THE SIGNIFICANCE OF VARIOUS ASPECTS IN DRAWINGS BY EDUCATIONALLY SUBNORMAL CHILDREN.

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I. INTRODUCTION.

DURING the past few years interpretations of drawings for the assessment of intellectual and emotional aspects of personality have been used frequently. Various scales have been designed on the basis of a correlation between the elaboration and complexity of a drawing on one side, and the intellectual capacity, as measured by orthodox intelligence tests, on the other side. The best known of these scales is Goodenough's " Draw-a-Man " test (13), which has been used extensively.

Very soon it was realized " that the drawing measures something which we might call the general maturity of the individual rather than the general intelligence measured by such an instrument as the Stanford Binet " (16), or, as has been suggested by others, that the drawing is an index of concept development, and stands for one aspect of general intelligence which " may or may not be closely related with other aspects of general intelligence " (15). When the observation was made that the Goodenough scale lost its value as an intelligence test when " applied to young delinquent subjects who are seriously warped and disturbed emotionally " (12), it confirmed the opinion of many that the " Draw-a-Man " test could be used as a projection test in clinical practice (5, 7, 16, 17, 23).

Some tentative attempts at interpretation of drawings by normal children were made (24, 25), but most of the investigations dealt with the deviations caused by abnormal psychological conditions (3, 4, 9, 16, 28, 29), until recent investigators provided more ambitious manuals for personality diagnosis (6, 19, 22).

There is, of course, no denial of the immense influence intellectual ability has on the execution of a drawing. Nevertheless, it seems certain that the lack of adjustment accounts nearly always for the differences between the intelligence level ascertained by orthodox verbal intelligence tests and the Goodenough I.Q. The conclusions reached by various investigators point to the view that the drawings, though certainly indicative of intellectual development under normal circumstances, are so sensitive to emotional influences that their value for intelligence assessment is nearly *nil* in the case of emotional disturbed subjects. Oakley (24) suggested, therefore, to interpret a drawing in the light of the known I.Q., and Buck (6) uses the difference between the I.Q. scored on his test and that derived from an established intelligence scale

for clinical diagnosis. Similarly, Brill (5) concludes that a discrepancy of 2 years or more between the Goodenough mental age and the Binet mental age can be used for diagnosis of maladjustment in mentally defective boys.

The drawings of mental defectives have usually been considered to indicate only intellectual inferiority, and investigators have agreed that they show the characteristics of normal, but younger, persons. Very little has been said about the emotional factors influencing their work, and it is, in fact, not quite clear how far the findings, collected in the normal population or in different clinical groups, are applicable to the very heterogeneous group of institutionalized subnormals. Earl's pioneer paper (10) on the drawing performance of adult defectives, which listed the characteristics of different clinical groups, has not been followed up by other investigations describing, in detail, personality types within the range of subnormality. There is, however, little doubt nowadays that the personalities of defectives vary in much the same way as with non-defectives and that these can be studied by projection tests, though allowances have to be made for the implications of intellectual subnormality.

Those investigators who have used the drawing test clinically have come to the conclusion that various features in the performance are typical or highly suggestive of certain personality traits (5, 9, 16, 17, 22, 29). The following investigation attempts to clarify the meaning of some of the features observed in the drawings made by educationally subnormal children, particularly studying the sex differences. This is important, as the influence of the "sex factor"* on the drawing performance has by no means been established beyond doubt, and because every interpreter must be able to view the individual case against the background of a group roughly comparable in sex, educational and social standing, and intellectual capacity.

In order to obtain an adequate "background" for clinical work two groups of children have been studied who show no significant differences in intellectual capacity or age, come, roughly speaking, from the same type of home, visit the same school and live in the same residential environment. The only fundamental difference is that of sex.

Drawing ability is said to be influenced by sex. Goodenough (14) quotes several investigators who agree that there are marked sex differences in favour of the boys. Burt (8) states quite decidedly: "In drawing, even among normal children, boys are eminently superior to girls; and among older children of special schools the difference is still more pronounced" (p. 325). On the other hand, Goodenough herself finds, on the basis of her very rigorous scoring system, "a small but consistent difference in favour of the girls at every age from 6 to 11 years" (14, p. 493). In this observation she is supported by the earlier report by McCarty (20), who finds that girls score slightly but consistently higher than the boys.

Strong doubts have been expressed by Burt whether these so-called "sex-differences" are inherent, and not, in fact, due to differences in school curricula and social environment. Many of the differences are, as Goodenough has pointed out, less quantitative than qualitative, and "appear to be based upon fundamental differences in the interests and attitudes of the two sexes"

* Sex factor refers in the following paper always to the sex of the artist.

(14). There appears to be so much disagreement among the various investigators that it seems necessary to establish independently the influence of the sex factor in the case of institutionalized educationally subnormal children, if the drawing test is to be included among the clinical diagnostic techniques. On the other hand, it must be pointed out in advance that the establishment of "sex-differences" in the present case does not deny the possibility, indeed the probability, of the influence of environmental factors, which may act in the direction of reinforcing and strengthening existing but slight sex-determined interests and attitudes.

II. The Sample.

The investigation is based on drawings obtained from 80 girls and 80 boys, all attending a residential special school for educationally subnormal children. The 80 girls comprised practically the whole girl population of the school between 13 and 15 + years of age at the time of testing. These girls were matched, as far as possible, individually with boys for age groups and intelligence quotients. Variance analysis confirms that the differences shown in Table I are not statistically significant. Thus, two samples were obtained, equal in age and intelligence, but differentiated by sex.

Table I.—*Composition of Samples.*

Group.	Sex.	Number.	Mean I.Q.	Standard deviation.	I.Q. range.
I	Boys	30	66·3	5·571	57–79
	Girls	30	66·5	7·06	56–80
II	Boys	30	66·2	6·754	55–78
	Girls	30	64·6	5·887	53–76
III	Boys	20	61·5	6·144	47–70
	Girls	20	61·9	4·46	54–71
Total	Boys	80	64·9	6·534	47–79
	Girls	80	64·7	6·477	53–80

Group I comprises children born in 1935, Group II those born in 1934, and Group III children born in 1933. The drawings were obtained in March, 1949, and the groups correspond therefore roughly to the age groups 13 to 15 +. All children were under 16 years of age.

The fact of institutionalization indicates that many of these children were maladjusted, which necessitated regular supervision. Many of the children were delinquent or presented serious behaviour difficulties at home. Others are orphans, illegitimate or come from broken homes, and the residential special school acts as a place of custody. All children are educable, and the majority leave at the age of 16 for employment under ordinary conditions.

The school is housed in the grounds of a colony for adult mental defectives, but the children do not ordinarily mix with the adults. They live in "homes," each having approximately 50 beds, and are, outside school hours, under the supervision of trained nurses of either sex. On five days of the week they go to school, which is not open to non-residents. The school curriculum is the same as that of any special school, and the teachers are trained and qualified.

" Art work," comprising drawing and painting, is included in the curriculum, and both boys and girls receive an equal amount of instruction. The children go home twice a year—if a " home " is available and suitable—for the Summer and Christmas holidays, but otherwise spend all their time in the school, " home," or playing fields.

This description applies to both sexes alike, but mention must be made of the fact that this particular school is experimental in character, and that results obtained there, are not necessarily typical for residential special schools in general. A short summary of facts which may have bearing on the findings of this paper is therefore advisable.

The education of maladjusted and educationally subnormal children in a residential special school necessitates careful experimenting with differing environmental conditions taking into account sex, age, type of behavioural problem and susceptibility to a broad group therapy. Thus, this residential school has developed, in course of recent years, an environmental treatment which is tuned to the needs of the children, and tends in consequence to strengthen any sex-determined characteristics. It would lead too far to describe in detail the differing environmental treatment children of opposite sex and different age receive. Suffice it to say that, generally speaking, the boys of this sample have more opportunities to assert themselves in games against outside schools and clubs than girls, go regularly on weekly " parole," have " jobs " outside the institution (newspaper delivery, gardening) and have generally more outside contacts. In view of the danger of sexual misbehaviour, much of this has of necessity to be withheld from the girls.

It is possible that this comparative scarcity of environmental stimulation may be responsible for certain typical features in the drawings by the girls, which assume in consequence the character of " femininity indicators," though they may be primarily due to environmental influences. The comparative lack of stimulation in an institution may limit the girl more than usual to her sex-determined interests (fostered particularly by the all-female environment), and may lead in consequence to a perhaps more than usual reinforcing of the feminine aspects. Thus, the girls tend to stress " feminine aspects " in their drawings, appear to be disinterested in features dependent on object-interest, and seem to register subconsciously their " feminine protest." The boys, favoured by their environment, follow their natural bent and show strongly in their drawings the interest usual in boys of their age. Moreover, since our civilization pattern and the residential school treatment agree in giving them comparatively more freedom than the girls, they have neither need to protest nor cause to feel " wronged."

Other factors, too, may be operative and may blur the picture of purely sex-determined characteristics. Length of residence, court record, home environment, rural or urban origin, frequency of leave, sexual maturity, etc., may conceivably be included among possible factors contributing to the sharp differentiation between the girls' and boys' drawings described. Even the selective procedure responsible for acceptance to the institution in the first place may have operated differentially between the sexes by admitting certain personality types more frequently. In short, though the sample discussed

is representative of the children of the age groups from 13 to 16 in this particular institution, it would need additional investigations in similar institutions before valid generalizations could be made. In the meantime, this report assumes that such differences as shown are mainly due to sex, but that a strong environmental factor is also in operation.*

III. The Test Procedure.

The children were tested in small groups, varying from two to four, each child sitting at a separate table which precluded copying from the neighbour. Since testing is frequent and a commonly accepted feature of the institution routine, no explanatory introduction was thought necessary. The children were told their first task, and after completion of the drawing, their next. As soon as a child had completed the series of drawings, he left the room and was replaced by the next. The testing was done by three male examiners, and a statistical analysis showed that results were not influenced by this division of labour.

Each child was first asked to draw " a house " and the usual admonitions to do his best and to make it a really " good house " followed. No standardization of these instructions was attempted, but it was impressed on the child to do his very best. After the drawing of the house had been completed, the child was told: "Now, I want you to draw a tree, a really good tree, on the same paper," again followed by the usual words asking him to try very hard. After completion of this subject a new instruction was given: " Now, I want you to draw a person. Any sort of person you like. It does not matter which way you draw the person, but see to it that it is a good drawing. A person from top to bottom," or words to that effect. Then a new sheet of paper was handed to the child. Special care was taken not to refer to the " person " by a pronoun which would have suggested the sex. When this drawing had been finished, the instruction was altered to " Now draw a man " or " woman " depending on the sex of the human figure drawn previously. The child received then a third sheet of paper.

The drawing paper (5 × 8 inches) was given directly into the hands of the child, and never put down in front of him. The examiner passed it on, holding one corner, with the opposite corner pointing towards the child. In this way it was hoped to reduce considerably the suggestive element and to give the child a better chance to select the position he thought most suitable for the subject he was about to draw.

An unobtrusive check on time was kept, though only to the nearest half minute, and with an ordinary watch. The children were frequently asked to be careful, to take their time, not to hurry and to make sure that they really did their very best. It is very likely, however, that the group situation reduced

* Throughout this report the statistical significance of observed differences has been established by Fisher's " t " or χ^2 with Yates' correction as appropriate. In order to simplify the presentation, the results of those tests have been indicated thus:

p — ·01 and under	++++ highly significant.
p — ·02 — ·05	+++ significant.
p — ·05 — ·10	++ trend towards significance.
p — ·10 — ·20	+ mild trend.

generally the average time spent on drawing, since a child was often induced to finish a drawing quickly when he or she saw other children leaving the room.

IV. General Aspects.

(a) *Position of Paper.*

Owing to the procedure described above, each child was able to place the drawing paper in the most convenient position. The two subjects (House, Person) being of different spatial orientation, seem to suggest at once a different positional placing of the paper, if satisfactory proportions are to be maintained. The house, being mostly an oblong resting on the longer side, is best drawn with the paper's longer side parallel to the side of the table at which the child is sitting. The upright human figure, on the other hand, seems to demand a position of the paper where the two longer sides of the paper are parallel to the body axis of the person drawn. We shall refer to the first position as the " Horizontal " (H), and to the second as the " Vertical " (V) position.

Little has hitherto been said about the significance of how the child uses differing size and shape of paper for drawing different subjects (2). The H-T-P test excludes the possible diagnostic significance of choice and change of format by confining the testee to prescribed positions. Oakley (25) found that the horizontal position of the paper was used in less than 2 per cent. for drawings of a man. This extremely low figure may perhaps be due to the manner of handing the paper. Oakley remarked that this particular position may be more closely related to introversion than adolescence.

Table II indicates that seven different combinations of paper positions for three different subjects have been used by the children. Two position combinations (HHH, VVV) have been considered " rigid," since the child was either unable or unwilling for one or the other reason to make use of the possibilities of different position choices, though he paid enough attention to continue with his original choice. The satisfactory solution, " horizontal " for the house and " vertical " for the two persons (HVV), has been referred to as " flexible " position choice. The remaining combinations of a " mixed " type could be ascribed to chance, and seem to indicate that the child did not pay any attention to the format of the paper.

TABLE II.—*Position of Paper for " House," " Man " and " Woman."*

Position.	Boys.					Girls.				
	Age groups.			Total.	%.	Age groups.			Total.	%.
	I.	II.	III.			I.	II.	III.		
" Rigidity "										
HHH	11	8	7	26	47·5	22	22	13	57	86·25
VVV	3	4	5	12		4	5	3	12	
" Flexibility "										
HVV	14	15	7	36	45·0	2	1	3	6	7·5
" Mixed "										
HVH	1	..	..	1	7·5	..	..	..	..	6·25
HHV	..	2	1	3		..	1	1	2	
VHV	1	..	..	1		..	..	..	..	
VHH	..	1	..	1		2	1	..	3	
Total.	30	30	20	80	100	30	30	20	80	100

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It is obvious from the figures that the " flexible " position is comparatively neglected by the girls, though well emphasized by the boys. An overwhelming majority of the girls failed to produce a pleasing and balanced arrangement of drawing and format, keeping particularly to the horizontal position throughout the series.

The lack of flexibility can not be ascribed to varying degrees of intelligence, since the boys do not differ significantly in intelligence from the girls in this sample. It may be regarded as a special feminine characteristic, though it is difficult to see the direct relationship between sex and unimaginative handling of the situation. Instruction in manual work, as enjoyed by the boys (woodwork, etc.), may perhaps have contributed to this particular aspect.

Children who draw small, will perhaps find no need to choose a paper position which permits a large drawing, whilst other children, used to drawing on a big scale, will of necessity select that position which is most suitable for their purposes. As the following section will show, the girls of this sample draw smaller than the boys, and they may therefore have " overlooked," or not looked out for, the opportunities offered by the vertical position. However, this does not account completely for the rigidity of position, since even large drawings of the human figure, which would more adequately be accommodated in the vertical position, are squeezed into the horizontal position, touching both edges of the paper.

In this connection reference to the suggestions of interpreters of drawings may offer a clue to the significance of the position choice. It has been assumed that the drawing paper represents symbolically the environment to the child, and the classical drawings of tiny, support-seeking " men " squeezed closely into the sheltering corner of the drawing paper by the timid artist seem to support this hypothesis. The horizontal position of the paper, with the top edge near the child, seems to suggest narrowness and lack of space, whilst the vertical position is pointing outwards and implies spaciousness. This position invites large-scale drawing for the human figure, a venturing out into space, which is made impossible in the horizontal position, where pencil movement is only possible sideways. This is neither in accordance with the subject of the human figure nor does it lead " away " from the artist. The horizontal position, with its small height, sets a limit to the size of the drawing of the human figure, or " ego-projection," which is thus hemmed in and more or less supported by the closeness of the limiting edges.

Interpreters will probably find that the various combinations of drawing size to paper size, and the adequacy of the paper position chosen, will supply valuable clues for diagnostic purposes. The drawing paper, in its various positions and with its opportunities for projection and display, may very well indicate symbolically the child's attitude to, and his position in, his environment.

A striking and suggestive feature, perhaps comparable to the position choice, is found in young children's paintings (1). Children who emphasized vertical brush strokes or vertical features " were likely, as a group, to be assertive and outgoing, to show a constructive pattern in their activities, and to be rational in their thought processes. Among them, masculine, rather than feminine, interests predominated. Emphasis on verticals was pronounced

in the more ' typical ' boys, i.e. in boys with outgoing self-confident, assertive mannerisms, many of whom seemed already to have identified themselves with older boys or men. . . ." (p. 58). Or : " Parallels between behaviour and use of circular and/or vertical patterns suggest the following tentative conclusions : (*a*) A maturity difference—whereas circular emphasis seems to reflect and to be associated with relatively infantile (emotional, subjective, dependent) tendencies, vertical emphasis tends to reflect a relatively more mature (more rational, more objective, more self-reliant) pattern. (*b*) A sex difference—whereas circular emphasis reflects relatively feminine tendencies, vertical emphasis tends to reflect a more masculine pattern. (*c*) A general personality difference—whereas circular emphasis seems to reflect and to be associated with more self-centred, withdrawing, inturned personality, vertical emphasis tends to reflect a more outgoing, assertive individual." (1, p. 59).

It has also been suggested that the prevalence of the pycnosomatic type among the girls, and of the leptosome and athletic types among the boys of this sample may have influenced this particular feature of the drawing test. This is a promising line of research, which, it is hoped, can be followed up in a future investigation.

(b) *Size of Drawing.*

The wide variations in sizes of the human figure drawings have been utilized by Machover for clinical interpretations. " It is probable that the size and placement of a figure are less subject to conscious control and variability than other structural aspects of a drawing. . . . The very large figure, placed aggressively in the middle of the page, is seen most often in the grandiose paranoid individual who possesses a high fantasy self-esteem. This treatment is quite different from the paranoid conditions usually associated with chronic alcoholism, involutional changes, or senility. In these latter cases the self-esteem is definitely not high, and the figure is correspondingly small. . . ." (22, p. 90). It would lead too far to quote in detail Machover's treatment of size, which, of course, does not use merely the foot rule for interpretation. It is, however, clear that the size of the drawing is of considerable diagnostic significance, once variables, due to technical limitations, have been eliminated.

Bell (2), summarizing the conclusions of previous investigators, interprets small drawings as indicating " inability to function freely in whole environment," or " compulsion neurosis," whilst large drawings where only part of an object is drawn, is quoted as indicating " potential ability of making contact with the surrounding world."

It is obvious that the size of the drawing depends to a great extent on the way in which the paper is placed. The height of the human figure in the drawing is, for example, definitely limited by the horizontal position of the paper preferred by the girls. Comparison of sizes of drawings must therefore first of all take into account the sizes and positions of the drawing paper. Table III sets out the means and standard deviations of height and width

of the house, and the height of the human figures as drawn by the two sexes. It becomes at once apparent that throughout the test the boys tend to draw significantly larger than the girls. This can be seen in the drawings of the house, where the differences in height as well as in width are statistically significant, and in the drawings of people, where even the cramping horizontal position does not obliterate the unmistakable tendency.

TABLE III.—*Sizes of "House," "Man" and "Woman."*

Subject.	Boys. N.	Boys. Mean.	Boys. Standard deviation.	Girls. N.	Girls. Mean.	Girls. Standard deviation.	Significance of differences between sexes.
House (horizontal position) :							
Width	67	3·65	1·23	65	2·96	0·895	++++
Height	67	3·42	0·981	65	3·04	0·906	+++
Man :							
Horizontal position	31	3·33	0·897	60	2·83	0·874	+++
Vertical position	49	4·88	1·427	20	3·52	1·355	++++
Total	80	4·28	1·459	80	3·00	1·06	++++
Woman :							
Horizontal position	28	3·10	0·869	63	3·14	0·678	
Verical position	52	4·83	1·503	17	4·12	1·555	+
Total	80	4·23	1·555	80	3·35	1·153	++++

Oakley's investigation (25) offers opportunity for comparing sizes of the drawings of a man executed by 430 normal children (10–14 years of age) with those of our sample. Though Oakley used the same size of paper (5 × 8 inches), he did not differentiate by position, since he found the horizontal position "uncommon." Table IV, comparing Oakley's percentage figures with the percentage distribution obtained in the present sample, indicates clearly that the performance of our boys resembles closely that of normals, but that our girls differ markedly from the normal children population. Whilst normal girls tend to draw larger men than the boys, the girls of our sample draw much smaller men than their contemporaries of the opposite sex. The data given by Oakley are too scanty to venture an explanation, but the interesting agreement between Oakley's and the present findings support, or at least do not contradict, the assumption that the size of the drawing may be influenced by emotional factors.

Emotional factors are assumed to play a decisive part in the interesting facts revealed in Table V. This table shows, with respect to sex of the artist, age, set of the paper position, and the sex of the first drawn human figure, the significance of the difference between the mean sizes of the male and female drawings. All pairs (Man, Woman) drawn on papers in different positions were excluded, which left 27 horizontal sets (HH) and 48 vertical sets (VV) for the boys, 60 horizontal (HH), and 18 vertical (VV) sets for the girls.

The girls show, in their preferred paper position (HH), a statistically significant difference in the size of the two sexes drawn, the woman being

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TABLE IV.—*Sizes of "Men" of Two Different Samples.*

	Boys.					Girls.				
	Subnormal: this sample.				Normal Oakley's sample.	Subnormal: this sample.				Normal Oakley's sample.
	Horizontal.	Vertical.	Σ.	%.	%.	Horizontal.	Vertical.	Σ.	%.	%.
Up to 1″	..	..	..	..	..	..	..	..	..	..
,, 2″	3	..	3	3·7	2·8	12	2	14	17·5	2·4
,, 3″	9	5	14	17·5	14·2	26	8	34	42·5	12·6
,, 4″	11	14	25	31·2	31·4	16	4	20	25	28·4
,, 5″	7	9	16	20	26·1	6	2	8	10	31·3
,, 6″	1	6	7	8·8	17·3	..	3	3	3·7	18·3
Above 6″	..	15	15	18·8	8·2	..	1	1	1·3	7·0
Total	31	49	80	100	99·9	60	20	80	100	100

TABLE V.—*Differences in Sizes of Human Figure.*

Age group.	Own sex drawn first.				Opposite sex drawn first.				Total.			
	N.	Mean men.	Mean women.	Significance.	N.	Mean men.	Mean women.	Significance.	N.	Mean men.	Mean women.	Significance.
Boys:												
I	10	3·42	3·02	+	1	..	..	..	11	3·44	3·11	+
HH II	8	2·67	2·82	..	1	..	..	..	9	2·82	2·94	..
III	4	3·57	3·72	..	3	3·13	2·93	..	7	3·39	3·39	..
Σ	22	3·18	3·08	..	5	3·42	3·34	..	27	3·22	3·12	..
I	13	4·9	4·22	++	4	5·15	5·42	++	17	4·96	4·50	+
II	19	5·22	5·13	..	0	..	..	..	19	5·22	5·13	..
VV III	11	4·45	4·62	..	1	..	..	..	12	4·43	4·68	..
Σ	43	4·93	4·72	..	5	4·96	5·42	..	48	4·93	4·79	..
Girls:												
I	21	2·79	3·17	++++	3	3·2	3·57	..	24	2·84	3·22	++++
II	19	2·99	3·3	+	4	2·65	2·82	..	23	2·93	3·21	++
HH III	9	2·44	2·73	..	4	3·17	3·82	..	13	2·67	3·0	++
Σ	49	2·8	3·14	++++	11	2·99	3·39	..	60	2·84	3·18	++++
I	5	3·78	4·96	++	1	..	..	..	6	3·57	4·72	++
II	6	3·62	4·18	..	0	..	..	..	6	3·62	4·18	..
VV III	5	3·94	4·04	..	1	..	..	..	6	3·75	3·77	..
Σ	16	3·77	4·38	+	2	..	..	..	18	3·64	4·22	+

much larger (3·18 inches) than the man (2·48 inches). The same trend is shown by the girls who use the VV position. The boys, on the other hand, do not show in the total sample any differentiating treatment of statistical significance.

Generally speaking, it appears that the girls in the present sample draw, in the majority of cases, their own sex considerably larger than the opposite sex, whilst the boys do not commonly differentiate the sexes by size.

The breakdown according to age group reveals that the differential treatment of the human figure in favour of the artist's own sex is without exception most pronounced in, and largely due to, the youngest Age Group I. The high statistical significance of the difference between the means of the HH group executed by the girls, is already observable in the 24 girls belonging to the youngest age group, and is marked in the other two age groups. The youngest boys, too, show a tendency to draw their own sex significantly larger than the opposite sex, but this trend disappears entirely in the larger sample composed of all three age groups.

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It appears therefore that age, too, may have a decisive influence in the differentiating handling of the sizes of the human figures. The younger and more immature age groups draw their own sex significantly larger than the opposite sex ; this tendency tends to disappear with increasing age in the boys' drawings, but remains marked in the girls' drawings.

It is conceivable that the human figure drawn first may be larger than the second figure, where a certain adjustment has taken place, and that the size of the figure may therefore depend on the sequence of the drawings rather than on the sex factor. To test this hypothesis the drawings were divided into two groups, the first group containing all children who drew their own sex first, the second group comprising those who drew the opposite sex first. Of the latter class there were only few, but the means indicate throughout the breakdown, with one exception (Boys VV), that the children drew their own sex larger, even if it came second in their choice of sequence.

The one statistically significant exception in the VV drawings of the boys (Group I), where the opposite sex is drawn larger, is rather interesting. It may perhaps be explained by the assumption that the same factor responsible for the atypical choice of the opposite sex as the " first person " may have caused its atypical enlargement, or that the small group of four happened to be of an atypical composition.

The columns indicating the means and significance of the drawings, with the artist's own sex drawn first, show the already previously observed tendency of the young age groups to differentiate significantly between the sexes.

The statistical treatment of the size of the drawings has brought out two facts very clearly. Generally speaking, the boys tend to draw larger than the girls, and the girls tend to draw their own sex taller than the opposite sex. The explanation of these tendencies may perhaps be found by reference to the observation that the younger age groups, irrespective of sex, draw their own sex larger than the older children. It appears, then, that the first impression of attributing to the girls in general a very marked tendency to emphasize their own sex, may have to be modified. Rather than being a sex characteristic, the peculiar drawing feature may indicate immaturity. Emphasizing one's own sex and literally belittling the opposite sex may in most of the present cases be the result of autistic and egocentric phantasy life, but may also be due to an unconscious attempt of the thwarted child at overcompensation. The statistical analysis reveals that the older boys show less often this " sign of immaturity " than the girls. This must, of course, not be interpreted as indicating the boys' general maturity as measured by normal standard, but merely as showing comparatively more maturity than the contemporary girls of the same intelligence level.

As pointed out before, the tendency to enlarge one's own person or sex at the cost of the opposite sex may not only be due to the child's egocentric approach to the world, but also, particularly in slightly more mature children, to a need to emphasize one's own place and importance. Real or supposed preferential treatment of others may lead to immediate reaction, as exemplified in our sample by some girls' drawings which do not find parallels in the boys' productions. The " feminine protest " of the girls is shown unmistakably

in a few cases in a not uncertain way, e.g. a schoolboy standing on his head, a scarecrow with the added written explanation " this is a scarecrow. It is a funny man," or " a clown " instead of a man. An indication of the intensity of emotional rooting is given by the fact that in each of the three cases the opposite sex was drawn first, but made ridiculous at the same time.

(c) *Elaboration of Drawings.*

The clinical significance of elaboration of details is rather dependent on the quality of detailing, its accuracy, and on its relation to the whole picture. Bell (2) refers to numerous publications concerning the abnormal and subnormal population and it is, of course, well known that Goodenough's scoring for intelligence depends on the number of details depicted. The detailing of a drawing is indeed vital for interpretative purposes, and the analysis of a drawing becomes richer in proportion to the wealth of details.

Many investigations have compared drawings made by girls and boys, and have usually agreed that the girls are better in their representations. McCarty's report (20) found that " according to the median scores, boys and girls are nearly equal in the quality of their representations of houses." The same report, referring to the human figure drawings, states that girls draw considerably better than the boys, and adds that this superiority, " while not great, is consistent through all the years of all the grades." Considering more recent reports with more adequate statistical treatment, we find that Goodenough (13, 14) reports that the test score favours the girls who draw neater, prettier and with much more detail. Burt (8) refers, with the following words, to the girls' superiority ; " girls excel in delineating minute particulars ; . . . in the fullness of detail, both as regards the incidents in the story to be illustrated, and as regards personal peculiarities like those of dress, girls everywhere surpass boys."

Detailing has been considered generally as an indicator of varying degrees of intelligence. Buck states " that there is a progressive increase in the number and quality of details presented as one goes from the drawings of subjects of the imbecile level to those of the superior level " (6, p. 344). Burt points out the influence of sex if an estimate of general ability on the basis of drawing is attempted. " Although . . . the correlation between ability in drawing and general ability is, among boys and particularly among older boys, by no means large, yet among girls, and particularly among younger girls, it is in no way negligible. . . . . Among girls the specific talent for drawing is small and plays but a slender part. A young girl's drawing depends largely upon her general ability. Consequently, for the diagnosis of intelligence, to rely, in part, at any rate, upon accomplishments in drawing is somewhat safer with a girl of 8 than it would be with a boy of 12 " (8, p. 325). The influence of emotional and socio-economic factors has been recognized. Geil (12), for example, states that " in cases where there is a noticeable lack of clothing representation in the presence of adequate tested intelligence, then it becomes a sign of maladjustive import, indicative of probable emotional immaturity." Environmental influence is discussed in the study by Havig-

hurst, Gunther and Pratt (15), who explain the varying performances of the sexes on the Goodenough test as being largely due to the varying stimulation offered by the environment. Their theory explains not only the differences found among the sexes, but also the relative better performance of Indian children compared with white children. "The children of Indian tribes which have kept close touch with the world of nature and with their indigenous cultures are specially stimulated to observe accurately, to organize their observations and express them aesthetically, and thus they may be expected to do well on the "Draw-a-Man" test. . . . We should expect the Indian groups which have been most adapted to the white culture to test more nearly the same as white children." Similarly, Oakley (25) found "that the ability to draw a man is influenced by social factors."

In order to score the drawings roughly as to the degree of elaboration, a simple point system, based on the number of details was evolved empirically without taking into account the quality of the drawing. It was felt that differentiation should be made between commonly drawn features, as revealed by inspection, and more unusual details. The weighted point system shown in Table VI was the result.

TABLE VI.—*System Used in Scoring for Detail of "House," "Man" and "Woman."*

	House.	Person.	
1 Point	Indication of different nature of roof by shading, showing tiles, etc.	Hat.	Cigar.
		Trousers.	Coat.
		Jacket.	Shirt.
	Indication of brickwork in chimney.	Pockets.	
		Shoes.	
	Window crosses	Buttons.	
	Curtains at windows.	Pipe.	
	Doorknob.	Stick.	
2 Points	Indication of brickwork of the house.	Tie.	Bag.
		Collar.	Necklace.
	Indication of woodwork.	Heels.	Jewellery.
	Housenumber.	Belt.	Dress.
	Rain pipe.	Watch.	
	Rain tub.	Shoelaces.	
	Letter box.	Button-holes.	
	Window flower boxes.	Bow.	
	Other details.	Other details.	
3 Points extra		For recognizable costume or dress.	

An inspection of the final scores reveals at once that the girls score generally far below the boys. Though all the children were given the same instructions and understood very well that the term "good drawing" translated into their language meant a "neat drawing with a lot of things in" the girls put far less work into their drawings than the boys. This is already shown in the schedule of approximate times. The three age groups of the girls used (I) 4·1, (II) 3·9 and (III) 4·3 minutes to finish their house, whilst the corresponding age groups of the boys used 7·4 ; 9·4 ; 6·8 minutes for the same task. The same tendency is seen when comparing the time taken over completion of the human figure. The girls use, on average, 5·3 minutes for the first figure drawn, and 4·7 minutes for the second figure (5·3 ; 5·1 ;—5·5 ; 4·2 ;—5·2 ; 4·9), the boys 6·8 minutes

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for the first, and 5·6 minutes for the second person drawn (6·8 ; 7·4 ; 6·1 ; 5·5 ; 6·2 ; 4·9). No statistical significance has been computed owing to the inexactness of time-taking. But it is obvious that these approximate times correlate closely with the scarcity of detailing shown in the average scores (Table VII).

TABLE VII.—*Comparison of Scores in Detailing of "House," "Man," and "Woman."*

Subject.	Boys.		Girls		Significance.
	Mean.	Standard deviation.	Mean.	Standard deviation.	
House	6·42	3·642	4·02	3·243	++++
Man	6·65	4·752	3·80	3·471	++++
Woman	4·58	3·207	4·43	3·255	..

The girls' unsatisfactory execution of the drawing task may partly be attributed to the situation with "strange men" administering the test, partly to adolescent shyness and girlish timidity. However, the general quality of the drawings suggests that such factors could have contributed very little, if at all. As far as the girls' performance in the drawing of the house is concerned, the poor quality of work is perhaps less due to a general tendency of "skipping it" than to the fact that they "had nothing to say." After having drawn the essentials, e.g. the oblong representing the house, roof, chimney, windows with curtains, and doors, nothing else seems to have impressed them sufficiently to be considered worth recording. On the other hand, the boys know far more about the house and are interested in it as a structure.*

Detailing is, as shown clearly by the figures in Table VII, largely a question of interest. In the drawings of persons, for example, the girls manage to score higher in their representations of women than of men, though not to a statistically significant extent. Their poor draughtmanship may be held responsible for that. The boys, on the other hand, who always obtain higher scores on the average than the girls, differentiate significantly in their elaboration of drawings of men and women. This is not contrary to expectation, and no other explanation than the obvious one of familiarity and identification need be assumed.

The results of this investigation throw some doubt at the usefulness of the "Draw-a-Man" test when applied to girls of similar standing as those in this sample. Though the girls are comparable to the boys of this sample in chronological age and intelligence, they give a generally poorer drawing peformance and draw less elaborately than the boys. The differences between the sexes in their execution of the house and the man is statistically significant and only in the drawing of a woman no statistically meaningful difference was found. In other words, generally speaking, the poorest productions of the boys are just equal to the best efforts of the girls.

* Herbert Read (26) observes "that boys emphasize the functional aspects (doors, windows, chimneys) and the dynamic aspects (smoke from the chimney), use a thick, forceful line and strong colours ; whereas girls emphasize details (curtains), environment (garden, trees), use a thinner line and more delicate colours. These are rather obvious expressions of sexual characteristics and are only significant for the determination of intersexual tendencies."

V. Particular Aspects.

(a) *House.*

Though McCarty (20) had reported that next to the human form, which is the most popular of all objects drawn (16·5 per cent.), the house comes second with 13·9 per cent., the interpretation of drawings of houses has not received as much attention as that of men. Nevertheless, Kerr (18) attempted to scale the drawings of houses on parallel lines to Goodenough's technique, and Buck (6) has recently devised an elaborate scoring method for the purpose of personality interpretation.

Table VIII.—*Characteristic Differences in the Treatment of the "House."*

	Boys.		Girls.		Significance.
	Mean.	Standard deviation.	Mean.	Standard deviation.	
Score in detailing	6·42	3·642	4·02	3·243	++++
Size of house (in horizontal position):					
Width	3·65	1·23	2·96	0·895	++++
Height	3·42	0·981	3·04	0·906	+++

	Number.	%.	Number.	%.	Significance.
Four-corner-window pattern	22	27·5	56	70	++++
Fifth window	10	45·4	12	21·4	++
Small windows	16	20·0	51	63·75	++++
Transparencies	0	0	6	7·5	not tested.

One of the most frequent and well-known features in drawings of houses is the placing of windows right into the corners of the building, or leaning against the two vertical lines representing the wall of the house. Kerr's sample of 555 normal children, 70 mental defective and 60 emotionally disturbed children, all between the ages of 6 to 14, shows a much less frequent occurrence of corner windows than the present sample, though her figures do not permit comparison with our sample because no information is available about the sex composition of her sample. Her percentages are: 8·2 ± 1·1 for normal, 15·0 ± 4·6 for neurotic, and 14·2 ± 4·1 for mentally defective children. Kerr's differences are not statistically significant, but reference is made to the general observation that "children who put the windows in the corners are over-anxious individuals." The corresponding figures of our sample are considerably larger. For the total population the percentage is 48·75 ± 3·9, and the breakdown according to sex shows a highly significant difference, the girls using the four-corner-window pattern in 70·0 ± 5·1, the boys only in 27·5 ± 4·8 per cent. of the cases.

The four-corner-window pattern leads to an interesting sequence. On account of the extreme edge position of the windows a great blank space is left in the centre of the house. This is a glaring disproportion which simply asks for a remedy. Many of the children hit on the obvious solution of providing a fifth window at the intersection of the diagonals. Comparing the boys,

who added the fifth window to the typical four-corner-window pattern, with the girls doing the same, shows a statistically significant difference in the samples. No reference to this particular feature has been found in the literature.

Another feature, differentiating between the two sexes, has been found in the size of the windows. Girls draw small windows (size subjectively estimated) far more frequently than the boys.

An interesting problem is offered by the well-known "transparency" which is found in the present sample in $3{\cdot}7 \pm 1{\cdot}5$ per cent. of the cases. These drawings show, besides the usual door and windows, interior details like table, chairs, staircase, lamp, etc. Kerr's percentage figures are $1{\cdot}2 \pm 0{\cdot}45$ for normal, $6{\cdot}6 \pm 3{\cdot}2$ for neurotic, and $7{\cdot}1 \pm 3{\cdot}0$ for mentally defective children. As explanation, Kerr offers the suggestion that the child is "out of touch with reality." Buck again states that "the details seen within the house in such instances may be regarded as having the same interpretative status as the irrelevant details drawn outside the house by more intelligent subjects who have a compulsive need to structure the situation as completely as possible. The mentally deficient subject, by his use of interior details rather than exterior, seems to point out his feeling of inadequacy in situations that are not thoroughly supportive and protective" (6, p. 375).

As has been shown previously, the girls are generally not interested in the task of drawing a house. They pay little or no attention to the external structural details of a house, and, we may surmize, are probably more interested in the interior of the house. The four-corner-window pattern and the frequent smallness of the windows raises for many children the problem of the "horror vacui." Most of the boys are able to overcome this feeling of incompleteness by placing a fifth window in the centre and so remaining within the framework of their structural task. To the girls this space seems to offer a point of penetration which induces them to think rather of what is behind the wall than of a means to fill the space by appropriate details. Thus, though our figures are too small to be more than merely suggestive, it can perhaps be considered significant that none of the 80 boys showed "transparency," whilst six girls drew items only found in the interior of the house.

Placing the window right into the corner is characteristic of an early developmental stage, and betrays the child's need of leaning against something, of support, and of his fear of venturing into space. If the four-corner-window pattern is thus indicative of feelings of insecurity, which may be so overpowering that the demands of reality are neglected, the introduction of the space-filling fifth window may be regarded as an attempt to take into consideration the requirements of the objective situation. The fifth window, often placed as an afterthought when the child is struck with the disproportion of the building he has drawn, may symbolize his attempt to reconciliate his affective life with his rational thinking. It is an attempt at reality thinking, and it is perhaps not surprising that this should happen more frequently in the boys than in the girls of our sample.

The girl is interested in "domestic reality," the homely atmosphere of furniture, curtains and flowerpots, where she feels secure and which she regards as her own special sphere of activity. She neglects the objective reality

of bricks and mortar, rainpipes and housenumbers to which the boy devotes his attention. For her the "house" is primarily a "home," for the boy it is a "structure." The girl's interest is centred on the inside of the house, and therefore her windows are generally small, just sufficient to look out of them. They are not considered essentials in the same way as the space enclosed by the four walls.

Whilst it is true that the transparency feature is certainly indicative of a certain lack of sense of objective reality, an estimate of the degree and the emotional rooting must take into account, intelligence, age, and sex of the child. Transparency shown in a girl's drawing may be of far less diagnostic value than when occurring in a drawing by a boy. In the first case it may show merely immaturity and self-centred reality thinking, in the second case it may be indicative of severe disturbance of reality thinking.

(b) *Tree.*

As has been shown in the introduction, the drawing of the tree did not receive the same attention in the design of the experiment as the other three subjects. The tree has figured very little in projection tests, though its symbolical meaning has been recognized. It has been included in the H-T-P test (6), and has recently been developed into a projection test by Koch (19). Herbert Read (26) has demonstrated a "correlation of temperamental disposition with graphic modes of expression" by the example of a series of drawings of trees, but since his is a completely intuitive approach, no scientific evidence is offered. No comparable figures or references have been found for the following observation referring to sex differentiation.

Generally speaking, the present sample suggested little beyond a classification of drawings under two headings with certain subdivisions.

Type A is merely the drawing of the tree trunk and a crown without indications of branches. The crown is usually round, and in a few cases elongated. Its circumference is mostly an irregular zigzag line with scribbling inside representing leaves.

Type B disregards the foliage altogether and attention is concentrated on the branches. The manner of representation varies from simple straight lines originating from the top of the trunk to a great number of inter-connected long and short lines, imitating, more or less faithfully, the branches.

A combination of these two types, AB, shows branches as well as the foliage.

A typical subdivision of the second type, BA, shows branches in the usual manner with carefully drawn leaves attached to them. The intention is apparently the same as in AB, but it does not reach that level of structural unity. It seems, moreover, to imply a different approach, emphasizing the detail rather than the whole.

Table IX sets out the occurrence of the different types in the drawings.*

* Kerschensteiner, in his *Die Entwicklung der zeichnerischen Begabung,*" quoted by Helga Eng (11), differentiates the following formalized shapes of trees: "broom formula" and "feather formula," which correspond to type B; the "coil formula," corresponding to type A, and a "lobate formula," where the "foliage is given as a lobate outline added to the trunk."

TABLE IX.—*Frequency of Different Types of Trees.*

Type.	Boys.	Girls.	Significance.
A. Foliage only	29	27	..
B. Branches only	26	26	..
AB. Foliage and branches	17	2	++++
BA. Branches with decorative leaves.	8	25	++++
Total	80	80	..

The table indicates that the basic types A and B occur to the same extent in both sexes, but that there are significant differences in emphasis in the two subdivisions, AB and BA. The test for statistical significance supports the impression that the boys prefer the type AB, whilst BA seems definitely characteristic for the girls.

Type AB appears to be a more mature attempt at representation of trees than BA, or even the basic types A and B. Whilst types A and B take into consideration only one essential characteristic of the tree (foliage or branches), type AB combines both features on a mature constructional level. BA appears to be a sort of half-way house to AB, emphasizing the detail rather than the whole, and being more decorative and symbolistic than any other type. (It is extremely unlikely that this type is meant to represent the tree in autumn which, indeed, shows the characteristic leaves at the end of branches. It is, however, possible that instruction in embroidery at school may account for the frequency of this type of representation.)

It is suggested that the type AB is the most mature representation of the tree and is characteristic for the boys. The decorative type BA may indicate a less mature conceptual level, is characteristic for the girls, and may even be considered a feminine mode of drawing.

(c) *Human Figure.*

The drawing of a man has traditionally and rightly been considered the most important and revealing standardized drawing situation, not only for estimating intelligence level, but also for personality interpretation. Goodenough's well-known work (13) has shown an objective method for a rough estimating of intelligence, whilst the recent work by Machover (22) has performed a similar service to personality interpretation on the basis of the drawing of the human figure. Preceding and following these manuals of interpretative technique have been a large number of papers which have contributed to particular aspects of the methods.

Apart from the more or less careful execution of the drawings by the two sexes, the most striking feature about the drawings of the human figure is the changing presentation, either in full face (FF) or profile (P). It is a well-known and established fact that girls generally prefer drawing their persons full face (13, p. 61 ; 25, p. 41 ; 20, p. 115 ; 22, p. 93), and the present sample supports these findings completely. Table X indicates that girls chose, with an overwhelming majority, full face for their portrayal of the human figure, whilst the boys distribute their different presentations almost equally.*

* The classification category " profile " in this paper does not necessarily refer to " true profile," e.g. the whole figure shown in profile. All drawings with the head in profile were classified as profile drawings regardless of the remainder of the body.

TABLE X.—*Distribution of Full Face and Profile Drawings.*

	Boys.	Girls.
Both sexes drawn full face	34	64
Both sexes drawn profile	28	3
Own sex drawn full face, opposite sex drawn in profile	8	12
Own sex drawn profile, opposite sex drawn full face	10	1
Total	80	80

Various explanations have been offered for this marked sex difference. It may be that the girl is more familiar with her full-face view by a comparatively more frequent mirror inspection than the boys. Machover suggests that the full face may indicate "a tendency to exhibitionism and display, which in our culture is more characteristic of females" (22, p. 93). The full view, moreover gives opportunity for display of ornament and decoration and for bringing the dress to full effect. Besides this, the influence of drawings in fashion journals, etc, should not be overlooked. It may therefore well be that the emphasis on full-face drawings of women by girls may have less clinical significance than when met in drawings by boys.

The change from full-face drawing to profile has been considered by various investigators as a sign of maturity, of chronologically higher age and of increased intellectual power (13, p. 34; 22, p. 93; 8, p. 321). There are, however, many exceptions to such a general trend. "Most of the drawings made in the immediate pre-adolescent years are profiles. During the first adolescent disturbances there is a tendency to revert to the full-faced drawing of the pre-6½-year age group" (25). There are, moreover, qualitative differences in the profile drawings executed by normal and subnormal children. "While the profile drawings of the subnormal children showed more mature elements, they also contained more immature elements such as absence of trunk, attachment of arms and legs at the neck, a row of buttons to represent clothing, and disproportion of parts. The immature elements more than balanced the mature elements in the total score" (21).

The overwhelming emphasis with which the girls use the full-face presentation makes it doubtful whether the change to profile has any meaning whatsoever in their case. It has generally been assumed that the child introjects himself into the person he or she is drawing, as is seen in the well-known cowboy and gangster stereotypes, and the many clinical signs of shading, reinforcing, erasing, omitting of parts, indicating thereby the draughtsman's tension areas (22). Girls, studying themselves in the mirror and knowing their attractions only as full views, tend naturally to portray themselves, or rather their ideal of themselves, as full view. The full-view trend in the girl population is therefore comparable to the cliché drawing of boys portraying their wish dreams.

Some support for this assumption may be found in the few cases where girls use both types of presentation in their portrayal of human beings. As seen from Table X, a decisive majority of those girls who showed both types of presentation, use full face for depicting their own sex, but change to profile

when drawing the opposite sex. The boys do not show any differentiation in presentation.

Generally speaking, the findings of the present investigation support McCarty's suggestion that the boys probably "represent what they see from the less naïve and intimate viewpoint." Further, it appears that differential treatment in the interpretation of full face and profile should be applied to the drawings of children of different sex. Whilst the boy's drawing of a man or woman may well be indicative of presence or absence of maturity, a similar interpretation is probably not possible for a girl's drawing.

As is to be expected from children who are struggling with the problems of puberty, sex references of an obvious or disguised type are frequent in the drawings. On the other hand, the task of differentiating between man and woman in a drawing is, for many children, difficult because their technique is too primitive or because they inhibit too much. Their drawings either do not differentiate at all between the sexes or purely superficially on the basis of hair-style and skirt. However, shading, type of line, etc., have been regarded as indicators of tension and anxiety (13, 22), and it is therefore often possible to ascertain from these clues whether the "sexual neutrality" is due to emotional disturbances or intellectual inferiority.

Drawings which characterize the sexes by anatomical or cosmetic detail are on a much higher level and may betray a certain degree of emotional security as well as pronounced sex interest, reaching, in extreme cases, pathological forms of utter lack of inhibition (10). Sex is still taboo in the age under discussion here, and the comparatively frequent but not pronounced sex references in the present sample are considered to be indicators of the "freedom of fear" in this particular environment.

It is obvious that the only socially permissible anatomical sex reference is the indication of the bosom and breasts in the female drawing by a suitable curving of the chest-line in the profile, and in the full-face drawing by a trapezoid-shape of the upper part of the body, which suggests the waist and wider shoulder part. Admittedly, the same execution may apply to the modern idea of masculine beauty, but we may safely accept this drawing technique as being reserved for the female sex.

The analysis of the drawings shows that the boys indicate the female sex in 14 cases (39 per cent.) in the profile, and in 5 cases (11 per cent.) in the full-face drawing. The girls, on the other hand, indicate the female sex in 18 (24 per cent.) of their full-face drawings, and have too-little chance to do likewise in their 4 profile drawings of women. In this connection it must be pointed out, however, that far more significance must be attached to the curved profile line, which is an intentional product of the draughtsman conscious of its implications, than to the trapezoid full-face shape which appears to be a stereotype in this girl population.

Another point of sexual attraction which is openly displayed and approved, is the female leg. Despite their frequently primitive drawing technique, the boys of our sample have managed to express their conviction that women's legs are worthy of portrayal. That, at least, is the conclusion one has to arrive at when comparing the boys' drawings with those of the girls, who have the

TABLE XI.—*Feminine Sex References in Drawings.*

	Boys, %	Girls, %	Significance.
Facial features as shown in full-face drawings :			
(*a*) In women	29·5	32·8	..
(*b*) In men	7·1	32·1	++++
Bosom :			
(*a*) In profile	39·0	..	..
(*b*) In full face	11·0	24·0	..
Legs—Dress :			
(*a*) Showing only feet and ankles	13·75	52·5	..
(*b*) Showing more than half the leg	63·75	41·25	++++
(*c*) Unclassified	22·5	6·25	..

tendency to hide the legs of their women behind particularly long party dresses. Table XI indicates the proportions of two groups, one showing either only the feet or not more than the ankle, the other group showing half or more than half of the legs. The test for statistical significance shows that the differences for the whole sample are highly significant, whilst the breakdown into age groups indicates that this is particularly due to the oldest group of boys, though the two younger groups too, show the same tendency. It must, however, be pointed out that the party dress, too, may be a learned stereotype preferred because it eliminates drawing the legs. It needs more evidence before any conclusions concerning this particular point can be reached.

Other female characteristics, as reported in previous investigations, include long and abundant hair, and emphasis of facial features, particularly cupid-bow lips and detailed eyelashes. The latter "cosmetic characterization" has realistically been used by the boys for 13 drawings of women, whilst 25 girls devoted attention to this feature. But it is also characteristic for the girls that 21 transfer the same "cosmetic characterization" to their drawings of men, whilst only 3 boys did likewise.

Practically no comparable characteristic feature referring to men can be listed. The draughtsmanship of the children is generally too poor to permit anatomical differentiation like broad shoulders to emerge, and other differentiating characteristics like beard, moustache, pipe, cigarette, etc., are infrequently but equally distributed among the sexes.

Considering the difficulty of portraying a "manly man" without introducing crude sexual characteristics, the absence of typical male references cannot be regarded as significant. As far as the portrayal of women is concerned, however, a basically different attitude taken up by the two sexes can be seen which is not explainable merely by reference to different drawing interests. From the drawings it appears that the boys attribute the attractions of the feminine sex to quite different features than do the girls themselves. Whilst the girls consider the external characteristics, cosmetics and beautiful dresses, as the most essential part of their femininity, the boys neglect and overlook this feature consistently, but devote pronounced attention to the erotically stimulating parts of the female anatomy.

Summary.

Various features of four simple drawing subjects (house, tree, man, woman), as executed on drawing paper of limited size (5 × 8 inches) by educationally subnormal children of both sexes, aged 13 to 15 +, and an average I.Q. of 64, have been compared. Though the two groups were matched for age and intelligence and showed a similar social and educational background, the girls have, nevertheless, been found to differ considerably from the boys in conception and execution of the drawings.

The following conclusions have been reached:

1. If given the choice between a paper position with the longer side parallel to the edge of the table where the child sits and a position where the shorter side of the paper is nearer the child, the girl prefers the first position, regardless of whether it suits the subject of the drawing or not. The boy, however, adapts the position of the drawing paper to the requirements of the subject.

2. There is a clearly-marked tendency on the girls' part to draw generally in smaller size than the boys.

3. A comparison of the sizes of the human figure reveals that sex and age of the draughtsman may influence considerably the drawing. The youngest age group of the sample tended, irrespective of sex, to draw consistently their own sex larger than the opposite sex. The girls of all age groups tend to draw the man smaller than the woman.

4. The girls are poorer draughtsmen than the boys, and spend less time and care on the drawings. However, both sexes spend more work on the elaboration of interesting subjects. Nevertheless, generally speaking, the level of the girls' best drawings does not differ significantly from the level of the boys' most uninspired productions. Throughout the test most boys showed themselves superior in detailing and elaboration of the subjects.

5. The treatment of the window pattern of the house is characteristically different in the two sexes. The girls draw more corner windows than the boys, and tend to draw them smaller. They also frequently omit the fifth window placed at the intersection of the diagonals, which is characteristic for the boys. Instead of this, a marked tendency for transparency can be observed in the girls' drawings, a feature which is absent in the boys' products.

6. Among four types of trees, differentiated in this paper, two have been singled out as being preferred by opposite sexes. The girls like to draw trees with branches "decorated" at the ends by single leaves, whilst the boys draw more often trees which show foliage as well as branches.

7. In the drawings of the human figure, the girls show marked preference for full-face drawings whilst the boys do not show any particular liking. Another tendency in the girls' drawings, unobserved in the boys' work, is their choice of full face for their own sex and profile for the opposite sex.

Summarizing, it can be said that the "average" educationally subnormal girl between 13 and 15 + years and an I.Q. between 58 and 71, of the particular sample discussed, produced a set of drawings with the following characteristics:

All three subjects are drawn on paper with the longer side parallel to the artist. Her house is approximately 2 to 4 inches wide and 2 to 4 inches high.

She tends to draw the woman taller than the man, giving her a size from 2½ to nearly 4 inches, whilst the man, though often attaining the same height as the woman, is just as often made to shrink to 2 inches. She does not spend much care or time on her drawing, using about 4 minutes to finish the house, a little over 5 minutes to finish the drawing of a woman and a little less than 5 minutes to draw the man. The drawing of a woman is more carefully executed than that of the man or the house. She shows very little interest in details, and may often incorporate characteristic features into her drawings. She generally draws, for example, small windows placed in the corners of the house and may add interior features like tables and chairs to the drawing of the exterior of the house (transparency). Her drawings of a tree show very often a typical characteristic decorative feature when isolated leaves are attached to the ends of branches. She draws the human figure nearly always in full-face view, but tends in a few cases to draw the opposite sex in profile. She pays little attention to the commonly accepted sexual characteristics like indications of breasts and display of legs, but concentrates on the elaboration of cosmetical facial features, often transferred to her drawings of a man, and display of "party dresses."

The educationally subnormal boy of this sample of the same chronological age and the same I.Q., shows the following typical characteristics:

He adapts his drawing paper to the requirements of the subject, e.g. making use of the available space to obtain pleasing proportions as well as a chance to draw large. He produces a "big" drawing where the house has a width between 2½ and 5 inches and a height between 2½ and nearly 4½ inches, and a person has a size between 3½ to a little over 6 inches. He does not differentiate in size between the two sexes unless very young. Often considerable time is spent on his drawing, but he usually averages 7½ minutes for the drawing of a house, 7 minutes for the man, and 6 minutes for the woman. His drawing is carefully done with the inclusion of many details If he draws the windows into the corners of the house he will very often add a fifth window at the intersection of the diagonals. He is not prone to transparency in the drawing of a house. The drawing of a tree tends to show foliage as well as branches. The human figure is drawn by him either in full view or profile, the latter position sometimes showing the bosom in the drawing of the woman. In both types of presentation he likes to show short skirt and legs when depicting a woman.

Various marked deviations in the girls' drawing performance from that of the normal school population, as reported by other investigators, have been mentioned. Our girls draw apparently smaller than the average girl and give also a markedly inferior performance in those qualitative aspects which have been commented upon by others as being the particular field where girls excel. No similar deviations concerning the boys could be recorded.

Without committing ourselves at present to a decision whether the differences in drawings shown by the two groups are "true sex differences," it has been pointed out that these differences may influence considerably the clinical interpretation of drawings, and that it is necessary to view the particular case against the appropriate background of a comparable group. It is clear that

the clinical significance of "signs" will vary tremendously as long as we do not know with some degree of certainty whether the presence of a particular feature is merely due to the sex and the traditional upbringing of the artist, or whether it indicates an emotional reaction to a situation, perhaps particularly brought into sharp relief by the sex of the artist, but not necessarily largely due to it. Other investigations of different populations would assist considerably in clarifying these problems. It appears, however, to the writer that establishing of a typical drawing pattern of the institutionalized educationally subnormal child of both sexes may assist already now in screening out atypical cases and may, once the significance of atypical features has been better understood than at present, contribute to and affirm the clinical diagnosis.

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