

CREATIVITY IN PRESCHOOL CHILDREN: THE EFFECT  
OF MATERIAL REWARDS ON CONFORMING AND  
NONCONFORMING BEHAVIOR

By

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## CHAPTER I

### INTRODUCTION

#### Purpose

The purpose of this study was to examine the effect of material rewards on one aspect of creativity in young children: the choice to conform or not to conform to a model in an impersonal situation.

#### Problem

Creativity, the process of bringing something new to birth (May, 1959), is not a new phenomenon. What is new is the study of creativity in a scientific manner. In the remote past, creativity was considered to be divine inspiration, a form of madness, and highly developed intuition; thus occurring only in rare individuals and not a quality that could be cultivated (Kneller, 1965, Chapter 2). In more recent times, creativity has been found to exist in all individuals (Stoddard, 1959; Anderson, 1959). With this realization, creativity came to be seen as a quality that can be measured and encouraged.

Certain personality traits have been found to be related to creativity (Haimowitz and Haimowitz, 1973; Kneller, 1965, Chapter 4; Torrance, 1964). Among them is the degree to which an individual chooses to conform or not conform in behavior and attitudes to other people.

During the past fifty years, especially in the United States, there

has been a heavy reliance upon material rewards as a means of enhancing learning, performance, and motivation in a wide variety of situations. The use of rewards has not been limited to behavioral scientists working with laboratory tasks, but has become a part of our childrearing practices, educational program, labor management relations, and indeed, most aspects of our daily lives.

This great preoccupation with material rewards has occurred because rewards have proved to be an effective means of achieving desired behavioral objectives. Nevertheless, research in the last few years, some of which will be reviewed in the next chapter, has shown that in addition to expected beneficial effects, rewards may also have some unexpected detrimental effects on motivation and performance (Condry, 1975; Haddad, McCullers and Moran, 1976; McCullers and Martin, 1971; McGraw and McCullers, 1974; Miller and Estes, 1961; Spence, 1970; Spence and Dunton, 1967; and Spence and Segner, 1967). The tasks and situations that have been found to be most susceptible to reward's detrimental effects are those requiring problem solving and higher cognitive processes (Deci, 1971; Glucksburg, 1962; Kruglanski, Friedman, and Zeevi, 1973; McGraw and McCullers, 1976; and Viesti, 1971).

If rewards can hamper reasoning and intellectual functions, they may also have an adverse effect on the creative process. One segment of this general question was examined in this study: the effect of material rewards on preschool children's choice to conform or not conform to a model in an impersonal situation. The problem, then, was to determine what effect rewards would have on this aspect of creativity in young children.

## CHAPTER II

### REVIEW OF THE LITERATURE

This chapter contains a survey of literature pertaining to the importance of creativity; and to conformity, nonconformity, and independence as they relate to creativity. Also included is a review of research in which material rewards had a detrimental effect upon learning tasks; including tasks requiring creativity and insight.

#### Importance of Creativity

Creativity is important to both individuals and societies. There is evidence that creative persons are better able to handle stress than noncreative ones. Torrance, in "Education and Creativity" (1964), states

. . . scattered evidence from a variety of sources leaves little question but that the stifling of creative desires and abilities cuts at the very roots of satisfaction in living and ultimately creates overwhelming tension and breakdown. There is also little doubt that one's creativity is an invaluable resource in coping with life's daily stresses, thus making breakdown less likely (pp. 51-52).

A person who is encouraged to use his creative abilities also may be more useful to society. "When creative ability is thwarted, it will not be extinguished; it is more likely to be given an antisocial turn" (Toynbee, 1964, p. 6). The encouragement or stifling of creative abilities begins early in life. Sylvia Ashton-Warner (1963) compares

the mind of a five-year old child to a volcano with two outlets; one creative, one destructive. As the creative outlet is widened, the destructive one narrows, and vice versa.

Creativity and creative people have played an important part in history and in the reshaping of the world (Taylor, 1964). In a technological society with its myriad problems, the need for people who can find creative solutions is great. Rogers (1959) recognized this need when he stated

In a time when knowledge, constructive and destructive, is advancing by the most incredible leaps and bounds into a fantastic atomic age, genuinely creative adaptation seems to represent the only possibility that man can keep abreast of the kaleidoscopic change in his world (p. 70).

Maslow (1967) also speaks of the need for flexibility as an aspect of creativity:

. . . people who don't need to staticize the world, who don't need to freeze it and make it stable, who don't need to do what their daddies did, who are able confidently to face tomorrow not knowing what's going to come, not knowing what will happen, with confidence enough in ourselves that we will be able to improvise in that situation which has never existed before . . . The society that can turn out such people will survive; the societies that cannot turn out such people will die (p. 44).

#### Conformity, Nonconformity, and Independence

Conformity hinders creativity to such an extent that some investigators define creativity by contrasting it to conformity.

. . . creativity has been seen as contributing original ideas, different points of view, and new ways of looking at problems. Conformity has been seen as doing what is expected and not disturbing or causing trouble for others (p. 3).

Moustakas (1961, p. 88) defines a conforming person as one who "does not use his own resources, his own experiences, but takes his

direction from experts, authority figures, and traditional guides

. . . He has lost touch with himself." Crutchfield (1963) also states

Conformity, involving loss of self-reliance, undermines the person's creative powers by weakening his trust in the essential validity of his own processes of thought and imagination . . . Conformity inhibits the person's ability to sense and grasp basic reality, and the loss of this contact with reality is fatal to creative thinking (p. 120).

It is easy to see how conformity inhibits creativity, but what about nonconformity? Kneller (1965) divides the trait into three parts:

. . . the conformist is less intelligent than the independent person, less intellectually flexible, and less fluent in his ideas . . . Above all he seeks security and acceptance, hence shuns novelty, closes himself to experience, and may avoid creativity altogether because of its unsettling challenges.

The counterconformist . . . can inhibit his creativity through self-centeredness. He flouts convention less in the course of creativity than because he feels a compulsion to be different.

The independent person is the most capable of creative achievement because he maintains a balance between group-centeredness and self-centeredness (p. 67).

Therefore, the compulsive nonconformist is as unlikely to be creative as the conformist. ". . . the creative person is willing to be a nonconformist, but he is not a compulsive nonconformist" (Starkweather and Cowling, 1963, p. 168). Starkweather and Cowling further state that freedom to use conforming and nonconforming behavior is one identifying sign of a potentially creative child.

#### The Effect of Material Rewards

Traditionally, educators have thought that material rewards would facilitate behavior of all types. However, during the past decade, a growing number of studies has shown that material rewards can also have detrimental effects on learning, performance and motivation.

### Learning Tasks

One of the first studies to show this effect was that of Miller and Estes (1961). They found that more third grade students made mistakes in a discrimination task when they were given money as a reward than when they received only knowledge of their results.

Spence (1970) also found that the use of material rewards (candy, beans) caused poorer performance on a discrimination task than the use of symbolic rewards (lights). She attributed her findings to the distraction of the accumulating rewards.

Condry (1975) found that high school students who were offered 50¢ for each of six concept attainment problems solved them less efficiently than subjects not offered a reward. The subjects offered a reward also asked more questions about the problems, and asked more illogical questions in proportion to logical questions than did the nonreward group.

Other studies showing material rewards to have a detrimental effect upon discrimination learning tasks are Haddad, McCullers, and Moran, 1976; McCullers and Martin, 1971; McGraw and McCullers, 1974; Spence and Dunton, 1967, and Spence and Segner, 1967).

### Tasks Requiring Creativity

#### and Insight

Viesti (1971) used material rewards (money) with a task requiring insight. The subjects were presented three computer generated patterns, two of which were two-thirds redundant, and asked to identify the one which was totally different. Viesti thought that reward should "shift the point of insight so that fewer trials would be necessary to achieve



it" (p. 181). Instead, he found that the nonreward group was correct more often than the reward group.

Glucksburg (1962) used material rewards (money was given to the top 25 percent who solved the problem the fastest) with another task requiring a shift of the point of insight. The subjects were given a candle, a box of thumbtacks, and a book of matches and asked to attach the candle to a vertical screen. To do so, the subject must be able to see the box of thumbtacks as a platform as well as a container. The reward subjects took longer to solve the problem than the nonreward subjects. Glucksburg (1964) obtained the same results in a similar study in which a screwdriver must be viewed as a conductor for electricity when the wires given are found to be too short.

McGraw and McCullers (1976) also found reward subjects to be slower in solution time on a problem requiring insight. The subjects solved a series of water-jar problems in which all but the last problem were solved by using a pattern of three jars. The solution to the last problem was simple and required only two jars. The subjects who were offered money for each correct solution took longer to solve the problems and made more mistakes.

Kruglanski, Friedman, and Zeevi (1971) used a different kind of material reward, a promised trip to the Tel Aviv University, in their study involving fifth grade Israeli school children. The children were asked to think of as many titles as possible for a written paragraph, and to write a story using as many words as possible from a list of fifty words. The two tasks were scored together. The nonreward subjects did significantly better than the subjects who were promised the trip.

Deci (1971) had subjects work on an interesting block-construction puzzle, called Soma, during three one-hour sessions. They were asked to construct four puzzle configurations in each session and were allowed 13 minutes per puzzle. If they were unable to complete the puzzle during the time limit, they were given the solution. The reward group was given one dollar for each solution completed within the time limit during the second session. Analysis revealed that the reward group demonstrated significantly less interest in the puzzles during the third session. The control group demonstrated no loss of interest during the third session.

In one of the few studies involving preschool children, Lepper, Green, and Nisbett (1973) first determined the interest level of children in drawing with magic markers. They then divided the children into three groups--expected reward (card with star, ribbon, and name), unexpected reward, and no reward--and asked the children to draw with the magic markers again. The expected reward group showed decreased interest after undertaking the task; the unexpected reward group showed the same or increased interest.

#### Implications for the Present Study

In the past two decades, educators have become aware of the importance of creativity to both the individual and the society, and have begun to search for ways to foster or at least to refrain from stifling the creative potential of young children. Rewards, which have been used with success in some areas, may appear to be a logical choice for fostering creativity. However, as the studies cited above show, rewards have hidden detrimental effects on some learning tasks,

including tasks requiring insight and creativity. One effect rewards seem to have on adults participating in tasks requiring insight and creativity is to make their thinking more rigid, thus less creative.

Rewards given for personality traits associated with creativity, such as the freedom to chose between conforming and nonconforming behavior, may have exactly the opposite effect of what was intended. If this is the case, children who are rewarded for participating in a task designed to measure this trait would actually move away from it, becoming more conforming or more nonconforming, and less creative. This is the hypothesis of the study.

## CHAPTER III

### METHOD AND PROCEDURE

This chapter presents a description of the subjects who participated in the research, the design of the research, the instrument used, the procedure used to administer the research instrument, the material rewards used, and how they were administered.

#### Subjects and Design

The subjects were 62 preschool children, 31 boys and 31 girls. They ranged in age from four years to six years, one month. All of the children were in attendance at private nursery schools in Oklahoma City and Stillwater, Oklahoma. Of the 62 subjects, 35 participated in the control group which received no reward, and 27 participated in the experimental group which received a material reward during the second session. An outline of the design is shown in Table I, the details of which will be presented in the following section. A description of the subjects by age, sex, and group is presented in Table II. Descriptive data and test scores for individual children is presented in Appendix A.

#### Materials

##### Research Instrument

The research instrument used was the Starkweather Form Boards Test.

TABLE I  
RESEARCH DESIGN

Session	1		2	
Slides	A-B	A-B	C-D	C-D
Reward	No	No	No	Yes
Group	Control	Exp.	Control	Exp.
Size	35	27	35	27

TABLE II  
DISTRIBUTION OF CHILDREN BY GROUP, AGE,  
AND SEX

	Control Group	Experimental Group	Total
Males			
Younger (4:11 & under)	14	6	20
Older (5:0 & older)	5	6	11
Total	19	12	31
Females			
Younger (4:11 & under)	13	6	19
Older (5:0 & over)	3	9	12
Total	16	15	31
Total Children (4:0 to 6:1)	35	27	62

n = 62

This test is designed to measure a child's tendency to conform in an impersonal situation. It consists of four puzzle-type form boards depicting colorful scenes familiar to most preschool children, e.g., a tree, a house, a playground, and a barnyard. The form boards are made of masonite approximately 12" by 14". Each form board has five holes, and for each hole there are four pieces which can be used to complete the picture. The form boards are hollow and flat pieces of masonite called "slides" fit between the colored picture and the back.

The slides have black and white line drawings on them which appear through the holes when they are in place. There are four slides for each form board. Each slide has drawings that match pictures on one of the four pieces that can be used to complete the picture. Two of the four slides (A and B) were presented during the first session, and two (C and D) during a second session. With each slide two puzzle pieces were presented to the child for completing each of the five holes; one that matched the visible line drawing of the slide and one that did not. The child could choose either piece and was encouraged by the experimenter to choose the one that "he likes best," or "whichever one he wants." The two phrases were alternated to keep the instructions from becoming monotonous.

A conforming child will choose the piece matching the line drawing whether it is the preferred piece or not. A child who is nonconforming will choose the piece that does not match. An independent or free child may exhibit either conforming or nonconforming behavior and will choose the preferred piece whether it matches the line drawing or not.

The scoring of the form board test indicates the relationship

between a child's conforming and nonconforming responses. Scores are arrived at by totaling both the number of times a conforming piece was picked and the number of times a nonconforming piece was picked, and subtracting the second total from the first. Children who chose conforming behavior earn high positive scores. Nonconforming children earn high negative scores. Children who use both behaviors earn low scores.

A complete description of the form boards test, its administration and scoring, is presented in Appendix B.

### Pilot Study

The Starkweather Form Boards Test is designed to be given in two sessions at least one week apart. During the first session the child is presented with slides A and C; during the second session, slides B and D were presented. In this study the order in which the slides were presented was altered to minimize the amount of equipment necessary for each session. Session one now consisted of the presentation of slides A and B; session two consisted of the presentation of slides C and D. Each session was scored separately and the scores used for analysis.

This change in administration necessitated a pilot study to determine whether the children were still influenced by the opportunity to conform when the slides were presented in this order. The instrument was administered to 50 preschool children in attendance at the Child Development Laboratories at Oklahoma State University. Twenty-five of the children participated in one session using blank slides and the other 25 participated in one session using slides A and B. A Chi-Square analysis revealed that the children were significantly

influenced by the opportunity to conform when the slides were presented in this manner ( $X^2 = 12.421$ ;  $p = .01$ ).

### Rewards

The material rewards used in this study consisted of small, inexpensive toys. Care was taken to ensure that the toys were of approximately equal monetary value and would appeal to both girls and boys. The toys included small plastic telescopes, rubber knives, plastic jewelry, plastic circus animals, and plastic cowboys and Indians.

### Administration of Rewards

The rewards were given for participation in the activity and were not contingent upon performance. This was indicated to the children by the wording used by the administrator when the rewards were offered.

Subjects in the experimental group were approached at the beginning of the second session with the words, "Do you remember playing with my pictures before? Today I will give you a toy if you will play with the pictures again." The children were then taken to the experimental room where they were shown a small box holding one of each kind of toy. The subjects were allowed to choose one toy and were told that it was theirs to keep. Subjects were also told that they would be allowed to pick another toy to keep after they finished with the pictures. During the session, the toy chosen remained on the table within reach of the subject. After the session, the subject chose another toy. The toys were then put into a large colorful envelope made of wallpaper and the child's name was written on the envelope. The envelopes were put away until it was time to go home.



### Analysis of Data

A t-test was used to analyze the A-B scores in both groups to determine if there was a difference in the groups before rewards were given. Chi-Square and Fisher Exact Probability Tests were used to analyze the number of changes in classification from A-B to C-D scores. Mann-Whitney U Tests were used to analyze the amount of change by score points from A-B to C-D scores. Analysis was done for all subjects, subjects according to classification of A-B scores, and for subjects according to sex and age.

## CHAPTER IV

### RESULTS

This chapter includes: 1) analysis of the A-B scores to determine if there was a difference between the groups before rewards were given; 2) analysis of the changes from the first session to the second session in both groups as a whole and according to A-B score classification, sex and age.

#### The A-B Scores

After the first session, the subjects were classified as conforming (scores from +10 to +40), free (scores from -08 to +08), and nonconforming (scores from -10 to -40). There were 40 points possible for each session. To obtain a score between +08 and -08 a child must engage in one behavior three-fifths as often or less than the other. The total number of conforming points for a child who conforms three-fifths (60%) of the times would be 24. The total of nonconforming points would be 16. The final score was obtained by subtracting the second total from the first, i.e.,  $24 - 16 = +08$ . A score of -08 would be obtained when the child engaged in nonconforming behavior three-fifths of the time. To obtain scores of +10 and above, or -10 and below, the child must engage in one behavior more than 60% of the time.

The distribution of the children in the initial matching session is presented in Table III for both groups according to classification, sex, and age. A t-test was used on the A-B scores to determine if

TABLE III  
DISTRIBUTION OF CHILDREN BY GROUP, A-B SCORE  
CLASSIFICATION, SEX AND AGE

	Conforming (+10 to +40)	Free (-08 to +08)	Nonconforming (-10 to -40)	Total
<u>Control</u>				
Males				
Younger	5	9	0	14
Older	3	1	1	5
Total	8	10	1	19
Females				
Younger	6	7	0	13
Older	3	0	0	3
Total	9	7	0	16
Total Children	17	17	1	35
<u>Exp.</u>				
Males				
Younger	2	4	0	6
Older	4	1	1	6
Total	6	5	1	12
Females				
Younger	4	2	0	6
Older	4	5	0	9
Total	8	7	0	15
Total Children	14	12	1	27

there was any difference between the two groups before rewards were given. There was no significant difference ( $t = .65$ , n.s.)

#### Changes from A-B to C-D

Chi-Square and Fisher Exact Probability tests were used to determine if there was a significant difference in the number of children who changed from one classification to another, i.e., from conforming to free. The results were not significant at the .05 level. However, more children in the reward group changed from one classification to another than children in the control group ( $X^2 = 2.26$ , n.s.;  $p = .06$ ). The distribution of changes in classification from A-B scores to C-D scores according to group, A-B score classification, sex and age is presented in Table IV.

The conforming children in both groups tended to remain in the conforming category. The free children in the reward group, however, tended to change classification more often than the free children in the nonreward group. The number of nonconforming children (one per group) was too small for separate analysis.

The males in the reward group showed a tendency to change classification more often than the males in the control group. Analysis of the number of females who changed classification revealed the same tendency to a slightly lesser extent. The younger children in the reward group changed more often than younger children in the control group. The older children in both groups tended to remain in the same

TABLE IV  
DISTRIBUTION OF THE CHANGES FROM A-B SCORES TO  
C-D SCORES BY GROUP, A-B SCORE CLASSIFICATION,  
SEX AND AGE

Control	No Change	Change	Total
Males			
Younger	10	4	14
Older	3	2	5
Total	13	6	19
Females			
Younger	12	1	13
Older	6	2	8
Total	18	3	21
Conforming	15	2	17
Free	12	5	17
Nonconforming	1	0	1
Total	28	7	35
-----			
Experimental			
Males			
Younger	2	4	6
Older	3	3	6
Total	5	7	12
Females			
Younger	5	1	6
Older	6	3	9
Total	11	4	15
Conforming	11	3	14
Free	5	7	12
Nonconforming	0	1	1
Total	16	11	27

classification. Analysis of the age groups was repeated using a median age division rather than an arbitrary one. The results were similar.

The Mann-Whitney U test, rather than measuring the number of children who changed from one category to another, measured the number of points the scores of the children changed from the first session to the second in both groups. This type of analysis revealed that children in the reward group changed a significantly larger number of points than children in the control group ( $p = .03$ ). The significant difference appears in the number of younger children who changed points during the reward session. There was no significant difference in the number of points changed by the conforming, free, male, female, or older children after receiving rewards. The number of points changed by the younger children after receiving rewards did not remain significant when the ages were divided by a median split. The results of the analyses are shown in Table V.

### Discussion

There are several possible reasons why the effect of reward did not result in significant differences between the two groups. One possible explanation is the small size of the sample. Another is the age of the subjects. The detrimental effect of reward may not be as powerful on children this young.

It is also possible that the task itself was so interesting and attractive to the children that the rewards did not remain salient during the session. If this is so, it would support Spence's (1970) theory that the detrimental effect of rewards is due to distraction of attention.

TABLE V  
RESULTS OF THE CHI-SQUARE, FISHER EXACT PROBABILITY,  
AND MANN-WHITNEY U TESTS

	$\chi^2$	Fisher	Mann-Whitney U Tests U	P
All Subjects	2.26, N.S.*	.07, N.S.	339	.03
Conforming	.06, N.S.	.40, N.S.	82	N.S.
Free	1.38, N.S.	.11, N.S.	83	N.S.
Males	1.20, N.S.	.14, N.S.	78	N.S.
Females	1.12, N.S.	.15, N.S.	87.5	N.S.
Younger	1.28, N.S.	.13, N.S.	98.5	.03
Older	.07, N.S.	.40, N.S.	60.5	N.S.
Younger-Median split	.06, N.S.	.07, N.S.	90.5	N.S.
Older-Median split	2.24, N.S.	.40, N.S.	75.5	N.S.

\*N.S. means not significant at the .05 level

It is also possible that the aspect of creativity chosen, conformity-nonconformity, is not as susceptible to the effect of reward as some of the other aspects may be.



## CHAPTER V

### SUMMARY AND IMPLICATIONS

The present research was a study of the effect of material rewards on preschool children's conforming and nonconforming behavior.

The subjects who participated in this study were 62 preschool children, 31 boys and 31 girls, ranging in age from 4 years to 6 years, 1 month. The children were in attendance at private nursery schools in Oklahoma City, Oklahoma, and Stillwater, Oklahoma.

The research instrument used was the Starkweather Form Boards Test for Preschool Children. The test was designed to measure the child's tendency to conform in an impersonal situation. It consisted of four form boards picturing scenes familiar to most preschool children. The scoring indicated the relationship between a child's conforming and nonconforming behavior. Children who conform consistently earn high positive scores. Nonconforming children earn high negative scores. Children who use both behaviors earn low scores, and are called free or independent.

Material rewards were given to the experimental group during the second session. The rewards consisted of small, inexpensive toys. The children were allowed to choose a total of two toys to keep, one at the beginning of the session and one at the end. The toy chosen at the beginning of the session was within the child's reach during the session.

After each session the children were classified as conforming, free, or nonconforming, based on their scores. The data gathered were analyzed to determine if a significantly larger number of children changed from one classification to another after receiving rewards as opposed to the number who changed classification without receiving awards. The data were also analyzed to determine if the children in the reward group changed a significantly larger number of score points during the second session than did the children in the control group. Both changes were further analyzed by A-B score classification, sex and age. The major findings are as follows:

- 1) There was a tendency for more children to change classification after receiving rewards.
- 2) The conforming children in both groups tended to remain in the conforming classification.
- 3) The free children in the reward group changed classification more often than the free children in the control group.
- 4) The males tended to change classification more often after receiving rewards.
- 5) The females showed the same tendency to a lesser extent.
- 6) The older children in both groups tended to remain in the same classification. This tendency was still apparent when the ages were divided by median split.
- 7) The younger children in the reward group changed classification more often than the younger children in the control group. This tendency was still apparent, to a lesser extent, when the ages were divided by a median split.

- 8) The children in the reward group changed a significantly larger number of score points than the children in the control group.
- 9) The younger children in the reward group changed a significantly larger number of points than the younger children in the control group. The difference did not remain significant when the children were divided by median age.
- 10) The conforming, free, male, female, and older children in the reward group did not change a significantly larger number of points than the same children in the control group.

#### Implications

This was an exploratory study. There are many possibilities for further research. The study could be repeated using the standard method of administering the form boards test, a larger sample with a more even distribution of classifications, using only subjects classified as free, or administering the reward in different manners such as promising the reward before the session and delivering it afterwards. There are also many other aspects of creativity, i.e., curiosity, originality, willingness to try the difficult, which could be studied in this context.

Even though the number of children who changed from one classification to another was not significant at the .05 level; there was a strong trend for the free subjects to become more conforming or more nonconforming when rewarded, and thus move away from potential creativity. This agrees with the findings of Glucksburg (1962), McGraw and McCullers (1976), and Viesti (1971) who discovered that material rewards made thinking more rigid.

The results do indicate that material rewards do not improve a child's freedom to choose between conforming and nonconforming behavior. Teachers and parents of young children who want to encourage this ability in young children then, are probably not doing so if they reward them with material rewards.

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## APPENDICES



APPENDIX A

DESCRIPTIVE DATA AND TEST SCORES FOR  
INDIVIDUAL CHILDREN

TABLE VI

DESCRIPTIVE DATA AND TEST SCORES FOR CHILDREN PARTICIPATING IN THE CONTROL GROUP

Sex Code No.	Age	A-B Score	Classification	C-D Score	Classification
M-2547	4:0	+06	F	+04	F
M-2540	4:0	+14	C	+24	C
M-2530	4:1	+04	F	+10	C
M-2544	4:1	+04	F	+08	F
M-2538	4:2	+18	C	+22	C
M-2546	4:4	-06	F	+02	F
M-2525	4:4	+22	C	+36	C
M-2552	4:4	+06	F	+34	C
M-2550	4:5	+04	F	+02	F
M-2548	4:6	+34	C	+32	C
M-2524	4:8	+02	F	+24	C
M-2523	4:9	+04	F	+06	F
M-2536	4:11	+28	C	+36	C
M-2539	4:11	+08	F	-10	NC
M-2528	5:6	+24	C	+40	C
M-2543	5:6	+02	F	+30	C
M-2535	5:9	+10	C	-40	NC
M-2406	5:10	+24	C	+16	C
M-2549	6:1	-18	NC	-18	NC
F-2531	4:0	-02	F	+08	F

TABLE VI (Continued)

Sex Code No.	Age	A-B Score	Classification	C-D Score	Classification
F-2526	4:1	+12	C	+10	C
F-2542	4:2	00	F	+06	F
F-2553	4:2	+14	C	+14	C
F-2522	4:4	+10	C	+14	C
F-2545	4:6	+06	F	+04	F
F-2452	4:6	-04	F	+08	F
F-2529	4:6	00	F	-04	F
F-2534	4:7	+14	C	+04	F
F-2532	4:7	+02	F	00	F
F-2411	4:7	+36	C	+40	C
F-2533	4:8	+30	C	+40	C
F-2447	4:10	+04	F	+04	F
F-2551	5:5	+30	C	+40	C
F-2537	5:10	+40	C	+38	C
F-2527	5:10	+14	C	+24	C

TABLE VII

DESCRIPTIVE DATA AND TEST SCORES FOR CHILDREN PARTICIPATING IN THE EXPERIMENTAL GROUP

Sex Code No.	Age	A-B Score	Classification	C-D Score	Classification
M-2612	4:0	-06	F	+10	C
M-2624	4:2	+28	C	+02	F
M-2622	4:6	+02	F	-02	F
M-2615	4:9	-02	F	+10	C
M-2618	4:10	+36	C	+40	C
M-2617	4:11	-04	F	+10	C
M-2616	5:0	+10	C	+30	C
M-2605	5:2	-12	NC	+02	F
M-2607	5:4	+06	F	-26	NC
M-2623	5:4	+22	C	-04	F
M-2600	5:10	+24	C	+30	C
M-2611	6:0	+22	C	+12	C
F-2625	4:1	+04	F	-04	F
F-2599	4:2	+16	C	+38	C
F-2621	4:4	+20	C	+40	C
F-2614	4:6	+14	C	+16	C
F-2619	4:8	00	F	+16	C
F-2620	4:9	+12	C	+10	C
F-2609	5:0	+10	C	+20	C
F-2613	5:1	+28	C	+38	C

TABLE VII (Continued)

Sex Code No.	Age	A-B Score	Classification	C-D Score	Classification
F-2608	5:5	+14	C	00	F
F-2610	5:6	+08	F	+08	F
F-2606	5:6	+10	C	+12	C
F-2601	5:7	+08	F	+14	C
F-2602	5:8	-08	F	-04	F
F-2603	5:8	-04	F	-02	F
F-2604	5:9	-04	F	-30	NC

## APPENDIX B

### THE STARKWEATHER FORMS BOARD TEST

STARKWEATHER FORM BOARDS CONFORMITY TEST  
FOR PRESCHOOL CHILDREN\*

developed by  
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Oklahoma State University  
Stillwater, Oklahoma

The Starkweather Form Boards Test is a research instrument designed to measure conforming and nonconforming behavior in an impersonal situation. The form boards provide opportunities for the young child to make choices in situations in which he can follow a model or respond freely according to his own preferences; and the variety of picture pieces insures that each child is offered some pictures that he prefers more than others. The design of the form boards test is such that the compulsive quality and the conforming quality of a child's behavior are measured independently; and therefore, the test is able to discriminate between children who are compulsive conformists or nonconformists and children who are free to use either conforming or nonconforming behavior.

The Instrument

The Starkweather Form Boards Test consists of four form boards, approximately 12" x 14" in size, picturing scenes familiar to young children. These include a tree, a house, a playground, and a barnyard (Figures 1-4). Each form board has five holes, and for each hole there are four different pieces which can be used to complete the picture. The form boards are made of masonite. The boards and picture pieces are colored; and the opportunity to conform is provided by black and white line drawings placed behind each form board.

The black and white line drawings are painted on pieces of masonite, referred to as slides, and the drawings are positioned so that the appropriate picture shows in each hole of the form board when the slide is in place. For each form board, there are four sides; and these are paired to correspond with the pictures shown to the child during the test. In Figures 1-4, the paired pictures to the left of each form board are those for slides A and B, and the pictures to the right are those for slides C and D. For example, slides A and B for the Tree Form Board have line drawings for the following paired pictures: Boy-

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\*This research was supported by the U.S. Office of Education, Cooperative Research Project #1967, and administered by the Research Foundation, Oklahoma State University.

Kite, Cloud-Airplane, Branch-Bees, Squirrel-Butterfly, and Rabbit-Grass. The pairing of pictures is also indicated on the sample score sheet on page 45.

The pairing of the picture pieces for the form boards is essential for the identification of conforming and nonconforming behavior. In the Tree Form Board (Figure 1), a line drawing of a rabbit is shown at the base of the tree. To complete this part of the picture, the child chooses between a rabbit and grass. If he chooses the rabbit, he is following the model; but whether he is conforming or showing a preference for the rabbit is a question which cannot be answered until the child has a second session with the form boards approximately one week later. At that time the child again chooses between the rabbit and the grass, but the line drawing is of the grass. The underlying assumption is that the child who really prefers the rabbit will choose the rabbit during both sessions if he is free to use conforming and nonconforming behavior; but the child who is a conformist will choose the rabbit only when the line drawing of the rabbit is shown, and the nonconformist will choose the rabbit only when the line drawing of the grass is shown.

The two sessions with the form boards provide the child with 80 choices between paired picture pieces. The conforming child will, for the most part, choose the pictures which correspond to the line drawings. The child who is free will choose the pictures he prefers, with the result that his choices will correspond to the line drawings approximately 50 percent of the time. The nonconformist, on the other hand, will choose the pictures that do not match the line drawings.

### Administration

The Starkweather Form Boards Test is administered to each child individually and requires two sessions with an interval of approximately one week between the two. During the first session, the child sees the line drawings pictures on slides A and C; and during the second session, he sees the line drawing pictured on slides B and D.

The first session begins with the Tree Form Board in which the slide-A line drawings have been placed. In giving directions to the child, the experimenter names the picture, comments about the holes in the form board, and tells the child that he can put pieces into the holes to furnish the picture the way that he wants it. The child is then shown one pair of pictures, is told that they both fit into the same hole, and is directed to put in the one that he wants. For example, "Here is a tree. But look at the holes in the picture. I am going to let you fix the tree just the way you want it. See this hole? (E. points to the hole at the base of the tree, and then places the rabbit and the grass picture pieces directly in front of the child.) Both of these pieces will fit in here. You put in the one you want." This procedure is repeated for each hole in the form board. As each pair of pictures is placed before the child, they MUST be placed in the left-right positions as indicated on the score sheet. This is true for



session with the form boards. An acceptable variation in the administration of the form boards test is to have the child indicate the hole that he wants to fill rather than having the experimenter make the choice. The order in which the form boards are presented and the order in which the holes are filled may vary; but the picture pieces MUST be placed before the child in the left-right positions indicated on the score sheet.

The four form boards with the slide-A drawings in place are presented to the child as described above. Then the boards with slide-C line drawings in place are presented in a similar manner. The children themselves enjoy helping with the changing of the slides.

### Scoring

The scoring of the form boards test consists of a numerical count of the conforming and nonconforming responses made by the child. A D-score, or difference score, is figured by subtracting the number of nonconforming responses from the number of conforming responses. The possible range of D-scores is from -80 (complete nonconformity) to +80 (complete conformity).

### Evaluation of the Form Boards Test

The validity of the form boards test was demonstrated by comparing the responses of children in an experimental group, to whom the form boards were administered as described above, with the responses of children in a control group, to whom the form boards were administered without the line drawings, i.e., without the opportunity to conform.

If the form boards provide a valid measure of the influence of the opportunity to conform, then the children in the experimental group should have larger D-scores than the children in the control group. Frequency of "conforming" and "nonconforming" responses demonstrated by the control group would be the result of chance; and therefore, the D-scores of this group should approximate zero. A Chi-Square analysis of the frequency of high and low D-scores for the two groups indicated that the children in the experimental group were influenced by the opportunity to conform (Chi-Square = 32.203;  $p < .001$ ).

If the form boards provide a valid measure of the opportunity to conform, the children in the experimental group should also show fewer picture preferences than the children in the control group, i.e., they should be less apt to choose the same picture piece both times that it is presented. A Mann-Whitney U test analysis indicated that the children in the experimental group showed significantly fewer picture preferences than did the children in the control group ( $U = 11.5$ ;  $p < .002$ ).

The reliability of the form boards test was demonstrated by a split-half analysis of the responses of the children in the experimental group. The correlation coefficient corrected by the Spearman-Brown formula, was +0.860 ( $p < .01$ ).

Unpublished manuscript  
Revised: June 1971

Credit: The form board pictures are the work of Barbara A. Moffatt, artist and child development specialist. Miss Moffatt is with the Bureau of Child Development and Parent Education, State Department of Education, Albany, New York.

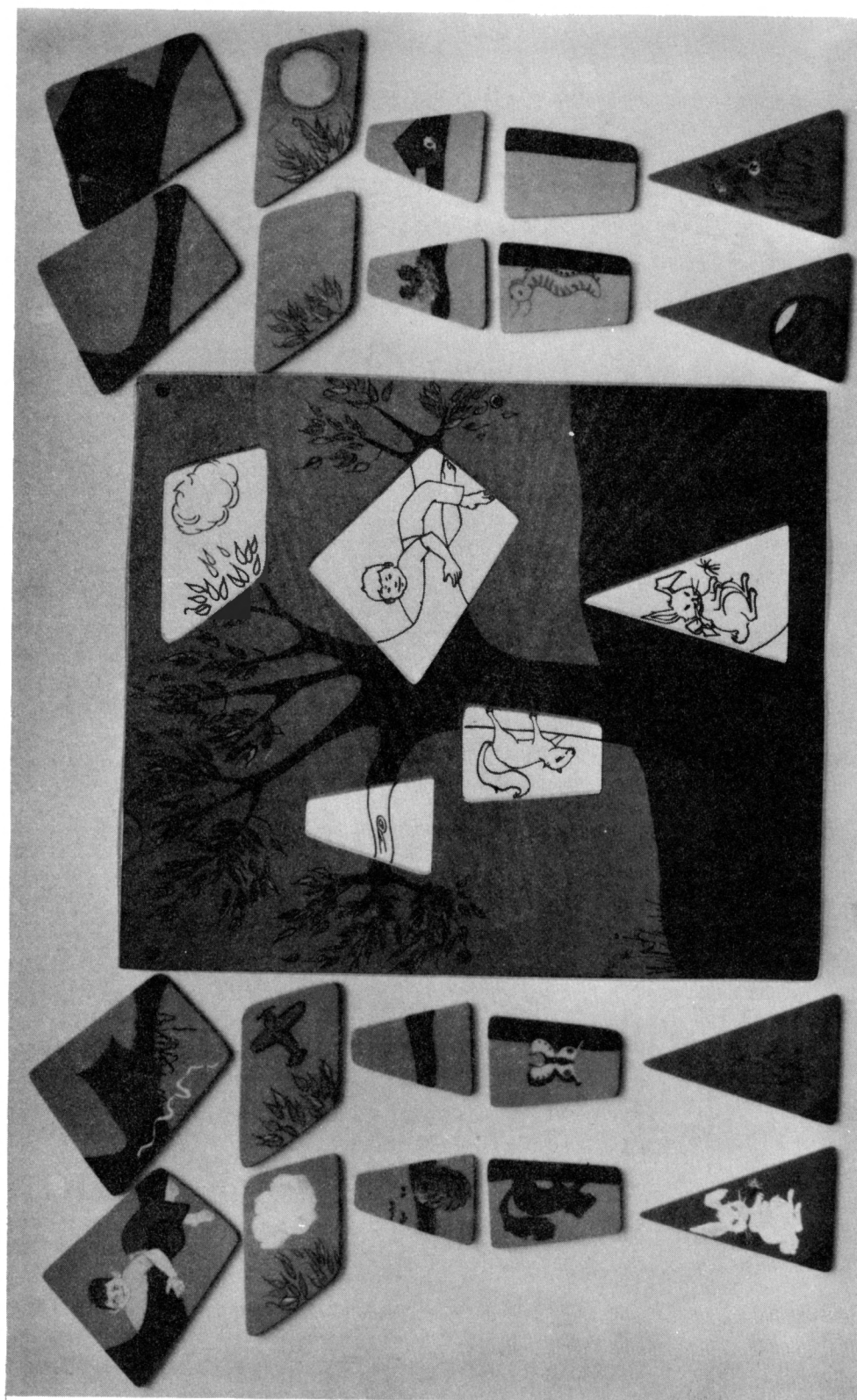


Figure 1. The Tree Form Board

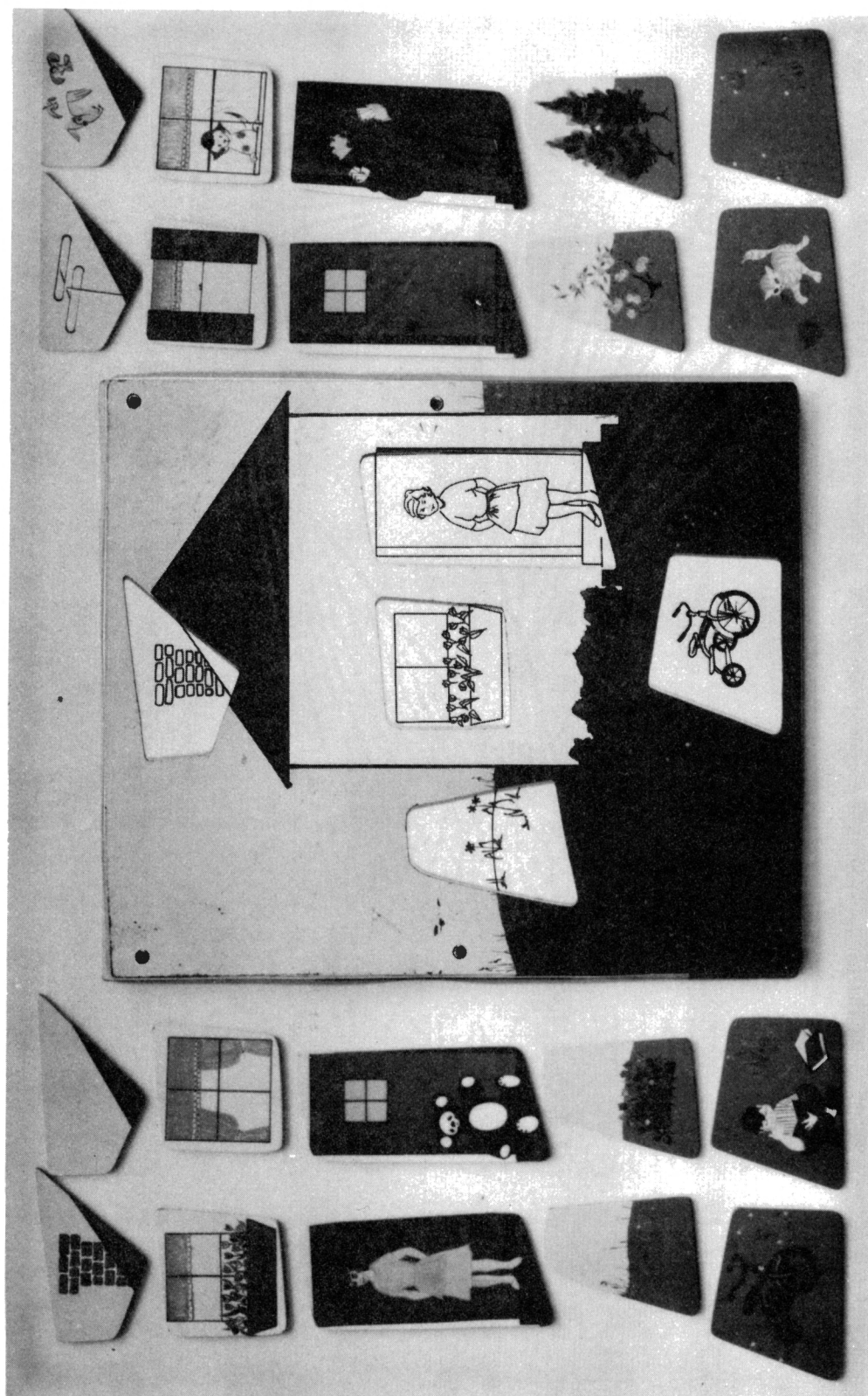


Figure 2. The House Form Board

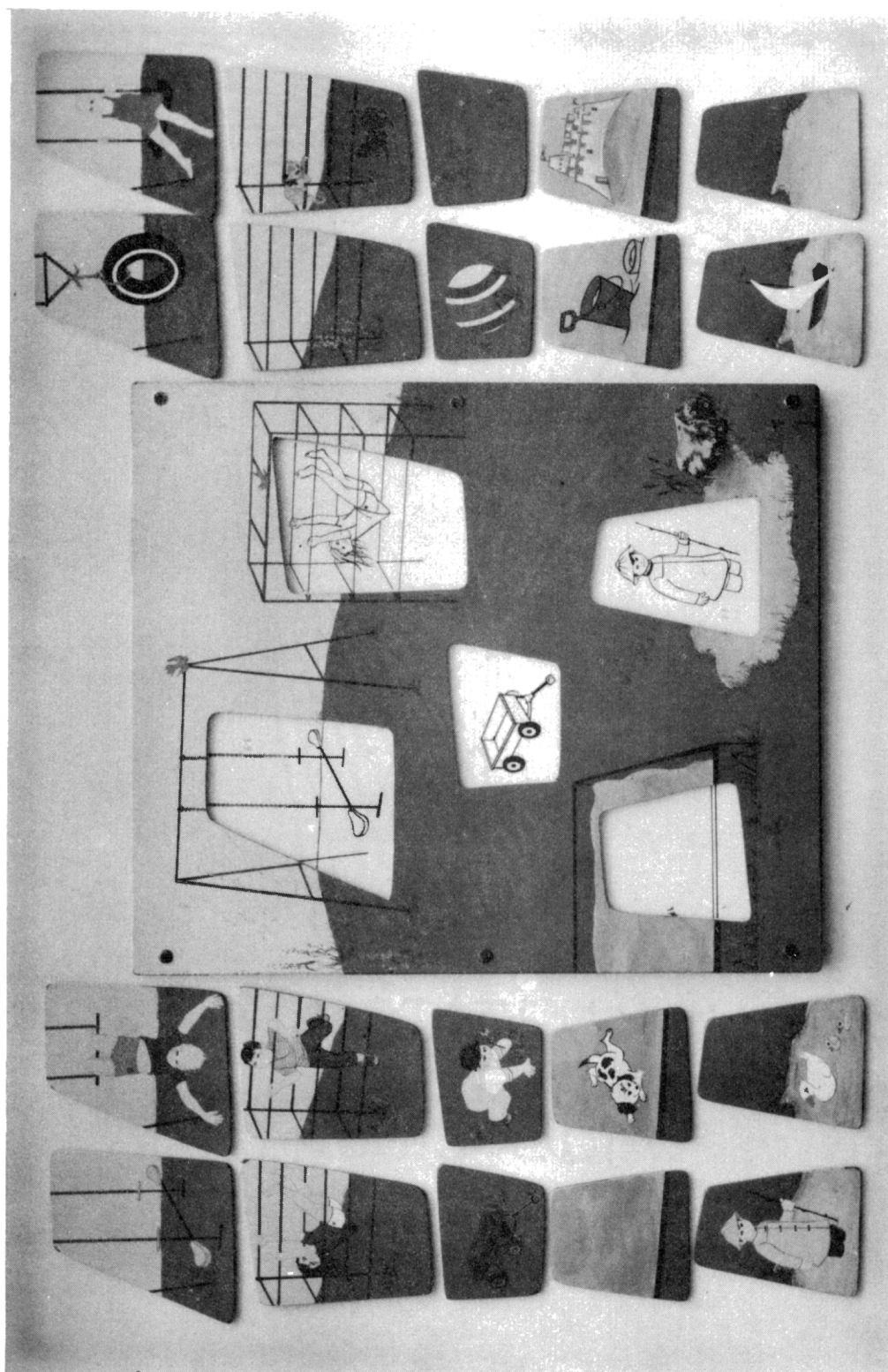


Figure 3. The Playground Form Board



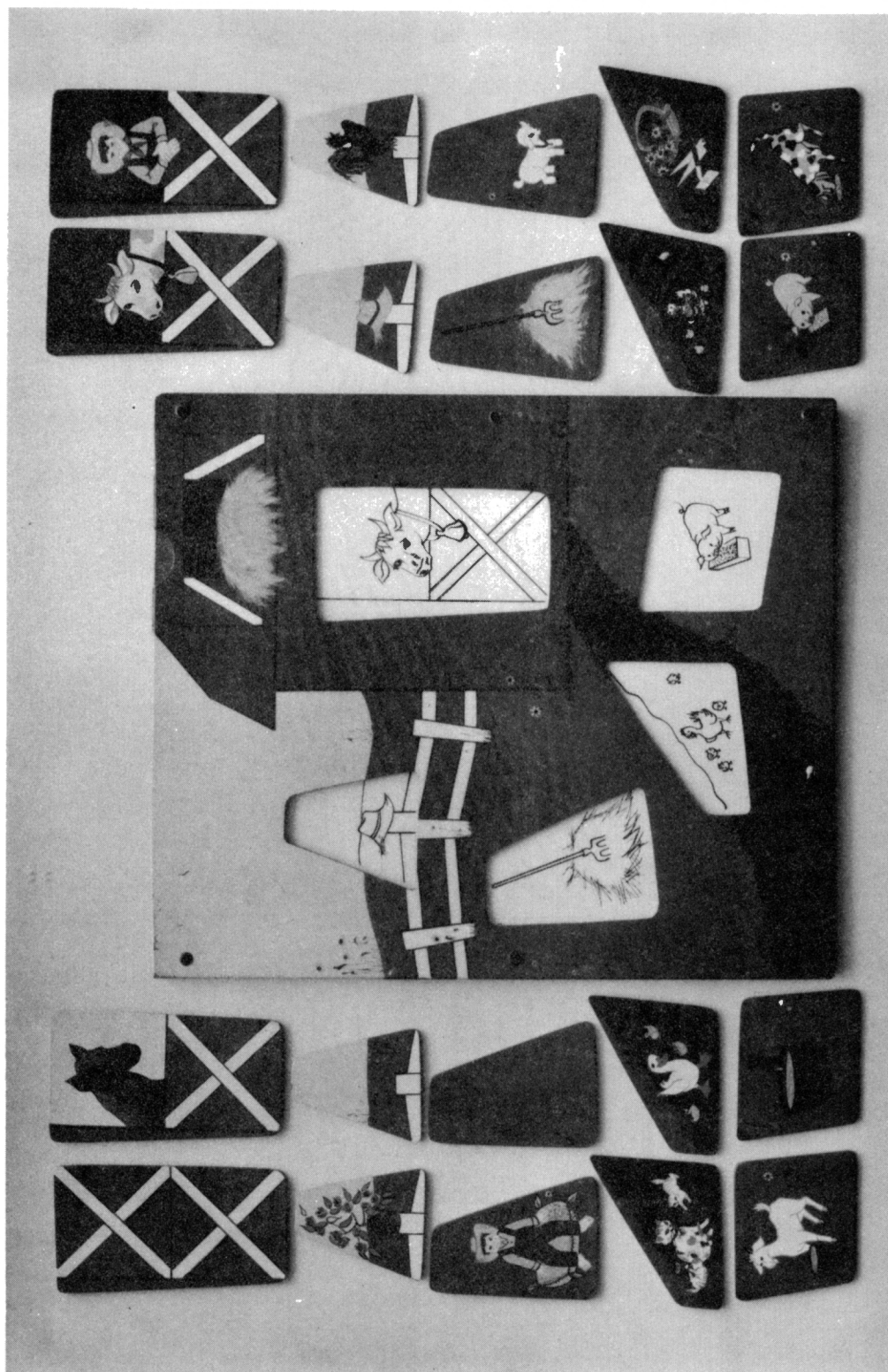


Figure 4. The Barnyard Form Board

STARKWEATHER FORM BOARDS CONFORMITY TEST

FOR PRESCHOOL CHILDREN

Name Child F-1768 Sex F No. 1768  
 Birthdate 2-22-65 Age 5:1  
 Date 3-23-70 Place Kiddie Klub

Scores  
 Conform: 58  
 Nonconf: 22  
 D-Score: +36

FIRST SESSION (A) - B	SECOND SESSION A - (B)
<u>TREE</u>	<u>TREE</u>
(Rabbit) - Grass Squirrel - (Butterfly) (Branch) - Bees (Boy) - Kite (Cloud) - Airplane	Rabbit - (Grass) Squirrel - (Butterfly) Branch - (Bees) Boy - (Kite) Cloud - (Airplane)
<u>HOUSE</u>	<u>HOUSE</u>
Tricycle - (Boy) (Mother) - Teddy Bear (Flower Box) - Window Grass - (Tulips) (Chimney) - Roof	(Tricycle) - Boy Mother - (Teddy Bear) Flower Box - (Window) Grass - (Tulips) Chimney - (Roof)
<u>PLAYGROUND</u>	<u>PLAYGROUND</u>
(Boy Wading) - Ducks (Sand) - Dog (Wagon) - Baby (Girl) - Boy (Glider) - Trapeze	Boy Wading - (Ducks) Sand - (Dog) Wagon - (Baby) (Girl) - Boy (Glider) - Trapeze
<u>BARNYARD</u>	<u>BARNYARD</u>
(Coat) - Water Tub (Cat & Kittens) - Ducklings (Boy) - Grass (Flower Pot) - Fence Post Barn Door - (Horse)	(Coat) - Water Tub (Cat & Kittens) - Ducklings Boy - (Grass) Flower Pot - (Fence Post) Barn Door - (Horse)

FIRST SESSION (C) - D	SECOND SESSION C - (D)
<u>TREE</u>	<u>TREE</u>
(Ball) - Flowers (Worm) - Tree Trunk (Bird Nest) - Bird House (Branch) - Tree House (Sky) - Sun	(Ball) - Flowers Worm - (Tree Trunk) (Bird Nest) - Bird House Branch - (Tree House) Sky - (Sun)
<u>HOUSE</u>	<u>HOUSE</u>
(Cat) - Grass (Door) - Mailman (Shutters) - Dog-window (Rose) - Trees (TV Antenna) - Birds	(Cat) - Grass (Door) - Mailman Shutters - (Dog-window) Roses - (Trees) (TV Antenna) - Birds
<u>PLAYGROUND</u>	<u>PLAYGROUND</u>
(Sailboat) - Water (Pail) - Castle (Ball) - Grass Jungle Gym - (Dog & Cat) (Fire Swing) - Girl in Swing	(Sailboat) - Water Pail - (Castle) (Ball) - Grass Jungle Gym - (Dog & Cat) (Fire Swing) - Girl in Swing
<u>BARNYARD</u>	<u>BARNYARD</u>
(Pig) - Dog (Hen & Chicks) - Garden Tools Hay - (Sheep) (Hat) - Rooster (Cow) - Farmer	(Pig) - Dog Hen & Chicks - (Garden Tools) Hay - (Sheep) (Hat) - Rooster Cow - (Farmer)

VITA<sup>2</sup>

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