

THE USE OF FINGERPAINTINGS IN THE CLINICAL EVALUATION
OF PSYCHOTIC CONDITIONS: A QUANTITATIVE AND QUALI-
TATIVE APPROACH.*

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PAINTINGS and drawings of emotionally and mentally disturbed persons have been the subject of many psychological and psychiatric investigations. The psychological evaluation of graphic art can probably be considered as the oldest "projective" technique. Paintings and drawings have been systematically studied by psychologists and psychiatrists from three different aspects:

1. As indicators of the developmental stage reached in perceptual, motor and intellectual functions (Goodenough, 1926; Graewe, 1932; Bender, 1938; Gesell and Ames, 1946).

2. As symptomatic manifestations of mental disturbances (Hrdlicka, 1899; Mohr, 1906-07; Prinzhorn, 1923; Morgenthaler, 1922; Engerth, 1933; Guttman and Maclay, 1937).

3. As symbolic representations of psychodynamic constellations (Rorschach, 1913; Lewis, 1925; Naumberg, 1945; Alschuler and Hattwick, 1947; Bell, 1948; Machover, 1949).

The vast literature on this subject covering the publications until 1941 has been thoroughly reviewed by Anastasi and Foley (1940, 1941) with regard to the artistic productions of the abnormal. The literature on children's drawings is comprehensively covered up to 1950 in two reviews, the first by Goodenough (1928), the second by Goodenough and Harris (1950).

It is the intention of this report to describe a method of clinical evaluation of a disturbed person's mental condition through the study of his free graphic expression in the form of fingerpainting. Although a number of investigations have been published in this particular field of application (Shaw, 1938; Fleming, 1940; Mosse, 1940; Rosenzweig and Durbin, 1945; Aslow and Kadis, 1946; Napoli, 1946 and 1947; Blum and Dragositz, 1947; Phillips and Stromberg, 1948), their practical value for clinical purposes has been limited by a number

* The National Film Board of Canada has produced a film strip on the evaluation of fingerpaintings in psychiatric conditions. This film strip contains 37 reproductions in colour of fingerpaintings from our material, illustrating the four principal rating categories and the changes that occur in the fingerpaintings of psychiatric patients under treatment.

of factors. In order to be really useful and practical for the clinician, such a method should fulfil the following requirements :

1. The method should be applicable to any patient regardless of his degree of artistic ability, interest, co-operation and intelligence.
2. It should be possible to obtain repeated productions which are comparable in order to obtain a longitudinal view of the variations in the patient's graphic expression over a period of time.
3. The method should allow for the comparison of productions of different patients and of the same patient at different times by means of a standardized method of rating.
4. It should be possible to obtain useful and valid information on the patient's mental condition through the evaluation of his paintings without having to spend additional time in observing the patient while he is painting or in interviewing him about his finished product.

In addition it seems advisable to use as simple and direct a method of painting as possible in order to reduce to a minimum the technical difficulties connected with the handling of the various media in the making of the painting.

For this reason, we have relied entirely on fingerpainting, since it is the most direct and most primitive form of graphic expression. Some of the earliest paintings known in the history of man, for instance, the paintings on the walls of the cave at Altamira, Spain, were fingerpaintings, and every artist will at times rely on his fingers rather than on any other instrument for the achievement of a certain effect. Shaw (1938) developed the method of fingerpainting originally for the specific purpose of providing children with an easily available outlet for the expression of fantasies without being hampered by the restrictions imposed upon them by difficult requirements of technique and motor skills. Blum and Dragositz (1947) point out that there were few developmental differences noticed in fingerpaintings produced by children of the first grade and of the sixth grade. This is a rather remarkable finding in view of the very pronounced differences that would be expected to appear in any other form of graphic expression at these different developmental stages. Fingerpainting, because of its simple and primitive approach and because of the unfamiliarity that most subjects have with this method at the beginning, seems to reduce those differences in performance that are due to cultural factors, learning and development. We agree with Goodenough and Harris (1950), however, when they state their opinion that the search for an entirely culture-free test of any measurable trait is illusory.

An important consideration when one is making use of paintings for psychiatric purposes concerns the degree of objectivity that can be attained by the clinical evaluator. A bias may creep in because the clinician cannot divorce himself from the aesthetic impact which the artistic production has made upon him. He may be delighted or disgusted by certain paintings and his psychiatric judgement may consequently be clouded. Another important bias often arises from the clinician's special dynamic orientation, which may lead him far afield in elaborate interpretation of every single feature of the patient's graphic product. While such interpretations may be, and indeed are, often highly ingenious and revealing, they may also be highly

erroneous. It is our opinion that no detailed interpretation of a painting or drawing should be accepted as valid unless it is the result of careful analytic work with a patient who is directed to deal with his artistic production as though it were a dream or a fantasy.

We have, therefore, attempted to devise a method of evaluation which would give the greatest possible protection against the aesthetic and the interpretative bias. Consequently, emphasis has been chiefly on the formal aspects of the graphic productions. This also offers the advantage of lending itself more easily to a rating system which allows for quantitative scores.

Finally, it seemed desirable to choose descriptive categories of graphic expression which are also significant for the description of behavioural aspects of the patient who produced the painting. Otherwise, problems arise when one attempts to translate the results of the test evaluation into meaningful psychiatric language. Such difficulties are encountered, for instance, with the Rorschach test and its scoring categories or determinants which are not always easily interpreted in clinical terms.

Several other methods for the quantitative evaluation of drawings have been proposed, notably by Elkisch (1945), Waehner (1946) and Buck (1948). We feel, however, that their scoring systems are not always easily applied, since there is often doubt about the objective evaluation of such criteria as compression, rhythm, symmetry, integration, etc. Waehner, as well as Buck, score drawings of subjects who were given a definite task, such as drawing human faces or a house, a tree and a person, and their scoring system has not been validated on undirected graphic material.

RATIONALE OF THE SCORING CATEGORIES.

The following four categories have been chosen for our clinical evaluation of the patient's fingerpaintings :

1. Energy output.
2. Contact with reality.
3. Affective range.
4. Clarity.

The degree of energy output in a fingerpainting is determined by a number of factors, the most important ones being the number of strokes, the pressure used, and the surface covered. Also to be considered are the complexity of the design, the care exercised, etc. It has been assumed that the degree of energy output as it appears in the fingerpainting corresponds to the energy output which the patient manifests in his general behaviour. A painting, after all, is a permanent record of an individual's psychomotor activity at a given time.

Contact with reality is measured by the degree of realism which the subject has achieved in his painting or has at least obviously attempted to achieve. Again, it has been assumed that the contact with reality which an individual expresses in a freely chosen graphic production is representative of this individual's general relation to reality at the time he was painting. A number

of authors have commented on the unrealistic quality of the art productions of psychotic individuals. Mohr (1940) draws attention to the strange and unusual features in their drawings and notes that they become more realistic as the patient's mental condition improves. Cameron (1938) finds that the drawings of schizophrenics resemble the drawings of children, because neither children nor schizophrenics are motivated in their expression by the purpose of social communication. Hartenstein (1934) observed a sex difference in the realism of artistic representation: in her material, boys were twice as likely as girls to draw objects actually seen in their environment. It is, of course, quite within the range of normality to produce paintings that are abstract, non-objective, or, in some other way, unrealistic. If such paintings, however, are produced persistently over a period of weeks and months, it expresses at least one aspect of the subject's attitude to reality. Maclay, Guttman and Mayer-Gross (1938) analysed the doodlings of non-psychotic persons, and found that these drawings which were produced during a temporary "lowering of the conscious level" were characterized by the prevalence of non-realistic patterns and designs.

The determination of the affective range of the person responsible for the painting is based on the findings of a number of investigators. We have proceeded with the thesis that the use of bright and "warm" colours such as red, orange and yellow reflects an outgoing free, sometimes impulsive, sometimes euphoric emotional setting, while blue and green, the neutral or "cold" colours, are indicative of more restrained emotions, and black, grey, purple and dark brown, the "sombre" colours, are expressive of a gloomy, depressed mood. Such a simplified approach to the highly complex problem of emotional expression is, of course, open to a great deal of controversy. For practical purposes, however, this formula has worked, and it has stood the test of clinical application. The experience gained with the Rorschach test is highly suggestive for the evaluation of the role which colour plays in painting and drawing. Although one is not necessarily justified in assuming that the colour/affect relationship which prevails in perception may be transferred to the individual's active choice and use of colour in manual production, it is difficult to see how one can entirely escape such a conclusion.

Alschuler and Hattwick (1947), in a thorough statistical study of the painting behaviour of 2-5-year-old children, state that the group of children emphasizing warm (red, orange, yellow) colours tended to show warmer, more affectionate relationships with others and a more emotionally toned behaviour, while children who emphasized cold colours (blue and green) tended to show more controlled, reasoned and less sympathetic behaviour. Other children who, over a period of time, consistently used black, tended, as a group to show a dearth of emotional behaviour. Staples (1932) found that the strongest interest in yellow was during infancy and that with increasing age there was more interest in blue. Schmidl-Waehner (1942) reports in a study of school age children that most of the neurotic depressives use mixtures of colours, black and blue. Traube (1937) noted that brown and violet were colours indicative of depression in a group of children. In a test situation, von Allesch (1925) asked experimental subjects to get the prescribed effect of "cheerful-

ness" from a colour stimulus. The task was easy with red, orange and saturated blue, but it was more difficult with dark blue and a blue that approached black. Katz (1931) found that psychotics preferred green and blue, while yellow, orange and red were preferred by the more chronic patients. In his material, men had a greater tendency to choose green and women to choose red. Pfister (1934) states that in psychotic patients the use of colour in their drawings reflects affective responsiveness. Mosse (1942) observes that red is the colour of choice of the manic and hypomanic patient, while melancholia and depression are revealed through a "blackout." We have found that green is the colour preferred by the majority of our patients, and the supply of green fingerpaint has to be considerably larger than that of the other colours. This may, as Robertson (1952) has pointed out, be due to the fact that many patients paint landscapes where green prevails.

Robertson (1952) has recently published a statistical study on the use of colour in the paintings of psychotics. He established that seriously disordered patients tended to prefer colours of the blue-red series and that they displayed "a weaker feeling in relation to colour." He reported that seriously disturbed patients employed heavy colouring more often and more frequently expressed a liking for unrealistic colourings. Unfortunately, his patient material was divided only with regard to the presence or absence of schizophrenic disorder and to the degree of chronicity of their psychosis. His findings, therefore, contribute little to the evaluation of the possible role colours are playing in the expression of various affective states.

Clarity in our rating scale is judged by the clearness of design, the neatness of execution, the distinctness of line and the separation of colours. Here are also considered the presence or absence of rhythm and co-ordination in the strokes and the degree of organization attempted and achieved. It is the clarity of a fingerpainting which is one of the most reliable indicators of a psychiatric patient's improvement. Paintings which lack clarity usually reflect some degree of intellectual or emotional confusion. Alschuler and Hattwick (1947) report that those children who produce "dirty" easel paintings as compared with those who produced clean paintings tended, as a group, to show uncontrolled, socially immature reactions which they considered to be relatively typical of the very young nursery-school child. In our material, increased clarity of the fingerpaintings would invariably relate to increased control of behaviour, thinking and emotional expression.

One peculiar effect was noted in the productions of many patients with paranoid symptoms and appeared only rarely in the paintings of other patients. It consists in a certain haze, a misty appearance which creates the impression that one is looking through smoke or a thin layer of fog. We have termed this particular effect "paranoid haze," because in the paintings of mentally disturbed individuals it is so characteristic of the presence of paranoid symptoms. It is often striking to witness the disappearance of this haze in the paintings of patients who recover and lose their paranoid syndrome. We feel that this haze effect is due to a basic disturbance of the figure-background relationship which may be one of the fundamental disturbances in the phenomenology of the paranoid syndrome.

METHOD AND MATERIAL.

Our method of evaluation is based on clinical experience with 942 hospitalized psychotic patients who have produced close on 6,000 paintings since this study was begun in 1947. These paintings have been collected, dated, and filed under a cross-index system which allows for immediate reference under the patient's name as well as under his diagnostic entity. Most newly admitted patients are asked to fingerpaint during the first week of hospitalization and many are requested to produce further fingerpaintings at intervals from one week to one month, in some cases covering a period of several years. Anything the patient produces is considered and kept as a record, even if there is only a dot or a smear on the paper. If the patient refuses to paint, the blank page is dated and filed. We have come to the conclusion that an evaluation of serial productions can give valuable information on a patient's progress or failure to progress with therapy. Fingerpaintings, if used in the longitudinal view, are sensitive indicators of the patient's mental state. We are also convinced that interpretations of single paintings do not afford a solid basis for clinical diagnosis.

Our technical procedure of obtaining fingerpaintings is simple: The size of our paper is 12 in. by 18 in. Patients paint in groups of from five to ten patients at a time. They are provided with paint of six different colours: red, yellow, blue, green, brown and black. The paper is given to them wet, or dry if they prefer, and from then on they are given no further instructions or suggestions other than to make a painting by applying the paint with their fingers. An observer is present, usually an occupational therapist or a nurse, who notes any remarkable behaviour on the part of the patients. If the patients make any spontaneous comments on their painting, these are recorded in writing. Occasionally the observer will make inquiries. The observer remains as passive as possible, since any premature comment may have disastrous effects on the patient's productions, which can be destroyed, literally, by a wave of the hand. Patients are allowed as much time as they want to complete their painting. After the paintings have dried, they can be stored and kept almost indefinitely.

A certain practice effect is usually observed in non-psychotic subjects. After they have done a number of fingerpaintings and have become familiar with the medium, they tend to experiment with it and often will produce more "artistic" paintings in which the effects are achieved by creating designs in a uniform background of paint rather than using the paint to produce the design on a white background. Psychotic patients, however, improve their fingerpaintings only rarely with practice unless there is a parallel improvement in their mental condition. It is usually possible to demonstrate fluctuations of mood, energy output, etc., corresponding to the person's state of mind even in those non-psychotic individuals who have practice and skill with fingerpainting.

SYSTEM OF SCORING.

We have adopted a rating scale of 12 for each of the four previously discussed aspects of a fingerpainting. The most objective rating is possible for

the aspect of affective range. Here the following scores are given to the different colours: Red, Yellow: 3 each. Blue, Green: 2 each. Black, Brown: 1 each. As can be seen readily, this adds up to a maximum score of 12 if all six colours are used in painting. If only black were used the score would be 1. If green and yellow were employed the score would be 5, and so on.

The aspect of clarity is also given a rating from 1-12 according to the following guide:

Smearing and confusion	1-3
Careless; hazy	4-5
Fairly distinct to distinct	6-8
Highly accurate	9-10
Meticulous	11-12

The aspect of reality contact is rated as follows:

Indefinable, bizarre and meaningless repetition	1-3
Lettering; Symbolism; Abstract design	4-7
Landscape; buildings; people	8-10
Detailed representations of objects, plants, etc.	11-12

The aspect of energy output is rated as follows:

Daubing, dotting, thin lines, using quarter of the available space	1-4
Co-ordinated and continuous strokes of normal pressure using at least half of available space and showing some variety of design	5-8
Strong pressure scratching and tearing of the paper, thick overlay of paint, all or at least three quarters of the available space used	9-12

These rating scales are arranged so that a score of 8 represents approximately the optimal rating. Scores below or above it are considered as deviations from the ideal norm. We found that this empirical rating scale can be applied by different judges who, after a modest amount of practice will arrive independently at fairly close scores. It is to be noted that in a series of paintings produced over a certain period of time, the patient sets his own baseline and acts as his own control. Even if there is some difficulty in arriving at an absolute score in certain cases, there is almost never any problem to decide in which formal categories of the paintings a change has occurred and in which direction.

STATISTICAL DATA ON SAMPLE GROUPS.

In order to test our hypothesis that the four categories, "energy output," "contact with reality," "affective range," and "clarity," as rated in the paintings, actually relate to the painter's overt behaviour and clinical manifestations which may be described in the same terms, we have made a statistical analysis of five sample groups. Each group consisted of 30 paintings which

represent the first fingerpainting done by the 30 experimental subjects. Group I was produced by non-psychotic, healthy individuals, the "normal" group. Group II was made up of paintings done by manic-depressive patients in the manic or hypomanic phase. Group III consisted of paintings by manic-depressive patients in the depressed phase. Group IV was composed of paintings by patients suffering from schizophrenia of varying degrees of chronicity and deterioration and comprising the four clinical types of schizophrenia. Group V consisted of paintings by patients suffering from psychoses caused by organic brain disease. In this group there were patients with the diagnosis of dementia paralytica, senile dementia, cerebral arteriosclerosis, Alzheimer's disease and Parkinsonism. Each group was about equally divided with regard to sex and fairly well matched with regard to age, with the exception of the organic group, which had a higher mean age than the four other groups.

Table I gives the average scores and the standard deviations of each of the four categories in the five sample groups. It can be seen that the non-psychotics

TABLE I.—*Mean Scores and Standard Deviations of the Four Categories in Five Diagnostic Groups (N = 30).*

Diagnostic group.		Energy output.	Contact with reality.	Affective range.	Clarity.
<i>Non-Psychotic</i>	Mean	8.4	7.0	9.0	7.3
	Standard deviation	1.81	2.93	2.23	1.81
<i>Manic</i>	Mean	8.2	4.8	8.0	6.0
	Standard deviation	2.49	3.07	3.20	2.19
<i>Schizophrenic</i>	Mean	6.3	3.9	6.4	5.2
	Standard deviation	2.53	3.26	2.81	2.70
<i>Depressed</i>	Mean	4.8	4.5	3.7	5.4
	Standard deviation	2.41	3.59	2.39	2.49
<i>Organic</i>	Mean	4.6	3.0	5.1	3.6
	Standard deviation	2.37	2.93	2.51	2.65

achieve consistently higher scores in all four categories than any of the psychotic groups. On the other hand the organic group has lower scores than any of the other groups except in the category "affective range," where the organics score higher than the depressed patients. The low scores of the organic patients would be in accord with the general concept of a deficiency syndrome characterizing the mental picture of the patient with organic brain disease (Dörken and Kral, 1952). The manic patients score higher than any of the other psychotic groups in the categories "energy output" and "affective range," while the depressed patients score lowest of all the groups in the category "affective range" and only very slightly higher than the organics in "energy output." This latter difference is not significant statistically. The schizophrenic patients score lower than any other group except the organics in the category "contact with reality."

Certain clinical expectations would have to be fulfilled if the four scoring categories are actually measuring the respective behavioural and psychological aspects designated by their headings. The highest energy output and widest

affective range would be expected in the manic and the lowest scores in these categories in the depressed group. The lowest score in the category "clarity" would be expected in the organic group, and a low score in the category "contact with reality" would fit into the clinical picture of schizophrenia. In Table II will be found the "t" values for the comparison of each of the five diagnostic

TABLE II.—Significance of Differences Between the Mean Scores (t ratio) in the Various Diagnostic Groups (N = 30).

Diagnostic group.	t ratio	Energy output.	Contact with reality.	Affective range.	Clarity.
Non-psychotic/manic	.36	2.9***	1.4	2.5**	
Non-psychotic/depressed.	6.7***	3.0***	9.1***	3.4***	
Non-psychotic/schizophrenic	3.5***	3.9***	4.0***	3.6***	
Non-psychotic/organic	7.0***	5.6***	6.5***	6.4***	
Manic/depressed	5.5***	.36	6.0***	1.0	
Manic/schizophrenic	3.0***	1.1	2.1**	1.3	
Manic/organic	5.8***	2.4**	4.0***	3.9***	
Schizophrenic/depressed	2.4**	.68	4.0***	.33	
Schizophrenic/organic	2.7***	1.1	1.9*	2.3**	
Depressed/organic	.33	.60	2.3**	2.7***	

*** = Significant at the 1 per cent. level.
 ** = " " " 5 " "
 * = Approaching significance.

groups with each other in the four scoring categories. It can be seen that most of the differences of the mean scores were significant at the 5 per cent. or 1 per cent. level of probability. It is interesting to note that there is no significant difference in the categories "contact with reality" and "clarity" between the schizophrenic and the depressed, the schizophrenic and the manic, and the depressed and the manic. There is also no significant difference in the category "contact with reality" between the schizophrenic and the organic, and the depressed and the organic. It thus appears that the categories designated "contact with reality" and "clarity" show little differences in the degree of impairment among the various psychotic sample groups. Clarity and contact with reality seem to be generally and equally impaired in most severe mental disturbances, but this seems to hold true mainly for the functional psychoses, since the difference in the clarity score between the organic and the other diagnostic groups is always very significant. The lowest standard deviations were obtained by the non-psychotic group and occurred in the categories "energy output" and "clarity."

EFFECTS OF THERAPY.

The scores in the various categories tend to remain rather constant unless there is a change in the patient's mental condition. Dörken (1952) has made a statistical study of the intra-individual test-retest reliability of a series of fingerpaintings in normal controls, in chronic untreated psychotics and in acute psychotic patients receiving active therapy. He found good reliability among his control subjects, very high reliability among the untreated psychotics

but no significant correlation between the serial paintings of psychotic patients under treatment.

An improvement in the patient's condition is usually reflected in an increase of clarity and contact with reality as expressed in the fingerpaintings. Improvement in clarity is, of course, particularly desirable in the organic patient. In the schizophrenic, increased contact with reality is a welcome sign. Insulin coma treatment will often bring about striking changes in these two categories. Schizophrenic patients who have been smearing or consistently produced the effect of "paranoid haze" in their paintings will begin to turn out crisp and bright paintings and indicate by their choice of subject matter (objects in their environment; Christmas trees at Christmas time; shamrocks on St. Patrick's Day; pumpkins around Hallowe'en time; etc.) that their contact with reality has improved. A wide range of colours used is also a favourable development in the schizophrenic, reflecting mobilization of affect. An increase of energy output is only desirable if the patient has been inhibited, as in the case of a stuporous catatonic, a simple schizophrenic, or a depressed patient. On the other hand, a decreased energy output would be considered a favourable sign in manic or excited catatonic patients.

It is apparent that one has to be careful not to evaluate mechanically any changes in the patient's manner of painting, but to approach each case individually and consider the whole pattern of behaviour, attitudes and responsiveness that is present. Changes in the fingerpaintings have only the same significance as changes in the patients' symptoms, and they are subject to the same limitations with regard to the general evaluation of the patient's mental state.

Electro-convulsive therapy is almost invariably responsible for increased energy output and a greater range of affect reflected in the paintings. If many electro-convulsive treatments are administered in a short time, one can usually observe a distinct decrease in the clarity of the paintings reflecting the patient's temporary organic confusion.

During the past two years we have studied the effects of lobotomy on the fingerpaintings of psychotic patients. One or several control paintings were obtained prior to the lobotomy, and after the operation the patient made a painting at weekly and later monthly intervals. During the first month or two, the paintings usually show a decrease in energy output and range of affect as well as in contact with reality and clarity. In fact, the fingerpaintings during this period are very characteristic of the productions of patients with an organic deficiency syndrome. After two or three months a general tendency becomes apparent to use very thick layers of paint, to simplify all objects depicted and to treat them in an almost pathognomically rigid and massive manner. A number of lobotomized patients reveal their tendency to perseveration and paucity of ideas by covering the paper with a large number of dots, which are sometimes arranged according to a pattern and sometimes quite unrelated. Patients who had shown considerable artistic ability prior to lobotomy produce coarser and less imaginative paintings afterwards. However, an increase in clarity, reality contact and affective range often reflects the improvement of the original psychotic disturbance. In cases of chronic depres-

sion one usually observes also an increase in energy output in the fingerpaintings following lobotomy.

The effects of treatment on the drawings and paintings of mentally disturbed patients have been observed by several authors. Fingert, Kagan and Schilder (1939) used the "draw-a-man" test in schizophrenic patients after insulin and metrazol therapy. Mosse (1940) was surprised at the apparent confusion in the fingerpaintings of patients several hours after metrazol shock. Mohr (1940) notes greater realism and freer use of colour in the paintings of a schizophrenic patient during a favourable response to insulin coma treatment. Claude and Masquin (1934) deal with the changes produced by malaria therapy in the artistic productions of a patient suffering from dementia paralytica. Aslow and Kadis (1946) mention the increase of distinctiveness and clarity in the fingerpaintings of disturbed children responding to psychotherapy. No systematic attempt has been made, however, by these authors to provide a reliable measuring scale of the patient's improvement through formal criteria applied to his undirected paintings.

Recently, Hetherington (1952) has published an experimental study on the effects of electro-convulsive therapy on the drawings of depressed patients. He observed that the patient's drawings during and after treatment were larger than those of his control subjects. He also noted a tendency for the drawings to be displaced towards the middle of the page during the treatment period.

COMMENTS.

A statistical treatment of such data as we have presented is limited by the nature of the material. It is not sufficient to group a number of subjects together merely because they have at one time been given the same psychiatric diagnosis. Katz (1931), for instance, reports a preference for red among manic-depressive patients, but fails to state whether his data were collected from patients in the manic or depressed phase of their psychosis. His findings are, therefore, meaningless. We have made every effort to choose patients for our psychotic sample groups who presented a characteristic syndrome and not only an identical diagnostic label. In the case of schizophrenia we decided to include a balanced distribution of the clinical sub-groups rather than to treat them as separate entities. We do not doubt, however, that these sub-groups, if considered separately, would show significant differences, and the same would certainly be true if schizophrenic patients were chosen according to the degree of deterioration present. A sample group of 42 schizophrenic patients selected from a "back ward" and presenting terminal states of personality deterioration gave significantly lower mean scores than the mixed schizophrenic group in all four categories, with the greatest drop occurring in the category "contact with reality." We have previously referred to the possible sex differences with regard to choice of colour and realism of drawing. We have considered this factor to some extent by arranging for an equal distribution of male and female subjects in the sample groups.

The age factor certainly plays an important role in drawings and paintings of the developing individual, but probably loses much of its significance in

the post-adolescent normal subject. We feel that the concept of regression will afford a satisfactory explanation for most of the changes which are observed in the paintings of psychotic patients. Particularly the scoring categories "contact with reality" and "clarity" are likely to reflect regressive tendencies. Hurlock and Thomson (1934) conclude from their data that accuracy of perception is positively related to age and intelligence. Cockrell (1930) found that the drawings of older children can be differentiated from those of younger ones by the presence of a guiding idea and purpose. Lange (1933) notes the greater self-criticism of the post-adolescents as compared with younger subjects towards their drawings. Factor analysis of scores based on drawings has been applied by Findlay (1936) and by Koga and Naka (1940). They found that perception and memory seem to be involved. Schilder and Levine (1942) conclude that the disturbance of the basic motor drives in the mentally disordered individual leads to disturbances in their drawings.

Our study has not been concerned with the artistic qualities of the finger-paintings. Tiebout and Meier (1936) have observed a low correlation of the artistic merit of drawings with standard tests of intelligence. We have often been struck by the observation that the aesthetic and artistic value of a patient's paintings may show a definite decline, while the scores in the formal criteria of his paintings improve simultaneously with the improvement of his mental condition. As a general rule, one may state that a tendency to produce prosaic commonplace paintings reflects a favourable trend in a psychotic patient.

It should be understood that no psychological or psychiatric evaluation of a non-directed drawing or painting is complete without the consideration of its content. This aspect has been dealt with by most of the authors who have written on the subject. It is, in our opinion, a dangerous practice to generalize the diagnostic interpretations of such highly individual features as the choice of certain symbols or other representational subjects. It may be safely assumed, on the other hand, that any experienced psychiatrist or psychologist nowadays will be able to arrive at an adequate interpretation of the content of a drawing or painting, given sufficient time, information and cooperation by the painter.

SUMMARY.

1. A method of evaluating fingerpaintings of psychotic persons is described which is applicable to any patient, allows for repetition and quantitative comparison with other paintings, and does not require observation of the patient during the painting process or interviewing him afterwards.

2. The method is based on the experiences gained with the material of 942 patients who produced close to 6,000 paintings. It consists in scoring the paintings in four categories which designate characteristic formal aspects of each painting :

- a. Energy output.
- b. Contact with reality.
- c. Affective range.
- d. Clarity.

3. The rationale for the selection of these four scoring categories is given. It is assumed that they designate characteristics of the clinical condition of the patient as well as of his paintings.

4. The system of scoring is described. The measuring scale extends from 1-12, with a score of 8 representing the optimal score.

5. Statistical analysis of the mean scores obtained by five sample groups (non-psychotic; manic; depressed; schizophrenic; organic) in the four categories yields significant differences in the ratings of the fingerpaintings, which are in accordance with the characteristic clinical features of the syndrome represented by each sample group. These differences tend to confirm the thesis that the four scoring categories actually measure the behavioural, intellectual and affective aspects they designate.

6. The fingerpaintings of patients who are responding to treatment usually show typical changes, and reflect in the improved scores the patient's improved mental condition. The effects of shock therapy and lobotomies are described.

7. The concept of regression may afford an explanation for the reversible changes occurring in the fingerpaintings of psychotic patients, since some of the most characteristic features found in the paintings of psychotics are also present in the paintings of children.

8. There is no positive correlation between the artistic merit of a patient's painting and his clinical condition.

9. Detailed consideration of the content of a painting requires individual analysis. Generalized interpretations may be misleading.

10. Emphasis is placed on the need for observing changes which occur in a series of paintings when the patient acts as his own control. The evaluation of symptomatic changes in a number of paintings produced over a period of time is more reliable than the diagnostic interpretation of single paintings.

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