets. On each booklet page, there are three different pictures (gummed seals) which are chosen and arranged by the investigator so that a masculine, a feminine, and a neutral picture appear on each page. The placement of masculine and feminine pictures is done for the purpose of maximizing the power of the test to discriminate between the preferences of boys and girls. The pictures themselves are commercially produced gummed seals and are selected to include a variety of objects such as animals, cars, babies, flowers, and cowboys. As each child is shown the booklets, page by page, he chooses the picture on each page that he prefers and is given an identical picture to keep. In order to be sure that the child makes a valid choice, it is important that he be given each picture that he chooses. It is by giving the child the pictures he chooses that the experimenter shows the child clearly that his choices do matter.

The scoring of the M-F test is designed to eliminate the bias of adult judgments. The scoring provides a measure of masculinity-femininity which is based on the actual choices of the children being tested. For example, a picture chosen by a majority of the boys and by few of the girls is weighted heavily as masculine.

The validity of the M-F test was determined by comparing children's test responses to their preferences for sex-appropriate toys and clothing. The correlation between these two sets of scores indicated significance beyond the .01 level; and the M-F test was accepted as a valid measure of masculinity-femininity. (McKinzie, 1968).

The reliability of the M-F test was determined by an examination of picture preferences of each child. Each child's responses were scored in terms of whether he chose the picture on each page which was preferred by the other like-sexed children. Split-half correlations were significant beyond the .05 level, indicating that the tests were reliable. (Skinner, 1972).

Measurement of Behavioral Independence

The measurement of behavioral independence was first attempted with inlay puzzles which were adapted for this purpose. Criteria for the instrument were (1) that the task should be of interest to young children, (2) that it should be possible and yet be difficult, (3) that it should provide opportunity for help to be offered to the child, (4) that it should provide the child with success, and (5) that it be objectively scored. (Patton, 1969). The inlay puzzles did meet the above criteria; but because of the children's familiarity with inlay puzzles, they seemed to bring to the task a specific attitude about their own ability with inlay puzzles. A sixth criterion, that the task be novel to the children, was added in order to solve this problem. (Tether, 1961).

The next step in the development of an instrument for measuring behavioral independence was the adaptation of a puzzle box used by

Keister (1937). The puzzle box provided the child with a novel situation, and it was possible to offer him help at intervals as he worked the puzzle box and give him help whenever he requested it. His independence score was indicated by the number of times he actually accepted help. (Griffin, 1966; White, 1967; Baxter, 1968). The puzzle box test met all of the above criteria, except that the child could only experience success when the puzzle box was completed. He did not necessarily experience success each time he was offered help, and therefore, he had no way of knowing that he had received genuine help.

A series of puzzle boxes, graded in difficulty, was developed to overcome the above problem. (Patton, 1969). In solving a series of puzzle boxes, the child experienced success with the completion of each box. Also, success was usually experienced soon after help was given, thereby assuring that the child knew he had received genuine help.

In subsequent use of the puzzle box independent test, two additional refinements were made. The method of recording the children's responses as they solved each puzzle box was clarified; and because the test proved to be rather long and frustrating for some children, one of the more difficult puzzle boxes was eliminated from the series. (Randal, 1972).

The puzzle box independence test was accepted as having face validity. A child who neither asks for help nor accepts help is more independent behaviorally than is a child who requests and accepts help.

Research Findings

The study of sex-role identification and behavioral independence has included research in many different areas. The influence of age,

sex, and socio-economic status have been examined, but studies of the influence of parent-child relations make up the larger portion of the research.

Sex-Role Identification

The bulk of the studies examining sex-role identification in childhood have been concerned with parent-child relations. Lynn (1964) theorized that boys initially identify with their mothers and that they must subsequently learn sex-role behavior which is unlike their mother's behavior.

Payne and Mussen (1956) found that fathers with high masculine ratings have sons with high masculine ratings, but that mothers who were somewhat masculine tended to inhibit strong father identification in their sons. Boys who were highly identified with their fathers viewed them as rewarding and affectionate. In a study conducted by Emmerich (1959), results indicated that boys selected the father more often than the mother as the object of identification, while the girls showed no significant difference in their choice of father or mother. Boys also saw the father as more controlling and the mother as more nurturant, while the difference was not significant for girls. Lefkowitz (1962) found that children with strong appropriate sex-role preferences frequently had nurturant mothers and were from homes in which both parents took responsibility for the discipline. Johnson (1963) believed the father to be the primary source of sex-differentiation for both sexes. Results indicated that mothers seemed to be equally expressive in their relations with both children, whereas, fathers were expressive in their relations with daughters, but were

both expressive and demanding in their relations with sons.

Hetherington (1965) found that children tended to identify with the dominant parent more than with the passive parent. When the father was dominant, boys identified equally with both parents. When the mother was dominant, boys and girls identified strongly with her and identified little or not at all with the father.

Various research studies have indicated the mother to be the preferred parent, especially with young children. Boys and girls who are secure in their own appropriate sex-role show strong maternal preference. This preference by both sexes is considered to be the result of the caretaking and nurturant role of the mother. (Gardner, 1947; Hawkes, Burchinal and Gardner, 1957; Kagen and Lemkin, 1960; Mott, 1964).

Behavioral Independence

In much of the research which is concerned with dependence and independence in early childhood the focus has been on parent-child relations as antecedents of independent or dependent behavior. Some research studies have been focused on emotional aspects of dependence and others have been focused on behavioral aspects of independence. The present study is specifically concerned with behavioral independence and dependence.

Emotional dependency in early childhood is related to the mother's child-rearing practices. Stendler (1954) studied the relationship of overdependency in young children to the mother's approach to infant discipline and found evidence that overdependency can result from maternal overprotection. She also found that overdependency can result from

serious discontinuities in the socialization process during a critical period. Heather (1955) and Marshall and McCandless (1957) found that children's emotional dependence on adults declines as the children grow older and become increasingly dependent on their peer group. Dependency on adults seems to accompany relatively low peer acceptance and participation. Smith (1958) studied the relationship between punishment and dependency and found that dependency is negatively correlated with the amount of punishment given by the mother and that it is positively correlated with the warmth of the mother. The warmth of the mother was indicated by her affectionate and nurturant role.

Studies of behavioral independence in childhood have also focused on the quality of the parent-child relationship. Crandall, Preston, and Rabson (1960) found that high-achieving children tend to be independent of adults rather than dependent on them for help and emotional support. In a study of parental behavior and its relationship to independence in boys, Clapp (1966) found that parents of independent boys tended to be permissive, warm, competent as models, and more consistent in their philosophy and actions toward their sons. These parents treated their sons as children, i.e., in a manner appropriate for their age, rather than as infants or adults. Hatfield, Ferguson, and Alpert (1967) found that, for boys, independence was related to low maternal directiveness, low hostility, and low use of models as a method of influencing the child's behavior and found that, for girls, independence is related to pressure to conform to adult role behavior, and to reward for conforming to that behavior.

Relationship Between Independence and Sex-Role Identification

White (1967) studied the relationship between behavioral independence and sex-role identification in young children. She used an early form of the Starkweather M-F and Independence Tests. The results of her research indicated that the more independent girls were more feminine than the less independent ones. One possible explanation for this difference has been offered.

The explanation may be that the more feminine girls have developed good feelings about themselves as a result of being rewarded for feminine behavior, and these good feelings may have provided the basis for the self-confidence that is necessary for behavioral independence. (White, 1967).

Implications for Research

Research indicates a widespread interest in parent-child relations and the way in which the quality of parent-child relations affects sex-role identification and independent behavior. Only recently have research methods suitable for use with young children been developed for the measurement of these particular characteristics. These are the Starkweather M-F Test and the Starkweather Independence Test. An objective study of the relationship between sex-role identification and behavioral independence is now possible.

CHAPTER III

METHOD AND PROCEDURE

The purpose of this study was to refine the scoring of the Starkweather M-F Test and to examine the relationship between sex-role identification and behavioral independence in early childhood. This chapter includes a description of the subjects who participated in the research, a discussion of the testing program, and information regarding the data analysis.

Subjects

The subjects who were included in the refinement of the Starkweather M-F Test were 184 preschool children, 92 boys and 92 girls, who ranged in age from three years one month to five years eleven months. The distribution of these children by age and sex is presented in Table I.

The subjects who participated in the portion of the research related to the examination of sex-role identification and behavioral independence, were 64 preschool children, 31 boys and 33 girls, who ranged in age from three years two months to five years five months. All of these children were in attendance at nursery schools and kindergartens in Oklahoma City and Stillwater, Oklahoma. The ages of these children (medians and ranges) are presented in Table II.

TABLE I
AGE DISTRIBUTION OF CHILDREN PARTICIPATING
IN SEX-ROLE IDENTIFICATION RESEARCH
(N = 184)

	Boys	Girls	Total
Three-year-olds (3:0 - 3:11)	22	22	44
Four-year-olds (4:0 - 4:11)	49	49	98
Five-year-olds (5:0 - 5:11)	21	21	42
Total	92	92	184

TABLE II
AGE DISTRIBUTION OF CHILDREN PARTICIPATING
IN BEHAVIORAL INDEPENDENCE RESEARCH
(N = 64)

	N	Median Age	Age Range
Boys	31	4:3	3:6 - 5:0
Girls	33	4:3	3:2 - 5:5

Testing Program

The Starkweather M-F Test and the Starkweather Independence Test were used in the present research. Children's responses to the M-F test provide a measure of two dimensions of sex-role identification-- (1) the masculinity or femininity exhibited by the child, and (2) the stability of the child's sex-role identification. Children's responses on the Independence Test provide a measure of their behavioral independence--the extent to which they refused help and preferred to work by themselves.

The M-F test consists of two forms, Form-A and Form-B, which are administered in a test-retest sequence with the interval between tests being no more than one week. The Independence test is administered in one session. The schedule of testing for the present research provided for the administration of Form-A of the M-F test during the first session with the child and the administration of the Form-B and the Independence test during the second session with the child. The reason for this sequence was that when research is conducted with young children, it is frequently true that those who participate in the initial phases of the research may be lost to the research before the data gathering is completed. Form-A of the M-F test was the only test administered during the first session with the child and the major data gathering was done during the second session. In this way it was assured that no child who had been given the Independence Test would be lost to the program.

Data Analysis

The responses of 184 children were available for analysis in the refinement of the scoring of the M-F test. The steps in the refinement provided for the elimination of the responses of children who were not stable in their responses from test to retest, and the elimination of the responses of children who were low-masculine and low-feminine in their preferences. In each step of the refinement, new picture scores were calculated, and the final picture scores were those based on the responses of 25 stable high-masculine boys and 25 stable high-feminine girls.

The reliability (internal consistency) of the M-F test was checked by an analysis of the frequency with which each child chose the pictures preferred by children of his own sex. A split-half correlation, corrected by the Spearman-Brown formula, was used for this analysis.

The validity of the M-F test was determined by comparing the children's responses on the two forms of the test with their responses on a validation test which offered choices between sex-appropriate toys and clothing. Spearman rank correlations were used for these analyses.

For each of the 64 children who were administered the M-F and independence tests, the following scores were available for analysis: two M-F test scores, a stability score, and an independence score. Spearman rank correlations were used to study the relationships among these scores. The major question to be answered was whether a child's sex-role identification, i.e., his expressed masculinity or femininity and the stability of his responses, was related to his behavioral independence.

CHAPTER IV

RESULTS*

The purpose of this study was to refine the scoring of the Starkweather M-F Test and to examine the relationship between sex-role identification and behavioral independence in early childhood. The refinement of the M-F test scoring was achieved by reanalyzing the test responses of 184 preschool children. The relationship between sex-role identification and behavioral independence was examined by comparing the responses of 64 preschool children to whom the M-F test and the Starkweather Independence Test were administered. Descriptive data and test scores of these children are presented in Table XIII, Appendix A.

Analysis of M-F Test Data

The analysis of children's responses to the Starkweather M-F Test includes the refinement of the scoring, tests of the reliability and validity of the instrument, and an analysis of sex differences in M-F test scores. The test responses of 92 boys and 92 girls were used in these analyses.

*The results of this research as presented here were co-authored by Elizabeth K. Starkweather, Ph.D., principal investigator in the creativity project of which this research is a part.

Refinement of the M-F Test Scoring

If the M-F test is to be useful in identifying the extent to which a child has masculine or feminine preferences, the pictures on each page of the test booklet must scale, i.e., the picture with the high-masculine score must be the one chosen most frequently by boys and the picture with the high-feminine score must be the one chosen most frequently by girls. The problem encountered here is illustrated in Figure 1. The pictures on page one of Form-A do scale. Of the boys, 65 chose the deer and the score for that picture was +29; and of the girls, 42 chose the baby, and the score for that picture was -33. On the other hand, the pictures on page 14 of Form-A do not scale. A majority of the boys (64) and a majority of the girls (62) chose Lassie, giving that picture a neutral score of +02; while the airplane had a masculine score of +17 and the rose had a feminine score of -19.

The first refinement of the M-F test scoring was designed to eliminate the influence of children whose responses were not stable from test to retest. For example, Child M-2068 scored low-masculine (+049) on Form-A and then scored high-masculine (+254) on Form-B. The first refinement consisted of the recalculation of the scores for the test booklet pictures, using only the responses of the more stable children, 46 boys and 46 girls. The M-F test scores were then recalculated for all 184 children, using these refined picture scores.

The second refinement of the M-F test scoring was designed to eliminate the influence of the boys whose responses were low-masculine and the girls whose responses were low-feminine. For example, Child M-2060 scored low-masculine on Form-A (+030) and again on Form-B



Form-A, page 1

	<u>Deer</u>	<u>Baby</u>	<u>Apple</u>
Boys (N = 92)	65	09	18
Girls (N = 92)	36	42	14
Assigned Score	+29	-33	+04



Form-A, page 14

	<u>Flower</u>	<u>Lassie</u>	<u>Airplane</u>
Boys (N = 92)	02	64	26
Girls (N = 92)	21	62	09
Assigned Score	-19	+02	+17

Figure 1. A Page From the Starkweather M-F Test Booklet on Which the Pictures Scale and a Page on Which the Pictures do not Scale

(+072); and Child F-2039 scored low-feminine on Form-A (-087) and again on Form-B (-057). The second refinement consisted of the recalculation of the scores for the test booklet pictures, using only the responses of the more stable high-masculine and high-feminine children, 25 boys and 25 girls. Then again, the M-F test scores were recalculated for all 184 children, using these refined scores.

Picture scores obtained in the original analysis of the data and the scores obtained in the two refinements are presented in Tables XV and XVI, Appendix A. The calculation of these picture scores is presented in Tables XVII and XVIII, Appendix A. In these tables the number of boys and the number of girls choosing each picture are reported. These data show that many pages which did not meet the criterion for scaling at first, did scale after the second refinement. Table III shows that 19 of the 40 booklet pages did not scale when originally scored, but that after the second refinement only six pages did not scale. Figures 2 and 3 illustrate pages which gradually scaled as refinements in scoring were introduced.

One type of problem persisted throughout the scoring refinement. When any one picture was a special favorite of both boys and girls, the page did not scale. Figures 4 and 5 illustrate this problem. Lassie and the American flag were favorite pictures of many children, both boys and girls, and these are pictures which should be eliminated from the test booklet in subsequent refinement.

Reliability

A split-half correlation, corrected by the Spearman-Brown formula, was used to check the reliability (internal consistency) of the two

TABLE III
NUMBER OF PAGES IN THE M-F TEST BOOKLET
ON WHICH THE PICTURES DO NOT SCALE*

	Form-A	Form-B	Total
Original Analysis	11	08	19
First Refinement	10	10	20
Second Refinement	03	03	06

*The pictures are accepted as scaling if the one scoring high-masculine is chosen most frequently by the boys and the one scoring high-feminine is chosen most frequently by the girls.



Form-A, page 10

<u>Original Analysis</u>	<u>Pumpkin</u>	<u>Squirrel</u>	<u>Rabbit</u>
Boys (N = 92)	66	15	11
Girls (N = 92)	<u>51</u>	<u>08</u>	<u>33</u>
Assigned Score	+15	+07	-22

First Refinement

Boys (N = 46)	35	07	04
Girls (N = 46)	<u>21</u>	<u>05</u>	<u>20</u>
Assigned Score	+14	+02	-16

Last Refinement

Boys (N = 25)	22	01	02
Girls (N = 25)	<u>06</u>	<u>02</u>	<u>17</u>
Assigned Score	+16	-01	-15

Figure 2. Form-A, Page 10, of the Starkweather M-F Test Booklet



Form-A, page 17

<u>Original Analysis</u>	<u>Squirrel</u>	<u>Baby</u>	<u>Car</u>
Boys (N = 92)	38	06	48
Girls (N = 92)	41	37	14
Assigned Score	-03	-31	+34
<u>First Refinement</u>			
Boys (N = 46)	21	02	23
Girls (N = 46)	21	15	10
Assigned Score	00	-13	+13
<u>Last Refinement</u>			
Boys (N = 25)	12	00	13
Girls (N = 25)	10	13	02
Assigned Score	+02	-13	+11

Figure 3. Form-A, Page 17, of the Starkweather M-F Test Booklet



Form-A, page 14

<u>Original Analysis</u>	<u>Flower</u>	<u>Lassie</u>	<u>Plane</u>
Boys (N = 92)	02	64	26
Girls (N = 92)	21	62	09
Assigned Score	-19	+02	+17
<u>First Refinement</u>			
Boys (N = 46)	02	32	12
Girls (N = 46)	11	32	03
Assigned Score	-09	00	+09
<u>Second Refinement</u>			
Boys (N = 25)	00	17	08
Girls (N = 25)	06	19	00
Assigned Score	-06	-02	+08

Figure 4. Form-A, Page 14, of the Starkweather M-F Test Booklet



Form-B, page 12

<u>Original Analysis</u>	<u>Baby</u>	<u>Flag</u>	<u>Squirrel</u>
Boys (N = 92)	15	56	21
Girls (N = 92)	27	55	10
Assigned Score	-12	+01	+11
<u>First Refinement</u>			
Boys (N = 46)	08	27	11
Girls (N = 46)	13	28	05
Assigned Score	-05	-01	+06
<u>Second Refinement</u>			
Boys (N = 25)	04	13	08
Girls (N = 25)	10	15	00
Assigned Score	-06	-02	+08

Figure 5. Form-B, Page 12, of the Starkweather M-F Test Booklet

forms of the Starkweather M-F test. In this analysis, for the first and last ten pages in the test booklets, scores were calculated which indicated the frequency with which each child chose a picture which was preferred by children of his own sex. For example, on Form-A of the test, Child F-1954 chose the picture preferred by girls five times during the first half of the test and eight times during the last half.

In Table IV, correlation coefficients for the two forms of the test are presented. Both forms of the test show statistically significant reliability when the responses of the boys and girls are combined. However, when the data for boys and girls were analyzed separately, the correlation coefficients indicated that the tests have greater reliability for the girls than for the boys. On Form-A, the correlation for the boys is not significant, and the correlation for the girls is significant beyond the .05 level. On Form-B, the correlation for the boys is significant beyond the .05 level, and the correlation for the girls is significant beyond the .01 level.

These findings are interpreted as indicating a need for further refinement of the M-F test with emphasis on the inclusion of more pictures for which boys show a strong preference. Commercial gummed seals, currently used in the test, seem to provide more sex-appropriate pictures for girls than for boys. On the other hand, it is possible that the sex differences which are evident in these findings may be a reflection of differences which exist in sex-role identification in early childhood.

TABLE IV
 RELIABILITY OF THE STARKWEATHER M-F TEST: SPLIT-HALF
 CORRELATIONS BASED ON THE RESPONSES OF THE MORE
 STABLE CHILDREN IN THE STUDY

	N	rho	
M-F Test: Form-A			
Boys	24	+0.161	n.s.
Girls	24	+0.409	p<.05
Total	48	+0.304	p<.05
M-F Test: Form-B			
Boys	24	+0.434	p<.05
Girls	24	+0.609	p<.01
Total	48	+0.530	p<.01

Validity

The validity of the M-F test was determined by comparing children's responses on the M-F test to their responses on a validation test, which was designed and scored like the M-F test. The validation test consisted of a booklet in which toys and clothing were pictured. As in the M-F test, the child indicated his preferences for one picture on each page. This type of validation test was first used by McKinzie (1968) who found the children's preferences for the toys and clothing to be in agreement with adult judgments of their sex-appropriateness.

The children who participated in the validation testing were 45 boys and 45 girls, all of whom showed stability in their sex-role identification, i.e., stability in their M-F test responses from Form-A to Form-B. The distribution of scores for these children are presented in Table V. The range of scores indicates that in this group of children there were those scoring high and low on the M-F test.

Spearman rank correlations between M-F test scores and validation test scores are presented in Table VI. For the test scores of both boys and girls, these correlations were statistically significant. Both forms of the Starkweather M-F Test do give valid indications of children's masculine and feminine preferences.

Sex Differences in M-F Test Scores

The 184 preschool children who participated in this research were a homogeneous middle-class group. Sex differences which are apparent in the responses of these children may serve to indicate possible areas for future research.

TABLE V
RANGES AND MEDIANS OF SCORES FOR CHILDREN
PARTICIPATING IN THE VALIDATION STUDY
(N = 45 Boys and 45 Girls)

	Median	Range
Boys		
Form-A	+114	-036 to +254
Form-B	+097	-058 to +240
Validation	+114	+104 to +323
Girls		
Form-A	-056	+147 to -241
Form-B	-108	+116 to -241
Validation	-189	+144 to -318

TABLE VI
SPEARMAN RANK CORRELATIONS BETWEEN M-F TEST
SCORES AND VALIDATION TEST SCORES

	N	Form-A	Form-B
Boys	45	+0.430	+0.470
		p<.01	p<.01
Girls	45	+0.756	+0.717
		p<.001	p<.001

The possibility of sex differences in M-F test scores is indicated by the distribution of the refined M-F test scores, presented in Table VII. On Form-B, the median M-F scores for boys and girls were similar. The boys' median was +080 and the girls' median was -088. However the medians for Form-A were dissimilar. The median masculine score of +115 for the boys was greater than the median feminine score of -047 for the girls. Beyond this, another sex difference is indicated by the greater stability of the girls from test to retest. The range of stability scores for the girls was 00 to 46, whereas the range for the boys was 00 to 72.

A chi-square analysis of the distribution of M-F test scores (Form-A) showed a statistically significant sex difference. ($\chi^2=29.371$; $p < .001$). This distribution is presented in Table VIII. Of the scores which were less than 000, the girls had 33 masculine scores, and the boys had only four feminine scores. Of the scores which were more than ± 100 , the boys had 49 high-masculine scores, and the girls had only 28 high-feminine scores.

The distribution of stability scores also showed a statistically significant sex difference. ($\chi^2 = 15.131$; $p < .01$). This distribution is presented in Table IX. The girls were more stable in their responses from test to retest than were the boys. The girls' range of stability scores was from zero to 46, and the boys' range of scores was from zero to 72. The girls had only ten stability scores above 30; and the boys had 29 scores above 30.

In Table VII, the median F-M scores for both forms of the test were given. From test to retest, the boys' median score decreased in masculinity (from +115 to +080) and the girls' median score increased

TABLE VII
DISTRIBUTION OF REFINED M-F TEST SCORES
(N = 184)

	Boys (N = 92)		Girls (N = 92)	
	Median	Range	Median	Range
Form-A	+115	-129 to +254	-047	+147 to -241
Form-B	+080	-162 to +263	-088	+124 to -241
Stability	17	00 to 72	13	00 to 46

TABLE VIII
DISTRIBUTION OF STARKWEATHER M-F TEST SCORES
FOR BOYS AND GIRLS (FORM-A)
(N = 184)

	Form-A Test Scores			Total
	Less than 000	000 to \pm 100	More than \pm 100	
Boys	04	39	49	92
Girls	33	31	28	92
Total	37	70	77	184

Chi-square = 29.371; $p < .001$.

TABLE IX
 DISTRIBUTION OF STABILITY SCORES
 (N = 184)

	Stability Scores				Total
	00-09	10-19	20-29	30+	
Boys	34	18	11	29	92
Girls	38	35	09	10	92
Total	72	53	20	39	184

Chi-square = 15.1314; $p < .01$.

in femininity (from -047 to -088). This observed difference in change of scores may be explained in terms of sex differences in stability and M-F scores. Data analysis indicated that the girls were more free to show masculine preferences than the boys were free to show feminine preferences; and it is possible that while responding to Form-B in the familiar test situation, the boys were able to express feminine preferences which might have been inhibited in a less accepting and/or a less private situation.

Sex-Role Identification and Behavioral Independence

The Starkweather M-F and Independence Tests were administered to 31 boys and 33 girls of preschool age. For each child the following scores were available for analysis: two M-F test scores, which indicated the extent to which the child's picture preferences were masculine or feminine; a stability score, which indicated the consistency of the child's preferences from test to retest; and an independence score, which indicated the child's behavioral independence.

Sex Differences in M-F Scores

On Form-A of the Starkweather M-F Test, the responses of the boys and girls were significantly different. There were many more high-masculine boys than there were high-feminine girls. Table X shows that 19 of the 31 boys had high-masculine scores, whereas only five of the girls had high-feminine scores. A chi-square analysis indicated that this difference was significant beyond the .001 level.

Because the responses of the boys and girls were not comparable on

TABLE X
SEX DIFFERENCES IN THE DISTRIBUTION OF
M-F TEST SCORES (FORM-A)
(N = 64)

	Form-A Test Scores			Total
	Less than 000	000 to \pm 100	More than \pm 100	
Boys	03	10	18	31
Girls	13	15	05	33
Total	16	25	23	64

Chi-square = 14.756; $p < .001$.

Form-A of the M-F test, no analysis of sex differences in the relationship between sex-role identification and behavioral independence could be made in this study. The median for the girls was a low-feminine score of -012, whereas the median for the boys was a rather high-masculine score of +141. A distribution of the test scores for boys and girls is presented in Table XI.

Sex-Role Identification Illustrated

A child's sex-role identification is indicated by his expressed masculine or feminine preferences and the stability of these preferences from test to retest. This operational definition of sex-role identification can be illustrated by the test responses of specific children.

Child M-2059 was a child who had identified his sex-role as high-masculine. His M-F score of +224 on Form-A was high-masculine, as was his score of +268 on Form-B. The difference between his rank of 04 on Form-A and 01 on Form-B gave him a stability score of 03, indicating that he was stable in his high-masculine preferences from test to retest, or in other words, indicating high-masculine sex-role identification.

Child F-1967 was a child who had identified her sex-role as low-feminine. Her M-F score of +049 on Form-A was low-feminine, as was her score of +043 on Form-B. This difference between her rank of 76 on Form-A and 85 on Form-B gave her a stability score of 09, indicating that she was stable in her low feminine preferences from test to retest, or in other words, indicating low-feminine sex-role identification.

Child M-2008 was a child who had not identified his sex-role. His score of +195 on Form-A was high-masculine and his score of +039 on

TABLE XI
DISTRIBUTION OF TEST SCORES INDICATING SEX-ROLE
IDENTIFICATION AND BEHAVIORAL INDEPENDENCE

	Boys (N = 31)		Girls (N = 33)	
	Median	Range	Median	Range
Form-A: M-F Scores	+141	-129 to +224	-012	+095 to -173
Form-B: M-F Scores	+087	-162 to +268	-058	+101 to -194
Stability Scores	19	00 to 72	13	00 to 36
Independence Scores	2.451	0.977 to 16.700	1.691	0.643 to 24.189

Form-B was low-masculine. This lack of stability from test to retest was clearly indicated by his change in rank from 14 on Form-A to 65 on Form-B--a change which resulted in a stability score of 51 and indicated a lack of sex-role identification.

Relationship Between Sex-Role Identification and Behavioral Independence

The major question to be answered was whether a child's sex-role identification was related to his behavioral independence. In the statistical analyses which provided answers to this question, three scores were used: (1) the score obtained on Form-A of the M-F test, which indicated the masculinity or femininity initially expressed by the child; (2) the stability score, which indicated whether or not the child was stable in his responses from test to retest, i.e., whether he had identified with this expressed masculinity or femininity as his sex-role; and (3) the independence score which indicated the child's behavioral independence. Spearman rank correlations among these three scores are presented in Table XII.

Correlations between M-F scores and stability scores were not statistically significant. The stability of a child's responses from test to retest was not related to his M-F test score. For example, Child M-2059 scored high-masculine (+224) and was stable in his test-retest responses (03); but Child M-2008 scored high masculine (+195) and was not stable (51).

Correlations between M-F scores and independence scores indicated a significant relationship between these two variables for girls (ρ : +0.440; $p < .02$), and more specifically, for the high-stability girls

TABLE XII
SPEARMAN RANK CORRELATIONS AMONG M-F TEST SCORES,
STABILITY SCORES AND INDEPENDENCE TEST SCORES

	N	Spearman Rank Correlations		
		M-F and Stability	M-F and Independence	Stability and Independence
All Children	64	+0.068 n.s.	+0.247 n.s.	+0.290 p<.05
All Boys	31	+0.083 n.s.	-0.002 n.s.	+0.445 p<.02
All Girls	33	+0.186 n.s.	+0.440 p<.02	+0.227 n.s.
High M-F Children	32	+0.086 n.s.	+0.390 p<.05	+0.440 p<.02
Low M-F Children	32	+0.132 n.s.	+0.253 n.s.	+0.121 n.s.
High Independence Children	32	+0.117 n.s.	+0.217 n.s.	+0.257 n.s.
Low Independence Children	32	+0.079 n.s.	+0.293 n.s.	+0.093 n.s.
High Stability Children	32	+0.176 n.s.	+0.429 p<.02	+0.717 p<.001
Low Stability Children	32	+0.001 n.s.	-0.367 n.s.	-0.290 n.s.
High M-F Boys	18	+0.263 n.s.	+0.281 n.s.	+0.462 p<.05
High M-F Girls	05	----	----	----
High Stability Boys	18	+0.271 n.s.	+0.292 n.s.	+0.667 p<.01
High Stability Girls	18	+0.333 n.s.	+0.620 p<.01	+0.775 p<.001

(rho: +0.620; $p < .01$). This finding is interpreted as indicating that girls who have identified their sex-roles are behaviorally more independent than those who have not.

Correlations between stability scores and independence scores indicate a statistically significant relationship between these two variables. This relationship was contributed to by the boys and girls who were stable in their responses from test to retest. (For high-stability boys, rho: +0.667; $p < .01$. For high-stability girls, rho: +0.775; $p < .001$.) Children who scored high on the M-F test also showed a significant relationship between these two variables (rho: +0.442; $p < .02$). These findings are interpreted as indicating that boys and girls who have identified their sex-roles are more independent behaviorally than are those who have not.

Summary of Findings

1. Findings indicate a need for further refinement of the Starkweather M-F Test with emphasis on the inclusion of more pictures for which boys show a strong preference and on the exclusion of pictures which are preferred by both boys and girls.

2. Both forms of the Starkweather M-F Test give valid indications of children's masculine and feminine preferences.

3. The girls showed greater stability in M-F scores from test to retest than did the boys.

4. The girls were more free to show masculine preferences than the boys were free to show feminine preferences; and there were more boys who scored high-masculine than girls who scored high-feminine.

5. The stability of a child's responses from test to retest was not related to his expressed masculinity or femininity.

6. Boys and girls who have identified their sex-roles are behaviorally more independent than those who have not.

CHAPTER V

SUMMARY AND IMPLICATIONS

The purpose of this study was to refine the scoring of the Starkweather M-F Test and to examine the relationship between sex-role identification and behavioral independence in early childhood. The refinement of the M-F test was achieved by reanalyzing the test responses of 184 preschool children. The relationships between sex-role identification and behavioral independence were examined by comparing the responses of 64 preschool children to whom the Starkweather M-F Test and the Starkweather Independent Test were administered. These two research instruments, developed as part of the creativity research at Oklahoma State University, were designed for use with preschool children.

The subjects who were included in the refinement of the M-F test were 92 boys and 92 girls who ranged in age from three years one month to five years eleven months. The subjects who participated in the portion of the research related to the examination of sex-role identification and behavioral independence were 31 boys and 33 girls who ranged in age from three years two months to five years five months. All of these children were in attendance at nursery schools and kindergartens in Oklahoma City and Stillwater, Oklahoma.

The refinement of the M-F test provided for the elimination of the responses of children who were not stable in their responses from test

to retest, and the elimination of children who were low-masculine and low-feminine in their preferences. In each step of the refinement new picture scores were calculated for the test booklets, and the final picture scores were based on the responses of 25 stable high-feminine girls and 25 stable high-masculine boys. A split-half correlation, corrected by the Spearman-Brown formula, was used to check the reliability of the M-F test and Spearman rank correlations were used for analysis of the validity of the M-F test.

For each of the 64 children who were administered the M-F test and independence test, the following scores were available for analysis: two M-F test scores, a stability score, and an independence score. Spearman rank correlations were used to study the relationships among these scores.

The conclusions of this research were as follows: (1) There is a need for further refinement of the M-F test with emphasis on the inclusion of more pictures for which boys show a strong preference and on the exclusion of pictures which are preferred by both boys and girls. (2) Both forms of the Starkweather M-F Test give valid indications of children's masculine and feminine preferences. (3) The girls showed greater stability in M-F scores from test to retest than did the boys. (4) The girls were more free to show masculine preferences than the boys were free to show feminine preferences; and there were more boys who scores high-masculine than girls who scored high feminine. (5) The stability of a child's responses from test to retest was not related to his expressed masculinity or femininity. (6) Boys and girls who have identified their sex-roles are behaviorally more independent than those who have not.

Implications of the Study

The results of this study support the findings of previous research concerning masculinity-femininity in early childhood. The girls showed greater stability in M-F scores from test to retest than the boys did. This finding agrees with the theories which suggest that girls achieve sex-role identification earlier than boys. In the present study sex-role identification was indicated by the stability of a child's expressed masculinity-femininity.

Girls were found to be more free to show masculine preferences than the boys were free to show feminine preferences, and there were many more boys who scored high-masculine than girls who scored high-feminine. These findings seem to have implications for the study of parent-child relations and how they affect the development of personality characteristics. These results pose several questions. Is our culture more accepting of masculine behavior exhibited by young girls and less accepting of the feminine behavior exhibited by young boys? Could parental reinforcement of such behavior be one reason why young boys are less free to behave in a feminine manner?

Boys and girls who have identified their sex-role are behaviorally more independent than those who have not. One possible explanation for this finding is that a child's sex-role identification contributes to the development of his self-concept, and this in turn may provide the security that allows him to behave in a more independent manner.

Recommendations for Future Research

In view of the findings of the present research the following recommendations are made:

(1) In further studies of sex-role identification in early childhood, subjects should be selected so that high-feminine girls and high-masculine boys are included. A study of sex differences would then be possible.

(2) In the refinement of the M-F test, more pictures for which boys show a strong preference should be included and pictures that are liked equally well by both boys and girls should be excluded.

(3) The Starkweather M-F and Independence Tests can be used in studying the influences of parent-child relations on the development of personality characteristics in early childhood.

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APPENDIX A

TABLE XIII
DESCRIPTIVE DATA AND TEST SCORES OF INDIVIDUAL
CHILDREN PARTICIPATING IN A STUDY OF SEX-
ROLE IDENTIFICATION AND BEHAVIORAL
INDEPENDENCE
(N = 64)

Sex and Code No.	Age	M-F Scores (Second Refinement)				Stability Score	Independence Scores		
		Form-A		Form-B			Level of Difficulty	Level of Help Accepted	Independence Score
		Score	Rank*	Score	Rank*				
M-2052	3:6	+062	66	+079	47	19	2.417	2.333	1.036
M-2051	3:7	+152	32	+140	26	06	2.763	1.833	1.507
M-2083	3:7	+070	62	+047	63	01	2.255	2.250	1.002
M-2082	3:9	+087	56	+105	38	18	3.305	1.750	1.886
M-2038	3:11	+100	50	+052	61	11	2.150	2.200	0.977
M-2060	3:11	+006	86	+036	67	19	6.784	2.200	3.084
M-1997	4:0	+155	30	+055	58	28	2.718	0.500	5.436
M-2061	4:0	-051	91	+176	19	72	1.777	1.000	1.777
M-2070	4:0	+176	20	+209	09	11	2.410	2.200	1.095
M-2008	4:1	+195	14	+039	65	51	1.900	0.667	2.849
M-2055	4:1	+162	25	+088	44	19	3.040	1.800	1.689
M-2068	4:1	+026	83	+093	43	40	3.254	1.200	2.712
M-2073	4:1	-129	92	-162	92	00	4.428	0.600	7.380
M-2069	4:2	+238	02	+224	04	02	3.432	1.400	2.451
M-2084	4:2	+156	29	+009	77	48	2.474	1.600	1.546
M-2044	4:3	+141	37	+093	42	05	2.154	1.400	1.539
M-2045	4:3	+098	51	+193	16	35	3.395	1.000	3.395
M-2067	4:3	+105	49	-004	82	33	2.195	1.500	1.463
M-2065	4:5	+052	71	-002	81	10	2.795	2.000	1.398
M-2033	4:7	+158	27	+062	54	27	2.074	1.200	1.728
M-1899	4:8	+062	67	+054	60	07	1.994	0.837	2.327
M-2043	4:8	+149	33	+126	30	03	4.175	0.250	16.700
M-2050	4:8	+202	10	+213	07	03	3.406	0.400	8.515
M-2062	4:9	+089	54	+017	73	19	2.844	1.000	2.844
M-1739	4:10	+158	26	+134	28	02	4.340	0.833	5.210
M-2036	4:10	+173	21	+087	45	24	1.716	0.600	2.860
M-2059	4:10	+224	04	+268	01	03	3.950	1.333	2.963
M-2064	4:10	+016	85	+160	23	62	4.188	0.750	5.584
M-2072	4:10	+203	09	+068	52	43	2.486	1.800	1.381
M-1998	4:11	-008	88	+079	48	40	7.460	1.600	4.663
M-2048	5:0	+194	15	+211	08	07	4.500	0.750	6.000
F-2058	3:2	-073	37	-166	13	24	4.850	1.333	3.638
F-2039	3:5	-082	35	-012	71	36	1.416	1.200	1.180
F-2040	3:5	+095	83	+003	74	09	1.930	3.000	0.643
F-2054	3:5	-048	46	-113	35	11	1.708	1.667	1.025
F-2032	3:6	-049	45	-014	68	23	2.445	1.833	1.334
F-2037	3:9	-010	58	-013	69	11	1.712	2.200	.778
F-1887	3:11	-045	48	-029	61	13	1.198	1.600	.749
F-2046	4:0	-026	52	-053	58	06	2.495	1.500	1.663
F-2066	4:1	+010	65	-098	43	22	1.842	1.000	1.842
F-2034	4:2	+030	69	-070	54	15	3.563	1.750	2.036
F-2041	4:2	+024	67	-058	57	10	3.276	1.200	2.730
F-2049	4:2	-094	30	-154	16	14	2.854	0.200	14.270
F-2081	4:2	-021	53	-097	44	09	1.728	1.333	1.296
F-2031	4:3	+035	71	-082	48	23	2.008	1.750	1.147
F-2042	4:3	+071	80	-047	59	21	8.055	0.333	24.189
F-2063	4:3	-125	22	-105	40	18	1.562	1.000	1.562
F-2078	4:3	-134	18	-159	15	03	2.345	1.333	1.759
F-1943	4:4	-102	28	-174	11	17	4.756	1.600	2.973
F-2053	4:4	-012	56	+050	86	30	3.265	1.167	2.798
F-2080	4:5	-011	57	-068	55	02	1.575	1.000	1.575
F-2047	4:6	+076	82	-013	70	12	1.983	1.333	1.488
F-2071	4:6	+007	63	+036	82	27	1.924	2.000	0.962
F-2074	4:6	-056	41	-035	60	19	1.500	1.800	0.833
F-2076	4:6	+029	68	+027	81	13	1.720	0.400	4.300
F-2077	4:6	-055	42	-101	42	00	2.760	1.000	2.760
F-1837	4:7	+074	81	+101	90	09	2.084	1.600	1.303
F-1967	4:7	+049	76	+043	85	09	4.396	2.600	1.691
F-1960	4:8	-124	23	-073	53	30	2.870	1.600	1.794
F-2056	4:9	+000	59	+017	78	19	2.980	1.400	2.129
F-2075	4:9	-084	32	-124	29	03	1.838	0.750	2.451
F-2035	4:11	-173	09	-194	08	01	4.040	0.400	10.100
F-2057	4:11	+038	72	-063	56	16	4.890	0.800	6.113
F-2079	5:5	+047	75	-028	62	13	1.630	1.600	1.019

*The ranks for which the stability scores are calculated were based on the scores of the 92 boys and 92 girls who participated in the M-F test refinement.

TABLE XIV
TEST SCORES BASED ON THE ORIGINAL ANALYSIS AND
THE FIRST REFINEMENT OF THE STARKWEATHER
M-F TEST
(N = 64)

Sex and Code No.	Age	M-F Scores (Original Analysis)					M-F Scores (First Refinement)				
		Form-A		Form-B		Stability Score	Form-A		Form-B		Stability Score
		Score	Rank*	Score	Rank*		Score	Rank*	Score	Rank*	
M-2052	3:6	+084	78	+241	34	44	+046	76	+091	47	29
M-2051	3:7	+287	32	+305	25	07	+143	38	+167	24	14
M-2083	3:7	+081	80	+109	61	19	+073	68	+047	62	06
M-2082	3:9	+193	57	+190	44	23	+083	64	+098	44	20
M-2038	3:11	+222	52	+159	49	03	+107	53	+074	53	00
M-2060	3:11	+030	86	+072	71	15	+023	83	+040	65	18
M-1997	4:0	+324	25	+127	57	32	+165	26	+039	66	40
M-2061	4:0	-068	90	+382	16	74	-068	91	+181	22	69
M-2070	4:0	+340	20	+421	08	12	+185	17	+227	09	08
M-2008	4:1	+368	11	+032	81	70	+193	14	+019	77	63
M-2055	4:1	+254	43	+136	54	11	+137	39	+086	50	11
M-2068	4:1	+049	84	+254	32	52	-011	86	-106	38	48
M-2073	4:1	-289	92	-288	92	00	-150	92	-148	92	00
M-2069	4:2	+400	09	+448	03	06	+236	02	+239	05	03
M-2084	4:2	+284	34	+080	70	36	+162	28	+015	81	53
M-2044	4:3	+280	36	+239	35	01	+160	30	+132	33	03
M-2045	4:3	+229	49	+389	14	35	+106	55	+197	17	38
M-2067	4:3	+284	35	+081	69	34	+134	40	+027	73	33
M-2065	4:5	+113	73	+054	76	03	+066	69	+015	80	11
M-2033	4:7	+360	13	+097	64	53	+176	22	+056	61	39
M-1899	4:8	+077	83	+205	42	41	+039	81	+073	55	26
M-2043	4:8	+255	42	+245	33	09	+151	35	+143	30	05
M-2050	4:8	+310	27	+363	19	08	+180	20	+214	12	08
M-2062	4:9	+195	56	+090	66	10	+108	52	+031	70	18
M-1739	4:10	+266	38	+272	29	09	+154	33	+150	28	05
M-2036	4:10	+372	10	+232	37	27	+192	15	+105	40	25
M-2059	4:10	+638	02	+506	01	01	+232	03	+287	01	02
M-2064	4:10	+080	81	+292	27	54	+017	85	+182	21	64
M-2072	4:10	+357	14	+108	62	48	+185	18	+046	63	45
M-1998	4:11	+026	88	+171	47	41	-006	89	+112	37	52
M-2048	5:0	+291	31	+384	15	16	+179	21	+227	10	11
F-2058	3:2	-194	27	-365	05	22	-082	35	-178	12	23
F-2039	3:5	-087	45	-057	64	19	-076	37	-031	66	29
F-2040	3:5	+156	85	-022	73	12	+089	84	-008	75	09
F-2054	3:5	-072	47	-225	31	16	-042	48	-130	32	16
F-2032	3:6	-148	34	-044	68	34	-069	41	-020	70	29
F-2037	3:9	-051	49	-063	61	12	-013	58	-036	62	04
F-1887	3:11	-073	46	-081	59	13	-054	46	-034	63	17
F-2046	4:0	-012	61	-054	66	05	-034	50	-057	58	08
F-2066	4:1	+053	68	-178	42	26	+014	66	-101	42	24
F-2034	4:2	+059	73	-202	37	36	+046	76	-090	48	28
F-2041	4:2	+017	66	-126	56	10	-001	61	-070	56	05
F-2049	4:2	-159	31	-266	21	10	-096	31	-148	26	05
F-2081	4:2	-039	54	-164	44	10	-025	53	-100	43	10
F-2031	4:3	+068	75	-162	47	28	+047	77	-097	45	32
F-2042	4:3	+134	83	-103	58	25	+072	82	-065	57	25
F-2063	4:3	-257	14	-164	45	31	-145	18	-098	44	26
F-2078	4:3	-220	23	-283	17	06	-136	23	-156	23	00
F-1943	4:4	-188	29	-355	07	22	-105	28	-181	11	17
F-2053	4:4	-022	57	+078	84	27	-013	59	+063	87	28
F-2080	4:5	-040	53	-178	43	10	-018	55	-086	52	03
F-2047	4:6	+102	80	-033	70	10	+051	79	-025	68	11
F-2071	4:6	-002	63	+065	83	20	+024	68	+036	85	17
F-2074	4:6	-131	36	-077	60	24	-059	44	-034	64	20
F-2076	4:6	+094	78	+082	85	07	+025	69	+033	83	14
F-2077	4:6	-127	38	-185	41	03	-059	43	-135	29	14
F-1837	4:7	+058	72	+160	90	18	+037	72	+068	88	16
F-1967	4:7	+036	67	+036	79	12	+032	71	+019	81	10
F-1960	4:8	-183	30	-133	55	25	-116	27	-082	53	26
F-2056	4:9	-025	55	+036	80	25	-010	60	+010	80	20
F-2075	4:9	-115	41	-267	20	21	-071	39	-126	35	04
F-2035	4:11	-261	13	-291	14	01	-170	13	-200	08	05
F-2057	4:11	+012	64	-152	49	15	+010	64	-072	55	09
F-2079	5:5	+078	76	-044	69	07	+042	74	-038	61	13

*The ranks from which the Stability Scores are calculated were based on the scores of the 92 girls and 92 boys who participated in the M-F test refinement.

TABLE XV

SCORE VALUES OF INDIVIDUAL PICTURES IN FORM-A
OF THE STARKWEATHER M-F TEST AS CALCULATED
IN THE ORIGINAL ANALYSIS AND IN THE
FIRST AND SECOND REFINEMENTS

Form-A Original Analysis (92 Boys; 92 Girls)				Form- A First Refinement (46 Boys; 46 Girls)				Form-A Second Refinement (25 Boys; 25 Girls)			
<u>Page</u>	<u>Pictures*</u>			<u>Page</u>	<u>Pictures</u>			<u>Page</u>	<u>Pictures</u>		
1.	<u>+29</u>	<u>-33</u>	<u>+04</u>	1.	<u>+10</u>	<u>-19</u>	<u>+09</u>	1.	<u>+11</u>	<u>-17</u>	<u>+06</u>
2.	<u>+07</u>	<u>+01</u>	<u>-08</u>	2.	<u>+09</u>	<u>00</u>	<u>-09</u>	2.	<u>+08</u>	<u>+03</u>	<u>-11</u>
3.	<u>-08</u>	<u>+37</u>	<u>-29</u>	3.	<u>00</u>	<u>+18</u>	<u>-18</u>	3.	<u>00</u>	<u>+14</u>	<u>-14</u>
4.	<u>+14</u>	<u>+03</u>	<u>-17</u>	4.	<u>+10</u>	<u>+02</u>	<u>-12</u>	4.	<u>+16</u>	<u>-04</u>	<u>-12</u>
5.	<u>-02</u>	<u>-26</u>	<u>+28</u>	5.	<u>+02</u>	<u>-19</u>	<u>+17</u>	5.	<u>+02</u>	<u>-19</u>	<u>+17</u>
6.	<u>+01</u>	<u>+23</u>	<u>-24</u>	6.	<u>+01</u>	<u>+09</u>	<u>-10</u>	6.	<u>+02</u>	<u>+05</u>	<u>-07</u>
7.	<u>+36</u>	<u>-42</u>	<u>+06</u>	7.	<u>+22</u>	<u>-25</u>	<u>+03</u>	7.	<u>+14</u>	<u>-19</u>	<u>+05</u>
8.	<u>-24</u>	<u>-06</u>	<u>+30</u>	8.	<u>-12</u>	<u>+01</u>	<u>+11</u>	8.	<u>-11</u>	<u>-05</u>	<u>+16</u>
9.	<u>-13</u>	<u>+10</u>	<u>+03</u>	9.	<u>-06</u>	<u>+05</u>	<u>+01</u>	9.	<u>-08</u>	<u>+05</u>	<u>+03</u>
10.	<u>+15</u>	<u>+07</u>	<u>-22</u>	10.	<u>+14</u>	<u>+02</u>	<u>-16</u>	10.	<u>+16</u>	<u>-01</u>	<u>-15</u>
11.	<u>+05</u>	<u>-28</u>	<u>+23</u>	11.	<u>+08</u>	<u>-18</u>	<u>+10</u>	11.	<u>+09</u>	<u>-17</u>	<u>+08</u>
12.	<u>-31</u>	<u>+26</u>	<u>+05</u>	12.	<u>-17</u>	<u>+13</u>	<u>+04</u>	12.	<u>-18</u>	<u>+13</u>	<u>+05</u>
13.	<u>+10</u>	<u>-10</u>	<u>00</u>	13.	<u>+09</u>	<u>-06</u>	<u>-03</u>	13.	<u>+12</u>	<u>-08</u>	<u>-04</u>
14.	<u>-19</u>	<u>+02</u>	<u>+17</u>	14.	<u>-09</u>	<u>00</u>	<u>+09</u>	14.	<u>-06</u>	<u>-02</u>	<u>+08</u>
15.	<u>-21</u>	<u>+27</u>	<u>-06</u>	15.	<u>-11</u>	<u>+15</u>	<u>-04</u>	15.	<u>-16</u>	<u>+18</u>	<u>-02</u>
16.	<u>+24</u>	<u>+03</u>	<u>-27</u>	16.	<u>+15</u>	<u>+03</u>	<u>-18</u>	16.	<u>+15</u>	<u>+04</u>	<u>-19</u>
17.	<u>-03</u>	<u>-31</u>	<u>+34</u>	17.	<u>00</u>	<u>-13</u>	<u>+13</u>	17.	<u>+02</u>	<u>-13</u>	<u>+11</u>
18.	<u>-25</u>	<u>+48</u>	<u>-23</u>	18.	<u>-13</u>	<u>+24</u>	<u>-11</u>	18.	<u>-11</u>	<u>+22</u>	<u>-11</u>
19.	<u>+31</u>	<u>-22</u>	<u>-09</u>	19.	<u>+22</u>	<u>-14</u>	<u>-08</u>	19.	<u>+17</u>	<u>-10</u>	<u>-07</u>
20.	<u>-20</u>	<u>-10</u>	<u>+30</u>	20.	<u>-11</u>	<u>-06</u>	<u>+17</u>	20.	<u>-14</u>	<u>-01</u>	<u>+15</u>

* The score values for the three pictures on each page are presented here in the order in which the pictures themselves appear in the Starkweather M-F Test booklet. For example, on Page 1 of Form-A, from left to right, the pictures were a deer, a baby, and an apple; and their respective values were +29, -33, and +04.

TABLE XVI

SCORE VALUES OF INDIVIDUAL PICTURES IN FORM-B
OF THE STARKWEATHER M-F TEST AS CALCULATED
IN THE ORIGINAL ANALYSIS AND IN THE
FIRST AND SECOND REFINEMENTS

Form-B Original Analysis (92 Boys; 92 Girls)				Form-B First Refinement (46 Boys; 46 Girls)				Form-B Second Refinement (25 Boys; 25 Girls)			
Page	Pictures*			Page	Pictures			Page	Pictures		
1.	<u>+23</u>	<u>-22</u>	<u>-01</u>	1.	<u>+09</u>	<u>-10</u>	<u>+01</u>	1.	<u>+08</u>	<u>-09</u>	<u>+01</u>
2.	<u>-24</u>	<u>-06</u>	<u>+30</u>	2.	<u>-09</u>	<u>-10</u>	<u>+19</u>	2.	<u>-13</u>	<u>-01</u>	<u>+14</u>
3.	<u>-02</u>	<u>+19</u>	<u>-17</u>	3.	<u>+02</u>	<u>+10</u>	<u>-12</u>	3.	<u>+01</u>	<u>+13</u>	<u>-14</u>
4.	<u>+21</u>	<u>-01</u>	<u>-20</u>	4.	<u>+15</u>	<u>-02</u>	<u>-13</u>	4.	<u>+17</u>	<u>-01</u>	<u>-16</u>
5.	<u>-08</u>	<u>-26</u>	<u>+34</u>	5.	<u>-11</u>	<u>-09</u>	<u>+20</u>	5.	<u>-04</u>	<u>-13</u>	<u>+17</u>
6.	<u>-10</u>	<u>+25</u>	<u>-15</u>	6.	<u>-05</u>	<u>+20</u>	<u>-15</u>	6.	<u>-04</u>	<u>+14</u>	<u>-10</u>
7.	<u>+36</u>	<u>-33</u>	<u>-03</u>	7.	<u>+20</u>	<u>-16</u>	<u>-04</u>	7.	<u>+16</u>	<u>-13</u>	<u>-03</u>
8.	<u>-13</u>	<u>-20</u>	<u>+33</u>	8.	<u>-03</u>	<u>-10</u>	<u>+13</u>	8.	<u>-04</u>	<u>-12</u>	<u>+16</u>
9.	<u>-01</u>	<u>-15</u>	<u>+16</u>	9.	<u>-06</u>	<u>-05</u>	<u>+11</u>	9.	<u>-07</u>	<u>-06</u>	<u>+13</u>
10.	<u>+04</u>	<u>-02</u>	<u>-02</u>	10.	<u>+06</u>	<u>+02</u>	<u>-08</u>	10.	<u>+08</u>	<u>+03</u>	<u>-11</u>
11.	<u>+07</u>	<u>-37</u>	<u>+30</u>	11.	<u>+07</u>	<u>-23</u>	<u>+16</u>	11.	<u>+08</u>	<u>-22</u>	<u>+14</u>
12.	<u>-12</u>	<u>+01</u>	<u>+11</u>	12.	<u>-05</u>	<u>-01</u>	<u>+06</u>	12.	<u>-06</u>	<u>-02</u>	<u>+08</u>
13.	<u>+34</u>	<u>-39</u>	<u>+05</u>	13.	<u>+18</u>	<u>-23</u>	<u>+05</u>	13.	<u>+15</u>	<u>-20</u>	<u>+05</u>
14.	<u>-25</u>	<u>-13</u>	<u>+38</u>	14.	<u>-12</u>	<u>-06</u>	<u>+18</u>	14.	<u>-08</u>	<u>-11</u>	<u>+19</u>
15.	<u>-02</u>	<u>+16</u>	<u>-14</u>	15.	<u>+03</u>	<u>+12</u>	<u>-15</u>	15.	<u>+04</u>	<u>+11</u>	<u>-15</u>
16.	<u>+24</u>	<u>00</u>	<u>-24</u>	16.	<u>+09</u>	<u>+03</u>	<u>-12</u>	16.	<u>+14</u>	<u>+01</u>	<u>-15</u>
17.	<u>+13</u>	<u>-39</u>	<u>+26</u>	17.	<u>+06</u>	<u>-23</u>	<u>+17</u>	17.	<u>+03</u>	<u>-18</u>	<u>+15</u>
18.	<u>-14</u>	<u>+18</u>	<u>-04</u>	18.	<u>-07</u>	<u>+11</u>	<u>-04</u>	18.	<u>-10</u>	<u>+15</u>	<u>-05</u>
19.	<u>+46</u>	<u>-37</u>	<u>-09</u>	19.	<u>+27</u>	<u>-18</u>	<u>-09</u>	19.	<u>+18</u>	<u>-12</u>	<u>-06</u>
20.	<u>-26</u>	<u>-24</u>	<u>+50</u>	20.	<u>-13</u>	<u>-13</u>	<u>+26</u>	20.	<u>-13</u>	<u>-07</u>	<u>+20</u>

*The score values for the three pictures on each page are presented here in the order in which the pictures themselves appear in the Starkweather M-F Test booklet. For example, on page 1 of Form-B, from left to right, the pictures were a deer, a baby, and a pear; and their respective values were +23, -22, and -01.

TABLE XVII
CALCULATION OF SCORES FOR INDIVIDUAL PICTURES
IN FORM-A OF THE STARKWEATHER M-F TEST

Page	Form-A Original Analysis (92 Boys; 92 Girls)			Form-A First Refinement (46 Boys; 46 Girls)			Form-A Second Refinement (23 Boys; 23 Girls)		
	Range of Scores Possible: -482 to +499 Actual: -416 to +460			Range of Scores Possible: -276 to +272 Actual: -243 to +261			Range of Scores Possible: -255 to +262 Actual: -241 to +254		
	Pictures	Pictures	Pictures						
1.	Boys: Girls: Score:	65 09 18 36 42 14 +29 -33 +04	27 03 14 17 24 03 +10 -19 +09	18 00 07 07 17 01 +11 -17 +06					
2.	Boys: Girls: Score:	31 28 33 24 27 11 +07 +01 -08	18 15 13 09 13 22 +09 00 -09	12 10 03 04 13 22 +08 +03 -11					
3.	Boys: Girls: Score:	09 72 11 17 13 40 -08 +37 -29	08 31 07 08 13 23 00 +18 -18	04 21 00 04 07 14 00 +14 -14					
4.	Boys: Girls: Score:	42 30 20 28 27 37 +14 +03 -17	21 18 07 11 16 19 +10 +02 -12	17 06 02 01 10 14 +16 -04 -12					
5.	Boys: Girls: Score:	23 11 38 23 37 30 -02 -26 +28	11 03 32 08 22 13 +02 -19 +17	04 01 20 02 20 03 +02 -19 +17					
6.	Boys: Girls: Score:	36 46 10 35 23 34 -01 +23 -24	19 19 08 18 10 18 +01 +09 -10	10 12 03 08 07 10 +02 +05 -07					
7.	Boys: Girls: Score:	48 09 35 12 51 29 +36 -42 +06	26 03 17 04 28 14 +22 -25 +03	14 00 11 00 19 06 +14 -19 +05					
8.	Boys: Girls: Score:	10 16 66 36 22 36 -24 -06 +30	05 09 32 17 08 21 -12 +01 +11	01 02 22 12 07 06 -11 -05 +16					
9.	Boys: Girls: Score:	19 57 16 32 47 13 -13 +10 +03	11 26 09 17 21 08 -06 +05 +01	02 16 07 10 11 04 -08 +05 +03					
10.	Boys: Girls: Score:	66 15 11 51 08 33 +15 +07 -22	35 07 04 21 05 20 +14 +02 -16	22 01 02 06 02 17 +16 -01 -15					
11.	Boys: Girls: Score:	24 33 35 19 61 12 +05 -28 +23	16 14 16 08 32 06 +08 -18 +10	12 04 09 03 21 01 +09 -17 +08					
12.	Boys: Girls: Score:	07 61 24 38 35 19 -31 +26 +05	04 29 13 21 16 09 -17 +13 +04	01 17 07 19 04 02 -18 +13 +05					
13.	Boys: Girls: Score:	52 23 17 42 33 17 +10 -10 00	30 09 07 21 15 10 +09 -06 -03	19 04 02 07 12 06 +12 -08 -04					
14.	Boys: Girls: Score:	02 64 26 21 62 09 -19 +02 +17	02 32 12 11 32 03 -09 00 +09	00 17 08 06 19 00 -06 -02 +08					
15.	Boys: Girls: Score:	40 40 12 61 13 18 -21 +27 -06	16 23 07 27 08 11 -11 +15 -04	04 18 03 20 00 05 -16 +18 -02					
16.	Boys: Girls: Score:	45 17 30 21 14 57 +24 +03 -27	25 11 10 10 08 28 +15 +03 -18	17 06 02 02 02 21 +15 +04 -19					
17.	Boys: Girls: Score:	38 06 48 41 37 14 -03 -31 +34	21 02 23 21 15 10 00 -13 +13	12 00 13 10 13 02 +02 -13 +11					
18.	Boys: Girls: Score:	04 82 06 29 34 29 -25 +48 -23	01 41 04 14 17 15 -13 +24 -11	00 25 00 11 03 11 -11 +22 -11					
19.	Boys: Girls: Score:	50 28 14 19 50 23 +31 -22 -09	28 11 07 06 25 15 +22 -14 -08	18 03 04 01 13 11 +17 -10 -07					
20.	Boys: Girls: Score:	08 33 51 28 43 21 -20 -10 +30	05 16 25 16 22 08 -11 -06 +17	01 08 16 15 09 01 -14 -01 +15					

TABLE XVIII

**CALCULATION OF SCORES FOR INDIVIDUAL PICTURES
IN FORM-B OF THE STARKWEATHER M-F TEST**

Page	Form-B Original Analysis (92 Boys; 92 Girls) <u>Range of Scores</u> Possible: -430 to +506 Actual: -461 to +534				Form-B First Refinement (46 Boys; 46 Girls) <u>Range of Scores</u> Possible: -244 to +287 Actual: -262 to +303				Form-B Second Refinement (25 Boys; 25 Girls) <u>Range of Scores</u> Possible: -241 to +268 Actual: -260 to +285			
	Pictures				Pictures				Pictures			
1.	Boys:	53	13	26	25	06	15	14	03	08		
	Girls:	30	35	27	16	16	14	06	12	07		
	Score:	+23	-22	-01	+09	-10	+01	+08	-09	+01		
2.	Boys:	15	17	60	09	05	32	02	04	19		
	Girls:	39	23	30	18	13	13	15	05	05		
	Score:	-24	-06	+30	-09	-10	+19	-13	-01	+14		
3.	Boys:	06	40	46	06	21	19	02	15	08		
	Girls:	08	21	63	04	11	31	01	02	22		
	Score:	-02	+19	-17	+02	+10	-12	+01	+13	-14		
4.	Boys:	47	11	34	28	04	14	20	02	03		
	Girls:	26	12	54	13	06	27	03	03	19		
	Score:	+21	-01	-20	+15	-02	-13	+17	-01	-16		
5.	Boys:	26	15	51	08	12	26	04	02	19		
	Girls:	34	41	17	19	21	06	08	15	02		
	Score:	-08	-26	+34	-11	-09	+20	-04	-13	+17		
6.	Boys:	28	41	23	10	24	12	05	17	03		
	Girls:	38	16	38	15	04	27	09	03	13		
	Score:	-10	+25	-15	-05	+20	-15	-04	+14	-10		
7.	Boys:	48	09	35	25	04	17	17	00	08		
	Girls:	12	42	38	05	20	21	01	13	11		
	Score:	+36	-33	-03	+20	-16	-04	+16	+13	-03		
8.	Boys:	13	19	60	06	11	29	00	03	22		
	Girls:	26	39	27	09	21	16	04	15	06		
	Score:	-13	-20	+33	-03	-10	+13	-04	-12	+16		
9.	Boys:	26	32	34	11	16	19	04	07	14		
	Girls:	27	47	18	17	21	08	11	13	01		
	Score:	-01	-15	+16	-06	-05	+11	-07	-06	+13		
10.	Boys:	34	12	46	18	08	20	10	05	10		
	Girls:	30	14	48	12	06	28	02	02	21		
	Score:	+04	-02	-02	+06	+02	-08	+08	+03	-11		
11.	Boys:	24	25	43	12	13	21	08	01	16		
	Girls:	17	62	13	05	36	05	00	23	02		
	Score:	+07	-37	+30	+07	-23	+16	+08	-22	+14		
12.	Boys:	15	56	21	08	27	11	04	13	08		
	Girls:	27	55	10	13	28	05	10	15	00		
	Score:	-12	+01	+11	-05	-01	+06	-06	-02	+08		
13.	Boys:	58	14	20	28	05	13	17	02	06		
	Girls:	24	53	15	10	28	08	02	22	01		
	Score:	+34	-39	+05	+18	-23	+05	+15	-20	+05		
14.	Boys:	06	23	63	02	13	31	01	03	21		
	Girls:	31	36	25	14	19	13	09	14	02		
	Score:	-25	-13	+38	-12	-06	+18	-08	-11	+19		
15.	Boys:	28	43	21	12	26	08	07	15	03		
	Girls:	30	27	35	09	14	23	03	04	18		
	Score:	-02	+16	-14	+03	+12	-15	+04	+11	-15		
16.	Boys:	59	17	16	25	10	11	19	04	02		
	Girls:	35	17	40	16	07	23	05	03	17		
	Score:	+24	00	-24	+09	+03	-12	+14	+01	-15		
17.	Boys:	40	18	34	20	04	22	08	02	15		
	Girls:	27	57	08	14	27	05	05	20	00		
	Score:	+13	-39	+26	+06	-23	+17	+03	-18	+15		
18.	Boys:	15	57	20	07	28	11	03	19	03		
	Girls:	29	39	24	14	17	15	13	04	08		
	Score:	-14	+18	-04	-07	+11	-04	-10	+15	-05		
19.	Boys:	53	28	11	30	13	03	18	07	00		
	Girls:	07	65	20	03	31	12	00	19	06		
	Score:	+46	-37	-09	+27	-18	-09	+18	-12	-06		
20.	Boys:	06	21	65	04	08	34	00	04	21		
	Girls:	32	45	15	17	21	08	13	11	01		
	Score:	-26	-24	+50	-13	-13	+26	-13	-07	+20		

TABLE XIX
DESCRIPTIVE DATA AND TEST SCORES OF INDIVIDUAL
CHILDREN PARTICIPATING IN A VALIDATION STUDY
OF THE STARKWEATHER M-F TEST
(N = 90)

Sex and Code Number	M-F Test Scores			Sex and Code Number	M-F Test Scores		
	Form A	Form B	Validation		Form A	Form B	Validation
M-1974	+254	+240	+247	F-1927	-241	-241	-269
M-1980	+219	+224	+296	F-1944	-221	-189	-263
M-1917	+212	+159	+208	F-1752	-216	-216	-167
M-2022	+207	+115	+279	F-1931	-205	-139	-210
M-2004	+201	+202	+236	F-1932	-188	-159	-271
M-1638	+199	+201	+325	F-1937	-182	-115	-249
M-2008	+195	+038	+123	F-1969	-172	-227	-318
M-1981	+195	+132	+288	F-1962	-170	-141	-268
M-1988	+189	+196	+137	F-1929	-161	-232	-232
M-1989	+189	+176	+298	F-1945	-161	-137	-252
M-2018	+168	+105	+211	F-1951	-141	-154	-269
M-2009	+166	+118	+197	F-1930	-138	-208	-304
M-2010	+163	+024	+162	F-1963	-133	-137	-280
M-1984	+156	+166	+137	F-1954	-130	-123	-133
M-1997	+155	+055	+203	F-1960	-124	-073	-218
M-1982	+146	+174	+164	F-1950	-123	-146	-262
M-2014	+143	+124	+247	F-1955	-123	-135	-169
M-2015	+137	+081	+222	F-1943	-102	-174	-103
M-2019	+128	+115	+151	F-1872	-100	-120	-259
M-1893	+118	-050	+208	F-1952	-084	-085	-264
M-2001	+117	+224	+283	F-1933	-083	-153	-264
M-1892	+115	+197	+311	F-1894	-081	-121	-143
M-2020	+114	+139	+284	F-1911	-056	-094	-249
M-2003	+106	+097	+222	F-1940	-054	-026	-148
M-1985	+093	+016	+122	F-1946	-053	-108	-164
M-1919	+089	+050	+285	F-1938	-045	+017	-101
M-1975	+085	+055	+214	F-1961	-037	-004	-200
M-1915	+085	+059	+174	F-1924	-015	-110	-038
M-1995	+084	+011	+173	F-1965	-013	-101	-220
M-1749	+083	+148	+156	F-1953	+001	+009	+006
M-1979	+070	+011	+154	F-1728	+001	+011	-206
M-1976	+067	+059	+222	F-1949	+003	-090	-189
M-2023	+057	+028	+190	F-1973	+010	-081	-140
M-1990	+054	+124	+215	F-1936	+039	+022	-077
M-2002	+052	+001	+104	F-1939	+046	+063	+015
M-1992	+049	+097	+139	F-1967	+049	+043	-236
M-2021	+048	-043	+119	F-1925	+058	-113	-144
M-1843	+046	+062	+208	F-1926	+067	+043	+038
M-1994	+043	+001	+149	F-1964	+095	-026	-064
M-1999	+042	+065	+115	F-1942	+098	+039	+060
M-2006	+041	+027	+202	F-1959	+114	000	-048
M-2007	+040	-013	+155	F-1896	+135	+071	+028
M-2016	+006	-058	+293	F-1957	+135	-074	-095
M-1998	-008	+079	+134	F-1968	+138	+116	+002
M-1918	-036	+072	+133	F-1934	+147	+067	+144

APPENDIX B

STARKWEATHER MASCULINITY-FEMININITY TEST
FOR PRESCHOOL CHILDREN¹

A Test of Sex-Role Identification

developed by

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Stillwater, Oklahoma

The Starkweather Masculinity-Femininity Test (M-F Test) measures the masculine and feminine preferences of preschool children. The test is designed so that the evaluation of what is masculine and what is feminine is based on the actual choices of the children being tested. The assumption underlying this design is that the behavior of boys is boy-behavior (masculine) and the behavior of girls is girl-behavior (feminine).

Two comparable forms of the Starkweather M-F Test have been developed, Form-A and Form-B. The materials for each form include a picture booklet of 20 pages (the test booklet) and individually mounted pictures, identical to those in the booklet. The pages in the test booklet are of colored hi-gloss paper approximately 3" x 8" in size. A variety of colors is available and no color is used for more than two pages in either booklet. On each page there are three pictures (gummed seals) which are arbitrarily selected as masculine, feminine, and neutral. This placement of masculine and feminine pictures on each page is done for the purpose of maximizing the power of the test to discriminate between the preferences of boys and girls. The pictures themselves are commercially produced gummed seals and are selected to include a variety of objects such as animals, cars, babies, flowers, cowboys, and Mother Goose figures. The individually mounted pictures are placed on small pieces of hi-gloss paper, approximately 2" x 3", which are the same color as the test booklet pages on which the pictures appear.

The administration of the two forms of the Starkweather M-F Test, as a test and a retest with an interval of no more than one week between the two, provides (1) two M-F test scores, which indicate the extent to which a child's picture preferences are masculine or feminine, and (2) a stability score, which indicates the stability of a child's preferences from one test to the next and which is an index of the extent to which a child has identified with the sex-role suggested by his expressed masculinity or femininity. These scores are illustrated in Table I.

¹The Starkweather M-F Test was developed as part of a creativity research program supported by the Research Foundation at Oklahoma State University, Stillwater, Oklahoma.

Administration

The Starkweather M-F Test is designed for administration to individual children. Each child is introduced to the test by being told that he is going to make a picture booklet of his very own. He is then shown the first page of the test booklet and is asked, "Which one of these pictures do you want?" The child makes his selection and is then given an identical picture, one of the individually mounted pictures, as the first page for his own picture book. This procedure is repeated until the child has chosen one picture from each of the 20 pages in the test booklet.

The two forms of the M-F Test are administered during two separate sessions with the child. Form-A is always administered first, and then after an interval of no more than one week, Form-B is administered.

Scoring

The scoring of the Starkweather M-F Test is designed to eliminate the bias of adult judgments. Each picture in the test booklet is assigned a score, a masculine or feminine value, which is determined by the actual choices of the children in the study. For example, a picture chosen by a majority of the boys and by few of the girls is weighted heavily as masculine. The M-F score for an individual child is then calculated by adding the masculine and feminine values of all the pictures that he has chosen.

The method of calculating the masculine and feminine values of individual pictures is illustrated in Figures 1 and 2. The page shown in Figure 1 is from an M-F Test booklet used in several studies in which an equal number of boys and girls participated. When this is the case, the score values assigned to the pictures are calculated by subtracting the number of girls from the number of boys who chose each picture. In the 1968 DKM Study, the pony, chosen by 63 boys and 23 girls, was assigned a masculine value of +40; and the baby, chosen by 15 boys and 46 girls, was assigned a feminine value of -31. These assigned values were only for use in scoring the M-F responses of the children who participated in that study. In the 1969 KGM Study, the assigned numerical values for these same pictures were smaller because fewer children participated in the study; nevertheless, the relative values remained the same, the pony was masculine (+20) and the baby was feminine (-17).

When an unequal number of boys and girls participate in a study, weighting is necessary in calculating the values to be assigned to the individual pictures. In Figure 2, a page from the M-F Test booklet used in the 1967 SKW Study is illustrated. In this study there were 17 boys and only 15 girls. Weighting to correct for this inequality was achieved by multiplying the number of girls who chose each picture by 1.133; n.b., $17 \div 15 = 1.133$. The weighted scores thus obtained for

the girls were then subtracted from the scores for the boys. In Figure 2, the picture of the baby was chosen by three of the 17 boys and by seven of the 15 girls. When the number of girls was weighted, i.e., multiplied by 1.133, the assigned value for the picture of the baby became -4.93.

The attached score sheet for Child M-2059 illustrates the way in which a child's picture choices are recorded and the way in which his M-F score is calculated from the assigned values of the pictures he chose. This child was one of the high-masculine boys in the 1973 SKD Study, in which 92 boys and 92 girls participated.

Stability scores are calculated from the scores earned on Form-A and Form-B of the M-F Test. For each of the two forms, the scores of boys and girls are ranked separately. Then for each child the difference between his rank on Form-A and his rank on Form-B indicates his stability score, i.e., indicates the stability of his preferences from one test to the next. The two ranks, and not the two M-F scores, must be used in this calculation. The M-F scores for each form of the test are based on the assigned values of the pictures in that form, and therefore cannot be directly compared. Examples of stability scores are presented in Table I.

Reliability

A split-half correlation, using the Spearman-Brown modified formula, was used to check the reliability (internal consistency) of the two forms of the Starkweather M-F Test. In this analysis, for the first and last ten pages of the test booklets, scores were calculated which indicated the frequency with which a child chose pictures which were preferred by children of his own sex. For example, on Form-A of the test, Child F-1954 chose the picture preferred by girls five times during the first half of the test and eight times during the last half. This child's M-F score was -130, a moderately high-feminine score.

In Table II, correlation coefficients for the two forms of the M-F Test are presented. Both forms show statistically significant reliability when the responses of the boys and girls are combined. However, when the data for boys and girls are analyzed separately, the correlation coefficients indicate that the test has greater reliability for the girls than for the boys.

These findings are interpreted as indicating a need for further refinement of the M-F Test with emphasis on the inclusion of more pictures for which boys show a strong preference. Commercial gummed seals, currently used in the test, seem to provide more sex-appropriate pictures for girls than for boys. On the other hand, it is possible that the sex differences which are evident in these findings may be a reflection of differences which exist in sex-role identification in early childhood.

Validity

A unique quality of the Starkweather M-F Test is that the bias of adult judgments is avoided in the scoring, an achievement which has not been possible when researchers have used other measuring devices. For the most part, where young children are concerned, masculinity and femininity are judged on the basis of behavior and appearance. A girl is judged to be a tomboy if her preferred activities and her appearance are more "appropriate" for boys than for girls. The rather common acceptance of judgments such as this suggested the possibility of designing a validation test which would measure masculinity and femininity as culturally defined. The validity of the M-F Test would be demonstrated if the test scores, free of adult bias, were in agreement with the cultural expectations for young children.

A validation booklet was constructed similar in design to the M-F Test booklet. It consisted of 24 pages on which clothing and toys were pictured. The booklet was shown to 20 middle-class adults (10 men and 10 women) who were asked to indicate the most masculine and the most feminine picture on each page. The booklet was then shown to 90 middle-class children, 45 boys and 45 girls, who were asked to indicate their picture preference on each page.

The method of scoring the validation test was identical to the method of scoring the M-F Test. The masculine or feminine value of each picture was calculated from the adults' responses and again from the children's responses. These two sets of scores were then compared. Of the 24 pictures selected as masculine by the adults, the children selected 20 as masculine and 04 as neutral; and of the 24 pictures selected as feminine by the adults, the children selected 21 as feminine and 03 as neutral. Among these middle-class adults and children there was high agreement about the sex-appropriateness of the clothing and toys pictured in the validation booklet.

In order to validate the Starkweather M-F Test, i.e., in order to answer the question of whether the test actually does measure masculinity and femininity, the children's scores on the validation test were compared with their scores on both forms of the M-F Test. Spearman rank correlations between validation test scores and M-F Test scores are presented in Table III. For the boys and for the girls, these correlations were statistically significant. Both forms of the Starkweather M-F Test are accepted as valid indicators of young children's masculinity and femininity.

Sex-Role Identification

When the masculinity or femininity expressed by a child is stable, that child has identified his particular sex-role. For example, the child who consistently shows low masculinity has identified his sex-role just as clearly as the child who consistently shows high

masculinity. The role may change over a period of time, but the stability of the role at a given time implies something about the child's self-concept and the security he finds in the role at that time. On the other hand, the child who is inconsistent in his expression of masculinity or femininity cannot have identified a sex-role in which he feels comfortable and secure.

The Starkweather M-F Test measures a child's sex-role identification in terms of his expressed masculine or feminine preferences and the stability of these preferences from test to retest. This operational definition of sex-role identification can be illustrated by the test scores of specific children presented in Table I.

Child M-2059 was a child who had identified his sex-role as high-masculine. His M-F score of +224 on Form-A was high-masculine, as was his score of +268 on Form-B. The difference between his rank of 04 on Form-A and 01 on Form-B gave him a stability score of 03, indicating that he was stable in his high-masculine preferences from test to retest, or in other words, indicating high-masculine sex-role identification.

Child F-2046 was a child who had identified her sex-role as low-feminine. Her M-F score of -026 on Form-A was low-feminine, as was her score of -053 on Form-B. The difference between her rank of 52 on Form-A and 58 on Form-B gave her a stability score of 06, indicating that she was stable in her low-feminine preferences from test to retest, or in other words, indicating low-feminine sex-role identification.

Child M-2008 was a child who had not identified his sex-role. His score of +195 on Form-A was high-masculine and his score of +039 on Form-B was low-masculine. This lack of stability from test to retest was clearly indicated by his change in rank from 14 on Form-A to 65 on Form-B -- a change which resulted in a stability score of 51 and indicated a lack of sex-role identification.

TABLE I
EXAMPLES OF STABILITY SCORES CALCULATED FROM
RESPONSES TO FORM-A AND FORM-B OF
THE STARKWEATHER M-F TEST

	Form-A		Form-B		Stability Score
	Score	Rank*	Score	Rank*	
<u>High Stability</u>					
Child M-2059	+224	04	+268	01	03
Child M-1915	+085	57	+059	56	01
Child F-1752	-216	03	-216	05	02
Child F-2046	-026	52	-053	58	06
<u>Low Stability</u>					
Child M-2008	+195	14	+039	65	51
Child M-1978	+053	70	+230	03	67
Child F-1958	-133	20	-019	66	46
Child F-1966	+010	66	-127	28	38

* Each child's rank is his or her position in a group of 92 like-sexed children.

TABLE II

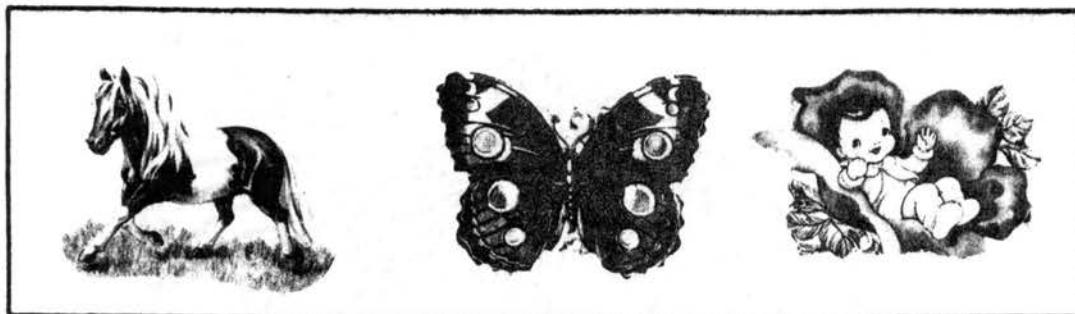
RELIABILITY OF THE STARKWEATHER M-F TEST: SPLIT-
 HALF CORRELATIONS BASED ON THE RESPONSES OF
 THE MORE STABLE CHILDREN IN THE STUDY

	N	rho	
M-F Test: Form-A			
Boys	24	+0.161	n.s.
Girls	24	+0.409	$p < .05$
Total	48	+0.304	$p < .05$
M-F Test: Form-B			
Boys	24	+0.434	$p < .05$
Girls	24	+0.609	$p < .01$
Total	48	+0.530	$p < .01$

TABLE III

SPEARMAN RANK CORRELATIONS BETWEEN M-F TEST
 SCORES AND VALIDATION TEST SCORES

	N	Form-A	Form-B
Boys	45	+0.430 $p < .01$	+0.470 $p < .01$
Girls	45	+0.756 $p < .001$	+0.717 $p < .001$



<u>1968 DKM Study</u>	<u>Pony</u>	<u>Butterfly</u>	<u>Baby</u>
Boys (N = 90)	63	12	15
Girls (N = 90)	23	21	46
	<hr/>	<hr/>	<hr/>
Assigned Value	+40	-09	-31

<u>1969 KGM Study</u>	<u>Pony</u>	<u>Butterfly</u>	<u>Baby</u>
Boys (N = 48)	35	09	04
Girls (N = 48)	15	12	21
	<hr/>	<hr/>	<hr/>
Assigned Value	+20	-03	-17

Figure 1. Method of calculating the masculine and feminine values for individual pictures in the Starkweather M-F Test.



<u>1967 SKW Study</u>	<u>Rooster</u>	<u>Chipmunk</u>	<u>Baby</u>
Boys (N = 17)	5	9	3
Girls (N = 15)	5	3	7
Girls (weighted)	5.67	3.40	7.93
	<hr/>	<hr/>	<hr/>
Assigned Value	-0.67	+5.60	-4.93

Figure 2. Method of calculating the masculine and feminine values for individual pictures in the Starkweather M-F Test when weighting of scores is necessary.

STARKWEATHER MASCULINITY-FEMININITY TEST
FOR PRESCHOOL CHILDREN

Name Child M-2059 No. M-2059

Date 10-25-72 Birthdate 12-26-67 Age 4:10

Testing Place Village Center Test Form A

<u>Pictures</u>			<u>Score</u>	<u>Pictures</u>			<u>Score</u>
1.	✓	—	<u>+11</u>	11.	—	✓	<u>+08</u>
2.	—	✓	<u>+03</u>	12.	—	✓	<u>+13</u>
3.	—	✓	<u>+14</u>	13.	—	✓	<u>-04</u>
4.	✓	—	<u>+16</u>	14.	—	✓	<u>+08</u>
5.	—	✓	<u>+17</u>	15.	—	✓	<u>+18</u>
6.	✓	—	<u>+02</u>	16.	✓	—	<u>+15</u>
7.	✓	—	<u>+14</u>	17.	—	✓	<u>+11</u>
8.	—	✓	<u>+16</u>	18.	—	✓	<u>+22</u>
9.	✓	—	<u>-08</u>	19.	✓	—	<u>+17</u>
10.	✓	—	<u>+16</u>	20.	—	✓	<u>+15</u>

TOTAL: +224

APPENDIX C

STARKWEATHER INDEPENDENCE TEST

FOR PRESCHOOL CHILDREN¹

developed by

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Stillwater, Oklahoma

The Starkweather Independence Test is designed to measure the behavioral independence of preschool children. Independence is operationalized as the relationship between the level of difficulty at which a child chooses to work and the extent to which he accepts help. The criteria for the instrument were (1) that the task be of interest to young children, (2) that it appear easy and yet be difficult, (3) that it provide opportunity for help to be offered to the child, (4) that it provide the child with experiences of success, and (5) that it be objectively scored. A series of nine puzzle boxes met these criteria. The boxes and puzzle pieces are made of one-half inch plywood, and the top surface of the puzzle pieces is painted so that the upright side can be identified easily. The nine puzzle boxes are illustrated in Figure 1.

Administration

Two of the 5-piece puzzle boxes are used in a preliminary demonstration of the task for the child. The experimenter places one box before the child and one before herself. She then explains, "These puzzles are different from picture puzzles. See, the pieces don't fit together." With her fingertips, the experimenter may then wiggle the pieces in the box to demonstrate their loose fit. "There are five pieces in my box. (She counts them.) Do you have five pieces?" In this way, the experimenter encourages the child to touch and count the pieces in his box. "Let's dump the pieces out," This is done by turning the puzzle box over completely so that the pieces are on the table with the colored side down. "Now let's turn the pieces over." The experimenter turns her pieces over so that the colored sides show and the child does the same with his. "Now, you try to get all the pieces back in your box, and I'll try to get all the pieces back in my box." The experimenter then slowly puts the pieces back into her box, using only one hand in order not to obstruct the child's view of what she is doing, and working in such a way that she makes several attempts before

¹The Starkweather Independence Test was developed as a part of the creativity research supported by the Research Foundation at Oklahoma State University.

completing the box correctly. As the child works with his demonstration box, the experimenter tells him, "I'll help if you want me to."

The demonstration provides each child with an opportunity to become familiar with the task, to learn that he can have help if he wants it, and to know that the puzzle boxes are a task at which he can succeed. As long as these purposes are fulfilled, changes may be made in the demonstration procedure to meet the needs and interests of individual children. For example, some children want to watch the experimenter complete her puzzle box before attempting their own; and still other children want to work both demonstration boxes themselves.

Following the demonstration, the seven remaining puzzle boxes are presented to the child, one at a time. The order or presentation is such that the child begins and ends with an easy puzzle box which assures him of success. With the first four boxes, the difficulty gradually increases, and with the last three boxes the difficulty gradually decreases. The number of puzzle pieces in each box is two, three, four, five, and then four, three and two, in that order.

As the puzzle boxes in the test proper are presented, the child is encouraged to count the pieces just as he did in the demonstration. This is done in order to be sure that he looks at the box carefully before the pieces are removed. He is then told to dump the pieces out and turn them colored side up. The experimenter then tells the child to put the pieces back in the box, and adds, "I'll help if you want me to."

Recording the Child's Attempts

The experimenter counts each puzzle piece that the child attempts to put into the box, the counting being done as the child releases each piece. The child's action is completed when it is counted.

Because of the variety of ways in which children work the puzzle boxes, several specific directions for recording attempts are described below:

1. A child may try to place one puzzle piece in several different positions in the box. His attempt is counted only when he has removed his hand from the piece, and his effort is then recorded as one attempt no matter how many moves he made with that one piece before releasing it.
2. A child may move a puzzle piece which was already placed in the box. When the child removes his hand from the piece, the move is then recorded as one attempt.
3. A child may move several puzzle pieces simultaneously, changing their position in the box, and doing so with one hand or with both hands. When he removes his hands from the pieces, this is

recorded as one attempt.

4. A child may try to match two pieces or fit two pieces together either on the table surface or inside the box. This is recorded as one attempt.

5. Some children take time out to play with the puzzle pieces, particularly if they remind them of animals or toys. Such activity is not included in the scoring inasmuch as it is not a part of the child's attempts to solve the puzzle box.

Method and Frequency of Offering Help

Help is offered to the child at regular intervals during the independence test, and it is also offered whenever the child's behavior suggests that he may need help. Specific directions for offering help are described below:

1. Help is offered after every five attempts the child makes while working a puzzle box. The offer is verbal. For example, "Would you like me to help?"

2. A child may ask a question or make a comment which appears to be a request for help, such as, "I wonder where this piece goes." To all such questions or comments, the experimenter responds with a verbal offer of help, "Shall I help?"

3. A child may sit quietly staring at the box or at the puzzle pieces. This quiet staring is in marked contrast to a child's studying the pieces in an attempt to solve the puzzle; and it may occur immediately after a box has been presented or it may occur after the child has made a few attempts with no apparent success. In either case, when this type of behavior is observed, the experimenter waits five seconds and then offers help. Offers of help made under these circumstances serve to bring the child back to the task at hand, and he either renews his own efforts or immediately accepts the offered help.

4. A child may respond to an offer of help by saying "Yes" while continuing to work on the puzzle box. In spite of his verbal acceptance of help, help is not given the child unless he stops his own efforts in order to permit help.

5. Help is always given to a child if, when he is offered help, he stops his work on the puzzle box in order to receive help. The child may or may not respond verbally, but he must stop his own independent efforts or no help is given.

Help is given to the child whenever he clearly accepts an offer of help, and it is also given when he specifically requests help. To give help, the experimenter removes all incorrectly placed pieces from the

puzzle box and then puts one piece in the box correctly. This procedure is repeated each time help is given. The order in which the puzzle pieces are put into the box by the experimenter, as help is given, is illustrated in Figure 1. If, as occasionally happens, a child wants help with the last piece to be placed in a box, the experimenter positions that piece on the edge of the box so that the child can slide it into place and thus complete the puzzle himself.

Scoring

The scoring of the Starkweather Independence Test is based on (1) the number of puzzle pieces in each box, (2) the number of pieces the child attempts to put into each box, and (3) the number of times the child accepts help. Each child's independence score indicates the relationship between the level of difficulty at which he chooses to work and the extent to which he accepts help.

The score sheet for Child M-1624 is used to illustrate the method of recording and scoring. The vertical marks indicate the number of attempts the child made in completing each puzzle box. Child M-1624 made 11 attempts in completing the first 3-piece puzzle box and made 45 attempts in completing the first 4-piece puzzle box. Each "o" indicates a point at which the experimenter offered to help the child; each "?" indicates a point at which the child's behavior suggested that he might want help; and each "h" indicates that help was given. In the illustration, Child M-1624 was offered help (o) after making five attempts to complete the first 3-piece puzzle box and again after making five more attempts. He accepted help at that time and was then able to complete the box by putting in the last piece. When Child M-1624 was working on the first 4-piece puzzle box, his behavior after nine attempts suggested that he might want help (?), and the experimenter offered help at that time (o), but the child refused it. In completing that particular puzzle box, the child made a total of 45 attempts, was offered help nine times, and accepted help only twice.

The calculation of the independence score takes into consideration all of the puzzle boxes with which the child has some difficulty. These are the puzzle boxes for which the child's attempts exceed the number of pieces in the box and the puzzle boxes with which the child accepts help. For Child M-1624 these include all of the puzzle boxes except those with only two pieces.

Steps involved in figuring the independence score are as follows:

(1) The level of difficulty at which the child chooses to work each puzzle box is calculated by dividing the number of attempts by the number of puzzle pieces in the box. For Child M-1624, the level of difficulty for the first 3-piece puzzle box was 11 divided by 3, or 3.667,

(2) The mean level of difficulty is calculated by summing the levels of difficulty and dividing this figure by the number of puzzle boxes included in the scoring. For Child M-1624, the sum of the levels of difficulty was 27,534. This sum divided by 5 yields a mean level of difficulty of 5.507.

(3) The mean amount of help is calculated by dividing the number of times the child accepted help by the number of puzzle boxes included in the scoring. For Child M-1624, help was given a total of seven times. The mean level of help for this child is 7 divided by 5, or 1.400.

(4) The independence score is then calculated by dividing the mean level of difficulty by the mean level of help. For Child M-1624, the independence score is 5.507 divided by 1.400, or 3.934.

Reliability

The Starkweather Independence Test was administered to 116 children ranging in age from two years ten months through six years four months. The responses of these children were used in an analysis of the reliability of the instrument. A split-half correlation, corrected by the Spearman-Brown formula, yielded a correlation coefficient of +0.70 ($p < .01$). Internal consistency was demonstrated and the test was accepted as reliable.

Validity

The Starkweather Independence Test is so designed that it has face validity. The puzzle boxes offer each child a situation in which he is faced with a difficult task and has the option of working by himself or accepting help. In such a situation, a child who prefers to work by himself is behaviorally more independent than a child who accepts help. Nevertheless, the puzzle boxes offer only one type of situation and may or may not reveal the independence that a child shows in his everyday activities.

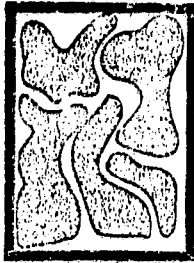
In order to obtain a more general picture of instrumentally independent behavior, a Pictorial Questionnaire, which offered children choices between independent and dependent situations in everyday activities, was developed. This questionnaire was administered to 48 children as a validation test. The validity of the Starkweather Independence Test was then examined by comparing the children's independence scores with their responses to the Pictorial Questionnaire. A Mann-Whitney U test was used to compare the 15 children who were high-scoring and the 15 children who were low-scoring on the independence test. The results of this analysis indicated that the children who were high-scoring on the independence test scored significantly higher

on the questionnaire than did the children who were low-scoring on the independence test ($U = 63.5$; $p < .05$). On the basis of these findings, the Starkweather Independence Test was accepted as a valid instrument.

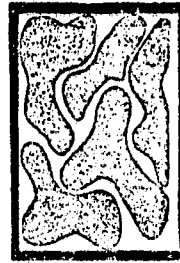
Age and Sex Differences

The scores of 116 children were used in an analysis of age and sex differences. A Mann-Whitney U test analysis indicated no significant difference between the independence scores of the boys and girls; however, the boys chose to work the puzzle boxes at a significantly more difficult level than did the girls ($z = 2.39$; $p < .01$). A Kruskal-Wallis analysis of variance indicated that the older children scored significantly higher in independence than did the younger children ($H = 29.2$; $p < .001$). The older children chose to work the puzzle boxes at a significantly more difficult level than did the younger children; and the younger children accepted significantly more help than did the older children.

Unpublished manuscript
April 1973



Demonstration Box
for Experimenter



Demonstration Box
for Child

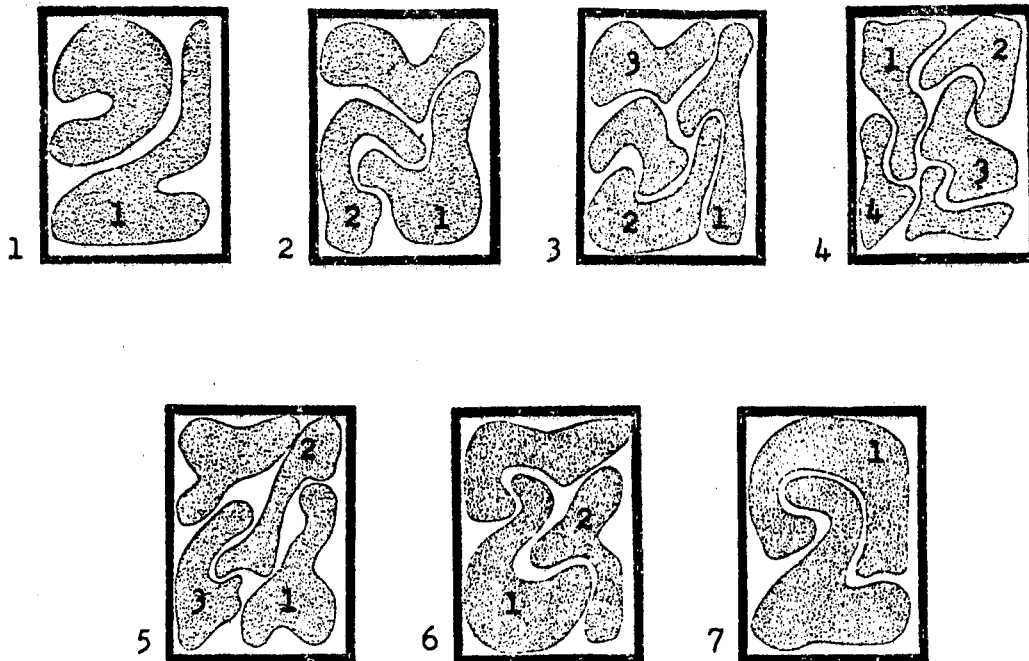


Figure 1. Starkweather Independence Test - The numbers on the puzzle pieces in this illustration indicate the order in which the puzzle pieces are placed in the box by the experimenter as he gives help to the child.

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VITA

Sherre Kay Davidson

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Master of Science

Thesis: CREATIVITY IN EARLY CHILDHOOD: THE RELATIONSHIP BETWEEN
SEX-ROLE IDENTIFICATION AND BEHAVIORAL INDEPENDENCE

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