

Studies on the stability of the human figure drawing

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ABSTRACT. Within a sample of 2,428 children from San Luis, Mendoza and San Juan, Argentina (1983), the standards of evaluation for 5 and 6-year-old children proposed by Koppitz (1968) and those developed in Ottawa by Groves and Fried (1991) are compared to Taborda-Barbenza's ones (1993) with the aim at establishing HFD stability in different populations. This comparative study was also carried out in 127 4-year-old children from San Luis and Villa Mercedes, Argentina, taking into account the frequency of scores recorded in Ottawa and those registered in San Luis and Villa Mercedes. The different items were classified in terms of percentages: 100-86 %, expected; 85-51 %, common; 50-16 %, uncommon and 15-0 %, exceptional. Results show that modifications proposed in this work for the evaluation of HFD make the scale even more valid, even although the HFD is a competent instrument for having a stable measure.

Key words: drawing, human figure, stability.

RESUMO. Estudos sobre a estabilidade do desenho da figura humana (DHF).

Com o intuito de pesquisar a estabilidade do desenho da figura humana (DHF) e a pertinência das modificações feitas pela autora deste trabalho, compararam-se as normas de revalidação para crianças de 5 e 6 anos elaboradas por Koppitz (1968), e as desenvolvidas em Ottawa por Groves e Fried (1991) com as elaboradas por Taborda-Barbenza em San Luis, Mendoza e San Juan (Argentina, 1993). Este estudo comparativo realizou-se também em 127 crianças de 4 anos de San Luis e Villa Mercedes, considerando a frequência de porcentagens registradas. Os resultados obtidos confirmariam a validade e a estabilidade do teste. Além disso, as modificações propostas fazem que a escala se torne uma medida da capacidade intelectual ainda mais válida.

Palavras-chave: desenho, estabilidade, figura humana.

This paper is a report of a study carried out about the stability of the Human Figure Drawing (HFD) as a measure of intellectual ability. The HFD is an important test included in the psychodiagnostic process since it is the first and most frequent element drawn by children in all cultures. In these drawings they express the concept they have acquired of the body, which depends, to a certain point, on their intellectual development, as it shows the ability to transfer a concept into a graphic scheme. On the other hand, the drawing offers clues with regard to the visual-manual co-ordination, the maturity level of the nervous system and the stimulation degree children have experienced.

Clinical observations conducted by Soiffer (1986), Aberastury (1969) and Dolto (1986) and genetic analysis carried out by Pain (1990), as well as results obtained in different studies of an empirical character, confirm the need to be cautious when arriving at diagnostic conclusions. Kamphaus and Pleiss (1991) and Naglieri (1992) consider that even

though many studies that have used different samples ratify the stability and concurrent validity of HFD, these requirements would not be enough to support the use of this tool as a sole instrument for the assessment of intelligence. The above mentioned authors agree with the concept of integral development held by the authors of this paper, since it is not advisable to arrive at a diagnosis without having a global approach, incorporating the life situation to the test situation.

Studies by Motta (1993) yielded the conclusion that HFD is a low value test to assess personality, behaviour and intelligence. However, Naglieri (1993) criticises Motta's work, based on what he considers limitations regarding the theoretical approach, as well as on alleged mistakes and omissions in the HFD analysis.

The authors of the present paper agree with Kamphaus (1993), who considers that, although Motta's review is not exhaustive, his arguments should be taken into account because they are based

on empirical data. For that reason, this work provides some evidence regarding the test stability and validity on the basis of empirical data and comparative studies.

Starting from the assumption that psychological tools only have validity when assessment standards come out from the population where they are to be applied, the adaptation and standardising of HFD by Koppitz were made. The application of Student's "t" within the samples studied by Taborda and Barbenza (1993) allowed the chronological categorising of the sample, the comparison of children's productions expected at each age and the ratification of gender differences.

With the aim to investigate HFD stability in different populations and its usefulness in assessing intellectual ability in 5- and 6-year-old children, Koppitz's psychometric standards (1968) are compared to those developed in Ottawa by Groves and Fried (1991) and to the ones obtained by Taborda and Barbenza in San Luis, Mendoza and San Juan (Argentina, 1993). This comparative study is also extended to the results obtained in a sample of 4-year-old children from San Luis and Villa Mercedes (Argentina), taking into account the frequency of scores registered in both places.

Method

Subjects

The sample was composed of 2,428 five- and six-year-old children from the cities of Mendoza, San Luis and San Juan (Argentina), and 127 four-year-old children from the cities of San Luis and Villa Mercedes (Argentina). Children were taken at random from the 4- to 6-year-old general pre-school population.

Along with those of Koppitz and Grove and Fried the sample is reasonably representative of three different populations with presumably different cultures, taken in two different moments of their historical development.

Procedure

Each child was given the HFD by a trained psychologist who applied it within a battery of tests, only after obtaining a good personal rapport.

Results

In order to carry out the comparative study and apply Koppitz criteria, items were classified in terms of percentages as follows: 100-86%, expected; 85-51%, common; 50-16%, uncommon; 15-0%, exceptional.

When comparing the scores obtained by Koppitz (1968) in children aged 5 and 6, discriminated according to gender, with those obtained in Ottawa (1991) and in San Luis, Argentina (1993), a high degree of correspondence is observed. This fact confirms the validity and stability that Koppitz's scale maintains in these age levels. Besides, these conclusions can be extended when the scores obtained in Ottawa are compared to those of San Luis at the 4-year-old level, discriminated by gender, although slightly higher scores were observed in San Luis.

Among the 4-year-old children there were increasing differences in the boys sample. In Ottawa, in the expected items only clothes, head and eyes were included, in spite of the fact that at this age children are able to discriminate arms from legs and also sum up legs and body. These differences become even more striking owing to the fact that in Ottawa a smaller number of items (16) may be classified as exceptional, whereas in San Luis 18 items are categorised as exceptional. This implies that the boys from Ottawa include in their drawings the most difficult HFD items much more frequently than the boys from San Luis.

In the 4-year-old sample there are fewer differences, both boys and girls being practically equivalent. In the 5-year-old boys the results obtained in San Luis are similar to those recorded by Koppitz, the ones from Ottawa being slightly higher. On the other hand, the scores obtained by girls in the three samples are practically equivalent.

In the 6-year-old category no significant differences are observed in the boys sample, whereas in the girls sample from San Luis the scores are slightly higher than those of Koppitz; such differences decrease when comparing San Luis with Ottawa.

In spite of these general conclusions, it has been observed that the order of evolutive items in Ottawa and in San Luis is slightly different to that proposed by Koppitz. Some of the common ones fall among the expected items; some of the uncommon fall among the exceptional, both in the 5- and 6-year-old groups and in the 4-year-old group.

Recorded differences would lead towards a reconstruction of the scale according to the percentages obtained for each of the items. Results deserve to be taken into account due to the fact that Koppitz considers only the expected and exceptional items for calculating IQ.

Table 1 shows the scores in terms of percentages. Tables 2, 3 and 4 were made from them. Tables include items classified as expected and exceptional and significant differences are shown

Table 1. Score percentages of items from Koppitz scale

ITEMS	4-year-				5-year-						6-year-					
	Girls		Boys		Girls			Boys			Girls			Boys		
	G-F	T-B	G-F	T-B	K	G-F	T-B	K	G-F	T-B	K	G-F	T-B	K	G-F	T-B
1. Clothes	100	100	100	100	100	100	100	90	100	100	100	100	100	90	100	100
2. Head	94	100	95	100	100	100	100	100	100	100	100	100	100	100	100	100
3. Eyes	95	98	88	100	100	100	100	98	98	100	100	100	100	98	100	100
4. Legs	86	95	82	98	97	95	100	97	98	100	93	100	100	98	97	100
5. Mouth	98	96	77	96	91	95	100	92	96	98	100	100	100	97	100	100
6. Body	45	75	54	71	91	76	93	89	87	92	94	100	100	97	100	100
7. Arms	76	92	63	84	91	87	94	84	89	89	98	97	100	95	100	100
8. Hair	86	58	49	67	85	97	83	54	65	68	91	100	100	72	92	75
9. Nose	86	72	68	69	90	97	87	87	91	74	95	100	100	91	95	92
10. Feet	51	52	49	64	75	84	84	73	84	75	89	93	100	80	92	100
11. Arms 2dimensions	16	32	12	26	52	26	62	48	44	55	77	45	80	62	49	82
12. Fingers	31	27	23	27	59	63	58	61	60	53	68	86	60	60	81	58
13. Legs 2dimensions	12	29	7	15	46	32	54	37	33	46	67	52	80	70	54	75
14. Hands	31	22	21	12	39	54	51	33	44	36	44	48	45	42	41	50
15. Neck	10	16	11	7	25	11	48	28	27	35	37	17	46	27	39	42
16. 2-3 Clothes	0	11	0	1	27	18	12	9	9	3	40	31	20	25	11	17
17. Feet 2dimensions	4	4	0	1	7	13	21	8	13	27	19	38	46	22	27	58
18. Pupils	27	5	23	10	19	18	23	11	29	7	34	34	26	22	26	8
19. Eyebrows	12	4	14	6	33	16	22	21	11	7	48	17	28	28	22	8
20. Arms downwards	16	6	12	0	29	16	31	21	24	37	38	14	66	35	35	67
21. Five fingers	10	3	5	7	18	3	17	13	20	27	24	31	20	26	32	17
22. Two lips	0	4	0	7	4	0	16	2	2	5	5	7	20	2	0	2
23. Ears	35	15	23	15	29	29	5	25	25	10	19	7	20	33	27	17
24. Arms on shoulders	0	2	0	0	0	5	19	3	5	10	11	7	40	14	14	17
25. Proportion	0	1	0	0	2	0	0	2	0	1	2	0	6	5	0	8
26. Nostrils	2	0	4	0	6	13	0	2	4	6	14	0	0	5	11	0
27. 4 Clothes	0	0	0	0	3	3	0	1	0	0	8	3	0	5	0	0
28. Elbows	6	0	4	0	0	3	0	1	5	0	7	3	0	6	8	0
29. Profile	0	0	0	0	1	0	0	1	2	1	7	0	0	1	0	0
30. Knees	12	0	5	0	2	5	0	0	7	0	2	3	0	3	11	0

Table 2. Expected and Exceptional Items in 4-year-old samples in Argentina and Ottawa

4-year-old boys		4-year-old girls	
Expected Items			
Ottawa	San Luis	Ottawa	San Luis
Clothes	Clothes	Clothes	Clothes
Head	Head	Head	Head
Eyes	Eyes	Eyes	Eyes
-	Legs	Legs	Legs
-	Mouth	Mouth	Mouth
-	-	Hair	-
-	-	Nose	-
-	-	-	Arms
Exceptional Items			
Ottawa	San Luis	Ottawa	San Luis
Arms 2 dimensions	-	-	-
Legs 2 dimensions	Legs 2 dimensions	Legs 2 dimensions	-
Neck	Neck	Neck	-
Clothes 2-3	Clothes 2-3	Clothes 2-3	Clothes 2-3
Feet 2 dimensions	Feet 2 dimensions	Feet 2 dimensions	Feet 2 dimensions
-	Pupils	-	Pupils
Eyebrows	Eyebrows	Eyebrows	Eyebrows
Arm downwards	Arm downwards	-	Arms downwards
5 Fingers	5 Fingers	5 Fingers	5 Fingers
2 Lips	2 Lips	2 Lips	2 Lips
-	Ears	-	Ears
Arms and shoulders	Arms and shoulders	Arms and shoulders	Arms and shoulders
Nostrils	Nostrils	Nostrils	Nostrils
Clothes 4	Clothes 4	Clothes 4	clothes 4
Elbows	Elbows	Elbows	Elbows
Profile	Profile	Profile	Profile
Knee	Knee	Knee	Knee
Proportion	Proportion	Proportion	Proportion
-	Hands	-	-

Table 3. Expected and Exceptional Items in the three samples of 5-year-old children

5-year-old boys			5-year-old girls		
Expected Items					
Koppitz	Ottawa	San Luis	Koppitz	Ottawa	San Luis
Clothes 0-1	Clothes	Clothes	Clothes	Clothes	Clothes
Head	Head	Head	Head	Head	Head
Eyes	Eyes	Eyes	Eyes	Eyes	Eyes
Legs	Legs	Legs	Legs	Legs	Legs
Mouth	Mouth	Mouth	Mouth	Mouth	Mouth
Body	Body	Body	Body	Body	Body
-	Arms	Arms	Arms	Arms	Arms
Nose	Nose	-	Nose	Nose	Nose
-	-	-	-	Hair	-
Exceptional Items					
Koppitz	Ottawa	San Luis	Koppitz	Ottawa	San Luis
-	-	-	-	Neck	-
Clothes 2-3	Clothes 2-3	Clothes 2-3	-	-	Clothes 2-3
Feet 2 dimensions	Feet 2 dimensions	-	Feet 2 dimensions	Feet 2 dimensions	-
Pupils	-	Pupils	-	-	-
-	Eyebrows	Eyebrows	-	-	-
Five fingers	-	-	-	Five fingers	-
Two lips	Two lips	Two lips	Two lips	Two lips	-
-	-	Ears	-	-	Ears
Arms on shoulders	Arms on shoulders	Arms on shoulders	Arms on shoulders	Arms on shoulders	-
Nostrils	Nostrils	Nostrils	Nostrils	Nostrils	Nostrils
Clothes 4	Clothes 4	Clothes 4	Clothes 4	Clothes 4	Clothes 4
Elbows	Elbows	Elbows	Elbows	Elbows	Elbows
Profile	Profile	Profile	Profile	Profile	Profile
Knee	Knee	Knee	Knee	Knee	Knee
Proportion	Proportion	Proportion	Proportion	Proportion	Proportion

Table 4. Expected and Exceptional Items in the three samples of 6-year-old children

6-year-old boys			6-year-old girls		
Expected Items					
Koppitz	Ottawa	San Luis	Koppitz	Ottawa	San Luis
Clothes	Clothes	Clothes	Clothes	Clothes	Clothes
Head	Head	Head	Head	Head	Head
Eyes	Eyes	Eyes	Eyes	Eyes	Eyes
Legs	Legs	Legs	Legs	Legs	Legs
Mouth	Mouth	Mouth	Mouth	Mouth	Mouth
Body	Body	Body	Body	Body	Body
Arms	Arms	Arms	Arms	Arms	Arms
Nose	Nose	Nose	Nose	Nose	Nose
-	Hair	-	Hair	Hair	Hair
-	Feet	Feet	Feet	Feet	Feet
-	-	-	-	Fingers	-
Exceptional Items					
Koppitz	Ottawa	San Luis	Koppitz	Ottawa	San Luis
-	-	Pupils	-	-	-
Two lips	Two lips	Two lips	Two lips	Two lips	-
-	Clothes 2-3	-	-	-	-
-	-	-	-	Ears	-
-	-	Eyebrows	-	-	-
Arms on shoulders	Arms on shoulders	-	Arms on shoulders	Arms on shoulders	-
Nostrils	Nostrils	Nostrils	Nostrils	Nostrils	Nostrils
Clothes 4	Clothes 4	Clothes 4	Clothes 4	Clothes 4	Clothes 4
Elbows	Elbows	Elbows	Elbows	Elbows	Elbows
Profile	Profile	Profile	Profile	Profile	Profile
Knee	Knee	Knee	Knee	Knee	Knee
Proportion	Proportion	Proportion	Proportion	Proportion	Proportion

Although the items selected by Koppitz allow a detailed and suitable assessment of HFD in little children, classifying items as expected, common, uncommon and exceptional restricts assessment possibilities since it generates the need of rearranging some of the items according to the

results obtained in each sample studied. For this reason, the authors of this propose to eliminate such item division, and standardise HFD scale giving one point to each recognizable item drawn by the child. Besides, it would be pertinent to construct norms which discriminate 4- to 6-year-old children into

five periods and by gender, as the Ms in each group are significantly different for boys and girls.

Table 5. M and SD corresponding to the five categories of both sexes. San Luis, Mendoza and San Juan sample

	M	SD	M	SD	M	SD	M	SD	M	SD
Age	4 years		4 y. 6 m.		5 y.		5 y. 6 m.		6 years	
Boys	9.55	2.54	10.69	2.77	12.06	4.11	14.08	4.89	15.91	5.44
Girls	9.00	2.32	11.67	3.18	13.69	3.99	15.31	4.73	17.17	5.11

Table 6. “t” test on categories at the five age levels - Boys and girls. San Luis sample, Mendoza and San Juan sample

	Boys		Girls	
	t	P	t	P
4 y./4 y. 6 m.	1,63	0,05	4,01	0,001
4 y. 6 m./5 y.	1,73	0,05	2,38	0,02
5 y./5 y. 6 m.	-6,37	0,0001	5,06	0,0001
5 y. 6 m./6 y.	-5,53	0,0001	5,97	0,0001

Table 7. “t” test on HFD scores for boys and girls. (5 age level categories). San Luis, Mendoza and San Juan sample

	4 y. / 4 y. 5 m.	4 y. 6 m. / 4 y. 11 m.	5 y. / 5 y. 5 m.	5 y. 6 m. / 5 y. 11 m.	5 y. 6 m. / 6 y. 5 m.
t	0,86	-1,38	-4,84	4,08	3,66
s ns		ns	0,001	0,001	0,001

Table 8. HFD percentile norms for Boys aged 4 to 6 years and 5 months

Raw Score	Age in years and months				
	4/00-4/05	4/06-4/11	5/00-5/05	5/06-5/11	6/00-6/05
0					
1					
2					
3	1.0	1.0	1.0	1.0	
4	2.0	2.0	2.0	2.0	
5	4.0	4.0	4.0	4.0	
6	8.0	7.0	7.0	5.0	4.0
7	16.0	12.0	12.0	8.0	5.0
8	27.0	18.0	16.0	12.0	8.0
9	42.0	27.0	24.0	16.0	12.0
10	54.0	42.0	31.0	21.0	14.0
11	69.0	54.0	38.0	27.0	16.0
12	82.0	69.0	50.0	34.0	18.0
13	90.0	82.0	58.0	42.0	31.0
14	96.0	88.0	69.0	50.0	38.0
15	98.0	95.0	76.0	58.0	42.0
16	99.4	97.0	84.0	66.0	50.0
17	99.8	99.0	88.0	73.0	58.0
18		99.6	92.0	79.0	66.0
19		99.9	96.0	84.0	73.0
20			97.6	88.0	76.0
21			99.0	92.0	82.0
22			99.2	95.0	86.0
23			99.6	96.0	90.0
24			99.7	98.0	92.0
25			99.8	99.0	96.0
26			99.8	99.6	99.2
27			99.8	99.8	99.5
28					
29					
30					

Tables 5, 6 and 7 show that from 5 years onwards, significant differences are recorded at Ms of the scores obtained by boys in contrast to those obtained by girls. The latter do significantly better

than boys at three of the age levels considered. Between 4 years and 4 years 6 months no significant difference between boys and girls was found. Taking into account these differences, the scale becomes an even more stable instrument.

These results allow the authors to reach the conclusion that, in spite of differences related to ethnicity, social condition and culture, the HFD maintains its diagnostic power regarding intellectual ability.

Scoring and norms

According to the results obtained in the present study, the authors have developed norms applicable to children aged 4 to 6 years and 5 months.

Table 9. HFD percentile norms for girls aged 4 to 6 years and 5 months

Raw Score	Age in years and months				
	4/00-4/05	4/06-4/11	5/00-5/05	5/06-5/11	6/00-6/05
0					
1					
2					
3					
4	1.0				
5	4.0	2.0	1.0	1.0	
6	10.0	4.0	2.0	2.0	1.0
7	18.0	7.0	4.0	4.0	2.0
8	34.0	14.0	8.0	7.0	4.0
9	50.0	21.0	12.0	10.0	5.0
10	66.0	31.0	18.0	14.0	8.0
11	82.0	42.0	24.0	18.0	12.0
12	90.0	54.0	34.0	24.0	16.0
13	96.0	66.0	42.0	31.0	21.0
14	98.0	76.0	50.0	38.0	27.0
15	99.5	84.0	62.0	46.0	34.0
16	99.9	92.0	73.0	50.0	48.0
17		96.0	79.0	62.0	50.0
18		98.0	86.0	73.0	58.0
19		99.0	90.0	82.0	66.0
20		99.5	95.0	84.0	69.0
21		99.9	96.0	88.0	76.0
22			98.0	92.0	82.0
23			99.0	95.0	86.0
24			99.5	96.0	90.0
25			99.7	98.0	93.0
26			99.8	99.0	95.0
27			99.8	99.0	95.0
28			99.9	99.4	97.0
29			99.9	99.6	99.0
30			99.9	99.6	99.4

In order to obtain the total score for a HFD, present developmental items should be added, without making any distinction among them. This raw score should be confronted with the percentile norms according to the age and gender of the child (Tables 8 and 9). Qualitative diagnosis may be made on the basis of the resulting percentile: superior (95-100), above average (75-90), average (30-70), below average (10-25) and defective (less than 5).

In the present version HFD becomes a quite useful instrument because of its suitability and economical scoring procedure.

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