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ABSTRACT

This study analyzes the Object Categorization Test (OCT) and the Picture Categorization Test (PCT) to provide (1) psychometric analysis of the tests, (2) substantive analysis detailing variation in performance level as a function of age, race, class, and sex, and (3) normative data yielding frequencies of various score patterns. Data was taken from tests given to more than 500 black and white children from lower and middle class backgrounds. Item analysis revealed that the OCT and PCT were sensitive to sex, education, and test order, and provided a range of types of responses for 4- and 5-year-olds. There were greater differences between ages than within an age group. Test-retest reliability was moderately high. Test order (OCT before PCT, or vice versa) had an effect, interacting with sex and social class of the child. Middle class children tended to provide more consistent response patterns on the OCT and PCT than lower class children, especially lower class black children. Boys and girls showed differential response patterns dependent on test order. Dominant styles of responding to test items were identified for lower class blacks, indicating that styles varied with age, sex, and educational status. Recommendations are made regarding the use of the OCT and PCT. (DR)

Analysis of the Object Categorization Test and the Picture Categorization Test for Preschool Children *

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and
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The Merrill-Palmer Institute

Research Report
2
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This report is a compilation of a s[illegible]s of studies which required the cooperation of a large group of people.

The data were collected under the leadership of Miss Bonnie McBane, Mrs. Elinor Waters, and Mrs. Patricia Olmsted. Final data analysis in this report was supervised by Mrs. Olmsted, with the admirable assistance of Matthew Dodd. The final typing and collating was done under the supervision of Mrs. Hazel McCutcheon.

Of course, all the data would not have been available had it not been for the cooperation of the Detroit Public Schools, Dr. A. Enzmann, Administrator. The fine cooperation of the principals, the teachers, and above all, the children made this study possible.

Our main hope is that this work will in time prove to be of value for enhancing the educational progress of all children, but especially those whose background and training have not prepared them to meet the requirements of the educational enterprise.

ANALYSIS OF THE OBJECT CATEGORIZATION TEST AND THE PICTURE CATEGORIZATION TEST FOR PRESCHOOL CHILDREN

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Purpose of Report

This report is a detailed description and analysis of the development and use of the Object Categorization Test (OCT) and the Picture Categorization Test (PCT). These two tasks were constructed to assess classification behavior of preschool children. Since 1964 this task has been central to a number of Merrill-Palmer and Michigan State University research projects. In the course of such use, over 500 preschool black and white, middle and lower-class children were given the OCT and the PCT. Even though the studies varied in purpose and sample, the classification tests were always administered in a comparable manner. In view of our continued interest in the test and the interest of other investigators, it was decided to analyze all the records.* The rationale for undertaking such a gigantic job is threefold:

(1) psychometric analysis of the tests themselves,

(2) substantive analysis detailing variation in performance level as a function of age, race, class and sex, and

(3) "normative" data yielding freuqencies of various score patterns becoming available as reference.

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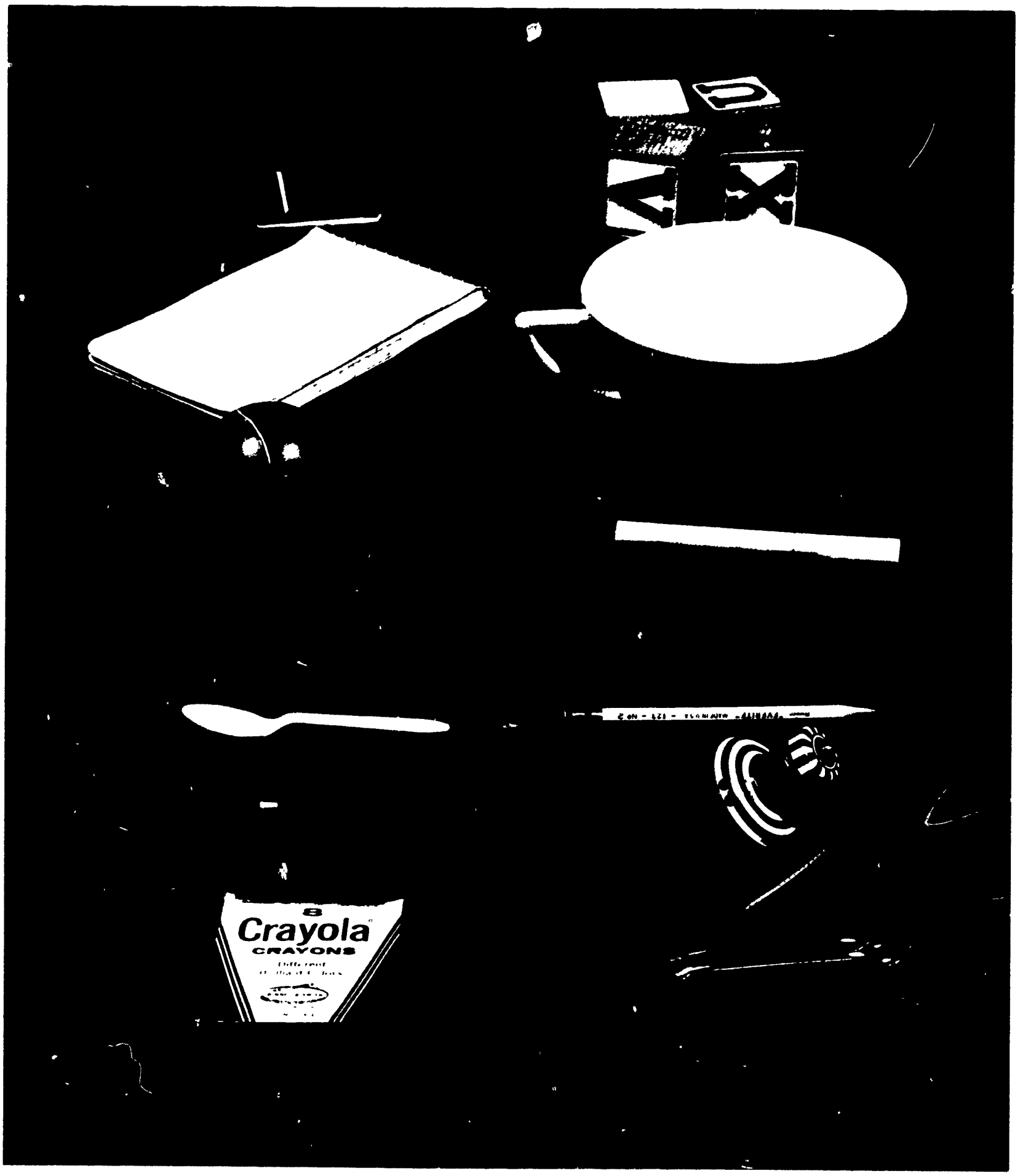
* Since the scoring systems had been increasingly refined, all the records had to be rescored.

History of the Tests and Their Use

Two classification tasks are used, each employing the same twelve objects. One task contains three-dimensional objects (see Figure 1), while the other is made up of full-sized colored photographs of these objects. The object task is called Object Categorizing Test (OCT) and the picture task is called the Picture Categorizing Test (PCT). In an earlier period, a black and white version of the PCT was used.

The rationale for the tests and various research findings have been reported elsewhere (Sigel & McBane, 1967; Sigel & Olmsted, 1969; Sigel & Olmsted, in press; Sigel, Anderson & Shapiro, 1966). Briefly, for those not familiar with these studies a short review of the tests and the results might be in order.

The initial research interest was the study of styles of categorization. The basic question was, what criteria do children employ in organizing various types of pictorial stimuli. Three major types of styles were identified, descriptive, relational-contextual, and categorical-inferential (Kagan, Moss & Sigel, 1963). Descriptive responses are those classifications which denote observational attributes of an instance, in whole or part, e.g., color, form, texture; relational-contextual is that type of grouping which is made on the basis of interdependence of items in a particular context, where these relationships may be functional or thematic; categorical-inferential is where items are grouped on the basis of inferred characteristics and commonalities. The results of studies employing familiar and unfamiliar pictorial stimuli of people, animals, objects, geometric forms, reveal age and sex differences in criteria employed in categorizing the stimuli (Sigel & McBane, 1967; Kagan, Moss & Sigel, 1963; Kagan, Rosman, Day, Phillips, 1964; Sigel, Jarman & Hanesian, 1967; Sigel, 1964).



CATEGORIZATION TEST OBJECTS

In the course of pretesting some test items, lower-class black kindergarten and first grade children were employed as subjects. In this pretesting, it was found that lower-class black children had difficulty in categorization when black and white pictures of familiar items were used. A free-sorting task was used. This was surprising in view of the fact that such a task was found to be easy enough for preschoolers, and that pictures are such common stimuli in kindergarten and first grade, free sorts should prove no problem.

These results, combined with the above experience, became the basis for a study to determine whether in fact lower-class black children have more difficulty classifying pictures in comparison to three-dimensional objects. Since previous research involving seven-year-old white lower-middle-class children revealed no dimensional differences in categorization (Sigel, 1953), there is no reason to expect one year to make such a difference. Two tests were constructed, using the same items, but varying in dimension, the Object Categorization Test (OCT), made up of life-size objects, and the Picture Categorization Test (PCT), made up of photographs of these same objects, blown up to life size. Each of these tasks was administered individually one week apart to preschool lower and middle-class black children ranging in age from 3 - 5 (Sigel, Anderson & Shapiro, 1966).

For the OCT and the PCT two test conditions were used, an Active and a Passive one. In the Active Condition the experimenter selects an object and asks the child to select from the array those he thinks belong with the standard. After each trial, the stimulus object is replaced in the array and another object is selected. Twelve trials are used for each task. In the Passive Condition, the examiner creates grouping and asks the child to explain the grouping. The Passive Condition always follows the Active to reduce chance of the children copying the examiner's grouping. Each test session took about one-half hour. The OCT and the PCT were usually spaced at least a week apart.

It was found that lower-class black children had greater difficulty classifying pictures than objects; and further, they used different types of categories for each condition. This was in contrast to the middle-class black children who did not exhibit significant differences in grouping of three-dimensional versus two-dimensional material (Sigel, Anderson & Shapiro, 1966).

To further validate these results, Sigel and McBane undertook a large scale study extending the investigation to include the degree to which race, class, and sex differences might influence OCT and PCT performance (Sigel & McBane, 1967). The results of this study supported the original findings, to wit, lower-class black children have more difficulty categorizing two-dimensional material compared to three-dimensional stimuli. The middle-class group, white or black, did not show this descrepancy.

Response with appropriate equivalence to two and three-dimensional objects was defined as <u>representational competence</u> (Sigel & McBane, 1967; Sigel & Olmsted, 1969). The significance of this cognitive process rests on the basic proposition that "The ability to deal with information in representational terms is considered a necessary condition for extending and for subsequent effective utilization of categorical systems... Representational thought is required since it involves the ability to think in terms of images, words, or other representations of the object world" (Sigel & McBane, 1967, p. 435).

Representational thought is, further, a critical cognitive process necessary for mastery of the symbolic world and is therefore presumed to be significant for educational success. The finding that lower-class black children have the most difficulty in performing representational tasks and the conviction that this capability is relevant for education (Sigel, 1969) led to a series of training studies directed at improving classification skills for various levels of stimuli (Sigel & Olmsted, 1968).

The first study undertaken by Sigel and Olmsted was with five-year-old children in kindergarten. Initial assessment of classification skills and object-picture discrepancy was done with the OCT and PCT as well as post-training assessment. Training programs were established modeled after that reported by Sigel, Roeper & Hooper, (1966). It was found that training did influence quality and quantity of styles of categorization. However, the discrepancy in ability to categorize objects and pictures remained.

A follow-up study was done, a year later, to test for long-term effects of training. Again, the OCT and PCT were used as criterion measures. Results showed that training results held up over a year period. The results of this study are complex and the interested reader can refer to Sigel and Olmsted (1968). The results are not germane to this report.

The results of these studies indicate that the OCT and the PCT are sensitive measures of classification and representational skills. In view of this history, in addition to increasing interest in this type of assessment procedure, further analysis of the test itself is a worthwhile task, providing better understanding of the nature of the instruments.

Methodological Issues

The use of the OCT and the PCT as assessment instruments pose some methodological issues. First, since each test contains the same items, varying only in level of representation, and since each child receives both, test order effects become immediately apparent. Test order effects were analyzed and will be discussed in a later section since they are of singular importance methodologically and substantively.

Secondly, although the test items were selected on the pretest basis with preschool children, the degree to which the items are familiar for all populations is another issue. This issue was handled in the test administration by asking the

the child to identify the objects and use his identification in the classification performance. Since the criterion for grouping is the key, it does not matter what label the child uses. The exception would be if the child could not identify the object at all. This rarely happens.

All scoring is based on the child's verbal explanation for his grouping. This is obtained by careful inquiry on the part of the examiner. They were trained not only in the administration but also in the scoring, which provided the examiners with a guide in knowing when an explanation was adequate. The scoring manual is appended to this report along with the administration directions (see Appendices A, B, C). Stringent rules were used in training for test administration and scoring to insure maximal consistency.

Two types of scores are usually employed with the OCT and the PCT: (1) organizational responses, i.e., grouping, and (2) style, e.g. descriptive (form, color, structure), relational-contextual and categorical-inferential. These have been identified previously and details are in Appendix C. In addition to these variables, some attention will be paid to the number of styles, irrespective of type. Other types of scores are possible, but for our current purposes and theoretical stage of development, these variables are adequate.

Other methodological issues involved in analysis of the data revolve about (1) the number of responses produced by the children, especially the lower-class black children, (2) the independence of the OCT and PCT scores since they were administered a week apart, (3) the ceiling of the test--12 items. (This number was selected because it was about the limit number of trials a child would comfortably tolerate.) Each of these points influenced the kind of statistical treatment that could be involved in the data analysis. Because of limitations in frequency of responses, interdependence of responses, etc., less sophisticated statistical treatments were

necessitated. Nevertheless, we feel the responses obtained are of value in defining sample performance.

Although the test was administered and scored in as standardized a way as possible, the numbers of test records used will vary from analysis to analysis, simply because groups were involved in various experiments and they were not comparable. Since the pretest conditions for each study were equivalent, these groups could be combined, but the various intervention procedures precluded combining posttest results. Further, since test orders are relevant, these could not always be combined. Tables 1 and 1:1 provide a detailed breakdown of the numbers and type of children employed in each of the studies, and indicates their treatment. Thus, the reader can ascertain the sample sizes and reasons for them.

With these as some of the crucial issues, let us turn to a more substantive analysis of the test itself.

Table 1

Overview of All Samples Used in This Study

		Sex	FEMALE												MALE											
		Class	Lower						Middle				Lower						Middle							
		HS	HS				NHS				NHS		HS				NHS				NHS					
		Race	Black			White			Black			White		Black			White			Black			White			
		Age	4	5	6	4	5	6	4	5	6	4	5	6	4	5	6	4	5	6	4	5	6	4	5	6
Study	N																									
1.	44								15				9								10				10	
2.	239			38			8			22			15			15			19			41			11	
3.	60								31												29					
4.	117			37						19											28					
5.	69				20			10														19				20
6.	40																				15				25	
TOTAL	569		-	75	20	-	8	10	46	41	-	-	15	-	9	15	-	-	19	-	-	84	19	-	11	-	39	84	20	-	12	-	10	18	-	-	14	-

Table 1:1

Breakdown of Sample by Order of Administration of Pre-Test

1.

Order	F LC	F MC	M LC	M MC	
$0 \rightarrow P \rightarrow P^+$	3	2	3	-	8
$0 \rightarrow P^+ \rightarrow P$	3	2	-	6	11
$P \rightarrow 0 \rightarrow P^+$	3	2	3	1	9
$P \rightarrow P^+ \rightarrow P$	1	-	-	-	1
$P^+ \rightarrow 0 \rightarrow P$	2	-	3	1	6
$P^+ \rightarrow P \rightarrow 0$	3	3	1	2	9
	15	9	10	10	44

2.

Order	F LC HS B	F LC HS W	F LC NHS B	F LC NHS W	F MC NHS B	F MC NHS W	M LC HS B	M LC HS W	M LC NHS B	M LC NHS W	M MC NHS B	M MC NHS W	
$0 \rightarrow P^+$	11	1	6	5	5	7	9	4	4	2	3	2	59
$P^+ \rightarrow 0$	12	3	6	6	3	4	13	-	4	3	3	3	60
$0 \rightarrow P$	5	3	6	-	5	5	9	6	7	3	5	4	58
$\rightarrow 0$	10	1	4	4	2	3	10	1	11	4	7	5	62
	38	8	22	15	15	19	41	11	26	12	18	14	239

3.

Order	F LC	M LC	
$0 \rightarrow P$	16	12	28
$P \rightarrow 0$	15	17	32
	31	29	60

4.

Order	F HS	F NHS	M HS	M NHS	
$0 \rightarrow P$	22	10	14	17	63
$P \rightarrow 0$	15	9	14	16	54
	37	19	28	33	117

5. All subjects received the PCT followed by the OCT.

6. Only PCT adminstered.

Performance of Lower-Class Four and Five-Year-Old Black Children on OCT and PCT*

Item Analysis:

Two types of responses were examined, organizational responses, i.e., grouping and scorable, and style analysis, i.e., criteria for grouping, for each of the 12 items on the OCT and the PCT.

Tables 2 to 2:3 provide a detailed breakdown for each test item for the active and passive test conditions for the OCT and PCT, in each test order for four-year-old lower-class female and male black children. Inspection of the tables reveals that on the whole the items pull approximately the same percentage of grouping, non-grouping, and scorable responses. Item 5, the bottle opener, consistently pulls fewer grouping responses. Closer examination of this table reveals that item 5 is either the most difficult or the second most difficult in 17 of 24 cases.

All other items show no consistent pattern as far as grouping and scorable responses are concerned irrespective of OCT or PCT or of test order.

These results are similar for both age groups, except that five-year-olds produce more grouping responses per item. This, however, is a function of age and schooling rather than the task itself.

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* In this section, the major emphasis will be on lower-class black children who are one of the key samples in this entire undertaking.

Table 2

Percentage of Lower-Class Black
Four-Year-Old Children Producing Different Types
of Organizational Responses for Each Item on the OCT

		F O→P* N=22	F P→O** N=24	M O→P N=15	M P→O N=24			F O→P	F P→O	M O→P	M P→O
1	G†	22.5	29.2	26.8	20.9	7	G	27.1	29.3	46.7	12.6
	NG	18.0	8.4	6.7	16.8		NG	18.0	20.9	13.4	20.9
	NS	59.0	62.5	66.7	62.5		NS	54.5	50.0	40.0	66.6
2	G	27.1	20.9	40.0	16.8	8	G	27.1	29.2	20.1	33.4
	NG	18.0	16.7	13.4	16.7		NG	13.5	29.2	26.7	12.6
	NS	54.5	62.5	46.7	66.7		NS	59.1	41.7	53.3	54.2
3	G	36.2	41.8	40.1	16.8	9	G	27.2	32.9	26.8	25.1
	NG	22.6	4.2	26.8	16.8		NG	18.1	20.9	26.7	-
	NS	40.9	54.2	33.4	67.7		NS	54.6	45.8	46.7	75.0
4	G	27.1	29.3	40.2	12.6	10	G	27.1	25.0	53.4	20.9
	NG	13.5	8.4	13.4	16.7		NG	9.0	12.5	13.3	4.2
	NS	59.1	62.5	46.7	70.8		NS	63.7	62.5	33.3	75.0
5	G	9.0	21.0	6.7	12.6	11	G	31.7	16.7	26.7	25.1
	NG	31.5	16.8	20.1	12.6		NG	18.0	20.9	6.7	12.5
	NS	59.1	62.5	73.3	75.0		NS	50.0	62.5	66.7	62.5
6	G	27.1	16.8	40.0	12.5	12	G	40.9	29.3	46.8	16.8
	NG	18.0	25.1	13.3	20.9		NG	9.0	20.9	26.7	12.6
	NS	54.5	58.3	46.6	66.7		NS	50.0	50.0	26.6	70.9

* OCT adminstered first, followed by PCT
** PCT adminstered first, followed by OCT
† G=Grouping
NG=Non-Grouping
NS=Non-Scorable

Table 2:1

Percentage of Lower-Class Black
Four-Year-Old Children Producing Different Types
of Organizational Responses for Each Item on the PCT

		F O→P N=32	F P→O N=24	M O→P N=15	M P→O N=24			F O→P	F P→O	M O→P	M P→O
1	G	13.5	25.1	20.1	8.4	7	G	13.5	20.9	26.7	12.6
	NG	27.1	4.2	26.8	8.4		NG	22.7	25.1	13.4	21.0
	NS	59.1	70.8	53.3	83.3		NS	63.6	54.2	60.0	66.6
2	G	22.7	20.9	33.5	8.4	8	G	22.6	16.7	20.0	12.6
	NG	18.1	16.8	20.0	16.8		NG	18.0	25.1	13.4	20.9
	NS	59.1	62.5	46.7	75.0		NS	59.0	58.4	66.7	66.7
3	G	27.1	20.9	33.4	21.0	9	G	27.1	12.6	20.0	16.7
	NG	9.0	29.3	26.7	16.6		NG	13.6	20.9	13.4	20.8
	NS	63.6	50.0	40.0	62.5		NS	59.0	66.7	66.7	62.5
4	G	18.1	25.1	20.0	-	10	G	27.1	20.8	20.1	12.5
	NG	31.7	20.9	20.0	33.3		NG	22.7	20.9	33.4	20.9
	NS	50.0	54.2	60.0	66.6		NS	50.0	58.3	46.7	66.7
5	G	9.0	4.2	26.7	4.2	11	G	31.6	16.7	13.4	12.6
	NG	27.1	33.4	33.4	25.0		NG	13.6	20.9	26.7	12.6
	NS	63.6	62.5	40.0	70.9		NS	54.6	62.5	60.0	75.0
6	G	27.0	4.2	20.0	4.2	12	G	22.6	25.1	40.1	12.6
	NG	9.1	25.1	26.7	25.1		NG	13.6	12.6	6.7	16.7
	NS	63.6	70.9	53.4	70.8		NS	63.6	62.5	53.3	70.9

Table 2:2

Percentage of Lower-Class Black
Five-Year-Old Children Producing Different Types
of Organizational Responses for Each Item on the OCT

		F HS* O ➔P N=39	F HS P ➔O N=36	F O ➔P N=22	F P ➔O N=19	M HS O ➔P N=32	M HS P ➔O N=37	M O ➔P N=26	M P ➔O N=33
1	G	43.2	68.9	40.6	52.3	27.9	62.1	41.8	33.0
	NG	20.1	13.6	22.5	26.0	37.2	16.2	19.0	18.0
	NS	35.8	16.5	36.3	20.9	34.3	21.6	38.4	48.4
2	G	48.3	69.2	40.7	47.0	59.1	56.7	30.6	30.1
	NG	20.2	8.2	13.5	31.3	21.7	18.9	34.2	33.0
	NS	30.7	22.1	45.4	21.0	18.7	24.3	34.5	36.3
3	G	56.1	71.8	40.8	73.7	52.8	64.8	57.4	63.6
	NG	20.2	13.6	18.1	21.2	27.9	21.6	11.5	15.2
	NS	23.0	13.8	40.9	5.3	18.7	13.5	30.8	21.2
4	G	56.5	72.2	59.0	63.3	46.4	59.4	53.6	45.5
	NG	18.0	16.8	9.1	10.6	31.2	24.3	15.3	21.2
	NS	25.6	11.2	31.8	26.3	21.9	16.2	30.8	33.3
5	G	28.3	58.3	40.7	63.3	31.1	40.5	42.1	30.2
	NG	25.8	16.7	-	10.6	34.2	27.0	26.7	24.3
	NS	46.1	25.0	59.1	26.3	34.4	32.4	30.7	45.5
6	G	53.9	63.9	49.7	58.1	53.2	54.0	38.3	33.4
	NG	10.1	13.9	9.0	5.3	21.7	24.3	30.5	27.0
	NS	28.2	22.3	40.9	36.9	25.0	21.6	30.8	39.4
7	G	39.7	64.0	40.8	42.2	41.8	43.2	43.9	33.4
	NG	21.1	14.0	13.6	10.6	23.9	21.6	27.8	18.1
	NS	39.5	22.2	45.4	47.4	29.0	35.1	27.9	48.5
8	G	56.6	61.2	49.8	63.4	61.1	62.1	50.0	30.3
	NG	24.6	25.0	13.6	10.6	12.8	18.9	24.8	33.2
	NS	19.1	13.9	36.4	26.4	25.9	18.9	24.9	36.4

* Head Start experience at age four.

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Table 2:2 (cont.)

		F HS 0→P	F HS P→0	F 0→P	F P→0	M HS 0→P	M HS P→0	M 0→P	M P→0
9	G	56.6	66.8	59.0	58.1	64.6	72.9	70.2	48.6
	NG	24.6	22.3	4.5	15.9	16.1	8.1	16.7	12.1
	NS	19.0	11.2	36.4	26.3	19.4	18.9	12.8	39.4
10	G	59.0	58.5	54.5	63.3	54.6	64.8	57.6	42.4
	NG	13.8	25.1	-	10.6	22.6	16.2	20.9	18.0
	NS	27.4	16.7	45.4	26.3	22.7	18.9	21.1	39.4
11	G	53.9	50.1	57.8	51.3	31.8	52.8	41.9	39.2
	NG	21.9	27.9	19.3	27.0	22.7	15.8	24.6	21.1
	NS	24.4	22.2	22.7	21.6	45.4	31.6	33.4	39.4
12	G	56.7	72.3	49.9	63.3	61.2	70.2	45.7	48.5
	NG	16.5	16.7	13.6	5.3	25.3	13.5	33.1	18.1
	NS	27.1	11.1	36.4	31.6	13.3	16.2	20.8	33.4

Table 2:3

Percentage of Lower-Class Black
Five-Year-Old Children Producing Different Types
of Organizational Responses for Each Item on the PCT

		F HS O →P N=39	F HS P →O N=36	F O →P N=22	F P →O N=19	M HS O →P N=32	M HS P →O N=37	M O →P N=26	M P →O N=33
1	G	39.3	45.8	50.1	30.8	56.5	36.0	40.8	35.5
	NG	35.8	8.3	25.2	23.1	21.6	30.8	18.0	24.3
	NS	25.0	45.8	25.0	46.2	21.7	33.3	40.9	40.8
2	G	60.8	33.4	50.1	23.1	43.5	36.0	45.4	22.4
	NG	23.6	20.9	25.2	30.8	30.3	38.7	31.5	37.5
	NS	10.7	45.8	25.0	46.2	26.0	25.6	22.7	40.7
3	G	68.0	62.5	68.8	38.5	60.7	66.7	68.0	46.5
	NG	21.5	12.6	12.6	38.5	17.2	15.6	13.5	20.7
	NS	10.7	25.0	18.8	23.1	21.7	17.9	18.2	33.3
4	G	64.3	54.3	43.9	69.3	56.4	55.1	58.9	32.2
	NG	21.4	20.9	18.9	7.7	25.8	23.6	27.1	32.3
	NS	14.3	25.0	37.5	23.1	17.4	21.0	13.6	35.9
5	G	39.2	54.2	31.3	38.5	34.6	32.5	45.3	26.5
	NG	35.8	12.5	31.4	23.1	43.1	32.4	31.1	30.4
	NS	25.0	33.3	37.5	38.5	21.7	35.1	22.7	43.4
6	G	67.9	54.3	50.0	46.2	60.7	54.0	40.8	28.4
	NG	17.9	12.6	18.9	15.4	21.6	24.3	22.5	28.4
	NS	14.3	33.3	31.3	38.5	17.3	21.6	36.3	43.4
7	G	40.7	50.1	56.4	61.6	50.0	48.6	52.4	39.7
	NG	37.0	25.2	18.9	23.1	31.5	24.3	19.2	20.9
	NS	22.2	25.0	25.1	15.4	18.1	27.0	28.6	39.6
8	G	62.9	66.6	62.7	61.6	54.6	56.7	50.0	34.0
	NG	29.6	16.8	6.3	15.4	31.7	27.0	30.0	32.3
	NS	7.4	16.7	31.3	23.1	13.6	16.2	20.0	33.9

../..2

Table 2:3 (cont.)

		F HS 0 ➔P	F HS P ➔0	F 0 ➔P	F P ➔0	M HS 0 ➔P	M HS P ➔0	M 0 ➔P	M P ➔0
9	G	62.9	75.1	75.2	69.3	72.6	56.7	55.0	51.0
	NG	22.2	8.4	12.6	7.7	13.5	27.0	20.0	20.9
	NS	14.8	16.7	12.5	23.1	13.6	16.2	25.0	28.3
10	G	66.7	74.9	62.6	53.9	68.0	75.6	65.0	52.9
	NG	18.5	12.5	12.6	15.4	18.0	16.2	20.0	24.7
	NS	14.8	12.5	25.0	30.8	13.6	8.1	15.0	22.7
11	G	51.8	37.6	56.4	53.9	49.8	67.5	50.0	28.3
	NG	29.6	29.3	25.2	23.1	27.0	21.6	20.0	36.1
	NS	18.5	33.4	18.8	23.1	22.7	10.8	30.0	35.8
12	G	66.6	66.8	62.7	61.6	54.3	70.2	50.0	43.5
	NG	22.2	20.9	18.9	23.1	27.1	18.9	20.0	24.7
	NS	11.1	12.5	18.8	15.4	18.2	10.8	30.0	32.1

Style Analysis:

Tables 3 to 3:3 show percentage of style responses per test item for OCT and PCT for four and five-year-old lower-class boys and girls. These tables make it possible to compare percentage of style responses within age and test order conditions for each task as well as between age groups.

Examination of Table 3 shows that for the four-year-olds, boys and girls, on the OCT, irrespective of test order and sex, color and relational responses are most frequent. Use of form type responses is not so prominent. Styles do shift as a function of test order. For example, among the girls, relational-contextual responses are produced more often for 10 items when pictures are used first as compared to objects, whereas color is more prevalent when objects are used first.

For boys, however, different results are found for the OCT. When this task is first, boys give fewer color responses per item and more relational-contextual. When the PCT is first, performance on the OCT shows some shift. It can be concluded that test order, type of stimulus and sex of child interact.

Detailed examination of Table 3:1 shows again that with PCT, trends similar to the OCT occur for each of the items.

Five-year-old children yield a wider array of style responses for each item, the percentage being influenced not only by sex and test order, but by educational experience. The five-year-old group contained children who had been in a Head Start program (see Tables 3:2 and 3:3).

Table 3

Percentage of Lower-Class Urban Black Four-Year-Old Children Using Different Response Style Categories for Each Item on the OCT

		F 0 ➔P N=22	F P ➔0 N=24	M 0 ➔P N=15	M P ➔0 N=24
1	F*	-	-	20.0	-
	Co	33.3	55.6	20.0	11.1
	S	-	-	40.0	11.1
	R	33.3	22.2	-	44.4
	Ca	33.3	22.2	20.0	33.3
2	F	10.0	11.1	12.5	-
	Co	60.0	33.3	62.5	12.5
	S	-	11.1	-	-
	R	20.0	33.3	12.5	62.5
	Ca	10.0	11.1	12.5	25.0
3	F	-	9.1	10.0	-
	Co	38.5	45.5	10.0	12.5
	S	-	-	-	-
	R	30.8	36.4	60.0	75.0
	Ca	30.8	9.1	20.0	12.5
4	F	-	-	-	-
	Co	44.4	44.4	25.0	14.3
	S	-	-	-	14.3
	R	33.3	33.3	50.0	71.4
	Ca	22.2	22.2	25.0	-
5	F	-	-	-	-
	Co	33.3	33.3	-	16.7
	S	22.2	-	-	16.7
	R	44.4	55.5	50.0	66.7
	Ca	-	11.1	50.0	-
6	F	-	-	-	-
	Co	50.0	40.0	50.0	25.0
	S	-	-	-	-
	R	20.0	50.0	25.0	75.0
	Ca	30.0	10.0	25.0	-
7	F	-	-	11.1	-
	Co	40.0	33.3	-	12.5
	S	20.0	-	-	-
	R	20.0	50.0	44.4	75.0
	Ca	20.0	16.7	44.4	12.5
8	F	-	7.1	-	-
	Co	55.5	14.3	14.3	9.1
	S	-	-	-	-
	R	33.3	57.1	71.4	63.6
	Ca	11.1	21.4	14.3	27.3
9	F	-	7.7	-	-
	Co	40.0	23.1	12.5	16.7
	S	10.0	-	-	-
	R	30.0	53.8	50.0	50.0
	Ca	20.0	15.4	37.5	33.3
10	F	-	-	-	-
	Co	50.0	33.3	40.0	16.7
	S	-	-	-	-
	R	12.5	66.6	50.0	83.3
	Ca	37.5	-	10.0	-
11	F	9.1	11.1	-	-
	Co	54.5	33.3	20.0	-
	S	-	-	-	-
	R	27.3	44.4	40.0	77.7
	Ca	9.1	11.1	40.0	22.2
12	F	9.1	8.3	9.1	-
	Co	54.5	16.7	18.2	14.3
	S	-	-	-	-
	R	36.4	66.7	54.5	71.4
	Ca	-	8.3	18.2	14.3

* F=Form
Co=Color
S=Structure
R=Relational
Ca=Categorical

Table 3:1

Percentage of Lower-Class Urban Black Four-Year-Old Children Using Different Response Style Categories for Each Item on the PCT

		F O→P N=22	F P→O N=24	M O→P N=15	M P→O N=24			F O→P	F P→O	M O→P	M P→O
1	F	-	14.3	14.3	-	7	F	-	-	16.7	-
	Co	33.3	42.9	42.9	25.0		Co	37.5	36.4	16.7	37.5
	S	-	-	-	-		S	-	-	-	-
	R	44.4	28.6	28.6	75.0		R	37.5	45.5	33.3	50.0
	Ca	22.2	14.3	14.3	-		Ca	25.0	18.2	33.3	12.5
2	F	-	11.1	12.5	-	8	F	-	-	-	-
	Co	44.4	44.4	37.5	16.7		Co	44.4	40.0	20.0	12.5
	S	-	-	-	16.7		S	-	-	-	-
	R	44.4	44.4	37.5	33.3		R	33.3	50.0	40.0	75.0
	Ca	11.1	-	12.5	33.3		Ca	22.2	10.0	40.0	12.5
3	F	12.5	-	22.2	-	9	F	-	-	-	-
	Co	50.0	58.3	11.1	-		Co	44.4	50.0	40.0	11.1
	S	-	-	-	-		S	-	-	-	-
	R	12.5	41.7	33.3	66.7		R	44.4	50.0	40.0	66.7
	Ca	25.0	-	33.3	33.3		Ca	11.1	-	20.0	22.2
4	F	-	-	-	-	10	F	-	-	-	-
	Co	54.5	36.4	16.7	-		Co	36.4	50.0	12.5	25.0
	S	-	-	-	-		S	-	-	12.5	-
	R	27.3	54.5	50.0	100.0		R	36.4	50.0	50.0	62.5
	Ca	18.2	9.1	33.3	-		Ca	27.3	-	25.0	12.5
5	F	-	11.1	-	14.3	11	F	-	11.1	-	-
	Co	37.5	55.6	22.2	-		Co	40.0	55.6	16.7	16.7
	S	-	-	-	-		S	-	-	16.7	-
	R	50.0	33.3	55.6	85.7		R	30.0	11.1	50.0	50.0
	Ca	12.5	-	22.2	-		Ca	30.0	22.2	16.7	33.3
6	F	-	-	-	-	12	F	-	11.1	-	-
	Co	37.5	28.6	14.3	28.6		Co	37.5	44.4	28.6	14.3
	S	-	-	-	-		S	-	-	-	-
	R	37.5	71.4	57.1	57.1		R	37.5	11.1	42.9	71.4
	Ca	25.0	-	28.6	14.3		Ca	25.0	33.3	28.6	14.3

Table 3:2

Percentage of Lower-Class Urban Black Five-Year-Old Children Using Different Response Style Categories for Each Item on the OCT

		F HS O >P N=39	F HS P >O N=36	F O >P N=22	F P >O N=19	M HS O >P N=32	M HS P >O N=37	M O >P N=26	M P >O N=33
1	F	8.0	26.7	21.4	40.0	9.5	37.9	12.5	23.5
	Co	60.0	33.3	57.1	40.0	38.1	37.9	43.8	35.3
	S	4.0	-	-	6.7	23.8	-	12.5	-
	R	12.0	16.7	7.1	-	23.8	17.2	25.0	35.3
	Ca	16.0	23.3	14.3	13.3	4.8	6.9	6.3	5.9
2	F	11.1	28.6	16.7	26.7	7.7	35.7	5.9	28.6
	Co	70.4	57.1	58.3	33.3	53.8	42.9	58.8	33.3
	S	3.7	-	-	6.7	-	-	5.9	4.8
	R	7.4	10.7	8.3	13.3	11.5	10.7	29.4	19.0
	Ca	7.4	3.6	16.7	20.0	26.9	10.7	-	14.3
3	F	-	25.8	7.7	22.2	15.4	18.8	11.1	15.4
	Co	70.0	32.3	53.8	33.3	46.2	40.6	61.1	34.6
	S	6.7	-	7.7	27.8	11.5	-	5.6	-
	R	13.3	25.8	30.8	5.6	19.2	18.8	16.7	38.5
	Ca	10.0	16.1	-	11.1	7.7	21.9	5.6	11.1
4	F	6.9	21.9	6.7	21.4	12.0	19.4	22.2	18.2
	Co	65.5	37.5	60.0	28.6	40.0	45.2	50.0	45.5
	S	6.9	-	6.7	28.6	16.0	3.2	5.6	-
	R	10.3	28.1	26.7	7.1	28.0	29.0	22.2	27.3
	Ca	10.3	12.5	-	14.3	4.0	3.2	-	9.1
5	F	9.5	25.9	11.1	21.4	4.8	28.0	22.2	25.0
	Co	66.7	29.6	55.5	28.6	33.3	36.0	33.3	37.5
	S	9.5	7.4	11.1	35.7	19.0	-	11.1	6.3
	R	14.3	37.0	22.2	-	42.9	32.0	27.8	31.3
	Ca	-	-	-	14.3	-	4.0	5.6	6.3
6	F	14.3	32.1	15.4	33.3	16.7	31.0	11.1	25.0
	Co	75.0	42.9	61.5	33.3	45.8	44.8	55.6	35.0
	S	3.6	-	7.7	8.3	4.2	-	-	5.0
	R	7.1	14.3	7.7	-	16.7	10.3	22.2	15.0
	Ca	-	10.7	7.7	25.0	16.7	13.8	11.1	20.0

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Table 3:2 (cont.)

		F HS 0 >P	F HS P >0	F 0 >P	F P >0	M HS 0 >P	M HS P >0	M 0 >P	M P >0
7	F	13.0	21.4	16.7	50.0	4.5	29.2	16.7	17.1
	Co	47.8	21.4	50.0	10.0	40.9	29.2	44.4	17.6
	S	13.0	3.6	-	20.0	9.1	-	5.6	17.6
	R	21.7	21.4	33.3	-	36.4	20.8	22.2	29.4
	Ca	4.3	32.1	-	20.0	9.1	20.8	11.1	17.6
8	F	10.0	22.6	14.3	28.6	13.0	23.3	16.7	14.3
	Co	50.0	25.8	50.0	35.7	52.2	40.0	50.0	38.1
	S	3.3	-	7.1	14.3	4.3	3.3	5.6	4.8
	R	30.0	45.2	21.4	7.1	30.4	30.0	27.8	33.3
	Ca	6.7	6.5	7.1	14.3	-	3.3	-	9.5
9	F	13.3	21.9	7.1	21.4	16.0	23.3	19.0	10.0
	Co	63.3	28.1	50.0	28.6	48.0	43.3	52.4	45.0
	S	3.3	-	7.1	21.4	4.0	-	-	-
	R	13.3	40.6	35.7	7.1	32.0	26.7	23.8	35.0
	Ca	6.7	9.4	-	21.4	-	6.7	4.8	10.0
10	F	11.1	20.0	8.3	21.4	8.3	26.7	15.8	5.0
	Co	66.7	30.0	58.3	35.7	54.2	43.3	47.4	45.0
	S	7.4	-	-	14.3	16.7	-	-	-
	R	14.8	40.0	33.3	7.1	16.7	23.3	31.6	35.0
	Ca	-	10.0	-	21.4	4.2	6.7	5.3	15.0
11	F	14.3	32.1	8.3	31.0	8.3	23.1	18.8	15.0
	Co	71.4	35.7	62.5	44.8	75.0	46.2	50.0	50.0
	S	3.6	-	4.2	-	-	7.7	6.3	10.0
	R	7.1	21.4	8.3	13.8	16.7	-	25.0	20.0
	Ca	3.6	10.7	16.7	10.3	-	23.1	-	5.0
12	F	3.7	25.0	14.3	15.4	11.1	32.3	21.1	22.7
	Co	70.4	34.4	50.0	38.5	44.4	38.7	47.4	40.9
	S	7.4	-	7.1	30.8	14.8	-	5.3	-
	R	14.8	37.5	28.6	-	22.2	25.8	26.3	31.8
	Ca	3.7	3.1	-	15.4	7.4	3.2	-	4.3

Table 3:3

Percentage of Lower-Class Urban Black Five-Year-Old Children Using Different Response Style Categories for Each Item on the PCT

		F HS O→P N=39	F HS P→O N=36	F O→P N=22	F P→O N=19	M HS O→P N=32	M HS P→O N=37	M O→P N=26	M P→O N=33
1	F	9.5	38.5	16.7	28.6	16.7	46.2	7.7	37.5
	Co	76.2	-	58.3	28.6	55.6	23.1	61.5	21.9
	S	4.8	-	-	14.3	-	7.7	7.7	6.3
	R	9.5	46.2	16.7	-	27.8	15.4	23.1	25.0
	Ca	-	15.4	8.3	28.6	-	7.7	-	9.4
2	F	12.0	53.8	16.7	14.3	11.8	51.7	28.5	37.5
	Co	68.0	15.4	66.7	42.9	52.9	34.5	52.9	31.3
	S	4.0	-	-	14.3	11.8	-	-	-
	R	12.0	23.1	8.3	14.3	23.5	10.3	17.6	18.8
	Ca	4.0	7.7	8.3	14.3	-	3.4	5.9	12.5
3	F	4.0	27.8	15.4	30.0	-	31.3	11.1	22.2
	Co	76.0	27.8	61.5	30.0	44.4	31.3	55.6	30.6
	S	4.0	5.6	-	20.0	5.6	3.1	5.6	-
	R	12.0	16.7	23.1	10.0	33.3	21.9	16.7	16.7
	Ca	4.0	22.2	-	10.0	16.7	12.5	11.1	30.6
4	F	8.3	33.3	10.0	30.0	10.5	33.3	21.1	23.5
	Co	75.0	16.7	60.0	30.0	52.6	36.7	42.1	35.3
	S	4.2	-	-	10.0	5.3	3.3	5.3	2.9
	R	12.5	44.4	20.0	-	26.3	20.0	26.3	26.5
	Ca	-	5.6	10.0	30.0	5.3	6.7	5.3	11.8
5	F	9.5	31.3	-	25.0	-	33.3	17.6	20.0
	Co	61.9	25.0	60.0	-	55.6	25.0	41.2	20.0
	S	14.3	12.5	-	25.0	16.7	8.3	11.8	13.3
	R	14.3	31.3	30.0	12.5	27.8	33.3	23.5	40.0
	Ca	-	-	10.0	37.5	-	-	5.9	6.7
6	F	8.3	43.8	9.1	12.5	5.3	27.6	7.1	30.0
	Co	75.0	31.3	72.7	50.0	52.6	41.4	57.1	30.0
	S	4.2	6.3	-	-	5.3	6.9	14.3	10.0
	R	8.3	12.5	9.1	-	21.1	10.3	21.4	23.3
	Ca	4.2	6.3	9.1	37.5	15.8	13.8	-	6.7

../..2

Table 3:3 (cont.)

		F HS 0→P	F HS P→0	F 0→P	F P→0	M HS 0→P	M HS P→0	M 0→P	M P→0
7	F	4.8	33.3	16.7	18.2	11.1	33.3	26.7	21.9
	Co	61.9	27.8	58.3	27.3	44.4	29.6	40.0	25.0
	S	9.5	5.6	-	18.2	-	11.1	-	15.6
	R	19.0	16.7	25.0	9.1	38.9	18.5	26.7	18.8
	Ca	4.8	16.7	-	27.3	5.6	7.4	6.7	18.8
8	F	8.0	30.0	9.1	10.0	10.5	29.0	12.5	31.4
	Co	72.0	30.0	63.6	60.0	57.9	38.7	56.3	20.0
	S	4.0	-	-	10.0	-	3.2	6.3	2.9
	R	16.0	40.0	27.3	-	26.3	25.8	25.0	34.3
	Ca	-	-	-	20.0	5.3	3.2	-	11.4
9	F	8.7	35.0	7.1	-	10.5	32.3	13.3	21.1
	Co	78.3	30.0	57.1	40.0	57.9	38.7	53.3	26.3
	S	4.3	-	7.1	30.0	-	-	6.7	15.8
	R	8.7	25.0	21.4	10.0	31.6	25.8	26.7	28.9
	Ca	-	10.0	7.1	20.0	-	3.2	-	7.9
10	F	8.7	28.6	8.3	-	5.3	32.4	5.9	24.4
	Co	78.3	28.6	75.0	44.4	57.9	35.3	64.7	19.5
	S	-	-	8.3	11.1	5.3	2.9	5.9	7.3
	R	13.0	33.3	8.3	-	31.6	23.5	23.5	41.5
	Ca	-	9.5	-	44.4	-	5.9	-	7.3
11	F	9.1	31.3	7.7	20.0	5.9	36.4	21.4	26.5
	Co	77.3	37.5	61.5	40.0	52.9	45.5	64.3	32.4
	S	4.5	-	-	10.0	5.9	-	-	5.9
	R	9.1	25.0	23.1	-	23.5	6.1	14.3	26.5
	Ca	-	6.3	7.7	30.0	11.8	12.1	-	8.8
12	F	4.2	23.8	15.4	18.2	-	24.2	14.3	19.4
	Co	75.0	28.6	53.8	45.5	55.6	42.4	57.1	36.1
	S	4.2	4.8	-	9.1	11.1	3.0	7.1	11.1
	R	12.5	42.9	30.8	-	33.3	27.3	21.4	27.8
	Ca	4.2	-	-	27.3	-	3.0	-	5.6

One of the major factors influencing style and quality of test response is test order. Chi-square analysis of test order (OCT or PCT first or second) indicates that for five-year-old girls, which test comes first does influence performance on the subsequent task. This is particularly true for girls. Inspection of Table 3:4 shows that for females a significant difference does obtain. More form responses tend to be used with pictures when presented first.

Test order does make a difference, particularly with girls, and consequently it is recommended that one or the other instruments be used. The finding raises an interesting question of why girls are so different than the boys in this respect. For details of this discussion see Sigel (1968), Sigel (1969), Sigel (1965), and Sigel (1963). The fact that the style responses of girls should be so influenced by pictures indicates that they are more oriented toward representational stimuli. Whether this is a reflection of their verbal facility, their greater maturity level, are among the questions that need further examination.

Summary:

The results of an item analysis for the major variables reveal that the OCT and the PCT are sensitive to sex, education, and test order. The twelve items do further reveal greater differences between ages than variability within an age group. On this basis it seems reasonable to conclude that performance of four-year-old lower-class black boys and girls reveals (1) an ability to group items, but (2) the preference is for color and relational-contextual, irrespective of item or nature of the test. With increase in age and education the tests reveal greater variety of responses. Test order, however, is still a critical variable.

Table 3:4

Chi-Square Item Analysis for Test Items for Five-Year-Olds: Comparison of Test Orders Within Sex

Item	OCT		PCT	
	F	M	F	M
1	<.05	<.05	<.001	<.01
2	n.s.	<.01	<.02	n.s.
3	<.01	n.s.	<.01	<.02
4	<.05	n.s.	<.001	n.s.
5	<.02	n.s.	<.01	<.05
6	<.02	n.s.	<.05	<.05
7	<.05	n.s.	<.05	n.s.
8	n.s.	n.s.	<.05	<.05
9	<.02	n.s.	<.02	n.s.
10	<.01	n.s.	<.01	<.02
11	<.02	n.s.	<.01	n.s.
12	<.05	n.s.	<.01	n.s.

An Examination of Test-Retest Performance for Lower-Class Black Children

Introduction

The reliability of a test is a standard psychometric criterion of its usefulness. There is no argument with that basic assertion. At issue, however, is the method used to establish reliability.

The use of a split-half measure is of limited value for the lower-class black preschool group since they tend to be highly perseverative. In spite of instruction to try to shift from one trial to another, the children tend to use the same criteria. Very often the first rationale seems to prevail. Whether this is an artifact or whether it reflects the paucity of the repertoire is an open question. Our guess is it is this that accounts for the high internal consistency.

A split-half test would yield a highly reliable score, but such a reliability would reflect more the behavior of the subject than the consistency of the test. In addition, a total of 12 test items results in a small number of items. Coupling the number of items with the behavior characteristics of these children would lead some to argue that a split-half reliability would lead to an inflated reliability score. The alternative is a test-retest procedure. Since most retesting was done after an interval of training, the time intervals ranged from six to eight months. There were children in control groups who received no classification or other relevant training.

In this analysis the scores on the OCT and PCT were combined, thereby yielding a large response pool. This appeared reasonable in view of the fact that the goal now is to determine if responses are consistent over time.

A test-retest procedure was possible with these data since control groups from the various studies could be combined yielding a high enough N, a long time interval, and no intervention treatment.

Reliability of OCT and PCT in Active Condition:

Inspection of Table 4 shows that for grouping and scorables obtained in the Active Condition, significant test-retest correlations of relatively high magnitude obtained (.69 <.01, .71 <.01). Similar results are also found with the Multiple Categorization Test. Thus it can be concluded that the performance scores are stable over a relatively long time.

Further breakdown of the various performance patterns are also shown in Table 4:1. Here are shown the percentage of children who can produce responses which can be scored, grouping responses. For the OCT and for the PCT only 24% and 17%, respectively, of the children changed. Of particular interest is the fact that on the OCT 11% of the children produced no grouping responses, where 21% gave no grouping score. Scorables show different patterns.

To be sure, the magnitude of these correlations are lower than what are usually accepted as reliability coefficients, but considering the time interval and the age of the children, the reliability scores are encouraging.

Reliability of OCT and PCT in Passive Condition:

The results for the Passive Condition show that although significant correlations obtain, the magnitude of relationship is much lower than that for the Active Condition (see Tables 4 and 4:2). This breakdown of response patterns reveals that for grouping scores the low correlation is due to the fact that for both objects and pictures 22% of the children shift from no scorable grouping response in the pretest to scorable grouping responses in the posttest. This holds for the OCT and the PCT. In addition, some children increase in the sheer number of grouping responses for the OCT and the PCT. These changes account for almost 50% of the subjects changing their scores from the pre to the post situation.

Table 4

Test-Retest Correlations of Combined OCT and PCT Grouping and Scorable Scores

Combined Scores	r	N	Time Interval Between Testing
CAG	.69	81	6 months
CAS	.71	81	6 months
CPG	.44	51	8 months
CPS	.31	51	8 months
Multiple Categorization Test			
MWG	.73	40	6 months
MWS	.64	40	6 months

Table 4:1

Analysis of Pre-Post Cognitive Style Performance:
Active Condition for OCT and PCT

Grouping Score (CAG)* r .69 (N = 81) <.01

Percentage of Children Showing Different Grouping Patterns Pre and Post

Pre	Post		OCT N	OCT %	PCT N	PCT %	Change	N	%
No Sc.	No Sc.		9	11	17	21	Neither	33	70
No Sc.	Sc.		8	10	8	10	Obj. Only	2	4
Sc.	No Sc.		6	7	5	6	Pict.Only	2	4
Sc.	Sc.	=	39	48	37	46	Both	10	22
Sc.	Sc.	≠	19	24	14	17		47	100
			81	100	81	100			

Scorable (CAS)* r .71 (N = 81) p.01

Percentage of Children Showing Different Use of Scorables Pre and Post

Pre	Post		OCT N	OCT %	PCT N	PCT %	Change	N	%
No Sc.	No Sc.		7	9	9	11	Neither	35	64
No Sc.	Sc		4	5	7	9	Obj. Only	5	9
Sc.	No Sc.		6	7	4	5	Pict.Only	4	7
Sc.	Sc.	=	42	52	43	53	Both	11	20
Sc.	Sc.	≠	22	27	18	22		55	100
			81	100					

* CAG, CAS = Combined scores for OCT and PCT.

Table 4:2

Analysis of Pre-Post Cognitive Style Performance:
Passive Condition for OCT and PCT

Grouping Score (CPG)* r .44 (N = 51) <.05

Percentage of Children Showing Different Grouping Patterns Pre and Post

Pre	Post		OCT N	OCT %	PCT N	PCT %	Change	N	%
No Sc.	No Sc.		1	2	2	4	Neither	21	66
No Sc.	Sc.		11	22	11	22	Obj. Only	2	6
Sc.	No Sc.		2	4	1	2	Pict.Only	2	6
Sc.	Sc.	=	25	49	24	47	Both	7	22
Sc.	Sc.	≠	12	23	13	25			
			51	100	51	100			

Scorable (CPS)* r .31 (N = 51) <.05

Percentage of Children Showing Different Use of Scorables Pre and Post

Pre	Post		OCT N	OCT %	PCT N	PCT %	Change	N	%
No Sc.	No Sc.		---	---	1	2	Neither	17	41
No Sc.	Sc.		7	14	7	14	Obj. Only	8	20
Sc.	No Sc.		---	---	---	---	Pict.Only	3	7
Sc.	Sc.	=	22	43	26	51	Both	13	32
Sc.	Sc.	≠	22	43	17	33		41	100
			51	100	51	100			

*CPG, CPS = Combined scores for OCT and PCT.

These findings may be due to the placement of the Passive Condition in the test sequence. It comes after the Active Condition, but prior to the next free classification situation with the second test, thereby creating a practice effect.

The test order for the child can be OCT, Active, OCT, Passive, PCT, Active, PCT, Passive. Even if the test order is reversed, there is in any event a Passive Condition as the final testing session. Thus, the child has had the most experience in grouping tests prior to the last passive sort.

It seems reasonable at this point to let the matter rest on this methodological note until this question is checked out by other research designs, namely by the Passive Condition alone for the PCT and OCT without prior experience in the Active Condition.

Multiple Categorization Test:

It will be recalled that a test added in the later battery was the Multiple Categorization Test. In this task, the child is asked to use more than one basis for a response.

Test-retest reliability shows that for grouping scores and scorables significant correlations were obtained (.73, $p < .01$, and .64, $p < .01$). This task, especially useful with six-year-old children, does yield consistent results.

Further analysis of the response pattern is evident in Table 4:3. It will be noted that response patterns--ability to produce responses which can be scored--increased for only 20% and very few changed from no response to a response.

Table 4:3

Analysis of Pre-Post Multiple Categorization Test

			MWG r=.73 (N=40) <.01		MWS r=.64 (N=40) <.01	
Pre	Post		N	%	N	%
No Sc.	No Sc.		---	---	---	---
No Sc.	Sc.		2	5	1	3
Sc.	No Sc.		1	3	1	3
Sc.	Sc.	=	25	72	25	72
Sc.	Sc.	≠	12	20	13	22
			40	100	40	100

Analysis of Pre-Post Consistency in Number of Styles

Heretofore, attention was paid to consistency in grouping and scorable responses from pre to post testing. Now, attention will be directed to consistency in style responses. Style scores refer to the number of different style criteria children used in making grouping or scorable responses. This analysis does not refer at this time to the types of styles employed. That will be discussed in a later section. The point of this analysis is to demonstrate the degree of consistency in use of particular bases of grouping.

Tables 5, 5:1, 5:2 show the change in styles used in grouping and scorable responses in the Active Condition for the OCT and PCT. The N in these tables is larger (81) since test orders were combined.

Inspection of the table shows that for the OCT approximately 50% of the children changed in number of styles (combining increase and decrease). This occurred for both object grouping and scorable responses in the Active Condition. It is of interest to note more children increased in grouping scores with objects as compared to pictures. This is not true for scorables, which are probably more reflective of increased verbal skills than classificatory skills.

Increases are also noted with the Passive Condition. In fact for both the OCT and PCT the percentage of children increasing in number of styles response is large. This lends further support to the notion that practice effect may be more pronounced with this condition than any other.

A more detailed analysis of number of styles used is presented in Table 5:1. For the Active Condition some small change is noted from the pre to post Active Condition for the OCT for grouping and scorable responses.

In view of the interest in discrepancy in responses for OCT and PCT, a comparison of number of styles between the two measures can be made by inspecting Table 5:1. More children produce no grouping responses on pictures than objects. Further differences are evident suggesting that more types of grouping responses occur with objects than pictures. For scorables these results do not obtain. Trends indicate tendency for objects to be easier for grouping than pictures.

For the Passive Condition on the OCT and PCT no difference appear (see Table 5:2).

Table 5

Analysis of Pre-Post Test Consistency of Number of Styles

Active Condition
N = 81

	Object				Picture			
	Grouping		Scorable		Grouping		Scorable	
Pre to Post	N	%	N	%	N	%	N	%
Increase	25	31	21	26	19	23	28	35
No Change	37	46	41	51	50	62	43	53
Decrease	19	23	19	23	12	15	10	12
	81	100	81	100	81	100	81	100

Passive Condition
N = 51

	Object				Picture			
	Grouping		Scorable		Grouping		Scorable	
Pre to Post	N	%	N	%	N	%	N	%
Increase	26	51	23	45	28	55	23	45
No Change	18	35	19	37	18	35	21	41
Decrease	7	14	9	18	5	10	7	14
	51	100	51	100	51	100	51	100

Table 5:1

Frequency Distribution of Number of Styles:
Pre and Post Active Condition

Object

Number of Styles	Grouping				Scorable			
	Pre		Post		Pre		Post	
	N	%	N	%	N	%	N	%
0	17	21	15	18	11	13	13	16
1	34	42	30	37	34	42	29	36
2	19	24	24	30	21	26	20	25
3	10	12	12	15	12	15	19	23
4	1	1	---	---	3	4	---	---
5	---	---	---	---	---	---	---	---
	81	100	81	100	81	100	81	100

Picture

Number of Styles	Grouping				Scorable			
	Pre		Post		Pre		Post	
	N	%	N	%	N	%	N	%
0	24	30	22	27	24	30	16	20
1	41	51	38	47	41	51	37	46
2	14	17	15	19	14	17	20	25
3	2	2	6	7	2	2	7	8
4	---	---	---	---	---	---	1	1
5	---	---	---	---	---	---	---	---
	81	100	81	100	81	100	81	100

Table 5:2

Frequency Distribution of Number of Styles:
Pre and Post Passive Condition

Object

Number of Styles	Grouping				Scorable			
	Pre		Post		Pre		Post	
	N	%	N	%	N	%	N	%
0	12	23	3	6	9	18	---	---
1	25	49	26	51	23	45	21	41
2	11	22	14	27	12	24	15	29
3	3	6	7	14	7	13	10	20
4	---	---	1	2	---	---	5	10
5	---	---	---	---	---	---	---	---
	51	100	51	100	51	100	51	100

Picture

Number of Styles	Grouping				Scorable			
	Pre		Post		Pre		Post	
	N	%	N	%	N	%	N	%
0	13	25	3	6	7	14	1	2
1	26	51	24	47	23	45	12	24
2	11	22	16	31	12	24	17	33
3	1	2	6	12	8	15	15	29
4	---	---	2	4	1	2	5	10
5	---	---	---	---	---	---	1	2
	51	100	51	100	51	100	51	100

Correlations Between OCT and PCT Grouping Responses

A series of correlations were computed taking into account test order for the total sample. Inspection of Table 6 shows that significant correlations obtain for grouping and scorable responses in all conditions and in all test orders. The results as shown in Table 6 indicate that for the total sample grouping and scorable responses are equivalent for objects and for pictures (colored or black and white). The correlations are all statistically significant, varying in magnitude from .51 to .82. Children generally are relatively consistent in their performance on these measures.

Unfortunately the number of cases and response patterns for each of the social class, racial, sex, and age groups was too small to carry out a sound statistical analysis for each sub-group. As data accumulate this will be possible.

Tables 6:1 to 6:3 do give some detailed information indicating the variety of scoring patterns obtained for OCT and PCT for the total sample. These tables indicate that when colored pictures are examined, their place on the sequence does have some effect. The results are self-evident from inspection of these tables--showing that no grouping or scorable responses at all occur for only small percentages of children, but that in spite of test order some changes occur. But the magnitude of these differences is relatively high.

What these results do indicate is that consistency in performance does exist with the highest consistency occurring for scorable responses (PCT and OCT correlated in test order O > P .84, $p < .01$). However, all other correlations are .80 to .69, indicating that some variance is not accounted for. In view of the heterogeneity of the sample and the long interval between tests, the correlations are indeed respectable. It must be kept in mind that these children are young and subject to a host of experiences that could influence the types of behavior assessed here.

Table 6

Correlations Between OCT and PCT Grouping and Scorable Responses for Active and Passive Conditions

Active

Color Pictures	Grouping	Scorable	N
O → P	.80*	.84	177
P → O	.76	.83	164
Combined	.77	.82	341
Black and White Pictures			
O → P	.82	.85	83
P → O	.69	.73	80
Combined	.76	.78	163

Passive

Color Pictures	Grouping	Scorable	N
O → P	.51	.79	86
P → O	.83	.75	78
Combined	.69	.77	164
Black and White Pictures			
O → P	.73	.80	83
P → O	.71	.83	80
Combined	.72	.82	163

* All correlations reported significant at the <.01 level of confidence.

Table 6:1

Analysis of Pre-Post Cognitive Style Performance for PCT: Active Condition

Grouping Scores

Color Pictures

Test Order			O → P		P → O		Combined	
N			177		164		341	
r			.80		.76		.77	
Obj.	Pict.		N	%	N	%	N	%
No St.	No St.		28	16	26	15	54	16
No St.	St.		10	6	3	2	13	4
St.	No St.		19	11	16	10	35	10
St.	St.	=	99	55	96	59	195	57
St.	St.	≠	21	12	23	14	44	13
			177	100	164	100	341	100

Black and White Pictures

Test Order			O → P		P → O		Combined	
N			83		80		163	
r			.82		.69		.76	
Obj.	Pict.		N	%	N	%	N	%
No St.	No St.		14	17	12	15	26	16
No St.	St.		2	2	3	4	5	3
St.	No St.		12	15	12	15	24	15
St.	St.	=	44	53	41	51	85	52
St.	St.	≠	11	13	12	15	23	14
			83	100	80	100	163	100

Table 6:2

Analysis of Pre-Post Cognitive Style Performance for PCT: Active Condition

Scorables

Color Pictures

Test Order			O → P		P → O		Combined	
N			177		164		341	
r			.84		.83		.82	
Obj.	Pict.		N	%	N	%	N	%
No St.	No St.		16	9	15	9	31	9
No St.	St.		9	5	5	3	14	4
St.	No St.		15	9	12	7	27	8
St.	St.	=	117	66	113	69	230	68
St.	St.	≠	20	11	19	12	39	11
			177	100	164	100	341	100

Black and White Pictures

Test Order			O → P		P → O		Combined	
N			83		80		163	
r			.85		.73		.78	
Obj.	Pict.		N	%	N	%	N	%
No St.	No St.		10	12	11	14	21	13
No St.	St.		1	1	3	4	4	2
St.	No St.		12	14	7	9	19	12
St.	St.	=	46	56	50	62	96	59
St.	St.	≠	14	17	9	11	23	14
			83	100	80	100	163	100

Table 6:3

Analysis of Pre-Post Cognitive Style Performance for PCT: Passive Condition

Grouping Scores

Color Pictures

Test Order			O → P		P → O		Combined	
N			86		78		164	
r			.51		.83		.69	
Obj.	Pict.		N	%	N	%	N	%
No St.	No St.		17	20	13	17	30	18
No St.	St.		5	6	10	13	15	9
St.	No St.		12	14	7	9	19	22
St.	St.	=	46	53	44	56	90	[illegible]
St.	St.	≠	6	7	4	5	10	[illegible]
			86	100	78	100	164	100

Black and White Pictures

Test Order			O → P		P → O		Combined	
N			83		80		163	
r			.73		.71		.72	
Obj.	Pict.		N	%	N	%	N	%
No St.	No St.		21	25	17	21	38	23
No St.	St.		1	1	3	4	4	2
St.	No St.		12	15	17	21	29	18
St.	St.	=	34	41	33	41	67	41
St.	St.	≠	15	18	10	13	25	16
			83	100	80	100	163	100

Table 6:4

Analysis of Pre-Post Cognitive Style Performance for PCT: Passive Condition

Scorables

Color Pictures

Test Order			O→ P		P→ O		Combined	
N			86		78		164	
r			.79		.75		.77	
Obj.	Pict.		N	%	N	%	N	%
No St.	No St.		12	14	10	13	22	14
No St.	St.		5	6	4	5	9	5
St.	No St.		5	6	2	3	7	4
St.	St.	=	56	65	49	62	105	64
St.	St.	≠	8	9	13	17	21	13
			86	100	78	100	164	100

Black and White Pictures

Test Order			O→ P		P→ O		Combined	
N			83		80		163	
r			.80		.83		.82	
Obj.	Pict.		N	%	N	%	N	%
No St.	No St.		17	21	14	18	31	19
No St.	St.		1	1	1	1	2	1
St.	No St.		7	8	9	11	16	10
St.	St.	=	45	54	42	52	87	53
St.	St.	≠	13	16	14	18	27	17
			83	100	80	100	163	100

To provide the reader with the details for organizational (grouping and scorable) responses for the various samples stratified by age, sex, social class, race, Head Start attendance or not, etc., a series of tables were constructed which give percentages or responses (see Tables 7 - 10:5). In view of the complexity of these tables, the reader will be better off inspecting them at leisure. Therefore, no verbal description will be forthcoming. The reader can inspect them for whatever his purpose, using them as indices of performance of various subsamples for each of the tests, OCT, PCT, each of the conditions, Active or Passive, on the performance variables, grouping, scorable, and style dimensions. Close inspection of these tables will show that less equivalence in performance is found among lower-class subjects than middle-class, and that boys and girls offer differential response patterns.

Granting the influence of test order, the fact that this influence is not consistent for boys and girls as well as for various social class groups speaks to the complexity of the issue which needs further exploration. Our contention is that this is not a methodological problem, but relates to the intriguing and mystifying area of sex differences.

Since, however, one of our interests in this test is its use as a diagnostic instrument to assess classificatory and representational skills, a final but brief analysis of the dominant style patterns among lower-class black boys and girls will be given. More data actually exists for this group since it has been the major research population in our training studies.

Table 7

Percentage of Different Types of
Organizational Responses for Each Group of
Four-Year-Olds on Each Active and Passive Test

Active

Group	Test Order	Object			Color			Black & White		
		G	NG	NS	G	NG	NS	G	NG	NS
F LC	O→P	27.6	17.4	54.9	20.3	18.0	61.7	21.4	13.1	65.5
	P→O	26.7	17.0	56.2	18.2	20.2	61.5	32.3	16.7	51.0
F MC	O→P	39.6	8.3	52.1	62.5	26.4	11.1	35.4	6.3	58.3
	P→O	63.3	13.3	23.3	44.4	11.1	44.4	65.0	8.3	26.7
M LC	O→P	34.4	17.2	48.3	23.1	13.4	63.4	26.4	8.3	65.3
	P→O	18.8	13.5	67.7	9.5	21.0	69.4	14.6	31.3	54.2
M MC	O→P	4.2	4.2	91.7	1.2	13.1	85.7	10.7	4.8	84.5
	P→O	41.7	18.8	39.6	41.7	8.3	50.0	38.9	2.8	58.3

Passive

F LC	O→P	6.9	4.2	88.9	8.3	7.4	84.3	9.5	20.2	70.2
	P→O	10.2	16.7	73.1	11.1	29.2	59.7	6.3	25.0	68.8
F MC	O→P	8.3	16.7	75.0	23.6	20.8	55.6	2.1	20.8	77.1
	P→O	31.7	20.0	48.3	22.2	19.4	58.3	30.0	18.3	51.7
M LC	O→P	8.3	41.7	50.0	9.7	30.6	59.7	12.5	12.5	75.0
	P→O	14.3	8.3	77.4	6.3	16.7	77.1	0.0	33.3	66.7
M MC	O→P	2.9	0.0	97.2	2.4	6.0	91.7	3.6	15.5	81.0
	P→O	25.0	27.1	47.9	36.1	13.9	50.0	30.6	2.8	66.7

Table 8

Percentage of Grouping and Scorable Responses in Different Style Categories for Each Group of Four-Year-Olds on the Active and Passive Conditions of the OCT

Active

Group		Test Order	Grouping F	Co	S	R	Ca	Scorable F	Co	S	R	Ca
F	LC	O ➔P	4.1	57.5	4.1	9.6	24.7	2.5	46.2	4.2	28.6	18.5
		P ➔O	2.6	44.2	0.0	31.2	22.1	4.8	32.5	0.8	48.4	13.5
F	MC	O ➔P	15.8	52.6	0.0	31.6	0.0	17.4	47.8	4.3	26.1	4.3
		P ➔O	50.0	36.8	10.5	2.6	0.0	45.7	41.3	10.9	2.2	0.0
M	LC	O ➔P	8.1	30.6	1.6	24.2	35.5	5.4	23.7	2.2	44.1	24.7
		P ➔O	0.0	18.5	3.7	55.6	22.2	0.0	14.0	3.2	67.7	15.1
M	MC	O ➔P	---	---	---	---	---	---	---	---	---	---
		P ➔O	0.0	45.0	10.0	25.0	20.0	0.0	37.9	6.9	41.4	13.8

Passive

F	LC	O ➔P	---	---	---	---	---	---	---	---	---	---
		P ➔O	0.0	63.6	0.0	18.2	18.2	0.0	55.2	0.0	20.7	24.1
F	MC	O ➔P	---	---	---	---	---	0.0	25.0	0.0	33.3	41.7
		P ➔O	62.3	31.6	5.3	0.0	0.0	54.8	41.9	3.2	0.0	0.0
M	LC	O ➔P	---	---	---	---	---	0.0	50.0	0.0	44.4	5.6
		P ➔O	0.0	8.3	0.0	83.3	8.3	0.0	5.3	5.3	84.2	5.3
M	MC	O ➔P	---	---	---	---	---	---	---	---	---	---
		P ➔O	0.0	66.7	25.0	8.3	0.0	0.0	48.0	16.0	24.0	12.0

Table 8:1

Percentage of Grouping and Scorable Responses in Different Style Categories for Each Group of Four-Year-Olds on the Active and Passive Conditions of the Color PCT

Active

Group		Test Order	Grouping					Scorable				
			F	Co	S	R	Ca	F	Co	S	R	Ca
F	LC	0 → P	1.6	50.8	0.0	9.8	37.7	3.5	39.1	0.0	31.3	26.1
		P → 0	4.3	58.7	0.0	15.2	21.7	2.1	52.6	0.0	35.1	10.3
F	MC	0 → P	11.1	46.7	8.9	17.8	15.6	10.9	51.6	7.8	15.6	14.1
		P → 0	75.0	25.0	0.0	0.0	0.0	60.0	20.0	20.0	0.0	0.0
M	LC	0 → P	6.0	32.0	0.0	8.0	54.0	6.3	24.1	2.5	31.6	35.4
		P → 0	4.2	12.5	0.0	54.2	29.2	1.3	18.2	1.3	68.8	10.4
M	MC	0 → P	---	---	---	---	---	0.0	0.0	8.3	91.7	0.0
		P → 0	0.0	66.7	13.3	13.3	6.7	0.0	61.1	11.1	22.2	5.6

Passive

F	LC	0 → P	---	---	---	---	---	0.0	70.6	0.0	17.6	11.8
		P → 0	---	---	---	---	---	0.0	27.6	0.0	24.1	48.3
F	MC	0 → P	29.4	41.2	23.5	5.9	0.0	21.9	21.9	15.6	28.1	12.5
		P → 0	---	---	---	---	---	80.0	13.3	6.7	0.0	0.0
M	LC	0 → P	---	---	---	---	---	0.0	24.1	0.0	65.5	10.3
		P → 0	---	---	---	---	---	0.0	72.7	0.0	18.2	9.1
M	MC	0 → P	---	---	---	---	---	---	---	---	---	---
		P → 0	0.0	61.5	15.4	0.0	23.1	0.0	66.7	11.1	5.6	16.7

Table 8:2

Percentage of Grouping and Scorable Responses in Different Style Categories for Each Group of Four-Year-Olds on the Active and Passive Conditions of the Black-and-White PCT

Active

Group		Test Order	Grouping F	Co	S	R	Ca	Scorable F	Co	S	R	Ca
F	LC	O→P	0.0	94.4	5.6	0.0	0.0	3.4	89.7	6.9	0.0	0.0
		P→O	0.0	29.0	0.0	25.8	45.5	14.9	25.5	0.0	23.4	36.2
F	MC	O→P	0.0	64.7	0.0	29.4	5.9	0.0	55.0	0.0	30.0	15.0
		P→O	43.6	41.0	10.3	5.1	0.0	40.9	38.6	15.9	4.5	0.0
M	LC	O→P	0.0	68.4	0.0	21.1	10.5	0.0	68.0	4.0	20.0	8.0
		P→O	---	---	---	---	---	0.0	0.0	0.0	72.7	27.3
M	MC	O→P	---	---	---	---	---	0.0	7.7	0.0	46.2	46.2
		P→O	0.0	78.6	7.1	14.3	0.0	0.0	73.3	6.7	20.0	0.0

Passive

F	LC	O→P	---	---	---	---	---	8.0	92.0	0.0	0.0	0.0
		P→O	---	---	---	---	---	40.0	13.3	0.0	13.3	33.3
F	MC	O→P	---	---	---	---	---	0.0	0.0	0.0	54.5	45.5
		P→O	27.8	61.1	11.1	0.0	0.0	48.3	41.4	6.9	3.4	0.0
M	LC	O→P	---	---	---	---	---	0.0	50.0	0.0	50.0	0.0
		P→O	---	---	---	---	---	0.0	0.0	68.8	31.3	0.0
M	MC	O→P	---	---	---	---	---	0.0	0.0	6.3	81.3	12.5
		P→O	0.0	90.9	9.1	0.0	0.0	0.0	91.7	8.3	0.0	0.0

Table 9

Percentage of Different Types of Organizational Responses for Each Group of Five-Year-Olds on Each Active Test

Group	Test Order	Object			Color			Black & White		
		G	NG	NS	G	NG	NS	G	NG	NS
F N LC HS	O→P	48.7	22.1	29.2	55.2	29.0	15.7	50.8	8.3	40.9
	P→O	65.5	17.6	16.9	57.7	16.0	26.3	23.6	11.1	65.3
F N LC NHS	O→P	47.0	11.4	41.7	55.7	18.8	25.5	48.6	18.1	33.3
	P→O	58.8	14.5	26.8	50.0	21.8	28.2	36.1	12.5	51.4
F N MC NHS	O→P	63.3	20.8	15.8	71.7	8.3	20.0	51.7	38.3	10.0
	P→O	61.7	5.0	33.3	79.2	4.2	16.7	36.1	8.3	55.6
F W LC HS	O→P	58.3	12.5	29.2	41.7	22.2	36.1	91.7	8.3	0.0
	P→O	75.0	16.7	8.3	75.0	16.7	8.3	69.4	25.0	5.6
F W LC NHS	O→P	50.0	31.7	18.3	---	---	---	40.0	43.3	16.7
	P→O	66.7	17.5	15.8	50.0	37.5	12.5	68.1	11.1	20.8
F W MC NHS	O→P	81.2	6.9	11.8	93.3	1.7	5.1	61.9	16.7	21.4
	P→O	83.3	15.5	1.2	75.0	11.1	13.9	89.6	8.3	2.1
M N LC HS	O→P	50.0	26.8	23.2	54.3	26.1	19.6	46.3	17.6	36.1
	P→O	57.4	20.3	22.3	53.8	23.5	22.6	49.4	12.2	38.5
M N LC NHS	O→P	49.4	22.3	28.3	49.6	22.9	27.4	62.5	31.3	6.3
	P→O	36.3	23.4	40.3	36.0	27.4	36.5	37.5	6.3	56.3
M N MC NHS	O→P	46.9	26.0	27.1	31.7	25.0	43.3	77.8	22.2	0.0
	P→O	49.2	39.2	11.7	34.5	41.7	23.8	72.2	22.2	5.6
M W LC HS	O→P	45.8	10.0	44.2	65.3	12.5	22.2	25.0	22.9	52.1
	P→O	41.7	58.3	0.0	50.0	16.7	33.3	---	---	---
M W LC NHS	O→P	45.0	11.7	43.3	58.3	13.9	27.8	62.5	16.7	20.8
	P→O	38.1	15.5	46.4	43.8	18.8	37.5	2.8	2.8	94.4
M W MC NHS	O→P	73.6	15.3	11.1	75.0	10.4	14.6	79.2	12.5	8.3
	P→O	74.0	12.5	13.5	55.0	5.0	40.0	69.4	13.9	16.7

Table 9:1

Percentage of Different Types of Organizational Responses for Each Group of Five-Year-Olds on Each Passive Test

Group	Test Order	Object			Color			Black & White		
		G	NG	NS	G	NG	NS	G	NG	NS
F N LC HS	O→P	26.0	34.9	39.1	11.7	46.7	41.7	23.1	34.7	42.1
	P→O	22.7	41.3	36.0	29.2	44.2	26.7	14.6	41.7	43.8
F N LC NHS	O→P	17.4	46.5	36.1	25.0	55.6	19.4	9.7	59.7	30.6
	P→O	21.7	35.0	43.3	33.3	27.1	39.6	5.6	38.9	55.6
F N MC NHS	O→P	21.7	45.8	32.5	35.0	43.3	21.7	11.7	61.7	26.7
	P→O	31.7	26.7	41.7	29.2	0.0	70.8	16.7	27.8	55.6
F W LC HS	O→P	16.7	41.7	41.7	13.9	41.7	44.4	25.0	66.7	8.3
	P→O	18.8	52.1	29.2	25.0	58.3	16.7	33.0	55.6	11.1
F W LC NHS	O→P	20.0	63.3	16.7	---	---	---	38.3	23.3	38.3
	P→O	20.0	56.7	23.3	18.8	58.3	22.9	19.4	56.9	23.6
F W MC NHS	O→P	28.5	42.4	29.2	35.0	40.0	25.0	32.1	35.7	32.1
	P→O	25.0	56.0	19.0	30.6	50.0	19.4	27.1	60.4	12.5
M N LC HS	O→P	25.5	60.6	13.9	20.4	61.1	18.5	26.9	38.9	34.3
	P→O	25.0	39.8	35.1	31.0	51.3	17.7	24.4	32.1	43.6
M N LC NHS	O→P	29.5	45.4	25.0	16.7	47.6	35.7	31.3	60.4	8.3
	P→O	23.9	39.4	36.7	23.6	49.1	27.3	27.1	25.0	47.9
M N MC NHS	O→P	24.0	38.5	37.5	20.0	40.0	40.0	22.2	61.1	16.7
	P→O	17.5	68.3	14.2	7.1	51.2	41.7	38.9	44.4	16.7
M W LC HS	O→P	18.3	43.3	38.3	23.6	44.4	31.9	12.5	37.5	50.0
	P→O	33.3	66.7	0.0	41.7	33.3	25.0	---	---	---
M W LC NHS	O→P	20.0	38.3	41.7	22.2	30.6	47.2	29.2	62.5	8.3
	P→O	17.9	23.8	58.3	20.8	31.3	47.9	0.0	0.0	100.0
M W MC NHS	O→P	31.9	40.3	27.8	29.2	47.9	22.9	45.8	37.5	16.7
	P→O	34.4	32.3	33.3	33.1	31.7	45.0	52.8	38.9	8.3

Table 10

Percentage of Grouping and Scorable Responses in Different Style Categories for Each Group of Five-Year-Olds on the OCT Active

Group		Test Order	Grouping F	Co	S	R	Ca	Scorable F	Co	S	R	Ca
F	N	O→P	10.4	68.9	4.5	9.0	7.2	7.4	68.1	4.6	13.9	5.9
LC	HS	P→O	30.2	38.8	2.4	15.1	13.4	26.3	33.1	1.9	27.6	11.1
F	N	O→P	12.1	64.5	4.8	14.5	4.0	12.3	56.5	4.5	22.7	3.9
LC	NHS	P→O	29.8	36.7	17.9	2.2	13.4	26.3	36.5	15.0	5.4	16.8
F	N	O→P	19.1	47.4	1.3	13.2	18.4	16.8	49.5	1.0	18.8	13.9
MC	NHS	P→O	51.4	27.0	0.0	18.9	2.7	47.5	25.0	0.0	25.0	2.5
F	W	O→P	42.9	28.6	3.6	17.9	7.1	38.2	26.5	2.9	26.5	5.9
LC	HS	P→O	0.0	47.2	0.0	27.8	25.0	0.0	52.3	0.0	27.3	20.5
F	W	O→P	13.3	50.0	10.0	16.7	10.0	30.6	32.7	6.1	24.5	6.1
LC	NHS	P→O	20.0	27.5	7.5	17.5	27.5	15.8	25.7	5.9	30.7	21.8
F	W	O→P	59.8	20.5	3.4	10.3	6.0	59.8	19.7	3.9	11.0	5.5
MC	NHS	P→O	30.0	7.1	2.9	34.3	25.7	26.5	10.8	2.4	37.3	22.9
M	N	O→P	14.1	59.4	7.8	9.9	8.8	10.5	43.4	11.5	25.4	9.2
LC	HS	P→O	26.3	44.7	0.8	16.5	11.8	27.0	41.2	0.9	21.7	9.3
M	N	O→P	12.6	63.8	7.8	11.4	4.2	14.9	52.7	6.6	22.4	3.3
LC	NHS	P→O	23.0	40.0	2.2	17.8	17.0	19.4	33.8	2.7	32.4	11.7
M	N	O→P	8.9	55.6	2.2	2.2	31.1	21.4	44.3	5.7	8.6	20.0
MC	NHS	P→O	64.4	5.1	6.8	13.6	10.2	38.7	10.4	15.1	29.2	6.6
M	W	O→P	12.7	61.8	3.6	12.7	9.1	10.4	52.2	3.0	26.9	7.5
LC	HS	P→O	---	---	---	---	---	0.0	25.0	0.0	50.0	25.0
M	W	O→P	11.1	59.3	3.7	11.1	14.8	8.8	61.8	5.9	11.8	11.8
LC	NHS	P→O	0.0	21.9	0.0	31.3	46.9	0.0	17.8	0.0	44.4	37.8
M	W	O→P	41.5	56.6	1.9	0.0	0.0	43.8	50.0	1.6	3.1	1.6
MC	NHS	P→O	85.9	9.9	1.4	0.0	2.8	86.7	8.4	2.4	0.0	2.4

Table 10:1

Percentage of Grouping and Scorable Responses in Different Style Categories for Each Group of Five-Year-Olds on the Color PCT Active

Group	Test Order	Grouping F	Co	S	R	Ca	Scorable F	Co	S	R	Ca
F N	O→P	7.8	81.0	3.6	5.6	2.2	5.1	75.8	4.8	12.4	1.9
LC HS	P→O	42.2	23.7	4.0	20.2	9.9	35.3	25.3	3.6	28.0	7.7
F N	O→P	10.3	73.8	1.9	9.3	4.7	11.2	62.2	4.2	18.2	4.2
LC NHS	P→O	20.5	43.6	14.1	2.6	19.2	17.9	33.9	17.0	4.5	26.8
F N	O→P	51.2	48.8	0.0	0.0	0.0	52.1	47.9	0.0	0.0	0.0
MC NHS	P→O	52.6	47.4	0.0	0.0	0.0	55.0	45.0	0.0	0.0	0.0
F W	O→P	0.0	66.7	0.0	20.0	13.3	0.0	52.2	0.0	34.8	13.0
LC HS	P→O	0.0	0.0	0.0	33.3	66.7	0.0	0.0	0.0	36.4	63.6
F W	O→P	---	---	---	---	---	---	---	---	---	---
LC NHS	P→O	0.0	58.3	0.0	25.0	16.7	0.0	33.3	4.8	52.4	9.5
F W	O→P	64.3	0.0	7.1	5.4	23.2	63.2	0.0	7.0	7.0	22.8
MC NHS	P→O	37.0	25.9	3.7	29.6	3.7	35.5	32.3	3.2	25.8	3.2
M N	O→P	8.0	64.0	6.7	15.3	6.0	7.2	52.7	5.4	29.7	4.9
LC HS	P→O	35.3	39.3	4.0	13.5	7.9	34.5	35.6	3.6	19.6	6.6
M N	O→P	14.0	66.4	7.7	9.1	2.8	14.4	50.7	8.1	22.0	4.8
LC NHS	P→O	32.4	27.1	5.8	19.1	15.6	27.0	27.5	6.3	28.8	10.4
M N	O→P	26.3	47.4	0.0	21.1	5.3	44.1	26.5	5.9	20.6	2.9
MC NHS	P→O	41.4	0.0	10.3	44.8	3.4	18.8	14.1	18.8	45.3	3.1
M W	O→P	17.0	63.8	0.0	17.0	2.1	21.4	55.4	1.8	19.6	1.8
LC HS	P→O	---	---	---	---	---	---	---	---	---	---
M W	O→P	0.0	95.2	0.0	4.8	0.0	0.0	92.3	0.0	7.7	0.0
LC NHS	P→O	0.0	42.9	4.8	23.8	28.6	0.0	30.0	6.7	43.3	20.0
M W	O→P	63.9	33.3	2.8	0.0	0.0	63.4	29.3	2.4	2.4	2.4
MC NHS	P→O	97.0	0.0	3.0	0.0	0.0	94.4	0.0	5.6	0.0	0.0

Table 10:2

Percentage of Grouping and Scorable
Responses in Different Style Categories for
Each Group of Five-Year-Olds on the Black-and-White PCT Active

Group	Test Order	Grouping F	Co	S	R	Ca	Scorable F	Co	S	R	Ca
F N LC HS	O →P	22.4	32.8	0.0	34.3	10.4	19.2	33.3	0.0	37.2	10.3
	P →O	2.9	35.3	0.0	41.2	20.6	14.0	26.0	0.0	46.0	14.0
F N LC NHS	O →P	2.9	57.1	2.9	28.6	8.6	2.1	41.7	2.1	47.9	6.3
	P →O	53.8	7.7	11.5	19.2	7.7	45.7	8.6	11.4	28.6	5.7
F N MC NHS	O →P	0.0	38.7	0.0	29.0	32.3	0.0	44.4	0.0	25.9	29.6
	P →O	84.6	0.0	0.0	15.4	0.0	68.8	0.0	0.0	31.3	0.0
F W LC HS	O →P	100.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0
	P →O	0.0	68.0	4.0	24.0	4.0	0.0	67.6	2.9	26.5	2.9
F W LC NHS	O →P	8.3	58.3	8.3	16.7	8.3	6.0	28.0	6.0	54.0	6.0
	P →O	32.7	14.3	8.2	16.3	28.6	28.1	14.0	7.0	26.3	24.6
F W MC NHS	O →P	25.0	44.2	5.8	15.4	9.6	31.8	36.4	4.5	12.1	15.2
	P →O	65.1	0.0	0.0	23.3	11.6	59.6	0.0	2.1	27.7	10.6
M N LC HS	O →P	0.0	56.0	10.0	18.0	16.0	0.0	40.6	18.8	26.1	14.5
	P →O	16.9	66.2	0.0	5.2	11.7	13.5	65.6	0.0	10.4	10.4
M N LC NHS	O →P	10.0	86.7	0.0	0.0	3.3	6.7	66.7	0.0	6.7	20.0
	P →O	0.0	100.0	0.0	0.0	0.0	42.9	52.4	0.0	4.8	0.0
M N MC NHS	O →P	7.1	67.9	0.0	10.7	14.3	41.7	36.1	0.0	11.1	11.1
	P →O	53.8	26.9	7.7	11.5	0.0	44.1	41.2	5.9	8.8	0.0
M W LC HS	O →P	0.0	8.3	0.0	25.0	66.7	0.0	8.7	0.0	52.2	39.1
	P →O	---	---	---	---	---	---	---	---	---	---
M W LC NHS	O →P	53.3	33.3	6.7	6.7	0.0	42.1	47.4	5.3	5.3	0.0
	P →O	---	---	---	---	---	---	---	---	---	---
M W MC NHS	O →P	0.0	100.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0
	P →O	96.0	0.0	4.0	0.0	0.0	90.0	0.0	10.0	0.0	0.0

Table 10:3

Percentage of Grouping and Scorable Responses in Different Style Categories for Each Group of Five-Year-Olds on the OCT Passive

Group		Test Order	Grouping F	Co	S	R	Ca	Scorable F	Co	S	R	Ca
F	N	O→P	6.0	58.0	0.0	28.0	8.0	7.7	53.0	0.9	27.4	11.1
LC	HS	P→O	28.3	48.3	1.7	13.3	8.3	13.0	36.7	1.2	37.3	11.8
F	N	O→P	8.0	44.0	0.0	16.0	32.0	9.8	19.6	1.1	32.6	37.0
LC	NHS	P→O	19.2	11.5	11.5	7.7	50.0	15.3	57.2	5.3	12.2	9.9
F	N	O→P	15.4	61.5	0.0	7.7	15.4	12.3	59.3	1.2	12.3	14.8
MC	NHS	P→O	31.6	42.1	0.0	15.8	10.5	20.0	37.1	0.0	37.1	5.7
F	W	O→P	---	---	---	---	---	39.3	35.7	0.0	10.7	14.3
LC	HS	P→O	---	---	---	---	---	0.0	47.1	0.0	29.4	23.5
F	W	O→P	8.3	50.0	0.0	8.3	33.3	14.0	24.0	4.0	42.0	16.0
LC	NHS	P→O	20.8	37.5	4.2	20.8	16.7	9.8	35.9	4.3	29.3	20.7
F	W	O→P	46.3	26.8	2.4	12.2	12.2	53.9	13.7	3.9	11.8	16.7
MC	NHS	P→O	28.6	19.0	0.0	38.1	14.3	30.9	16.2	0.0	22.1	30.9
M	N	O→P	5.5	56.4	16.4	9.1	12.7	8.6	53.2	8.6	19.9	9.7
LC	HS	P→O	29.0	36.2	0.0	15.9	18.8	20.7	33.0	0.0	29.6	16.8
M	N	O→P	0.0	87.2	5.1	2.6	5.1	7.1	71.7	2.0	17.2	2.0
LC	NHS	P→O	2.3	46.5	0.0	4.7	46.5	13.2	42.1	6.1	15.8	22.8
M	N	O→P	17.4	47.8	0.0	17.4	17.4	20.0	41.7	3.3	21.7	13.3
MC	NHS	P→O	71.4	9.5	14.3	4.8	0.0	35.9	10.7	15.5	34.0	3.9
M	W	O→P	31.8	31.8	0.0	18.2	18.2	24.3	21.6	0.0	35.1	18.9
LC	HS	P→O	---	---	---	---	---	0.0	0.0	0.0	41.7	58.3
M	W	O→P	16.7	66.7	0.0	8.3	8.3	22.9	62.9	0.0	11.4	2.9
LC	NHS	P→O	0.0	26.7	0.0	26.7	46.7	0.0	22.9	2.9	34.3	40.0
M	W	O→P	39.1	60.9	0.0	0.0	0.0	50.0	46.2	0.0	1.9	1.9
MC	NHS	P→O	63.6	15.2	6.1	12.1	3.0	73.4	9.4	3.1	7.8	6.3

Table 10:4

Percentage of Grouping and Scorable Responses in Different Style Categories for Each Group of Five-Year-Olds on the Color PCT Passive

Group		Test Order	Grouping F	Co	S	R	Ca	Scorable F	Co	S	R	Ca
F	N	O >P	0.0	71.4	0.0	0.0	28.6	0.0	80.0	0.0	11.4	8.6
LC	HS	P >O	31.4	40.0	5.7	11.4	11.4	20.5	40.9	3.4	25.0	10.2
F	N	O >P	27.8	33.3	11.1	22.2	5.6	15.5	32.8	3.4	44.8	3.4
LC	NHS	P >O	0.0	6.3	18.8	0.0	75.0	0.0	6.9	17.2	27.6	48.3
F	N	O >P	42.9	57.1	0.0	0.0	0.0	34.0	63.8	0.0	2.1	0.0
MC	NHS	P >O	57.1	42.9	0.0	0.0	0.0	57.1	42.9	0.0	0.0	0.0
F	W	O >P	0.0	60.0	0.0	20.0	20.0	0.0	55.0	0.0	25.0	20.0
LC	HS	P >O	0.0	0.0	0.0	66.7	33.3	0.0	0.0	0.0	40.0	60.0
F	W	O >P	---	---	---	---	---	---	---	---	---	---
LC	NHS	P >O	11.1	44.4	0.0	0.0	44.4	2.7	32.4	5.4	35.1	24.3
F	W	O >P	52.4	0.0	0.0	23.8	23.8	62.2	0.0	0.0	22.2	15.6
MC	NHS	P >O	36.4	36.4	0.0	18.2	9.1	48.3	31.0	0.0	13.8	6.9
M	N	O >P	0.0	86.4	0.0	4.5	9.1	2.3	77.3	1.1	12.5	6.8
LC	HS	P >O	44.1	34.4	10.8	7.5	3.2	40.5	27.1	6.9	19.0	6.5
M	N	O >P	0.0	57.1	21.4	14.3	7.1	3.7	50.0	7.4	24.1	14.8
LC	NHS	P >O	21.6	43.1	2.0	8.8	24.5	20.7	34.4	2.9	28.3	13.7
M	N	O >P	41.7	41.7	0.0	8.3	8.3	38.9	22.2	11.1	19.4	8.3
MC	NHS	P >O	33.3	0.0	0.0	50.0	16.7	18.4	2.0	6.1	65.3	8.2
M	W	O >P	17.6	64.7	0.0	17.6	0.0	16.3	63.3	0.0	20.4	0.0
LC	HS	P >O	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	11.1	88.9
M	W	O >P	0.0	100.0	0.0	0.0	0.0	0.0	84.2	0.0	15.8	0.0
LC	NHS	P >O	0.0	50.0	0.0	10.0	40.0	0.0	40.0	4.0	24.0	32.0
M	W	O >P	71.4	28.6	0.0	0.0	0.0	70.3	24.3	0.0	0.0	5.4
MC	NHS	P >O	50.0	14.3	21.4	14.3	0.0	57.6	6.1	15.2	21.2	0.0

Table 10:5

Percentage of Grouping and Scorable
Responses in Different Style Categories for
Each Group of Five-Year-Olds on the Black-and-White PCT Passive

Group		Test Order	Grouping					Scorable				
			F	Co	S	R	Ca	F	Co	S	R	Ca
F	N	0→P	14.3	3.6	0.0	64.3	17.9	15.7	17.1	0.0	47.1	20.0
LC	HS	P→0	23.8	42.9	0.0	19.0	14.3	9.9	34.6	0.0	43.2	12.3
F	N	0→P	0.0	71.4	0.0	14.3	14.3	2.0	24.0	2.0	58.0	14.0
LC	NHS	P→0	50.0	0.0	0.0	50.0	0.0	43.8	3.1	12.5	34.4	6.3
F	N	0→P	0.0	14.3	0.0	14.3	71.4	0.0	18.2	0.0	38.6	43.2
MC	NHS	P→0	66.7	0.0	0.0	14.7	14.7	25.0	0.0	0.0	66.8	6.3
F	W	0→P	100.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0
LC	HS	P→0	0.0	66.7	0.0	25.0	8.3	0.0	75.0	0.0	21.9	3.1
F	W	0→P	4.3	39.1	0.0	17.4	39.1	2.7	24.3	0.0	37.8	35.1
LC	NHS	P→0	50.0	0.0	0.0	0.0	50.0	23.6	0.0	0.0	38.2	38.2
F	W	0→P	33.3	37.0	11.1	14.8	3.7	35.1	33.3	7.0	12.3	12.3
MC	NHS	P→0	15.4	0.0	0.0	69.2	15.4	19.0	0.0	0.0	50.0	31.0
M	N	0→P	0.0	44.8	17.2	31.0	6.9	0.0	26.8	18.3	42.3	12.7
LC	HS	P→0	10.5	71.1	0.0	10.5	7.9	13.6	64.8	3.4	10.2	8.0
M	N	0→P	6.7	86.7	0.0	6.7	0.0	11.4	61.4	0.0	15.9	11.4
LC	NHS	P→0	15.4	84.6	0.0	0.0	0.0	8.0	84.0	0.0	0.0	8.0
M	N	0→P	12.5	37.5	0.0	37.5	12.5	3.3	56.7	0.0	23.3	16.7
MC	NHS	P→0	57.1	21.4	14.3	7.1	0.0	50.0	40.0	6.7	3.3	0.0
M	W	0→P	0.0	0.0	0.0	33.3	66.7	0.0	0.0	0.0	66.7	33.3
LC	HS	P→0	---	---	---	---	---	---	---	---	---	---
M	W	0→P	57.1	42.9	0.0	0.0	0.0	50.0	50.0	0.0	0.0	0.0
LC	NHS	P→0	---	---	---	---	---	---	---	---	---	---
M	W	0→P	0.0	100.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0
MC	NHS	P→0	73.7	0.0	5.3	15.8	5.3	84.8	0.0	3.0	9.1	3.0

Dominant Style Patterns Among Lower-Class Black Children

Style patterns reflect criteria of classification, or to put it another way, reflect what particular cues are "preferred" as basis of grouping stimuli. The ability to employ various criteria becomes an important index of the openness of the system--to be attentive to and capable of using a variety of available cues--thus, the variety of styles employed becomes an index of flexibility. We have shown how limited the number of styles is among lower-class black boys and girls and have also demonstrated how modification in such response patterns can occur (Sigel & Olmsted, 1967, 1968).

Styles of response as a substantive factor does indicate what kind of information a child uses in organization. The kind of criteria used in creating a grouping does reveal whether the information employed is tied specifically to physical attributes of objects (form, color, structure) or is related to function--a reiteration of particular experience or organization based on already developed class status in a sense, but organized on the basis of inferred characteristics.

This section will be a detailing of the dominant style found. A word of caution here. As the reader knows by now, a total of only 12 responses is possible. The total number of style categories is five, limiting the number of responses per style. The tests do limit the number of style responses possible because of the interdependence of scores. A respondent can not be high on more than one approach. Nevertheless, the tests are sufficiently open to allow alternatives for each trial--albeit the Ns would be small. Thus, children may show much variety with small frequencies occurring. By examining the total test protocol, however, types of performance can be identified which could reveal particular significance of various test response patterns.

To accomplish this, careful examination was given to profile type analysis of each record. Unfortunately, the number of possibilities far exceeded the population, but perhaps in time, with increase in number of cases, it will be possible to do a thorough profile analysis--especially to examine the degree to which particular profiles relate to other cognitive variables.

For now, the focus will be on one type of quasi profile--the dominant style. The argument asks whether dominant styles can be identified and what are they, especially among the target population, the lower-class black children.

A dominant style occurs when the subject produces at least three or more of one kind of response than another. Example: 7 form, 4 color, 1 relational, 0 categorical is form dominant. A dominant style also is said to exist when the child gives 1, 2, or 3 responses of one style and no other. Mixed styles are identified when the child's most frequent response style is (less than 3) more than the next most frequent. Example: 7 form, 5 relational is a form dominant mixed style.

More complex patterning is possible, taking into account the types of responses in the nondominant area. Example: 5 form, 3 color, 2 relational, 2 categorical, as compared to 5 form, 3 color, 4 relational and 0 categorical. The subject sample necessary for such analysis is considerable, since the possible combinations are fantastic in number.

In this section, then, the analysis will be limited to dominant style for four and five-year-olds, Head Start trained or not, for each test (OCT, PCT) and each condition (Active and Passive). Tables 11, 11:1, 11:2, 11:3 contain this information. It is clear that for the younger the child, the more likely is the dominant style to be color, with few children showing other patterns. Increase in age or Head Start experience, or both, reveals greater variety with increase in form and categorical styles.

Table 11

Dominant Style Patterns Among
Lower-Class Black Samples: OCT Active Grouping

Test Order	Female O→P			Male O→P			Female P→O			Male P→O		
Age Group	4*	5-NHS†	5-HS††	4	5-NHS	5-HS	4	5-NHS	5-HS	4	5-NHS	5-HS
	%	%	%	%	%	%	%	%	%	%	%	%
Style												
O	28	25	11	17	17	22	14	0	4	48	22	13
F	0	13	4	6	8	4	0	15	32	0	15	29
Co	32	50	74	22	38	44	29	46	32	5	22	33
S	0	0	4	0	8	9	0	15	0	0	0	0
R	12	13	4	22	21	9	38	8	12	38	19	17
Ca	24	0	4	17	0	13	14	15	8	10	15	4
Misc.	4	0	0	17	8	0	5	0	12	0	7	4
	100	101	101	101	100	101	100	99	100	101	100	100

* 4 Too young for Head Start
† 5-NHS Eligible but non Head Start
†† 5-HS Attended Head Start

Table 11:1

Dominant Style Patterns Among
Lower-Class Black Samples: OCT Active Scorable

Test Order	Female O→P			Male O→P			Female P→O			Male P→O		
Age Group	4	5-NHS	5-HS	4	5-NHS	5-HS	4	5-NHS	5-HS	4	5-NHS	5-HS
	%	%	%	%	%	%	%	%	%	%	%	%
Style												
0	16	19	7	17	13	13	10	0	0	27	19	13
F	0	13	4	6	21	4	5	15	32	0	22	29
Co	32	50	74	17	42	39	24	40	28	5	22	33
S	0	0	4	0	0	9	0	15	0	0	0	0
R	32	19	7	39	25	26	43	8	32	57	30	25
Ca	12	0	4	17	0	4	14	15	4	5	7	0
Misc.	8	0	0	6	0	4	5	8	4	5	0	0
	100	101	100	102	101	99	101	101	100	99	100	100

Table 11:2

Dominant Style Patterns Among
Lower-Class Black Samples: PCT Active Grouping

Test Order	Female O→P			Male O→P			Female P→O			Male P→O		
Age Group	4	5-NHS	5-HS	4	5-NHS	5-HS	4	5-NHS	5-HS	4	5-NHS	5-HS
	%	%	%	%	%	%	%	%	%	%	%	%
Style												
O	56	13	11	50	13	22	33	0	12	57	37	13
F	0	13	7	6	17	4	5	15	24	0	11	29
Co	16	63	67	22	50	44	33	31	24	10	19	38
S	0	0	4	0	8	0	0	8	0	0	0	0
R	4	13	4	6	13	22	14	15	24	19	15	13
Ca	20	0	4	11	0	4	10	23	8	10	11	8
Misc.	4	0	4	6	0	4	5	8	8	5	7	0
	100	102	101	101	101	100	100	100	100	101	100	101

Table 11:3

Dominant Style Patterns Among
Lower-Class Black Samples: PCT Active Scorable

Test Order	Female O→P			Male O→P			Female P→O			Male P→O		
Age Group	4	5-NHS	5-NH	4	5-NHS	5-HS	4	5-NHS	5-HS	4	5-NHS	5-HS
	%	%	%	%	%	%	%	%	%	%	%	%
Style												
O	32	13	4	33	13	13	19	0	12	33	22	13
F	0	13	17	6	17	4	5	15	24	0	15	29
Co	20	50	74	6	46	48	33	39	24	10	22	38
S	0	0	4	0	4	0	0	8	4	0	4	0
R	36	25	11	33	17	30	24	15	32	52	22	13
Ca	12	0	0	11	4	0	10	23	0	0	4	4
Misc.	0	0	0	11	0	4	10	0	4	5	11	4
	100	101	100	100	101	99	101	100	100	100	100	101

These changes and differences in dominant style among the various groups attest to the value of the OCT and PCT since such differences would be expected on the basis of the literature (Sigel, 1964).

These results are meaningful in the context of the body of research done on styles of categorization with middle-class white children (Kagan, Moss & Sigel, 1963; Sigel, Jarman & Hanesian, 1967).

Color, form or structure are subsumed under the rubric of descriptive categorization. In the previous studies on styles of categorization black and white stimuli were used, thereby precluding color responses. Descriptive responses of a form or structural quality were found and these were interpreted as reflective of analytic behavior. With the lower-class black children at age four virtually no form responses were found, and at age five, still relatively low frequencies. The low frequency of structural responses under all test order and stimuli conditions reveals an inability to "analyze" through part-whole analysis. Color and form are actually more global type responses. Consequently, these data, varied as they are because of test order and stimuli, do reveal that lower-class black boys and girls have difficulty in "analyzing" relative to their middle-class white or black counterparts.

That Head Start experiences do not necessarily influence these patterns in any dramatic way may well be due to the fact that the Head Start programs do not focus on such processes as discrimination and attention to details. Some evidence supporting this interpretation comes from an analysis of items grouped, but where children could not verbalize the basis of the grouping. Analysis of the items grouped revealed that form criteria dominated the grouping. On the basis of these results, it seems that color responses do not reflect primary "pull" but rather the form quality is the more basic criteria--in effect, the figure-ground relationship as expressed in <u>form</u> provides the primary classificatory criteria. Color

responses may be more reflective of increased verbal skills--but still applied to the ostensive characteristics of objects. Whether the increase in form responses at age five represents a difference process than the use of form at the "nonverbal" level is a moot question. Other style variations with age, class, race, and sex and test order can be ascertained from inspection of the tables.

Summary and Conclusion

The purpose of this report was to summarize the data obtained on the OCT and PCT, thereby providing some "normative" type data or response patterns of various subsamples. Obviously, the study was not planned as a normative standardized study. Rather, this is a post hoc analysis of a mass of accumulated test data collected for a number of different studies. The test results were pooled where possible and analyzed to provide various kinds of information about the test.

This report represents a compilation of various analyses and should be used as a reference.

Some conclusions are in order as follows:

(1) The 12 items do seem to provide a range of types of responses for four and five-year-old children.

(2) Test-retest reliability is moderately high for most variables assessed.

(3) Test order does have effect, OCT→ PCT, PCT→ OCT. The test order interacts with sex and social class of the child.

(4) Middle-class children tend to provide more consistent response patterns on the OCT and the PCT than lower-class children, especially lower-class black children.

(5) Sex interacts with test order. (This poses an interesting question as to why.)

(6) Dominant categorization styles have been identified for lower-class black samples, varying with age, sex and educational status.

Recommendations regarding the use of the OCT and the PCT:

The OCT and PCT are two forms of the same instrument. For middle-class children, only one form is needed since three-dimensional and two-dimensional stimuli are relatively equivalent. For lower-class children different results obtain for the OCT and the PCT. Care must be taken in using the two tests and the data in this report demonstrate the value of counterbalance or consistent order.

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Appendix A

ADMINISTRATION OF CATEGORIZING TEST

Materials:

(In order of presentation to the child)

(1) MATCHES (M)	(2) BLOCKS (Bl)	(3) SPOON (S)	(4) PENCIL (Pe)
(8) NOTEBOOK (NB)	(7) CUP (Cu)	(6) PIPE (Pi)	(5) TOP (T)
(9) BALL (Ba)	(10) CIGARETTES (Ci)	(11) CRAYONS (Cr)	(12) BOTTLE OPENER (BO)

A set of colored pictures of these same twelve objects (presented in the same order).

Procedure:

I. Identification Task:

A. Say to the child: I have some things here that I am going to put on the table.

Tell me what they are.

The objects (or pictures) are placed in front of the child in the order indicated above, the matches in the upper left hand corner of the child's view. The name that the child uses is written on the answer sheet. If the child cannot give you a name, ask him to describe what it does or how it is used, and record the description. Do not give the child a label if he lacks one. If he gives the correct label you may just make a check mark.

II. Active Sort:

A. Pick out the pencil from the array (leaving the other items in the above order), put it over to the side and say to the child:

a. Look at all these (indicate total array of objects or pictures) and put over here the ones that are the same or like this one.

Circle on the score sheet the items that the child selects, and ask him:

Why are these the same or alike?

Record the answer verbatim, and put an "a." to indicate he responded to Question a.

If the child does not respond to the above (a.) say:

b. Look at all these and pick out the ones that belong with this one.

Circle the items he selects and ask:

Why do these things belong together?

Record his answer and indicate that he responded to Question b.

If the child does not respond to the above (b.), say:

c. Put over here the ones that go with this one.

Circle the items he selects and ask:

Why do these go together?

Record his answer and indicate that he responded to Question c.

B. Return the pencil to the array and repeat the procedure with the ball. Continue this procedure for the 10 remaining items in the following order: Cigarette, crayons, bottle opener, top, pipe, cup, notebook, matches, blocks, spoon. (You will note that the order for the 12 items is upper right to lower left, through the lower right, then middle right to middle left, then upper left to pencil.

Clarify all vague responses with one of the following probes:

(1) How are they the same? or In what way are they alike?

Use this probe after a response such as "they are alike" or "they are the same." Try to determine the specific reason for the grouping.

(2) Show me or Show me the ones you (that are)_____.

This probe is used when the child responds "they are straight," "you smoke them," etc., and it is not obvious that the response pertains to all objects grouped. (For example, if the cigarette, pipe and crayons are grouped and the response is "you smoke them," the appropriate probe would be Show me the ones you smoke.)

(3) Tell me more. This general probe can be used to clarify any response the child gives which is not clear to E.

III. Passive Sort:

A. After the child is questioned on all twelve pictures (and they are again in the original order), E selects out three items (see score sheet for items and order) and asks:

a. Tell me how these three are the same or alike?

If no response then E asks:

b. Tell me how there three belong together?

If no response then E asks:

c. Why do these three go together?

For each item circle the objects the child includes in his response, record the child's answer verbatim, and indicate to which question he responded. For vague responses use the probes given under the Active Sort.

Appendix B

ADMINISTRATION PROCEDURE -- MULTIPLE CATEGORIZATION TEST

Materials:

Set of twelve colored pictures from the Sigel Categorization Test.

Procedure:

E selects out two (or three) items (see protocol for items and order) and asks:

a. Tell me how these two are the same or alike?

If no response then E asks:

b. Tell me how these two belong together?

If no response then E asks:

c. Why do these two go together?

Then say:

Now tell me another way that they (are alike of the same; belong together; go together).

Record the second answer as a', b', or c' and the third answer as a'', b'', or c''. Continue until the child has given two bases of categorization for items 1 through 12.

For each answer to each item circle the objects the child includes in his response, record the child's answer verbatim, and indicate to which question he responded. For vague responses use the probes given in the Categorization Test instructions.

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Appendix C

SCORING MANUAL -- CATEGORIZING TEST

General Rules:

(1) Check to make sure that responses are correctly recorded and that the stimulus is not also counted as an item selected.

(2) If two or more responses are given for one group of stimuli, score the one of the highest verbal level. If multiple responses are equally good in verbal level, but use different bases of classification, score the first.

(3) If the child initially mislabels an item and consistently uses that label, accept it and score his responses within the context of that label, e.g., if he calls the top a sharpener and selects the pencil to go with it, saying that you sharpen the pencil with it, score as Appropriate R-F. Only initial unusual labels are accepted.

(4) If the child uses a response such as "you buy them in a store," "you play with them," or "God made them," indiscriminately, i.e., for several different groups of items, score the responses as global (See Section 4).

Each response made by the subject will be scored for two aspects, the verbal level of the response, and the type of classification used.

VERBAL LEVEL

SCORABLE RESPONSES

Grouping Responses:

Grouping responses are those in which a meaningful relationship between all of the items grouped is given. There are three types:

1) Appropriate --All items sorted from the stimulus array must be included in a fully articulated response. A fully articulated response must include a categorical label or the labels of all items included in the sort. A pronoun will be accepted as a substitute for the item label(s) if the referent of the pronoun is unequivocal: e.g., "they are all round," or "they the same color."

If the items are treated separately, but the same, the response is scored as Appropriate; e.g., "this is yellow and this is yellow," or "you play with this and you play with this," or "you eat with the spoon and you eat out of the cup."

When the action attributed to one of the items needs, or is commonly associated with, the presence of the other

item(s) for its execution, score as Appropriate since the child has selected these items from the matrix: e.g., "light the cigarette," when the items are the matches and the cigarette.

2) Additional --If the child gives a verbal response which does not fulfill the criteria for full articulation, but through implication expresses a unifying concept, score as an Additional: e.g., "yellow," or "long." Such implications may also be assumed when a single verb represents the function of all the items: e.g., "smoke," or "play."

Also score as Additional, responses where the basis of classification is indicated manually: i.e., no verbal response but the child point (→) to blue parts on all of the objects selected.
Note: When gestures accompany a fully articulated response: e.g., "they are all blue," and the child points to blue parts of the items selected, score as Appropriate as the gestures are redundant with the verbal response.

3) Labeling Error --Here the child has grouped items which are, in fact, similar but gives the incorrect label for the grouping: e.g., puts blue items together and says, "they are all yellow."

Nongrouping Responses:

Nongrouping responses are those in which an answer is given and its meaning is clear but it does not meet the task requirements. There are five types:

1) Partial and Disjunctive 2 --In a partial, one grouping response is given but includes only some (two or more) of the items selected: e.g., "this (→Ba) is blue and this (→T) is blue," when the items are the ball, top, and spoon.

(Ba T) S

If it is not clear which items are referred to in the grouping response, a proble should have been used.

If in response to the probe the child indicates the inclusion of only some of the items, score as a Partial (See Section 3).

DJ2s are responses which consist of two or more smaller groupings of the items chosen: e.g., (1) "these are blue (→Ba and T) and these are white (→T and S)," and (2) "these are blue (→Ba and T) and this (→S) is white."

(1) (Ba (T) S)

(2) (Ba T) (S)

2) Disjunctive 1 --Here the child assigns a different attribute, use, or owner to each of at least two objects picked: e.g., (1) "you play with the blocks, smoke a cigarette and drink from the cup," or (2) "this (→Cu) is yellow and this (→S) is white," when the items are the cup, spoon and top.

(1) (Bl) (Ci) Cu

(2) (Cu) (S) T

When the items have a common cultural usage, e.g., cup and spoon, but the verbal responses clearly indicate a separate function: e.g., "you drink with the cup and eat with the spoon," then the response is not scored as Appropriate, but as Disjunctive 1.

Also, responses which show an associative difference between two or more items should be coded as DJ1: e.g., "these (→Ba and T) are blue and this (→Cu) is not blue," or "this is taller than that," or "they are not the same color."

3) Single Associations --Single associations are responses in which the subject gives a reasonable association to just one item selected: e.g., "you write with the pencil," when the stimuli are the pencil, the pipe and the cigarette.

4) Grouping Error --Here the child has grouped items which are different but gives them a common label: e.g., "they are all blue," when the items are the ball, the top and the cup.

5) Irrelevant and Idiosyncratic --These responses include such things as:
   (1) color responses using the backgrounds or shadows of the stimuli;
   (2) form or structure responses referring to the shape or to properties of the pictures themselves: e.g., "they are square," and child points to edges of pictures, or "they have points," and subject points to corners of pictures;
   (3) contextual groupings which are merely piling: e.g., "put the ball in the cup,: or "put the pipe on the blocks;" and
   (4) thematic responses where the items are related in a story but not in any meaningful way: e.g., "the ball and the cup are going for a ride."

NONSCORABLE RESPONSES

Nonscorable responses are those in which an answer is not given or is not clear enough to score. There are two types:

1) Insufficient Information --This category includes the following:
(1) subject merely names the objects,
(2) subject says, "I don't know," and
(3) subject merely repeats or paraphrases the question, e.g., "they are the same," or "they belong together."

2) No Choice --The subject selects no item to go with the stimulus. (This response can only occur in the Active section of the test.)

CLASSIFICATION

All scorable (grouping and nongrouping) responses of the child are scored in one of the three following categories:

1) Descriptive

form --The use of measurement or shape properties, such as round, flat, long, small, fat, corners, is scored as a form response: e.g., "they are all long," (See Section 1.)

color --Use of a color label, or saying "same color" is scored as a color response.

structure --Designation of specific intrinsic or inherent parts or properties such as metal, wood, having writing on them; having similar parts like handles, knobs, points, etc., is a structure response.

2) Relational Contextual

functional --When the action of the functional-relation takes place directly between the items in a given sort, then the response is recorded as relational-functional: e.g., "light the cigarette with the matches."

Also, functions taking place between a person and single items in a given sort are scored as relational-functional: e.g., "write with the pencil and smoke the cigarette."

thematic --When the action between two or more items in a given sort takes place on an imported item, then the response is recorded as relational-thematic: e.g., "open the pop with the bottle opener and drink it out of the cup."

Also code as thematic those responses in which the objects are related in story sequence but their function is not otherwise interrelated: e.g., "smoke a cigarette while you drink a cup of coffee."

Thematic responses can also occur with single items: e.g., "you get up in the morning and drink juice in the cup," when the items are the cup, the crayons and the pencil.

contextual --Responses in which objects are grouped because they are found in the same location, or belong to the same person, are scored contextual: e.g., "my daddy has those," or "they are in the kitchen."

Contextual responses can also occur with single items: e.g., "this goes in the kitchen," when the items are the bottle opener and the top and child points to BO.

3) Categorical

low functional-One object or picture is related to the stimulus because both are used for the same purpose: e.g., "you write with them," or "you play with them," or inferred action properties such as rolling or spinning.

high functional--Two or more objects or pictures are chosen to go with the stimulus because all are used for the same purpose of inferred action properties such as rolling or spinning.

class label --One term is used to define two or more items included in the class: e.g., "toys," or "kitchen things," or "writing things."

This response can also be used with single items: e.g., "this (→T) is a toy," when the objects are the top and the bottle opener.

All nonscorable responses are scored as having no classification ("None" category on the score sheet).

Section 1

Descriptive-Form:

The following adjectives are considered to accurately describe the form of the object:

Matches.....Flat,* straight, square, corners

Blocks.....Flat,* straight, square, corners,** round, fat***

Spoon.....Flat* (handle), straight (handle), round (bowl)

Pencil.....Long, round, straight, pointed, flat*

Top.....Round, fat

Pipe.....Round, flat,* straight, long

Cup.....Round, fat

Notebook.....Flat,* square, corners, straight, long

Ball.....Round, fat

Cigarettes.....Round, long, straight, flat*

Crayons.....Flat,* square, corners, long, straight

Bottle opener.....Flat,* long, pointed, straight, round

* Flat may be taken to bean either:
a) a flat surface, or
b) a lack of height
Pointing is necessary to indicate flatness meaning resting on a surface.

** Pointing to the round letters on the blocks is necessary to indicate roundness.

*** Fat may be taken to mean massive or having height and width.

Section 2

Sample Responses

SCORE	CODE	ITEMS	RESPONSE
App -Fo	01	Pe,Ci	They are long
App -Co	02	Cu,Pe,Cr	They are the same color
App -Co	02	Cu,Pe,Cr	They yellow
App -Co	02	Cu,Pe,Cr	All are yellow
App -Co	02	Cu,Pe,Cr	This yellow (→Cu), this yellow (→Pe), and this yellow (→Cr)
App -St	03	Pi,BO	They have metal on them
App -R-F	04	Pi,M	You light the pipe
App -R-F	04	Pe,NB	Write in here (→NB) with this (→Pe)
App -Th	05	Cu,S	You put coffee in the cup and drink it with the spoon
App -Cont	06	Ba,Bl	My brother has these
App -LF	07	Cu,S	You drink coffee with them
App -LF	07	NB,Pe	You write in the NB and you write with the Pe
App -HF	08	T,Ba,Bl	You play with them
App -CL	09	T,Ba,Bl	They are toys
Add -Fo	11	Ba,Pi,Ci	All of these have this (traces circular edge of cup with finger)
Add -Fo	11	Pe,Ci	Long
Add -Co	12	Cu,Pe,Cr	Yellow
Add -Co	12	Cu,Pe,Cr	Same color
Add -Co	12	Cu,Pe,Cr	(→yellow parts on each)
Add -Co	12	Cu,Pe,Cr	This (→Cu) has this color (Pe), this (→Pe) has this color (→yellow on crayons) and this (→Cr) has this color (→Cu)
Add -St	13	BO,Pi	(→metal parts on each)
Add -R-F	14	Pe,NB	(Pretends to write in NB with Pe)
Add -LF	17	Ci,Pi	(Pretends to smoke each one)
LE -Fo	21	Ba,T	They are square
LE -Co	22	Cu,Pe	Blue
LE -St	23	Cu,S	They are wood
Part-Fo	31	Ba,Cu,Ci	This (→Ba) is round and this (→Cu is round
DJ2 -Co	32	Ba,T,S	This (→Ba) and this (→T) and blue and this (→T) and this (→S) are white
DJ2 -St	33	Ba,Cu,S	These (→Cu and S) are plastic and this (→Ba) is round
DJ2 -R-F	34	Ci,Pi,M	You light the Ci with the M and you light the Pi with the M
DJ2 -Th	35	T,BO,Cu	You open pop with this (→BO) and pour it in the cup and this (→T) is a toy
Part-Cont	36	Cu,BO,S	This (→Cu) and this (→S) go in the kitchen
DJ2 -LF	37	NB,Cr,Pe	You write with these (→Cr and Pe) and these (→Cr and NB) are square
DJ2 -HF	38	Ci,Pi,M,T	You smoke with this (→Ci) and this (→Pi) and this (→M)
DJ2 -HF	38	Pe,Cr,NB,M	You write with these (Pe,Cr,NB) and these are square (Cr,NB,M)
DJ2 -CL	39	T,BO,Cu	This (→T) is a toy and you open pop with this (→BO) and pour it in the cup

Sample Responses (cont.)

SCORE	CODE	ITEMS	RESPONSES
DJl -Fo	41	Cu,Ci,Cr	This one (Cu) is round and this one (Cr) is square
DJl -Co	42	Ci,M	This one (M) is blue and this one (Ci) is not blue
DJl -Co	42	Ci,M	This (Ci) is white and this (M) is blue
DJl -Co	42	Ci,M	They aren't the same color
DJl -St	43	Cu,S,BO	These (Cu and S) are plastic and this one isn't
DJl -R-F	44	NB,M	You write in this (NB) and this (M) is blue
DJl -Th	45	Pe,Ci	When you go to school you write your name on your paper with this one (Pe) and you supposed to smoke this one
DJl -Cont	46	BO,T	Cause this one (BO) goes in the kitchen and play with the top
DJl -CL	49	Ba,Cu	This one (Ba) is a toy and you drink out of the cup
SA -Fo	51	NB,Pe,Cr	This (NB) is square
SA -Co	52	Ci,M	This (Ci) is white
SA -St	53	NB,Pe,Cr	This one (Pe) has a point
SA -R-F	54	S,Ci,NB	You eat with this one (S)
SA -Th	55	Pe,Ci	When you go to school you write your name on your papers
SA -Cont	56	BO,T	Cause this one (BO) goes in the kitchen
SA -CL	59	Ba,Cu,Cr	This is a toy (→Ba)
GE -Fo	61	Ba,NB,Ci	They are all square
GE -Co	62	Ba,T,S	They are all blue
GE -St	63	Ba,Cu,T	They all have points
GE -R-F	64	S,NB	You write in here (NB) with this (S)
GE -Th	65	BO,T	You open pop with this (BO), pour it in the T and drink it
GE -Cont	66	M,Cr,NB	Cause you put these in your desk at school
GE -LF	67	BO,T	You eat with these
GE -HF	68	Pe,Pi,Ci	You smoke with all of these
GE -CL	69	Pe,Pi,Ci	These are smoking things
Irld-Fo	71	Pe,Ci	This is square and this is square (→shape of the pictures)
Irld-Co	72	Ci,Cr	This is brown and this is brown (→background of each picture)
Irld-St	73	Cu,S	These have points (→corners of pictures)
Irld-R-F	74	M,Ba	You take the matches and burn that (Ba) up
Irld-Th	75	Pe,Cr,NB	The Pe and Cr went downtown to buy a birthday present for the NB
Irld-Cont	76	Ba,Bl	Put the ball on the blocks
Inln-None	80	Pe,Cr	This is a pencil and these are crayons
Inln-None	80	Pe,Cr	I don't know
Inln-None	80	Pe,Cr	They are the same
NC None	90	Pe	(Subject selects no item to go with the pencil)

Section 3

Examples with Probes

ITEMS	RESPONSE	PROBE		
Ba,Cu,NB	"These are round"	Show me the round ones		
	RESPONSE TO PROBE	**SCORE**	**CODE**	
	No response	GE -Fo	61	
	Points to all three	GE -Fo	61	
	Points to Ba and Cu	Part-Fo	31	
Cu,Pe,Ba	"They are yellow"	Show me the yellow ones		
	No response	GE -Co	62	
	Points to all three	GE -Co	62	
	Points to Cu and Pe	Part-Co	32	
NB,Cr,Pe	"You can write on that"	Can you tell me more		
	No response	App -R-F	04	
	You write on this (→NB) with this (→Pe)	Part-R-F	34	
	You write on this (→NB) with this (→Pe), and you write on this (→NB) with this (→Cr)	DJ2 -R-F	34	
	You write with these (→Pe,Cr) on that (→NB)	App -R-F	04	
	You write on that (→NB) and you write with this (→Pe)	Part-LF	37	
	You write with them (→Pe,NB,Cr)	App -HF	08	
Cu,S,BO	"Drink coffee"	Show me the ones you drink coffee with		
	No response	GE -HF	68	
	Points to all three	GE -HF	68	
	Points to Cu and S	Part-LF	37	
	Pour coffee in cup, open can of milk with BO, pour it in cup and stir it with the spoon	App -Th	05	

Section 4

Additions to the Scoring Manual

RESPONSE	CODE
(Matches edges of pictures)	76
(Lays pictures end to end in a row)	76

GLOBAL RESPONSES

Global responses are those which are vague and can be used for any grouping of items. The first digit of the code for these responses will be X.

Examples:

Belong to you	X6
They in the suitcase	X6
They go in a house	X6
You buy them in a store	X6
They made them	X7 or X8
God made them	X7 or X8
They made together	X7 or X8

The following responses may be scored global depending on the frequency of use and/or particular items grouped.

You play with them*	X7 or X8
You can break them	X7 or X8
Burn them	X7 or X8

* X7 or X8 to be coded when items grouped include cigarette, pipe, bottle opener and/or matches.