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The acquisitions of cognitive skills as a function of a television programme

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APPENDIX B4.15 ANALYSIS OF COVARIANCE OF POSTTEST SCORES WITH PRETEST SCORES AS COVARIATES

	Control Group			Experimental Group		
	df	F	SIGNIF OF F	df	F	SIGNIF OF F
PEABODY				PEABODY		
Main Effects	8	1.358	0.256	Main Effects	8	3.071	0.011
*Crèche differences	2	0.169	0.846	Crèche differences	2	3.367	0.047
Sex differences	1	0.330	0.570	Sex differences	1	0.615	0.439
Age differences	2	0.735	0.488	Age differences	2	0.918	0.410
Language differences	2	3.398	0.047	Language differences	2	1.957	0.158
Televiewing differences	1	0.632	0.433	Televiewing differences	1	0.013	0.909
2-Way Interactions	20	0.469	0.959	2-Way Interactions	18	0.750	0.737
Crèche by Sex	2	1.911	0.166	Crèche by Sex	2	0.197	0.822
Crèche by Age	3	0.264	0.850	Crèche by Age	3	0.357	0.784
Crèche by Language	3	0.675	0.574	Crèche by Language	2	0.234	0.792
Crèche by Televiewing	2	0.058	0.944	Crèche by Televiewing	2	0.468	0.630
Sex by Age	2	0.046	0.955	Sex by Age	2	1.965	0.157
Sex by Language	2	0.754	0.480	Sex by Language	1	0.152	0.700
Sex by Televiewing	1	0.019	0.892	Sex by Televiewing	1	2.264	0.142
Age by Language	2	0.223	0.802	Age by Language	2	0.157	0.855
Age by Televiewing	2	0.930	0.406	Age by Televiewing	2	1.614	0.215
Language by Televiewing	1	0.007	0.934	Language by Televiewing	1	0.067	0.798
3-Way Interactions	11	1.879	0.085	3-Way Interactions	10	0.448	0.911
Crèche by Sex by Age	3	1.396	0.264	Crèche by Sex by Age	3	0.467	0.708
Crèche by Sex by Language	1	2.135	0.155	Crèche by Sex by Language	1	0.000	0.985
Crèche by Sex by Televiewing	2	0.924	0.408	Crèche by Sex by Televiewing	1	0.431	0.516
Crèche by Age by Language	2	4.950	0.014	Crèche by Age by Language	1	0.070	0.793
Crèche by Age by Televiewing	1	1.846	0.185	Crèche by Age by Televiewing	2	0.069	0.934
Sex by Age by Language	1	0.800	0.378	Sex by Age by Language	1	0.103	0.750
Sex by Age by Televiewing	1	0.847	0.365	Sex by Age by Televiewing	1	0.012	0.914

APPENDIX B4.16 ANALYSIS OF COVARIANCE OF POSTTEST SCORES WITH PRETEST SCORES AS COVARIATES

	Control Group			Experimental Group		
	df	F	SIGNIF OF F	df	F	SIGNIF OF F
DRAW A PERSON				DRAW A PERSON		
Main Effects	8	0.644	0.735	Main Effects	8	0.802	0.605
* Crèche differences	2	0.379	0.688	Crèche differences	2	0.057	0.944
Sex differences	1	0.933	0.342	Sex differences	1	0.909	0.348
Age differences	2	1.407	0.261	Age differences	2	2.012	0.150
Language differences	2	0.112	0.895	Language differences	2	0.421	0.660
Televiewing differences	1	0.255	0.617	Televiewing differences	1	1.664	0.206
2-Way Interactions	20	1.000	0.483	2-Way Interactions	18	0.950	0.533
Crèche by Sex	2	2.137	0.136	Crèche by Sex	2	0.835	0.443
Crèche by Age	3	0.179	0.910	Crèche by Age	3	0.568	0.640
Crèche by Language	3	0.598	0.622	Crèche by Language	2	0.903	0.415
Crèche by Televiewing	2	3.156	0.058	Crèche by Televiewing	2	1.866	0.171
Sex by Age	2	0.015	0.985	Sex by Age	2	1.222	0.308
Sex by Language	2	0.131	0.878	Sex by Language	1	1.122	0.297
Sex by Televiewing	1	1.668	0.207	Sex by Televiewing	1	0.794	0.380
Age by Language	2	0.159	0.853	Age by Language	2	0.426	0.657
Age by Televiewing	2	1.292	0.290	Age by Televiewing	2	3.810	0.033
Language by Televiewing	1	0.311	0.581	Language by Televiewing	1	0.253	0.618
3-Way Interactions	11	1.318	0.264	3-Way Interactions	10	1.155	0.356
Crèche by Sex by Age	3	0.258	0.855	Crèche by Sex by Age	3	0.407	0.749
Crèche by Sex by Language	1	0.587	0.450	Crèche by Sex by Language	1	0.465	0.500
Crèche by Sex by Televiewing	2	3.389	0.046	Crèche by Sex by Televiewing	1	0.269	0.608
Crèche by Age by Language	2	0.465	0.633	Crèche by Age by Language	1	2.877	0.100
Crèche by Age by Televiewing	1	0.024	0.877	Crèche by Age by Televiewing	2	0.311	0.735
Sex by Age by Language	1	1.077	0.308	Sex by Age by Language	1	0.009	0.988
Sex by Age by Televiewing	1	7.477	0.011	Sex by Age by Televiewing	1	0.090	0.766

* crèche differences refers to differences between the three child care centres, Jubilee, Dorkas and Holy Rosary Nursery School,
- Underlined F scores are significant at the 0,5 level of significance.

APPENDIX C1

RELIABILITY COEFFICIENTS ACCORDING TO

TEST - RETEST CORRELATIONS

SUBTEST	r	p
Body Parts	0,76346	,0001
Geometric Forms	0,64250	,0001
Identifying	0,74361	,0001
Matching	0,49820	,0001
Letters	0,24998	,0175
Numbers	0,88349	,0001
Relational Terms	0,56645	,0001
Classifying	0,59589	,0001
Sorting	0,34264	,0009
Parts of Whole	0,65755	,0001
Emotions	0,39624	,0001
Attitudes Happy	0,45130	,0001
Attitudes Sad	0,32310	,0019
Total	0,91038	,0001
PPVT	0,82454	,0001
DAP	0,86391	,0001

APPENDIX C2

INTERCORRELATIONS OF PRETEST SCORES OF CONTROL GROUP CHILDREN

	Body Parts (1)	Geometric Forms (2)	Identifying (3)	Matching (4)	Letters (5)	Numbers (6)	Relational Terms (7)	Classifying (8)	Sorting (9)	Parts of Whole (10)	Emotions (11)	Attitudes (happy) (12)	Attitudes (sad) (13)	Total (14)	PPVT (15)	DAP (16)
1.		0,372	0,490	0,357	0,116	0,372	0,486	0,292	0,154	0,337	0,159	0,381	-0,180	0,654	0,139	0,442
2.	0,372		0,307	0,223	-0,028	0,321	0,431	0,143	0,171	0,279	0,114	0,071	0,102	0,493	-0,036	0,421
3.	0,490	0,304		0,350	0,127	0,107	0,292	0,307	0,320	0,153	-0,146	0,247	-0,092	0,404	0,139	0,309
4.	0,358	0,223	0,350		0,238	0,268	0,337	0,503	0,393	0,129	0,031	0,123	0,062	0,479	-0,052	0,365
5.	0,116	-0,028	0,127	0,239		0,322	0,271	0,014	-0,035	0,030	0,057	0,268	-0,142	0,384	-0,071	0,445
6.	0,372	0,321	0,107	0,257	0,322		0,515	0,209	0,048	0,236	0,212	0,293	-0,170	0,878	-0,159	0,469
7.	0,486	0,431	0,292	0,337	0,271	0,515		0,502	0,192	0,565	0,349	0,255	-0,005	0,752	-0,029	0,563
8.	0,292	0,143	0,307	0,503	0,214	0,209	0,502		0,331	0,348	0,061	0,130	0,019	0,471	0,098	0,454
9.	0,154	0,171	0,320	0,383	-0,035	0,048	0,192	0,331		0,140	-0,014	0,067	0,062	0,238	-0,027	0,211
10.	0,337	0,279	0,153	0,129	0,030	0,236	0,565	0,348	0,140		0,327	0,155	-0,062	0,432	0,189	0,305
11.	0,159	0,114	-0,146	0,031	0,057	0,212	0,349	0,062	-0,014	0,327		0,109	0,035	0,275	-0,067	0,253
12.	0,382	0,071	0,247	0,123	0,268	0,293	0,255	0,130	0,067	0,155	0,109		-0,695	0,376	-0,052	0,303
13.	-0,180	0,102	-0,093	0,062	-0,142	-0,170	-0,005	0,019	0,062	-0,052	0,035	-0,695		-0,146	-0,091	-0,079
14.	0,554	0,493	0,404	0,479	0,384	0,878	0,752	0,471	0,238	0,452	0,275	0,375	-0,146		-0,056	0,652
15.	0,139	-0,036	0,139	-0,052	-0,071	-0,159	-0,029	0,093	-0,026	0,189	-0,067	-0,052	-0,091	-0,056		-0,217
16.	0,442	0,421	0,309	0,365	0,445	0,469	0,563	0,454	0,211	0,306	0,253	0,303	-0,078	0,652	-0,217	

Underlined correlations are significant at the 0,5 level of confidence.

APPENDIX D EXPLANATION OF SOCIAL CLASS MEASURES.

In this study the closest indication of a reliable measure of social class emerged from an examination of the occupation of parents of the children attending the crèches and nursery school. See Table 25 below.

TABLE 25. SOCIO-ECONOMIC STATUS ACCORDING TO PARENT'S OCCUPATION.

	Jubilee %	Dorkas %	Holy Rosary %
White Collar Professional	9,09	10,00	7,47
White Collar Clerical	26,74	32,50	19,54
Blue Collar Skilled	31,55	27,50	29,31
Blue Collar Semi-Skilled	27,28	16,67	25,29
Blue Collar Unskilled	1,60	3,33	3,45
Pensioner/Disabled	1,08	2,50	1,15
Unemployed	1,60	5,00	1,72
Housewife	1,07	2,50	12,07

Upper, middle and lower working class groups can be established from this range of professions. However, these levels refer specifically to the Coloured community and should not be compared with any other race group. The following is a description of class level allocation according to profession. Professional and Clerical workers belong to the middle working class level Blue collar semi-skilled to the lower middle working class and Blue collar unskilled to the lower working class level.

From the above table, it appears that the highest percentages of white collar professional and clerical workers are in the Dorkas

crèche group (42,50%). This is an expected result since many of these families live in Bosmont the "smarter" neighbourhood. However Jubilee crèche, while situated near the Holy Rosary Nursery School has a higher percentage of white collar workers (35,83%) than has Holy Rosary (27,01%).

While children attending Dorkas come from areas which may be easily class stratified, (Bosmont - Upper, Newclare - middle and Western-low), this pattern does not exist in the extensions of Eldorado Park. Initially it appeared as if a higher or lower class area and higher or lower class house type were useful indications of social structure. However, area and house type may not be used in this study for the following reasons :

1. In Eldorado Park, lower class people have been resettled by State Authorities into areas housing middle and upper class people. (Anonymous personal communication 1978). This move by the authorities is welcomed by some people who consider that the standard of low class families rises when they are among upper class families. Others however, condemn the move as enforced restructuring and maintain that upper class families build high walls to "blot out" the dirt in their lower-class neighbours homes.

2. Furthermore very highly professional and affluent families often live in mediocre to low houses having made applications to be moved to better houses. In Western Coloured Township, for example, many families live in tin shanties although they can afford better. They have usually waited years to be

moved in to better dwellings. (Anonymous personal communication 1978).

A greater percentage of Blue Collar skilled workers are found in Jubilee (31,55%) and in Holy Rosary (29,31%) than in Dorkas (27,50%), although the difference is not a significant one, indicating that a higher percentage of middle class people live in the Eldorado Park surrounds. Likewise the children of blue collar semi-skilled (low-middle class) people are more predominantly found in Jubilee (27,28%) and in Holy Rosary (25,29%) than in Dorkas (16,67%).

The low-class represented by blue collar unskilled workers group similarly in Dorkas (31,33%) and Holy Rosary (3,45%) although Jubilee has fewer children from low class families (1,60%).

A relatively high percentage of unemployed people in the Dorkas area is not representative of unemployment in this area since many of these people have started work since this survey was taken. Similarly in the category of housewife, many women are temporarily out of work since then can seldom afford to stay at home.

APPENDIX E1

DESCRIPTION OF TESTS AND SUBTESTS OF EDUCATIONAL TESTING SERVICE (ETS) TEST DEVELOPED FOR TESTING COGNITIVE SKILLS ON SESAME STREET

General Knowledge Test

1. Naming Body Parts--10 items--Child points to parts of his own body (5 items) and names the parts of the body pointed to by the tester (5 items).

2. Function of Body Parts--8 items--Child points to pictures of body parts that perform certain functions (4 items) and he supplies the names of body parts used to perform certain functions (4 items).

3. Naming Forms-- 4 items--Child gives name of each geometric form pointed to by tester.

4. Recognizing Forms--4 items--Child points to one of four geometric forms named by tester.

5. Community Members--4 items--Child points to instruments used by community members (2 items) and names community members who perform certain functions (2 items).

Letters Test

1. Matching by Form--9 items--Child points to one of four pictures, letters, words, or numbers that matches the stimulus.

2. Matching by Position--3 items--Child points to one of three pictures whose objects are in the same position as the stimulus.

3. Recognizing Letters--4 items--Child points to one of four letters named by tester.

4. Naming Letters--8 items--Child names each capital letter (4 items) and each lower case letter (4 items) pointed to by tester.

5. Letter Sounds--4 items--Child makes the sound of each

sustaining consonant pointed to by tester.

6. Initial Sounds--6 items--Child names letter or makes sound of initial sound of four words presented orally and pictorially (4 items). Child selects one of four pictures that begins with the same sound as the other words (2 items).

7. Decoding--8 items--Child selects one of four pictures that ends with the same sound as three other words (3 items). Child points to written word presented orally and pictorially (2 items). Child reads word presented (3 items).

8. Reading Words--9 items--Child reads words from the word list (see Goals Statement, Appendix A), as presented one at a time (5 items) or in a sentence (4 items).

9. Left-Right--4 items--Child points to the first and last words in a sentence (2 items). Child points to dots in a line (2 items).

10. Alphabet Recitation--1 item.

Numbers Test

1. Recognizing Numbers--4 items--Child points to one of four numbers named by tester.

2. Naming Numbers--6 items--Child names each number pointed to by tester.

3. Enumeration--7 items--Child counts the number of objects presented on a page (5 items). Child points to picture containing specified number of objects (2 items).

4. Conservation--7 items--Child points to one of three pictures containing the same number of objects as the stimulus.

5. Counting Strategies--8 items--Child points once to each of several dots in various configurations.

6. Number/Numeral Correspondence--3 items--Child points to one of four numerals that represent the number of objects shown to him.

7. Addition and Subtraction--13 items--Child tells tester the number of objects that result from adding or subtracting objects and represented pictorially (4 items). Child reads +, -, and = signs (3 items). Child solves simple arithmetic problems orally (6 items).

8. Counting from 1 to 30--1 item.

Relational Terms Test--17 items--Child points to picture that represents a relationship of size, position, amount, or distance.

Classification Test

1. Classification--15 items--Child selects one of four pictures of objects that "belongs with" or "is like" three other pictures of objects that have one property in common (10 items). Child gives reason why the picture "belongs with" the others (5 items).

2. Double Classification--9 items--Child selects one of four pictures of objects that "belongs with" three other pictures of objects that have two characteristics in common (3 items).

Sorting Test--16 items--Child selects one of four pictures that does not "belong" or is not "like" the others because of a difference in size, number, of function (11 items). Child gives reason why the picture does not "belong" with the others (5 items).

Parts of Whole Test--10 items--Child selects one of four pictures that represent the "whole" that can be made from the parts shown to him.

Emotions Test (and Attitudes)

1. Emotions--8 items--Child points to one of two pictures that

shows the way he feels (happy or sad) in certain situations that are distinctively happy or sad.

2. Attitude to School--7 items--Child points to one of two pictures that shows the way he feels in certain school situations.

3. Attitude to Others--4 items--Child points to one of two pictures that shows the way he feels in certain situations involving other people.

4. Attitude to Race of Others--6 items--Some items from 2 and 3 above are presented again with the race of the relevant others reversed.

APPENDIX E2

EDUCATIONAL GOALS AND
DESCRIPTION OF TESTS AND SUBTESTS AND SAMPLE ITEMS OF THE M-TEST
DEVELOPED FOR TESTING COGNITIVE SKILLS ON BRIGHT RILES

1. BODY PARTS

i) Naming : The Tester points to pictures of body parts, asks "What is this" and the child must name the bodypart. (5 items)

ii) Recognising : The Tester says "Show me your leg, arm ....." etc. and the child must point to parts of his own body. (5 items)

iii) Identifying : The Tester points to parts of the child's body and asks the child to name these parts (5 items)

iv) Functions of Body Parts : The Tester points to parts of his own body and asks the child, "What can we do with the ear, tongue, eye," etc. (5 items)

2. GEOMETRIC FORMS

i) Naming : The Tester points to pictures of a square, circle and triangle and asks "What is this" and the child must name the geometric form. (2 items)

ii) Recognising : The Tester shows the child a page presenting various geometric forms and asks "Can you show me a circle; a square and a triangle?" (3 items)

iii) Identifying : The Tester shows the child a page with various geometric forms and says "Look at all these shapes. Point to all the triangles".(1 item).

3. IDENTIFYING COMMUNITY MEMBERS AND PLACES

i) The Tester points to pictures of community members such as the postman, bus conductor, teacher and asks the child "Who is this ..... What does he do?" (4 items)

ii) The Tester points to pictures of community places such as the airport, station etc. and asks "What place is this?" (4 items)

4. MATCHING

i) The Tester points to a picture and says "Look at the picture/letter in the box". He then shows the child an array of pictures or letters and says "Which one is the same as the picture/letter in the box?" The child must point to one of four pictures/letters that matches the stimulus item. (4 items)

LETTERS

i) Recognising : The Tester says "Show me c, a, m" etc., and the child must point to the correct letter (3 items).

ii) Naming : The Tester points to a letter and says "What letter is this?" The child must name each letter. (3 items)

iii) Letter Sounds : The Tester points to a letter and asks the child to make the sound of each. (16 items)

iv) Left - Right : The Tester points to a sentence and a row of numbers and asks the child "Which is the first word here? Which is the last? Which is the first number here? Which is the last?" (4 items)

v) Alphabet : The Tester asks the child to recite the alphabet (10 points are awarded for the full alphabet, 5 points for half - 1 or 2 points for a few letters recited in order).

5. NUMBERS

i) Recognising : The Tester shows the child a page of numbers, and says "Show me a 4, 7, 6, 3 etc." (8 items).

ii) Naming : The Tester points to numbers which the child must

name. (3 items)

iii) Enumeration : The Tester shows the child a page with pictured objects and asks "How many matches (blocks, balls) are there here?" The child must count the number of objects (3 items). The tester says "Show me the picture with 6 objects" and the child must indicate which picture contains the specified number of objects (2 items).

iv) Conservation : The Tester shows the child a stimulus picture and says "Look at the picture here, then shows the child four response pictures and asks "Can you find the picture with the same number of butterflies (umbrellas) as the picture above?" The child must point to the correct response picture. (2 items)

v) Counting Strategies : The Tester asks the child to count the dots in each configuration. (3 items)

vi) Number/numeral correspondence : The Tester asks the child to point to one of four numerals that represent the number of objects shown to him. (4 items)

vii) Addition and Subtraction : The Tester asks the child to tell how many objects result from adding or subtracting objects represented pictorially (2 items) and to tell which numeral represents the result of the addition or subtraction. (2 items)

viii) Counting : The Tester asks the child to count from one to twenty (20 points are awarded for perfectly ordered counting).

6. RELATIONAL TERMS

The Tester shows the child a picture and asks :

i) "Are the monkeys around, between or at the sides of the trees?" (position relationships) (4 items)

ii) "Which is the tallest candle?" (size relationships) (2 items)

iii) "Which dog is farthest from the bone?" (distance relationships). (2 items).

7. CLASSIFICATIONS TEST

The Tester shows the child a stimulus picture and says "Look at the squares in this box. One is missing". The child is then shown the response picture to which the tester says "Look at these squares, which is the missing one?" The child selects one of four pictures that "is like" three other pictures of objects that have one or two properties in common (6 items).

8. SORTING TEST

The Tester shows the child a page with pictured objects and asks "Which thing does not belong". The child must select the odd object which differs in size, number, type or function of object. (3 items)

9. PARTS OF WHOLE

The Tester shows the child a stimulus picture and says "Look at these parts", then shows four response pictures to the child and says "Which of these can be made from the parts?" The child must select one of four pictures that represents the "whole" that can be made from the parts shown to him. (4 items)

10. EMOTIONS

The Tester shows the child a picture and says "The little boy gets a piece of cake - Is the little boy happy or sad?" The child must point to a happy or sad picture that reflects the way he feels in certain situations that are distinctively happy or sad. (2 items).

11. ATTITUDES

i) To school situations : The Tester shows the child a picture

of a child reciting the alphabet, and asks "When you say the abc are you happy or are you sad?" The child must point to one of two pictures that shows the way he feels in certain school situations. (1 item)

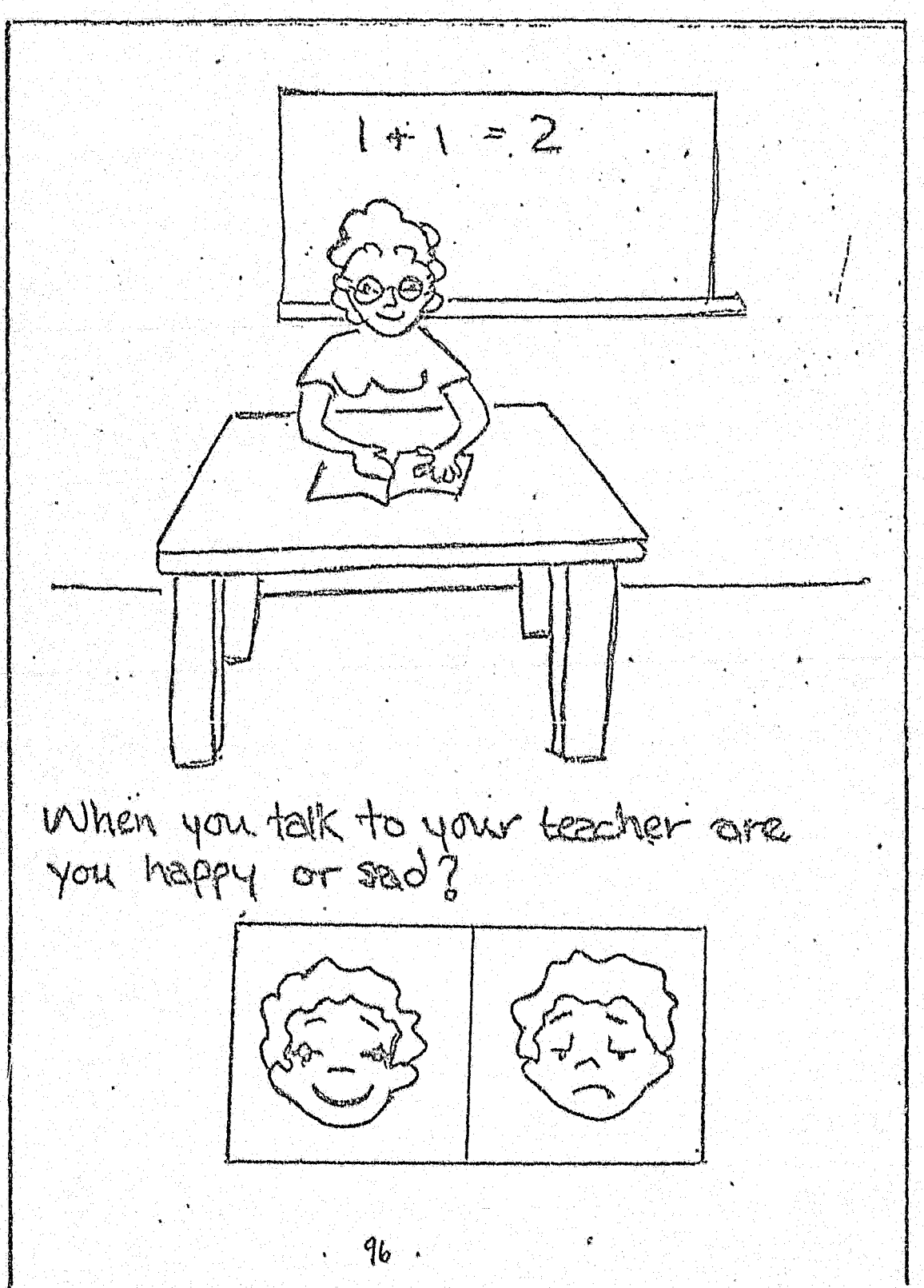
ii) To self : The Tester shows the child a picture and asks "When you play on the swing are you happy or are you sad?" The child must point to one of two pictures to show the way he feels in self-made situations. (1 item).

iii) To others : The Tester shows the child a picture and asks "When you play with a friend are you happy or are you sad?" The tester also says "Here is your family. Are you happy or sad when you talk to Mother, Father, sister, brother, teacher.

The child must point to one of two pictures that shows the way he feels in situations involving his family and others. (6 items)

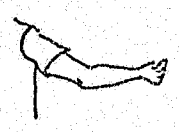
APPENDIX E.3. SAMPLE ITEMS OF THE M-TEST

ACTUAL SIZE OF PAGE USED FOR TESTING



IDENTIFYING THE BODY PARTS:
"What is this?" etc.






What is this? etc.



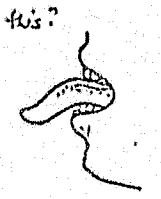




What is this?



and this?



Tester says

Show me your

leg
arm
hand
mouth
nose

Tester points out and child names parts

face
ear
foot
finger
tongue.

Function of Body Parts

- Tester points to
  1. ear
  2. tongue
  3. eye
  4. nose
  5. teeth

And asks

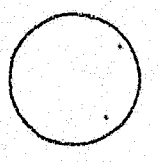
"What can we do with the ear" etc.

IDENTIFYING GEOMETRIC FORMS.

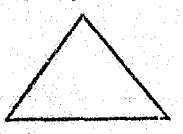
What is this?



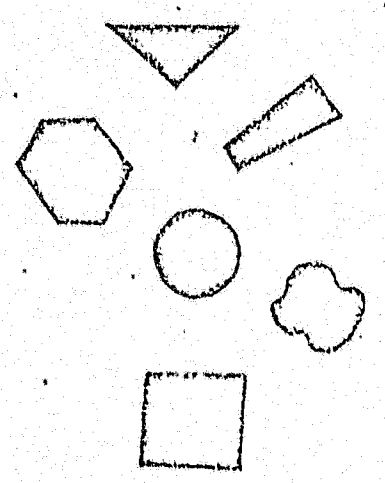
and this?



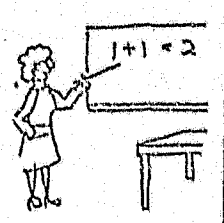
and this



Can you show me a circle, a square, and a triangle



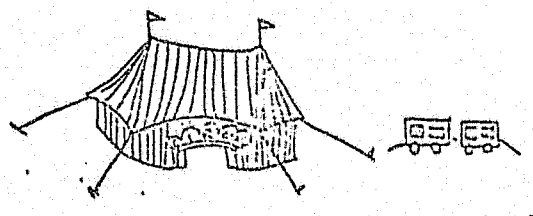
IDENTIFYING COMMUNITY MEMBERS.
"Who is this?" etc... What do they do?



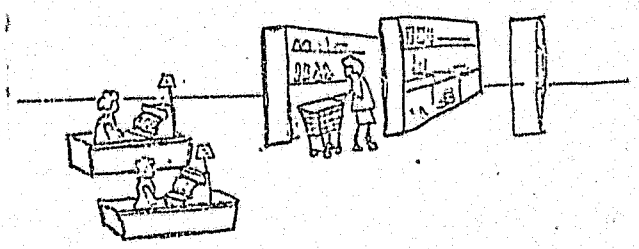




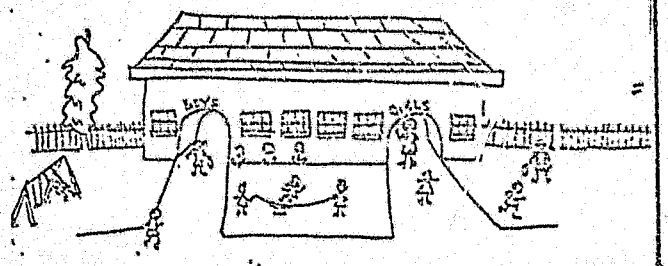

IDENTIFYING PLACES:
The child looks at the picture and names the place.



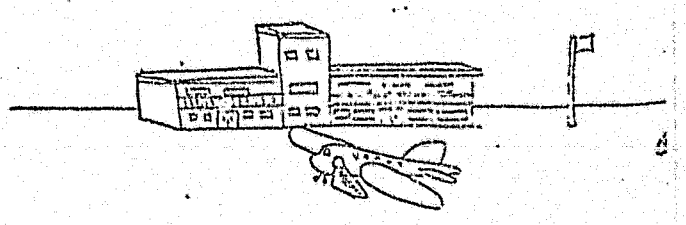
What place is this?



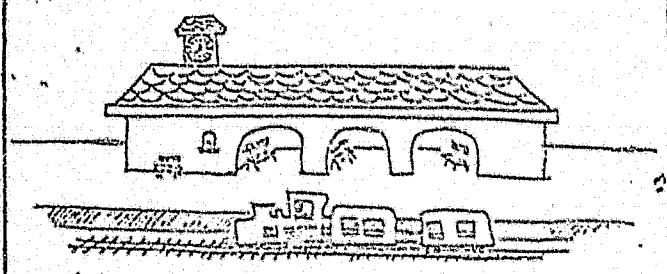
What place is this?



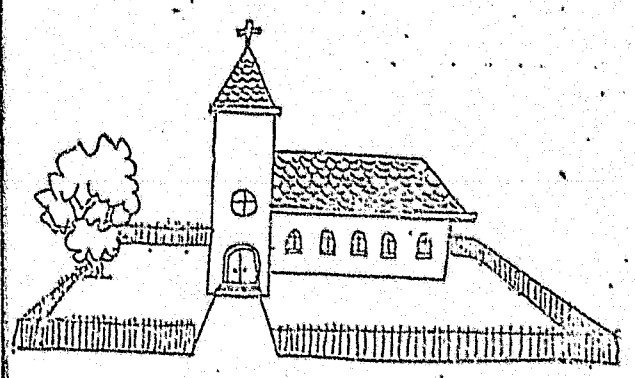
What place is this



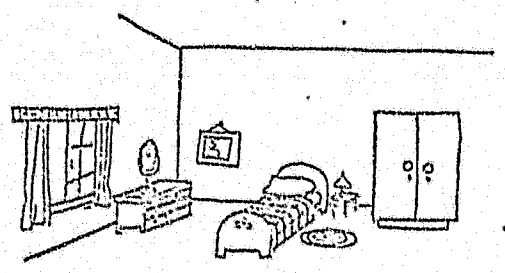
What place is this?



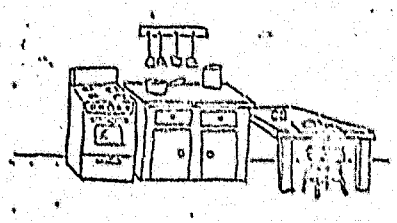
What place is this?



What place is this?



What place is this?



Look at the letter in the box. Which one is the same as the one in the box?

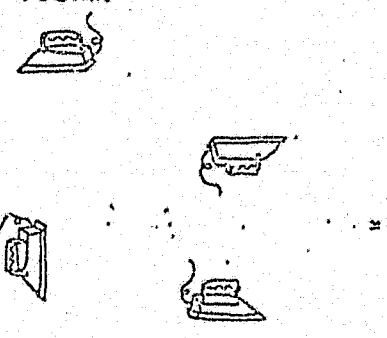
b

c b d e p

Look at the pictures here?



Which one is the same as the one in the box?



Look at the letter in the box.

f

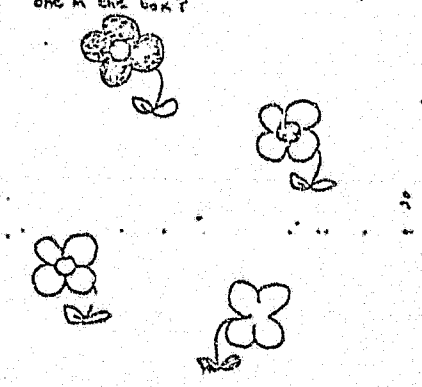
Which one is the same as the letter in the box?

t b g f

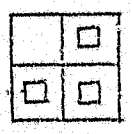
Look at the flower in the box.



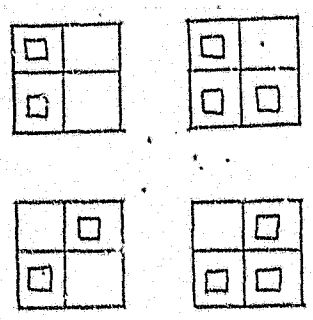
Which flower here is the same as the one in the box?



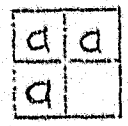
Look at the picture here.



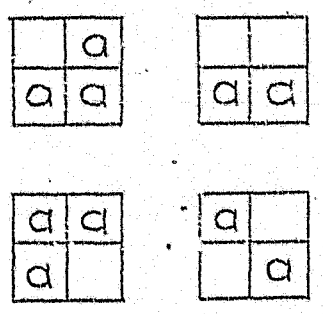
Now find the same one here.



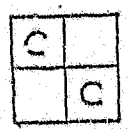
Look at the pattern here.



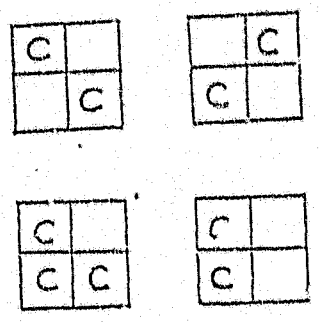
Now find the same one here.



Look at the pattern here.



Now find the same pattern here.



Tester names a letter, child must give verbal response and point out letter named. eg. "Show me a, s, m, etc.

a z p c m

"What letter is this?" [Tester points to letter and child responds verbally]

f r q

o t

Letter Sounds:
Say:...

c s m n f

a e i o u

Say:

p v b d g

y l t w z

x h j k q r

Which is the first word here? Which word is the last?

the dog bit the cat

Which is the first number here? Which is the last number here?

1 3 6 5 7 2 4

Recite the Alphabet.

Recognizing numbers:
The child indicates the number named by the teacher.

2 3

5 6

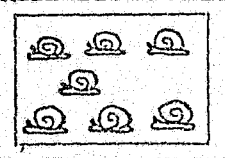
The child indicates the number named by the teacher.

4 7

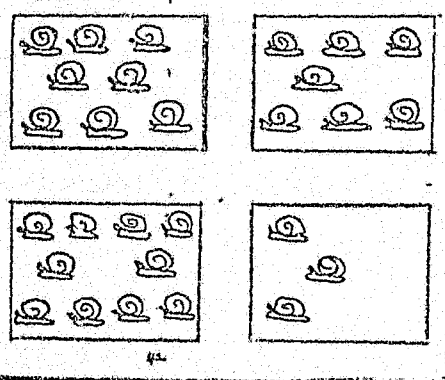
6 3

CONSERVATION:

The child indicates one of 3 pictures containing the same no. of objects as the stimulus picture, eg. Look at the picture here

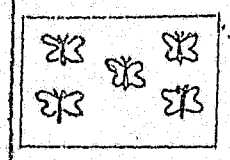


'Can you find the picture with the same number of snails as in the picture above?

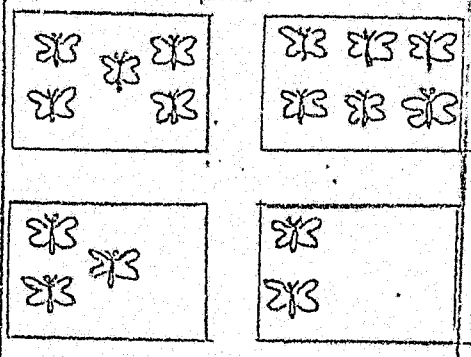


42

Look at the picture here.

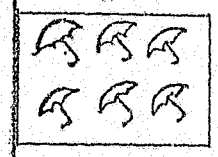


Can you find the picture with the same number of butterflies as in the picture above?

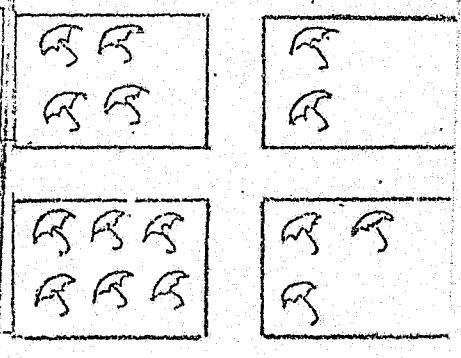


43

Look at the picture here.



Can you find the picture with the same number of caterpillars as in the picture above?



44

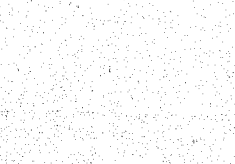
COUNTING STRATEGIES:

The child counts the dots in each configuration.

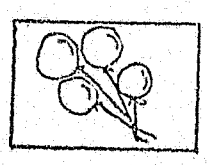
45

CORRESPONDENCE:

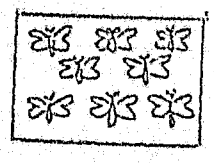
The child indicates the number representing the number of objects in the picture.



3 5 2 4



1 6 4 7



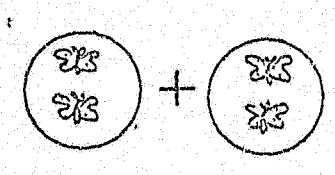
8 1 9 3

46

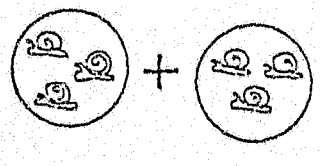
Count 16 20

47

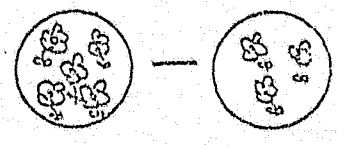
ADDITION AND SUBTRACTION



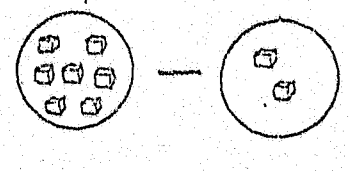
2 4 5



6 4 3

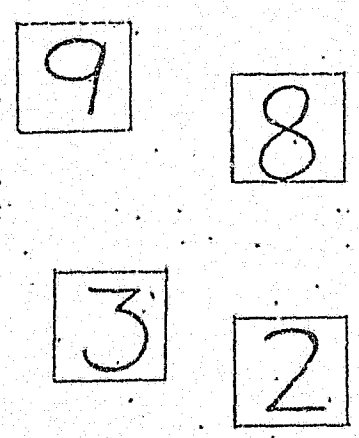


3 2 5



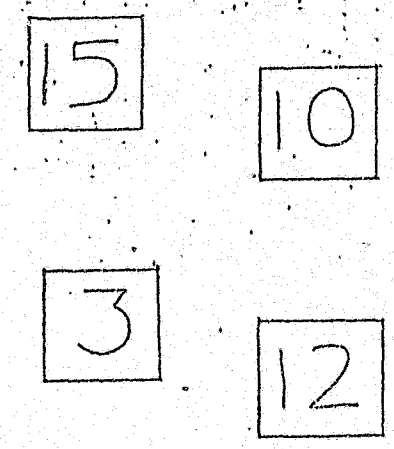
2 5 7

Show me 9, 3, 8, 2



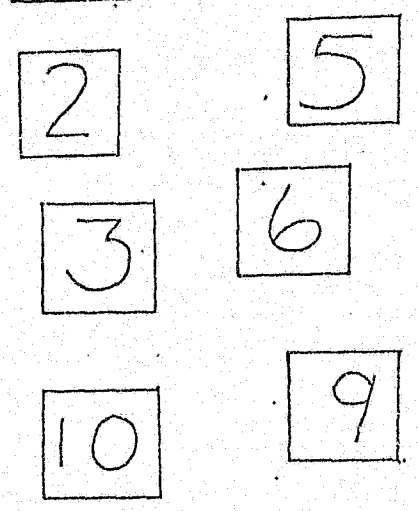
17

Show me 10, 12, 15, 3.



24

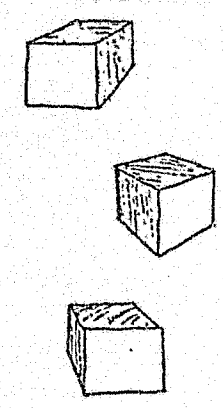
NAMING NUMBERS:
Child names each number pointed to by teacher.



35

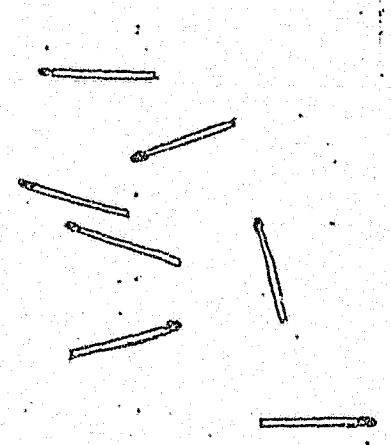
NUMERATION:
The child counts the number of objects.

Blocks: How many blocks are there?



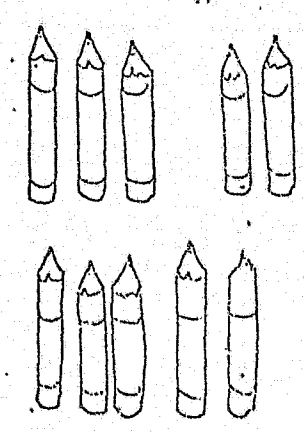
36

Matches:
How many matches are there here?



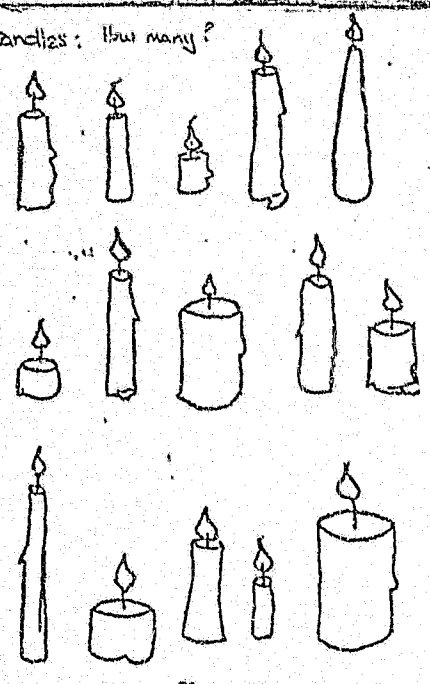
37

Crayons:
How many crayons are there here?



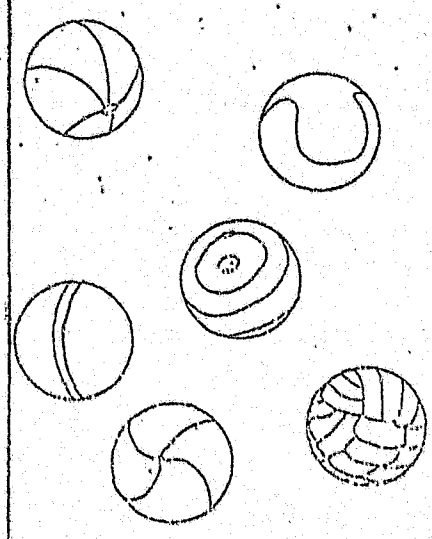
38

Candles: How many?



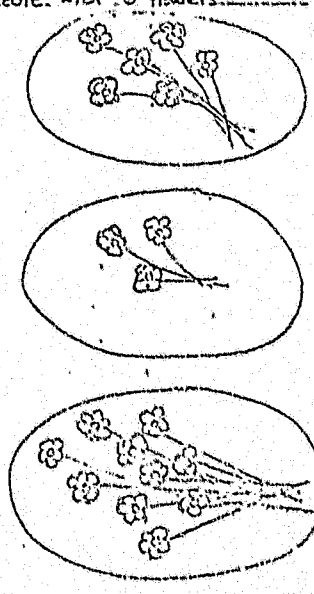
39

Balls How many balls are there here.



40

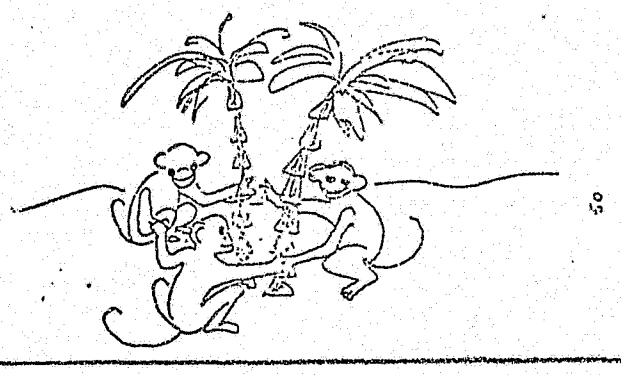
The child indicates the picture containing the specified number of objects eg "Show me the picture with 6 flowers"



41

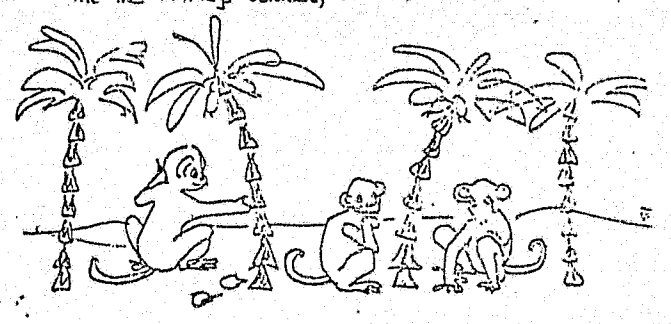
RELATIONAL TERMS TEST:

a. Here are pictures of monkeys and trees. Where are the monkeys in relation to the trees?

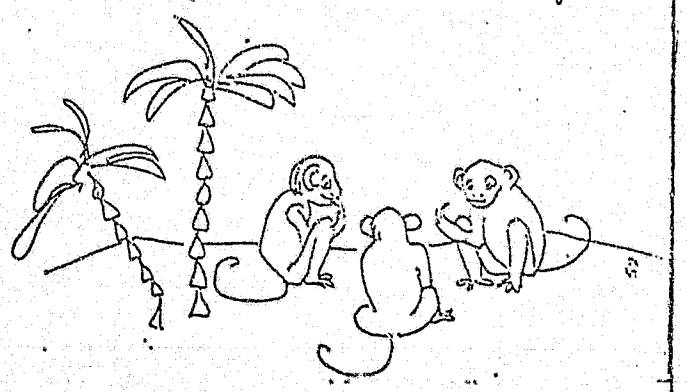


50

Are the monkeys between, around, or on the side of the trees?



Are the monkeys around, between, or on the side of the trees?



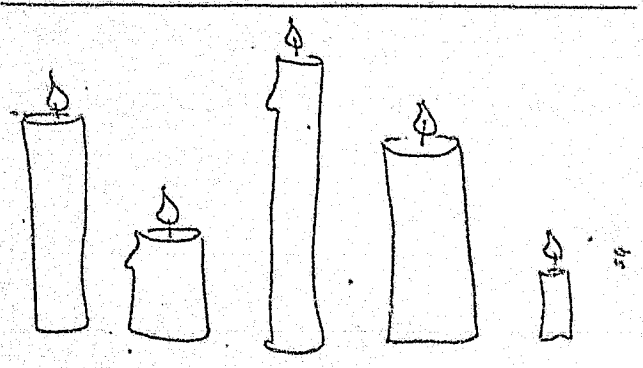
51

Are the monkeys around, between or on the side of the trees?



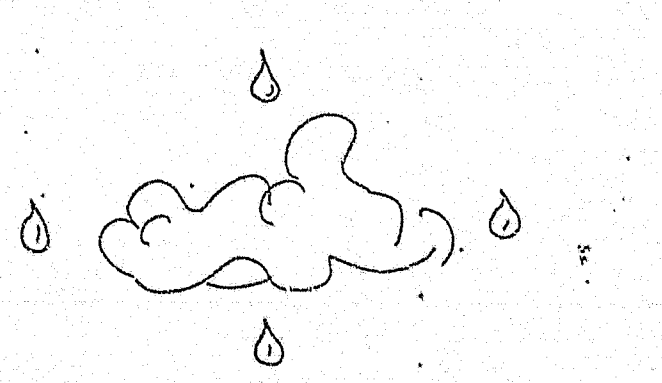
53

b. Which is the tallest candle?



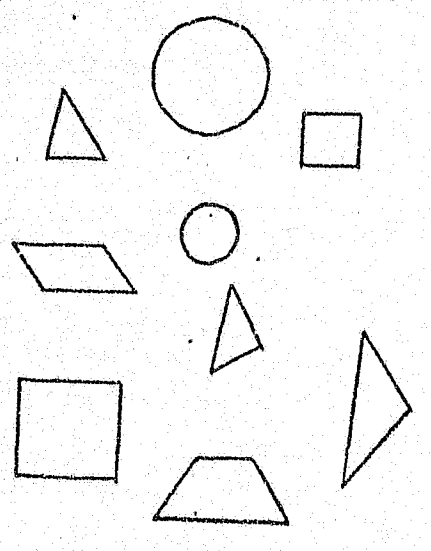
54

c. Which raindrop is above the cloud?



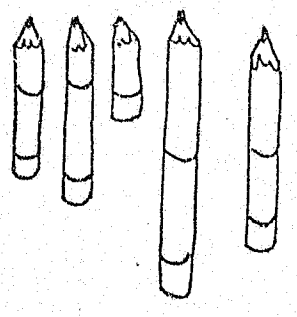
55

Look at all these shapes.
Point to all the triangles.



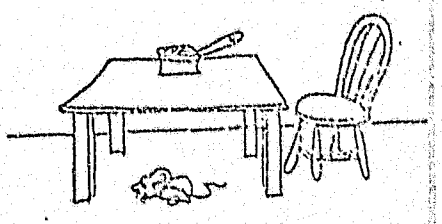
56

e. Which is the shortest crayon?



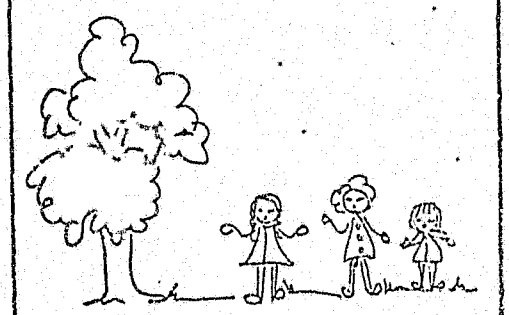
57

f. What is under the table?
What is ontop of the table?



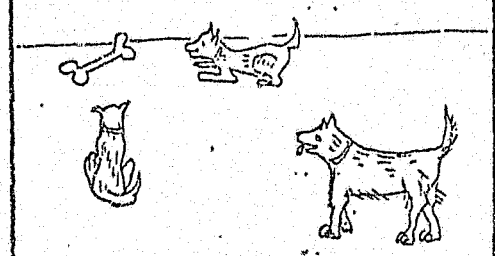
58

g. Which girl stands nearest the tree?



57

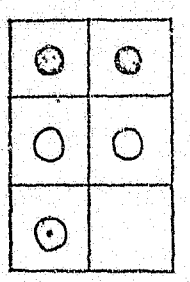
h. Which dog is farthest from the bone?



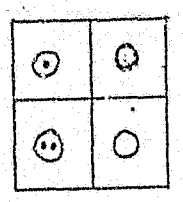
60

SINGLE CLASSIFICATION:

Look at the circles in the box. One is missing.

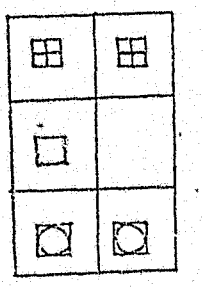


Look at these circles. Which one is it?

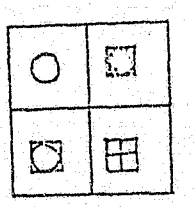


53

Look at the squares in the box. One is missing.

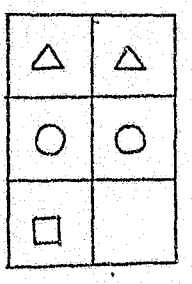


Look at these squares. Which is the missing one?

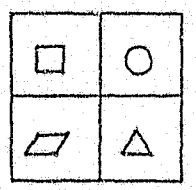


62

Look at the shapes in the box. One shape is missing.

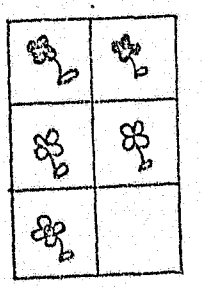


Look at these shapes. Which is the missing one?

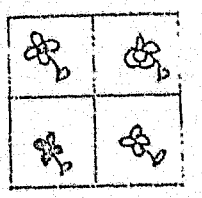


55

Look at the pictures in the box One is missing.

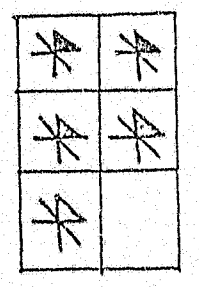


Which one of these is it?

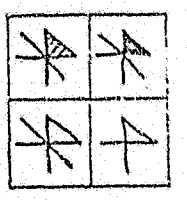


64

Look at the pictures in the box One is missing.



Which one of these is it?



57

Look at the words in the box. One is missing.

go	go
go	go
go	

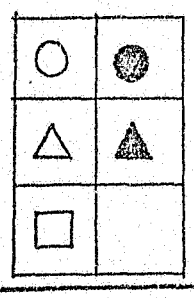
Which of these word is the missing one?

on	go
og	no

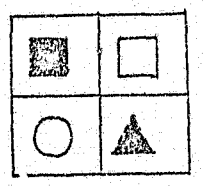
66

Double Classification:

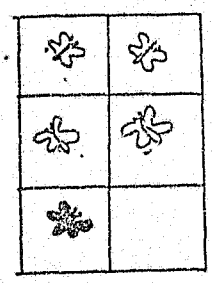
Look at the shapes in the box.
One shape is missing.



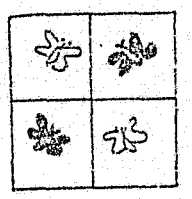
Look at these shapes.
Which is the missing one?



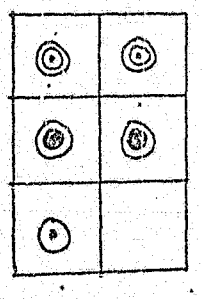
Look at the pictures in the box
One is missing.



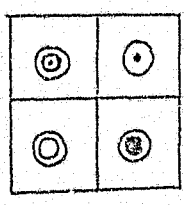
Which one of these is it?



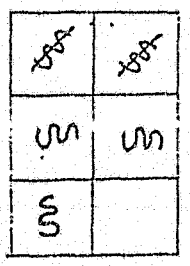
Look at these circles in the box
One of them is missing.



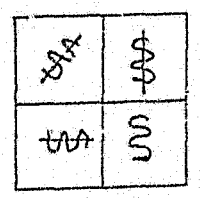
Which one of these is it?



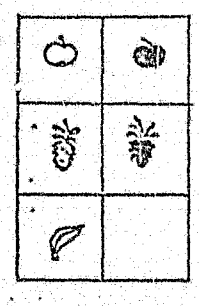
Look at the pictures in the box.
One is missing.



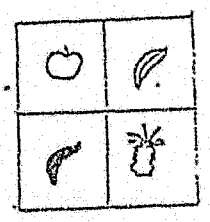
Which one of these is it?



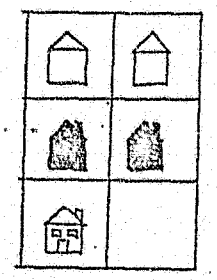
Look at the pictures in the box
One is missing.



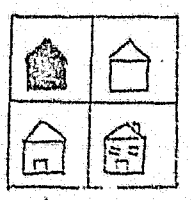
Which one of these is it?



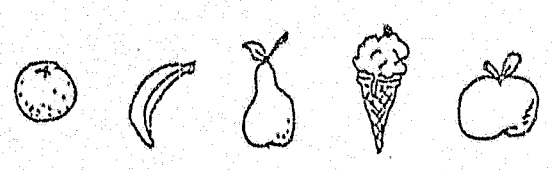
Look at the pictures in the box
One is missing



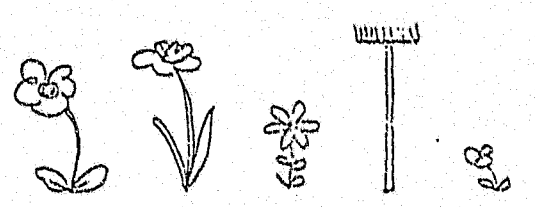
Which one of these is it?



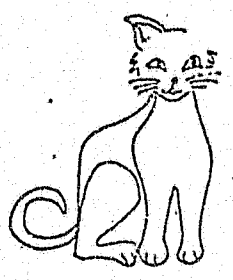
Sorting Test:
Look at the pictures here.
Can you find the one that does not belong?



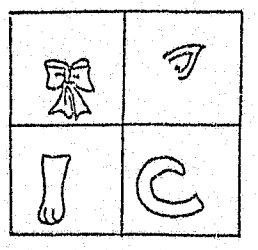
Which thing doesn't belong?



Part of this picture is missing.



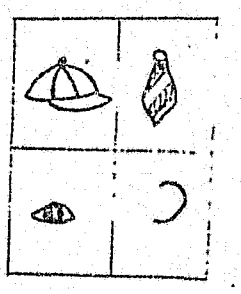
Can you find the missing part here?



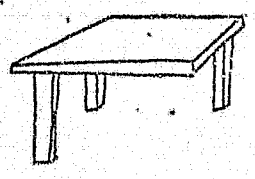
Part of this picture is missing.



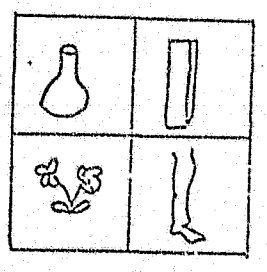
Can you find the missing part here?



Part of this picture is missing.

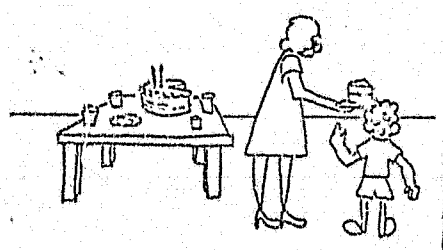


Can you find the missing part here?

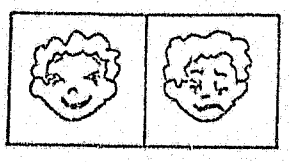


EMOTIONS TEST.

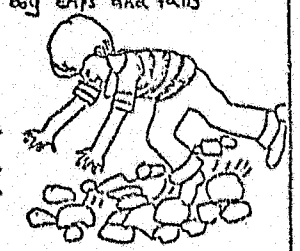
The little boy gets a piece of cake.



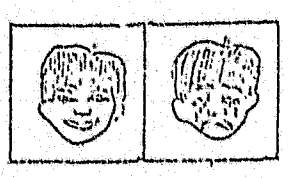
Is the little boy happy or sad?



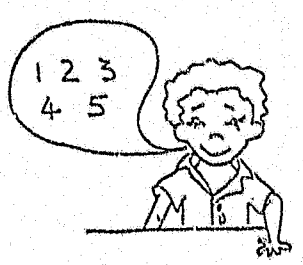
The little boy trips and falls



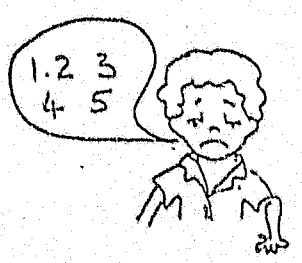
Is he happy or is he sad?



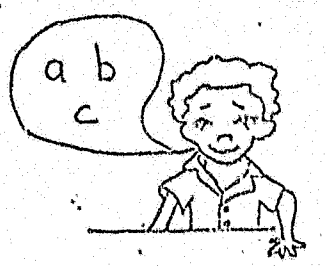
When you count are you happy?



Or are you sad?



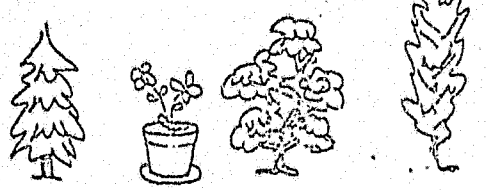
When you say the abc are you happy?



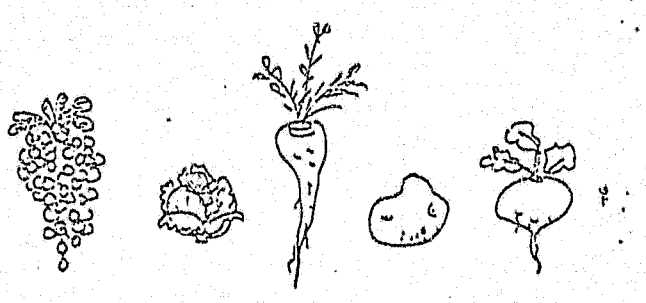
or are you sad?



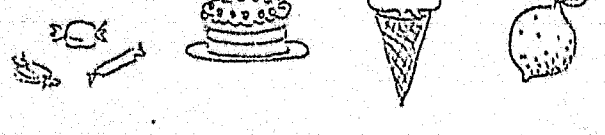
Which thing does not belong?



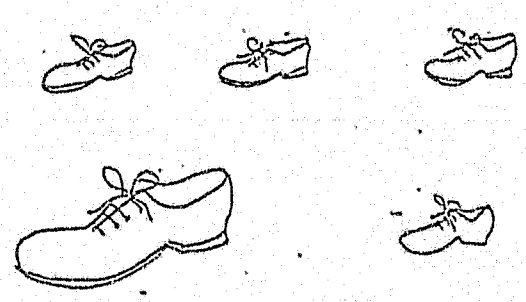
Which one does not belong?



Which one does not belong

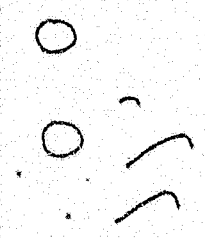


Which one does not belong?

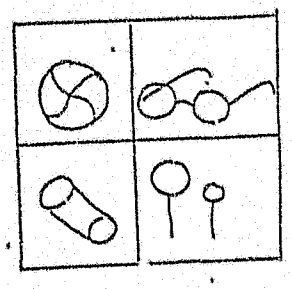


Parts of a Whole!

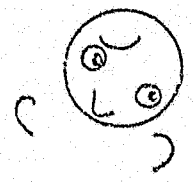
Here are some parts which can be put together to make something.



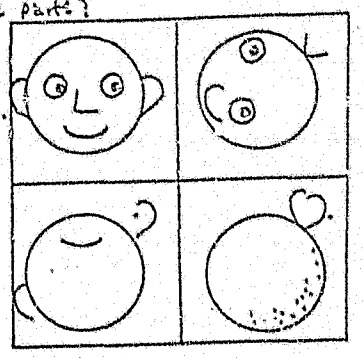
Which of these things can be made from the parts?



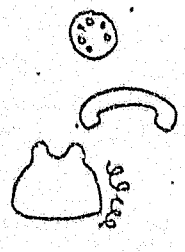
Look at these parts.



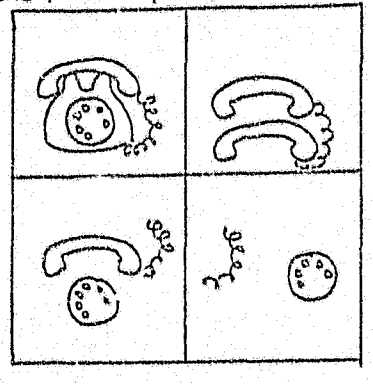
Which of these can be made from the parts?



Look at these parts.

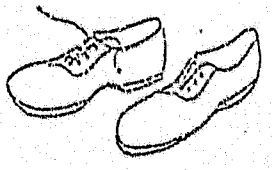


Which of these pictures can be made from the parts?

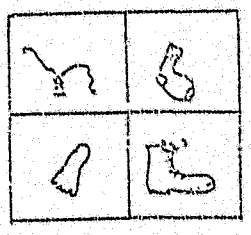


Picture Completion

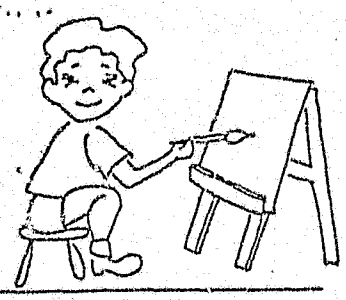
An important part of the picture is missing.



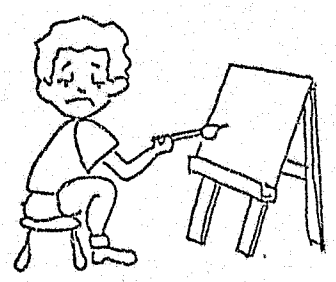
Look at the things in the box.
Can you find the missing part of the picture?



When you paint are you happy . . .

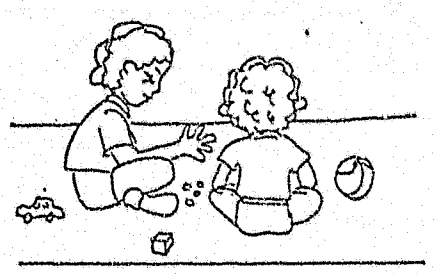


Or are you sad?

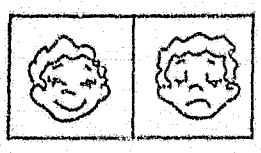


92

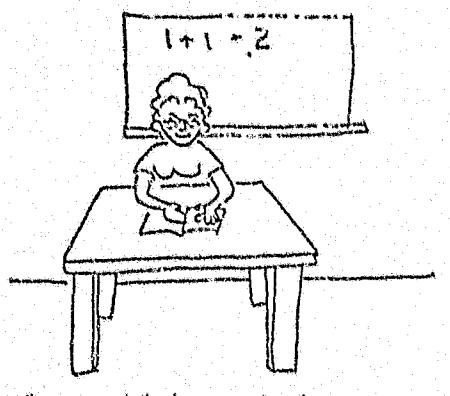
When you play with a friend



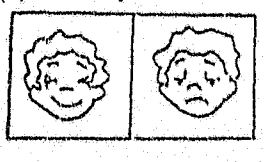
Are you happy or are you sad?



94



When you talk to your teacher are you happy or sad?



4

When you play on the swing are you happy

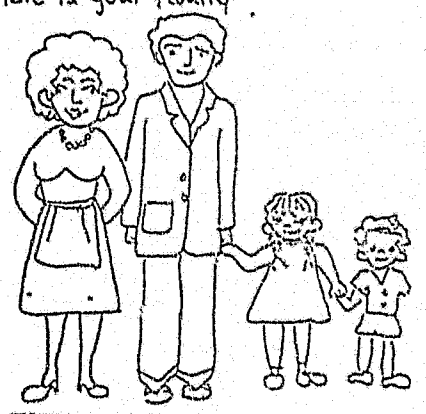


Or are you sad ?

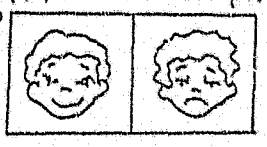


93

Here is your family



Are you happy or sad when you talk to mother?
to father?
to sister?
to brother?



95

Human figure drawing:

"On this sheet of paper I want you to make a picture of a man. Try very hard to see what good pictures of a man you can make."

91

APPENDIX E4

PRETEST

P1	leg face	36		77	
		38		79	
2	nose eyes	40		81	same
3	tongue	41	6 3	82	
4	same			85	
		42		87	
5	same	44			
6	square triangle	45	2 4 7	88	
				90	
7	all	46	umbrellas butterflies	92	
8	teacher postman	47		94	
9		48		95	
10		49		96	
11		50		97	
12		52			
15		54			
17		55			
18		56			
21		57	shortest		
22		58	under side		
24	a z m	59	nearest		
25	f r q	61			
26	c s m n f	64			
27	p v b d g x h j k q r	65			
28	same	67			
29	same	69			
30		71			
34		73			
35	2 9 6	75			

APPENDIX E4

PRETEST

P1	leg face	36		77	
		38		79	
2	nose eyes	40		81	same
3	tongue	41	6 3	82	
4	same			85	
5	same	42		87	
6	square triangle	44		88	
7	all	45	2 4 7	90	
8	teacher postman	46	umbrellas butterflies	92	
		47		94	
9		48		95	
10		49		96	
11		50		97	
12		52			
15		54			
17		55			
18		56			
21		57	shortest		
22		58	under side		
24	a z m	59	nearest		
25	f r q	61			
26	c s m n f	64			
27	p v b d g x h j k q r	65			
28	same	67			
29	same	69			
30		71			
34		73			
35	2 9 6	75			

APPENDIX E5

POSTTEST

P1	hand arm	35	3 5 10	72	
2	mouth ear	37		74	
3	teeth	39		76	
4	same	40		78	
5	same	41	6 10	80	
6	circle triangle	43		81	same
7	all	44		83	
8	clown bus conductor	45	3 5 9	86	
12		46	balloons butterflies	87	
13		47		88	
14		48		91	
16		49		93	
19		51		94	
20		53		95	
22		54		96	
23		55		97	
24	p c a	56			
25	q t o	57	tallest		
26	a e i o u	58	side ontop		
27	y l t w z x h j k q r	60	farthest		
28	same	62			
29	same	63			
31		66			
33		68			
		70			

APPENDIX F1

PEABODY PICTURE VOCABULARY TEST Form B

Suggested starting points (see manual page).

Age Category	Begin With:	Age Category	Begin With:
below 3-3	Plate No. 1	9-6 to 11-5	Plate No. 60
3-3 to 4-2	Plate No. 15	11-5 to 13-5	Plate No. 70
4-3 to 5-5	Plate No. 25	13-6 to 15-5	Plate No. 80
5-6 to 7-5	Plate No. 40	15-6 to 17-5	Plate No. 90
7-6 to 9-5	Plate No. 50	above 17-6	Plate No. 100

BASAL: 8 consecutive correct responses

CEILING: 6 errors in 8 consecutive responses

Plate No.	Word	Response	Errors	Plate No.	Word	Response	Errors
1	table		£	14	jacket		?
2	bus		$	15	pulling		£
3	horse		%	16	ring		$
4	dog		f	17	nail		%
5	shoe		&	18	hitting		f
6	finger		+	19	tire		&
7	boat		?	20	ladder		+
8	children		£	21	snake		?
9	bell		$	22	river		£
10	turtle		%	23	ringing		$
11	climbing		f	24	baking		%
12	lamp		&	25	cone		f
13	sitting		+	26	engineer		&

Plate No.	Word	Response	Errors	Plate No.	Word	Response	Errors
27	peeking		+	54	insect		&
28	kite		?	55	gnawing		+
29	rat		£	56	weapon		?
30	time		$	57	bannister		£
31	sail		%	58	idol		$
32	ambulance		f	59	globe		%
33	trunk		&	60	walrus		f
34	skiing		+	61	filing		&
35	hook		?	62	shears		+
36	tweezers		£	63	horror		?
37	wasp		$	64	chef		£
38	barber		%	65	harvesting		$
39	parachute		f	66	construction		%
40	saddle		&	67	observatory		f
41	temperature		+	68	assistance		&
42	captain		?	69	erecting		+
43	whale		£	70	thoroughbred		?
44	cash		$	71	casserole		£
45	balancing		%	72	ornament		$
46	cobweb		f	73	cobbler		%
47	pledging		&	74	autumn		f
48	argument		+	75	dissatisfaction		&
49	hydrant		?	76	scholar		+
50	binocular		£	77	oasis		?
51	locomotive		$	78	soldering		£
52	hive		%	79	astonishment		$
53	reel		f	80	tread		%

Plate No.	Word	Response	Errors	Plate No.	Word	Response	Errors
				108	sampler		%
81	thatched		f	109	ingenious		f
82	jurisprudence		&	110	response		&
83	sapling		+	111	constrain		+
84	arch		?	112	tangent		?
85	dwelling		£	113	sconce		£
86	lubricating		$	114	hoary		$
87	pedestrian		%	115	pendant		%
88	vale		f	116	prodigy		f
89	jubilant		&	117	casement		&
90	laden		+	118	quiescent		+
91	pursuit		?	119	talon		?
92	goblet		£	120	chevron		£
93	rodent		$	121	feline		$
94	confiding		%	122	cairn		%
95	reclining		f	123	convergence		f
96	frisking		&	124	apothecary		&
97	moat		+	125	indigent		+
98	salutation		?	126	edifice		?
99	barrier		£	127	scallion		£
100	foal		$	128	inform		$
101	incadescent		%	129	emaciate		%
102	cornucopia		f	130	catapult		f
103	ascending		&	131	arable		&
104	summit		+	132	orifice		+
105	caster		?	133	renovate		?
106	lobe		£	134	precarious		£
107	patriarch		$	135	pedagogue		$

Plate No.	Word	Response	Errors	Plate No.	Word	Response	Errors
137	sepal		f				
138	lethargic		&				
139	delectation		+				
140	embellish		?				
141	osculation		£				
142	cincture		$				
143	barrister		%				
144	carrion		f				
145	lanate		&				
146	chirography		+				
147	mendicant		?				
148	saltation		£				
149	florescence		$				
150	culver		%				

APPENDIX F2

PEABODY PICTURE VOCABULARY TEST Form A

Suggested starting points (see manual page).

Age Category	Begin With:	Age Category	Begin With:
below 3-3	Plate No. 1	9-6 to 11-5	Plate No. 60
3-3 to 4-2	Plate No. 15	11-5 to 13-5	Plate No. 70
4-3 to 5-5	Plate No. 25	13-6 to 15-5	Plate No. 80
5-6 to 7-5	Plate No. 40	15-6 to 17-5	Plate No. 90
7-6 to 9-5	Plate No. 50	above 17-6	Plate No. 100

BASAL : 8 consecutive correct responses

CEILING : 6 errors in 8 consecutive responses

Plate No.	Word	Response	Errors	Plate No.	Word	Response	Errors
1	car		£	15	catching		£
2	cow		¢	16	drum		¢
3	baby		%	17	leaf		%
4	girl		f	18	tying		f
5	ball		&	19	fr ace		&
6	block		+	20	bat		+
7	clown		?	21	bee		?
8	key		£	22	bush		£
9	can		¢	23	pouring		¢
10	chicken		%	.4	sewing		%
11	blowing		f	25	wiener		f
12	fan		&	26	teacher		&
13	digging		+	27	building		+
14	skirt		?	28	arrow		?

Plate No.	Word	Response	Errors	Plate No.	Word	Response	Errors
29	kangaroo		£	56	transportation		?
30	accident		$	57	counter		£
31	nest		%	58	ceremony		$
32	caboose		f	59	pod		%
33	envelope		&	60	bronco		f
34	picking		+	61	directing		&
35	badge		?	62	funnel		+
36	goggles		£	63	delight		?
37	peacock		$	64	lecturer		£
38	queen		%	65	communication		$
39	coach		f	66	archer		%
40	whip		&	67	stadium		f
41	net		+	68	excavate		&
42	freckle		?	69	assaulting		+
43	eagle		£	70	stunt		?
44	twist		$	71	meringue		£
45	shining		%	72	appliance		$
46	dial		f	73	chemist		%
47	yawning		&	74	arctic		f
48	tumble		+	75	destruction		&
49	signal		?	76	porter		+
50	capsule		£	77	coast		?
51	submarine		$	78	hoisting		£
52	thermos		%	79	wailing		$
53	projector		f	80	coil		%
54	group		&	81	kayak		f
55	tackling		+	82	sentry		&

Plate No.	Word	Response	Errors	Plate No.	Word	Response	Errors
83	furrow		+	112	concentric		?
84	beam		?	113	vitreous		£
85	fragment		£	114	sibling		$
86	hovering		$	115	machete		%
87	bereavement		%	116	waif		f
88	crag		f	117	cornice		&
89	tantrum		&	118	timorous		+
90	submerge		+	119	fettered		?
91	descend		?	120	tartan		£
92	hassock		£	121	sulky		$
93	canine		$	122	obelisk		%
94	probing		%	123	ellipse		f
95	angling		f	124	entomology		&
96	appraising		&	125	bumptious		+
97	confining		+	126	dormer		?
98	precipitation		?	127	coniferous		£
99	gable		£	128	consternation		$
100	amphibian		$	129	obese		%
101	graduated		%	130	gauntlet		f
102	hieroglyphic		f	131	inclement		&
103	orate		&	132	cupola		+
104	cascade		+	133	obliterate		?
105	illumination		?	134	burnishing		£
106	nape		£	135	bovine		$
107	genealogist		$	136	eminence		%
108	embossed		%	137	legume		f
109	mercantile		f	138	senile		&
110	encumbered		&	139	deleterious		+
111	entice		+	140	raze		?

Plate No.	Word	Response	Errors	Plate No.	Word	Response	Errors
141	ambulation		£				
142	cravat		$				
143	impale		%				
144	marsupial		f				
145	predatory		&				
146	incertitude		+				
147	imbibe		?				
148	homunculus		£				
149	cryptogam		$				
150	pensile		%				

APPENDIX G

THE DRAW A PERSON

MEASUREMENT OF INTELLIGENCE BY DRAWINGS

by

F. L. GOODENOUGH

Rules for Scoring*

Class A

In drawings of this class the subject cannot be recognised. The total possible score is either 0 or 1. If the drawing consists merely of aimless, uncontrolled scribbling (Fig. 1), the score is 0. If the lines are somewhat controlled and appear to have been guided by the child to some extent, the score is 1. Drawings of this type most frequently take the form of a rough square, triangle, or circle, very crudely done. Not infrequently several of these forms are included in a single drawing (Fig. 2). If a drawing of this kind contains much detail, it is always well to call upon the child for an explanation, since occasionally it will be found that such a drawing belong in Class B, rather than in Class A. Figure 3 is an example.

In questioning a child about his drawing, great care must be taken to avoid suggesting the expected answer. Be sure that his confidence has been gained before asking any direct questions. Then, after praising his drawing, say "Now tell me about your picture. What are all these things you have made?". If this does not elicit a response, point to one of the items and say in an encouraging tone, "What is this?". If he is still unable to respond, or if, as is frequently the case, he calls each part in turn "a man", then the drawing should be scored as Class A;

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* Goodenough F.L. Measurement of Intelligence by Drawings Pp 90-110. Figures referred to are to be found on Pp 112-153.

but if, on the other hand, he names the various parts in a logical fashion, it should be scored according to the rules given for Class B.

Class B

This class includes all drawings which can be recognized as attempts to represent the human figure, no matter how crude they may be. Each point is scored plus or minus. A credit of 1 is allowed for each point scored plus, and no half credits are given.

1. Head present

Requirement: Any clear method of representing the head. Features alone, as in Figure 4, without any outline for the head itself, are not credited for this point.

2. Legs present

Requirement: Any method of representation clearly intended to indicate the legs. The number must be correct; two in full-face drawings, either one or two in profiles.

It is always necessary to mingle a reasonable amount of common sense with what would otherwise be purely arbitrary scoring. One or two examples have been found in which only one leg was present. But a crude sketch of a crutch was included, showing clearly what the child had in mind. A more sophisticated drawing of this kind would probably

show the stump of the missing leg, but it is hardly fair to expect this from a young child. On the other hand, little children sometimes draw three or more legs, or a single leg without logical explanation. These should be scored minus. A less usual occurence is the showing of a single leg to which two feet are attached. These are scored plus.

3. Arms present

Requirement: Any method of representation, clearly intended to indicate arms. Fingers alone are not sufficient, but the point is credited if there is any space left between the base of the fingers and that part of the body to which they are attached. The number must also be correct. See rules for preceding point.

The only real danger of incorrect scoring of this point arises from the many remarkable methods by which the arms are indicated, and the unusual points of attachment, which makes it very easy for the beginner to overlook them. Figures 9-12 instances of this sort.

4a Trunk present

Requirement: Any clear indication of the trunk, whether it be by means of a straight line only (in which case, 4b, it should be noted, is always minus) or by some sort of two-dimensional figure. In cases where there is no clear differentiation between the head and the trunk, but the features appear in the upper end of a single figure, the point is scored plus if the features do not occupy more than half the length of the figure; otherwise the score is minus, unless a cross line has been drawn to indicate the

termination of the head. A single figure placed between the head and the legs is always counted as a trunk, even though its size and shape may be such as to suggest to the adult a neck rather than a trunk. This ruling is based on the responses of a number of children whose drawing showed this peculiarity, practically all of whom have, when questioned, called the item a trunk. A row of buttons extending down between the legs is scored minus for trunk but plus for clothing, unless a cross line has been drawn to show the termination of the trunk.

4b Length of trunk greater than breadth.

Requirement: Measurement should be taken at the points of greater length and of greatest breadth. If the two measurements are equal, or so nearly so that the difference is not readily determined by the use of a millimeter rule, the score is minus. In most instances the differences will be found great enough to be recognised at a glance, without actually measuring. Unless the trunk is shown in two dimensions, the score is minus.

4c Shoulders definitely indicated.

Requirement: In full-face drawings, a change in the direction of the outline of the upper part of the trunk which gives an effect of concavity rather than convexity. See Figure 5. The point is scored rather strictly. The ordinary elliptical form is never credited, and the score is always minus unless it is evident that there has been a recognition of the abrupt broadening out of the trunk below the neck which is produced by the shoulder blade and the collar bone.

5b Legs attached to the trunk. Arms attached to the trunk at the correct point.

Requirement: In full-face drawings where 4c is plus, the point out attachment must be exactly at the shoulders. If 4c is minus, the attachment must be exactly at the point which should have been indicated as the shoulders. Score very strictly, especially in those cases where 4c is minus.

In profile drawings the attachment must be indicated at a point approximately on the median line of the side trunk, at a short distance below the neck, this point coinciding with the broadening of the trunk which indicates the chest and shoulders. If, as is frequently the case, the arms extend from the line which outlines the back, or if the point of attachment reaches the base of the neck, or falls below the greatest expensation of the chest line, the point is not credited. See 5a for ruling as to omitted limbs or misplacement of a single limb.

While this point and point 4c to go together ÷ that is , one is more likely to be credited if the other is also credited this agreement is not absolute, and 5b is more likely to be credited than is 4c. However, success with 4c does not insure success with 5b, and care must be taken to differentiate between the two. It should be noted that 4c has to do only with the shape of the upper portion of the trunk, 5b with the point of attachment of the limbs. If this distinction is kept in mind, there should be no difficulty in scoring the two points independently of each other.

6a Neck present.

Requirement: Any clear indication of the neck as distinct from the head and the trunk. Mere juxtaposition of the head and the trunk is not credited.

6b Outline of neck continuous with that of the head, of the trunk, of both.

See Figures 6 and 7 for examples of success with this point. There is practically never any question as to scoring.

7a Eyes present.

Requirement: Either one or two eyes must be shown. Any method is satisfactory. A single indefinite feature such as is occasionally found in the drawings of very little children is given credit here, even though its significance is uncertain.

In one of the earliest revisions of the scale, the rather obvious requirement of two eyes in full-face drawings was taken as the basis for scoring. It was found, however, that erroneous results were introduced by this method, owing to the confusion which many children undergo at the time of change from the full face to the profile. Holding to the strictly correct numerical requirement means that, in any cases, a child who for several years has been succeeding with this point in his full-face drawings suddenly begins to fail with it, not because he is any less certain of the correct number of eyes, but merely because he has not learned how to express this fact when

drawing the figure from another angle.

7b Nose present

Requirement: Any clear method of representation. In "mixed profiles" the score is plus even though two noses are shown.

In cases where only one feature has been shown in addition to the eyes, it is sometimes impossible to tell whether this feature has been intended for a nose or for a mouth. Since the child's score will be the same in either case, it does not greatly matter which way the point is credited. However, the percentages given for this and for the following point are for this reason subject to a slight degree of error.

7c Mouth present

Requirement: Same as for the preceding point.

7d Both nose and mouth shown in two dimensions; two lips shown.

Requirement: See Figure 8 for accepted forms. In the full-face drawing any two dimensional figure which approximates the true shape of the nose is accepted. A rough equilateral triangle is credited if in the normal position with the base downward, but not credited if the position is reversed so that it rests upon its apex. A straight line only, a dot, a circle, or a square are failures. Two dots representing the nostrils is failure here but credited for the next point.

In the full-face drawing, the mouth is credited if it is drawn in two dimensions and if the line showing the separation of the two lips is indicated. In practical scoring this is the point to be looked for first, as it is the one which most frequently determines success or failure. Both nose and mouth must confirm to requirements if the point is to be credited.

In the profile drawing, the nose must show a clean differentiation both from the forehead and from the upper lip. The mouth must show either a separate modelling of the two lips, or the line indicating the mouth must be continuous with that outlining the remainder of the face. In every small drawing a reading glass or small magnifying glass is sometimes convenient in determining the scoring of this point but its use is very rarely necessary. The profile drawing is very much more likely to receive credit than is the full-face drawing.

7e Nostrils shown.

Requirement: Any clear method of indicating the nostrils. In profile drawings the point is credited if the line outlining the nose is extended inward upon the upper lip as in Figure 18. A complete showing of the division of the septum (Fig. 11) is not credited. If the only indication of the nose consists of two dots representing the nostrils, the score is plus for this point and also for 7b, but is minus for 7d.

8a Hair shown.

Requirement: Any method clearly intended to represent hair is credited.

In scoring kindergarten drawings it is sometimes hard to distinguish between hair, hat and fingers. The following notes will be found helpful.

In a drawing which shows no other indication of arms or fingers, but in which there appear a number of straight lines orojecting from either side of the head, fingers have almost invariably been intended. See Figures 16-17.

A scribbled line on top of the head usually represents hair.

The hat, can, as a rule, be distinguished by its brim. It must not be forgotten, however, that the hair in these primitive drawings is usually visible through the hat, and any unusual shading or apparent decoration on or about the hat should be observed carefully and its relation to the outline of the head noted. If it is appeared to follow this outline rather than that of the hat, it is most probably that hair has been intended.

8b Hair present on more than the circumference of the head, Better than a scribble, Non-transparent; that is, outline of the head not showing through the hair.

Figures 18, 19 and 20 are examples of success, and Figures 21 and 22 of failure, with this point. All three requirements must be met if the point is to be credited.

9a Clothing present.

Requirement: Any clear representation of clothing. As a rule the earliest forms consist of a row of buttons running down the centre of the trunk, or of a hat (which is likely to be placed above rather than on the head), or of both. A single dot or small circle placed in the centre of the trunk is practically always intended to represent the navel and should not be credited as clothing. A series of vertical or horizontal lines drawn across the trunk - more rarely on the limbs as well - is fairly common way of indicating striped material, and should be credited as clothing.

9b <u>At least two articles of clothing (as hat and trousers) non-transparent; that is, concealing the part of the body which they are supposed to cover.</u>

In scoring this point it must be noted that a hat which is merely in contact with the top of the head but does not cover any part of it is not credited. Buttons alone, without any other indication of the coat, are not credited here.

9c <u>Entire drawing free from transparencies of any sort.</u>

There is usually no difficulty in scoring. In children's drawings the sleeves do not appear until a relatively late period of development - as a rule, from two to three years after trousers are first shown. The point is therefore a difficult one, but the correlation with school success is unusually good. 36 per cent of the accelerated nine-year-olds succeed with it, but only 7 per cent of the average and none of the retarded group of the same

age do so.

9d <u>At least four articles of clothing definitely indicated</u>.

The articles should be among those in the following list : Hat, shoes, coat, shirt, collar, necktie, belt or suspenders, trousers.

<u>Note</u>: Shoes must show some detail, as laces, toe cap, or double line for the sole. Heel alone is not sufficient. Coat or shirt must show either sleeve, pockets, lapels, or distinctive shading, as spots or stripes. Buttons alone are not sufficient. Collar should not be confused with neck shown merely as insert, nor should coat lapels be counted as collar. Necktie is often inconspicuous and care must be taken not to overlook it, but it is not likely to be mistaken for anything else.

9e <u>Costume complete without incongruities</u>.

Requirement: A definite and recognizable kind of costume, as a business suit, a soldier's uniform, etc. Whatever the costume, it must be complete in all the essential details and there must be no confusion of any of the items, such as a sailor's hat with a business suit, etc. The scoring should be strict. The following rules should be observed as to the number of required item :

1. The hat must always be shown if it forms an essential part of the costume as in the case of a uniform. It need not be shown with a business suit.

2. The sleeves must always be shown. Either a coat, as indicated by pockets, etc., must be shown or an acceptable substitute therefore, such as a sport shirt (with the remainder of the costume corresponding) must be present. Both collar and necktie must be sown when these would ordinarily form a part of the costume.

3. The trousers must always be shown.

4. The shoes must always be sown. See note under 9d. The only real danger of incorrect scoring of this point lies in the tendency to give credit for a large number of unimportant or non-essential details in spite of the absence of essentials. This is especially likely to be the case in the drawings representing "cowboys" and "Indians", two subjects which are extremely popular with retarded boys of nine to twelve years. One frequently finds in these drawings a great number of detail - elaborately drawn "chaps", cartridge belts, revolvers, dtc., but no sleeves. (Fringes on the arms similar to those on the trousers may not be counted as sleeves unless the cross line at the wrist, showing the termination of the sleeve, is present).

10a. Fingers present.

Requirement: Any clear indication of fingers, no matter what may be the method of representation. They must be shown on both hands if both hands are present, but credit is given for fingers on one hand if only one hand is shown.

Note. Little children sometimes express the fingers in very curious ways, and the scorer must be on his guard to avoid overlooking such cases. A number of these bizarre types are shown in Figures 13-17. Sully (115) has described in detail the various methods of picturing the hand and fingers which are found in his collection, and a study of his article in this connection is well worth while. See also the note on 8a which calls attention to the likelihood of confusing fingers and hair.

10b Correct number of fingers shown.

Requirement: Five fingers on each hand where both hands are shown; on one hand if only one hand is shown. In cases where both hands are shown but one is partially concealed, as in carrying something, credit may be given on the basis of the one hand that is entirely visible, if there is no question regarding the number of fingers on that hand and the concealment of fingers on the other hand is logically demanded by the situation. This ruling must be interpreted very rigidly, however, and credit allowed only in cases in which the above conditions are unquestionably applicable.

10c Detail of fingers correct.

Requirement: Fingers must be shown in two dimensions, the length in all cases must be greater than the breadth, and the angle subtended by them must be greater than 180 degrees. As in the preceding point, if one hand is now shown, credit is given on the basis of the hand that is present. All three requirements must be fulfilled if the point is to

be credited.

10d Opposition of thumb shown.

Requirement: A clear differentiation of the thumb from the fingers. Scoring should be very strict. The point is credited if one of the lateral digits is definitely shorter than any of the others - compare especially with the little finger - or if the angle between it and the index finger is not less than twice as great as that between any two of the other digits, or if its point of attachment to the hand is distinctly nearer to the writer than that of the fingers. Conditions must be fulfilled on both hands if both are shown; one hand is sufficient, if only one is shown.

10e Hand shown as distinct from fingers or arm.

See Figures 23-27 for some of the most common ways of picturing the hand. There is usually no difficulty in scoring.

A small percentage, usually of the brightest children, who have come to realize the technical difficulties involved in drawing the hands, avoid the issue by concealing them in some way, usually drawing the man with his hands in his pockets. In these cases the child should be credited with points 10a, 10b, and 10c; not with 10d, and with 10e only in case the upper part of the hand is visible above the pockets. This ruling is based upon the average score made on the remainder of the drawing by children who drew the hands in this position.

11a Arm joint shown. Either elbow, shoulder or both.

Requirement: If the elbow joint is taken as the basis for scoring there must be an abrupt bend (not a curve) at approximately the middle of the arm. One arm is sufficient in this case. If the shoulder joint is taken, the arm must hang at the side in a position approximately parallel to the body axis. An arm which simply points in a downward direction does not score; there must be a curve at the point of attachment to the body, to indicate the shoulder joint. While this point is more likely to be gained if 4 c and 5b are also credited, yet success with any of them does not necessarily mean success with either of the others. For the sake of clearness, the distinction between these points is repeated here:

4c depends upon the shape of the upper portion of the trunk
5b depends upon the point of attachment of the arms
11a depends upon the manner of attaching the arms, and the angle between the arms and the body axis.

Drawings are occasionally found in which the arm does not hang at the side; yet 11a should obviously be credited since there is a clear indication of the shoulder joint, as when the man is reaching out to get something. Because of the marked tendency of little children to draw the arms standing stiffly out from the side, it is necessary to exercise great caution in giving credit for this point unless at least one arm hangs at the side. Both arms must do so if both are shown, unless there is a logical reason forthe change in position. See Figures 28-31.

Note that in Figure 28, 11a is credited although both 4c and 5b are failures. Compare this drawing with Figure 23, which represents the upper limit of failure in point 11a. In Figure 23 the curve was determined in part by the size of the sheet of paper.

In drawings made by young or backward children, the position of the elbows and knees is sometimes indicated, without apparent recognition of their function as joints. See Figures 33-34. No credit is allowed for joints in these cases. (In Figures 34 credit has been given for the hip joint).

11b Leg joint shown. Either knee, hip or both.

Requirement: If the knee joint is taken as a basis for scoring, there must be, as in the case of the elbow, an abrupt bend at about the middle of the leg, or, as is sometimes found in very high-grade drawings, a narrowing of the leg at this point. Knee-length trousers are not sufficient. The hip joint is the one most frequently shown. If the inner lines of the two legs meet at the point of junction with the body, the point is credited. Young children usually place the legs as far apart from each other as possible.

12a Proportion. Head.

Requirement: Area of the head not more than one half or less than one tenth that of the trunk. Score rather leniently. See Figure 32 for a series of standard forms of which the first

is double the area of the second.

12b Proportion. Arms.

Requirement: Arms equal to the trunk in length or slightly longer, but in no case reaching to the knee. Width of arms less than that of trunk.

12c Proportion. Legs.

Requirement: Length of the legs is not less than the vertical measurement of the trunk, nor greater than twice that measurement. Width of the legs less than that of the trunk.

12d Proportion. Feet

Requirement: The feet and legs must be shown in two dimensions. The feet must not be "clubbed"; that is, the length of the foot must be greater than its height from sole to instep. The length of the foot must be not more than one third or less than one tenth the total length of the leg. The point is also credited in full-face drawings in which the foot is shown in perspective, as in Figure 35, provided that the foot is separated in some way from the rest of the leg in these drawings.

12e Proportion. Two dimensions.

Requirement: Both arms and legs shown in two dimensions. If the arms and legs are in two dimensions, the point is credited even

though the hands and feet are in linear dimension only.

13 Heel shown.

Requirement: Any clear method of indicating the heel. See Figures 36 - 38 for the method most frequently found. The point is also credited in full-face drawings where the foot is shown in perspective, as in Figure 35.

14a Motor coordination. Lines A.

Requirement: All lines reasonably firm, for the most part meeting each other cleanly at points of junction, without marked tendency to cross or overlap, or to leave gaps between the ends, The degree of complexity of the drawing must be taken into account, a drawing with very few lines being scored more rigidly than one which involves much detail and frequent change in the direction of the lines. A "sketchy" drawing in which most of the outlines consist of many short lines is ordinarily credited, since this is a characteristic confined almost entirely to drawings of a rather mature type.

For the scoring of this and the other five points in this group, reference should be made to the series of specimen drawings on pages 112-161. While the scoring of these points is perhaps slightly less objective than that of most of the others in the scale, a study of the types presented should produce results which are at least as consistent as those obtained by the

ordinary handwriting scale, in which essentially the same method of comparision is used.

14b Motor coördination. Lines B.

Requirement: All lines firmly drawn with correct joining.

This point is based upon a much more rigid interpretation of the rules given for the scoring of the preceding point. Obviously it can never be credited unless 14a is also credited. The score is in addition to that for 14a. Scoring should be very strict.

14c Motor coördination. Head outline.

Requirement: Outline of head without obviously unintentional irregularities. The point is credited only in those drawings in which the shape of the head has developed beyond the first crude circle or ellipse, so that conscious control of the movement of the hand is necessary throughout.
Scoring should be rather strict.

14d Motor coördination. Trunk outline.

Requirement: Same as for the preceding point, but there with reference to the trunk. Note that the primitive circle or ellipse does not score.

14e Motor coördination. Arms and legs.

Requirement: Arms and legs without irregularities as above, and without tendency to narrowing at the point of junction with the body. Both arms and legs must be in two dimensions.

14f Motor coördination. Features.

Requirement: Features symmetrical in all respects. Eye, nose and mouth must all be sown in two dimensions . In full-face drawings the eyes must be equidistant from the nose and from the corners of the mouth, and there must be no correct juxtaposition with the outline of the head. The nose must be symmetrical in shape, and must be placed above the centre of the mouth. Where the nose is represented by two dots, these must be equidistant from the corners of the mouth. The two sides of the mouth must be alike, and the mouth must be placed at right angles with the axis of the hand. In profile drawings the eye must be regular in outline and the distance from the centre of the eye to the back of the head must be not less than twice as great as the distance from the centre of the eye measured forward to the edge of the nose. The nose must form an obtuse angle with the forehead, and its size must be in proportion to the other features and to the size of the head. The mouth must be regular in outline and of a size proportionate to the other features. The scoring should be strict.

The point is much more likely to be credited in profile drawings than in full-face drawings.

15a Ears present.

Requirement: Two in full-face drawings, one in profile. Any clear method of representation.

Care must be taken not to overlook inconspicuous or unusual methods of showing the ears. Figures 43-46 show some of the bizarre forms under which this item may appear. In some kindergarten drawings there is danger of confusing ears and arms. It should be remembered that, as a rule, the arms are shown at an earlier age than the ears; hence in cases of doubt it is usually safer to call the unexplained feature an arm rather than an ear, unless the size and shape are such as to make the classification fairly certain. As a rule the total rating of the child will not be affected whichever way the point is credited, since a score of more than than one point on either item is not usual in these primitive drawings.

15b Ears present in correct position and proportion.

Requirement: The vertical measurement must be greater than the horizontal measurement. In profile drawings some detail, such as a dot to represent the aural canal, must be shown. In full-face drawings such detail may or may not be present. The ears must be placed somewhere within the middle two thirds of the head (as viewed from the side) and the shell-like portion of the ear must extend toward the back of the head. For some unexplained reason, a fairly large number of children, especially of retarded boys, tend to reverse this position, making the ear extend toward the face (Fig. 46). In such drawings point 15b is never credited.

16a Eye detail. Brow, lashes or both shown.

Requirement: Any clear method of representation. In most instances the brow is shown by means of a curved line above the eye. In some profile drawings of a high grade it is indicated by modelling to show the supraorbital ridge. Either method is satisfactory. Lashes are almost invariably represented by means of a series of curved lines projecting from the outline of the eye.

16b Eye detail. Pupil shown.

There is rarely any question as to the scoring. It should be noted, however, that a dot with a curved line above it is not credited, since the dot must be considered as representing the eye itself in these cases. The pupil must be present in both eyes if both are shown.

16c Eye detail. Proportion.

Requirement: The horizontal measurement of the eye must be greater than the vertical measurement. This requirement must be fulfilled in both eyes if both are shown; one eye is sufficient if only one is shown. In profile drawings a hight grade, the eye is sometimes shown in perspective; that is, its shape is altered from the customary almond form to that of a sector of a circle. In all such cases the point should be credited.

16d Eye detail. Glance.

Requirement: The face must be shown in profile. The eye must either be shown in perspective, as described in the preceding paragraph, or, if the ordinary almond form is retained, the pupil must be placed toward the front of the eye rather than in the centre. The scoring should be strict.

17a Both chin and forehead shown.

In full-face drawings both the eyes and the mouth must be present, and sufficient space must be left above the eyes to represent the forehead, below the mouth to represent the chin. The scoring should be rather lenient. In profile drawings the point may also be credited when the eyes and mouth are omitted, if the outline of the face shows clearly the limits of the chin and forehead. If there is no outline to indicate the separation of the chin from the neck to full-face drawings, the point cannot be credited. See Figures 47-50 for examples of success and failure. Note also the unusual methods of showing the chin and forehead, in Figures 51-54.

The reliability of scoring is rather less for this point than for most others in the scale. A number of scoring methods have been tried in an attempt to devise a purely objective rule for determining what is to be considered "sufficient" space. Comparative vertical measurements of different kinds, and combinations of vertical and horizontal measurements, using as a basis the total size of the head, the distance from the eyes to the top of the head, distance from the eyes to the mouth, etc., were tried; but no simple standard could be devised which would make sufficient allowance for the great variations in the shape of the head and in the relationships of the several

features to each other. Because of this difficulty in scoring, the point was entirely omitted from one of the earlier forms of the scale. It was re-included in the present revision because of its apparent significance in the case of kindergarten and first-grade children. There is little difference between the performance of accelerated and average children in respect to this point, but the retarded group is clearly behind the others at all age levels.

17b Projection of chin show; chin clearly differentiated from lower lip.

The point is rarely credited except in profile drawings. In full-face drawings, however, it may be credited if the modeling of the chin is indicated in some way, as by a curved line below the lip.

18a Profile A

Requirement: The head, trunk and feet must be shown in profile without error. The trunk may not be considered as drawn in profile unless the characteristic line of buttons has been moved from the centre to the side of the figure, or some other indication, such as the position of the arms, pockets, necktie, etc. showns clearly the effect of this change of position. The entire drawing may contain one, but not more than one, of the following errors :

1. One bodily transparency, as the outline of the trunk showing through the arm.

2. Legs not in profile. In a true profile at least the upper part of the leg which is in the background must be concealed by the one in the foreground.

3. Arms attached to the outline of the back and extending forward. This appears to be a residual effect of the manner of attachment which the child was accustomed to use in his full-face drawings.

18b Profile B.

Requirement: The figure must be shown in true profile, without error or bodily transparency, except that the shape of the eye may be ignored.

Considering the strong emphasis which previous workers have placed upon the change from the full-face to the profile drawing, it may seem that too little weight has been given to this characteristic in the present scale. It has been found, however, that while it is true that very young children practically never draw the figure in profile, an appreciable number of older ones, even among the accelerated children, continue to give the preference to the full-face position. Most of the literature on children's drawings tends to give the impression that the change to the profile position is a general rule which all children come to adopt in their drawings, but my own figures show that this is far from being the case. The proportion of profiles, when the subject is left entirely to his own choice, increases steadily until it includes about 80 or 85 per cent of all drawings; but apparently the maximum is reached at about this point. At least this is

the approximate proportion found among drawings by high school students and university graduates. It has therefore seemed best not to give too much credit to the profile as such; rather to devise a scoring plan which would tend to favour the profile position in a large number of the points considered, but which would not preclude the possibility of success with these points in the full-face drawing.

COLUMN 1		COLUMN 2		COLUMN 3	
CREDITS	M.A.	CREDITS	M.A.	CREDITS	M.A.
1	3-3	17	7-3	33	11-3
2	3-6	18	7-6	34	11-6
3	3-9	19	7-9	35	11-9
4	4-0	20	8-0	36	12-0
5	4-3	21	8-3	37	12-3
6	4-6	22	8-6	38	12-6
7	4-9	23	8-9	39	12-9
8	5-0	24	9-0	40	13+
9	5-3	25	9-3	41	13+
10	5-6	26	9-6	42	
11	5-9	27	9-9	43	
12	6-0	28	10-0	44	13+
13	6-3	29	10-3	45	
14	6-6	30	10-6	46	13+
15	6-9	31	10-9	47	13+
16	7-0	32	11-0	48	
				49	

Author Galaun C
Name of thesis The acquisition of cognitive skills as a function of a television programme 1979

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