

THE USE OF COLOUR IN THE PAINTINGS OF PSYCHOTICS.

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INTRODUCTION.

STUDENTS of the paintings produced by mental hospital patients believe that schizophrenics show peculiarities in their use of colour. Impressions in the matter have been summarized by Reitman (1950). Schizophrenics, especially the chronic, seem to favour colours avoided by others, particularly shades of mauvish-red. They put colours into relationships that others find displeasing. They employ colours more boldly than others. Sometimes, it would appear, they purposely depict objects in colours at variance with those possessed in real perception.

Such impressions have not yet been quantitatively verified or experimentally elucidated. The following enquiry was pursued to throw more light on the question by—

- (a) counting the frequencies with which colours were employed in the paintings of mental hospital patients of various classes ;
- (b) counting the frequencies with which displeasing combinations, bold colours, unrealistic colours and the like occurred in such paintings ;
- (c) contrasting the choices of schizophrenics, non-schizophrenic patients and normal individuals in colouring a picture where shapes were already drawn in outline ;
- (d) comparing the same patients as to their liking for realistic and unrealistic colourings in drawings shown to them ;
- (e) comparing them as to their liking for isolated colours painted on cards ;
- (f) comparing them as to their liking for combinations of colours ;
- (g) comparing them as to the strength of feeling roused in them by colours ;
- (h) investigating differences amongst them in the associations that they connected with particular colours.

FREQUENCIES OF COLOURS IN PAINTINGS.

The paintings examined were those carried out in art-groups by 689 in-patients of Netherne Hospital between October, 1946, and December, 1950. The primary aim was to contrast the work of schizophrenics and non-schizophrenics. "Schizophrenics" were taken to include all definitely diagnosed as such or as paraphrenics. "Non-schizophrenics" were taken to include all definitely diagnosed as depressives, psychopaths or psychoneurotics. Manics,

epileptics, miscellaneous organics and patients in whom a schizophrenic re-activity was suspected but not demonstrated were excluded from consideration. The work of patients that had produced fewer than ten paintings was also ignored, because their opportunity to display their use of colour seemed inadequate. These exclusions reduced the number of patients actually considered to 176.

A distinction between the work of chronic and that of recent patients was imposed by the way in which the paintings had been collected. Here, "chronic" applies to patients who had been in hospital a long time, usually in closed wards, and whose recovery or readjustment was unlikely, "recent" applies to patients in reception wards or convalescent villas. Chronic and recent patients had never been mixed in an art-group but had always painted in different studios. In other respects the conditions under which they had painted had been the same. The chronic patients were all females, the recent of both sexes. Thus the contrast schizophrenic versus non-schizophrenic could be made within three classes: chronic females, recent females and recent males. Further contrasts were possible, within the schizophrenic and non-schizophrenic classes, between chronic and recent females for differences due to chronicity and between recent females and males for differences due to sex.

Consideration was given to the frequencies with which the following colours were employed: red, yellow, green, blue, purple, mauve, black, brown, grey and white. The colour-names were taken in a broad classificatory sense. Shades, tints and intermediate colours were classed according to their predominant appearance, except in the case of the blue-red series. Here "purple" was applied to blues with a definite component of red and "mauve" to reds with a definite component of blue. Where an area of paper was left unpainted with the obvious intention of representing white it was counted as the use of white. The occurrence of a colour in a given painting was weighted according to the amount of its employment: one point where it was used in a minor or subordinate way, two points where it had an extensive or important rôle, three points where it emphatically dominated all or nearly all the other colours in the painting. The number of paintings per patient showed an extreme variation. To make conditions of practice and self-confidence as similar as possible for all, the occurrence of colours was counted only in a patient's first ten paintings. The weighted frequency of each colour in each patient was thus expressed as an integer in the range 0 to 30. The counting and weighting were carried out in ignorance of diagnoses so far as the great majority of cases was concerned. The mean weighted frequencies of the various classes for each colour are shown in Table I. Statistically significant differences between class-means, tested by Student's *t*-ratio, are shown in Table II.

Differences between schizophrenics and non-schizophrenics are relatively trivial; those between chronic and recent patients are striking, especially within the schizophrenic class. Chronics show a more extensive use of purple and mauve and a less extensive use of grey. Among the schizophrenics, recent males are nearer than the recent females to the chronic females in their use of purple and mauve; evidence from the case-histories suggested that

TABLE I.—*Paintings : Mean Weighted Frequencies of Colours.*

| Colours. | Schizophrenics. | | | Non-schizophrenics. | | |
|--------------------|------------------|-----------------|---------------|---------------------|----------------|---------------|
| | Chronic females. | Recent females. | Recent males. | Chronic females. | Recent females | Recent males. |
| Red . . . | 8.40 | 8.78 | 11.04 | 9.93 | 9.95 | 8.82 |
| Yellow . . . | 10.94 | 10.67 | 11.19 | 13.67 | 10.40 | 11.00 |
| Green . . . | 17.06 | 15.72 | 15.33 | 15.53 | 14.10 | 18.00 |
| Blue . . . | 10.86 | 11.55 | 12.38 | 11.53 | 13.45 | 10.73 |
| Purple . . . | 8.91 | 4.49 | 6.79 | 7.20 | 4.90 | 5.27 |
| Mauve . . . | 9.31 | 5.82 | 6.88 | 6.80 | 6.55 | 5.36 |
| Black . . . | 5.26 | 6.02 | 6.33 | 4.20 | 7.55 | 6.64 |
| Brown . . . | 11.80 | 10.63 | 10.75 | 11.93 | 8.68 | 9.36 |
| Grey . . . | 3.26 | 6.06 | 5.96 | 3.27 | 6.15 | 9.36 |
| White . . . | 4.97 | 5.49 | 4.60 | 6.53 | 5.60 | 6.73 |
| No. of cases . . . | 35 | 51 | 24 | 15 | 40 | 11 |

TABLE II.—*Colour in Paintings : Statistically Significant Differences.*

| Colours. | Significantly more abundant in | t. | df. | p. |
|----------|---|-------|-----|-------|
| Red . | Male than female recent schizophrenics | 2.808 | 73 | < .01 |
| Yellow . | Chronic than recent non-schizophrenic females | 2.804 | 53 | < .01 |
| Green . | Male than female recent non-schizophrenics | 2.228 | 49 | < .05 |
| Blue . | — | — | — | — |
| Purple . | Chronic than recent schizophrenic females | 4.146 | 84 | < .01 |
| „ . | Chronic than recent non-schizophrenic females | 2.137 | 53 | < .05 |
| „ . | Male than female recent schizophrenics | 2.087 | 73 | < .05 |
| Mauve . | Chronic than recent schizophrenic females | 3.629 | 84 | < .01 |
| Black . | — | — | — | — |
| Brown . | — | — | — | — |
| Grey . | Non-schizophrenic than schizophrenic recent males | 2.061 | 33 | < .05 |
| „ . | Recent than chronic schizophrenic females | 3.334 | 84 | < .01 |
| „ . | Recent than chronic non-schizophrenic females | 2.482 | 53 | < .05 |
| „ . | Male than female recent non-schizophrenics | 2.026 | 49 | < .05 |
| White . | — | — | — | — |

seriously ill patients were proportionately more numerous among the males. Differences in regard to red, yellow and green probably depend only on sampling fluctuations. The abundance of green in all classes and the employment of brown beyond what might be expected arise because landscapes were the most frequently depicted subject-matter.

OTHER ASPECTS OF COLOUR IN PAINTINGS.

A count was made of the frequency with which the following occurred in the first ten paintings of each patient :

(a) *Bright* paintings, where strikingly brilliant or highly saturated colours were used ;

(b) *dull* paintings, where a sombre effect was produced by a dominance of black, brown and grey, or the shading of other colours with them ;

(c) *Pale* paintings, where the pigments were greatly diluted with water ;

(d) *heavy* paintings, where the paint was laid very thickly on the paper ;

(e) paintings with *unrealistic colours*, showing for example green hair or blue faces ;

(f) paintings with *displeasing colour-combinations*, realistic or unrealistic, for instance that of a cat with a white face, a purple, mauve and green body, green and brown legs, and a bright red tail ;

(g) paintings with *patterned colours*, arranged in some aesthetic order transcending pure representation.

As four of these modes of using colour occurred with zero frequency in an absolute majority of patients, it was convenient to treat them all in terms of absence or presence. Table III shows the numbers in the various classes that displayed each mode. The statistical significance of differences was tested by the exact binomial-product method (Fisher, 1950).

TABLE III.—*Paintings : Modes of Using Colour.*

| | Schizophrenics. | | | Non-schizophrenics. | | |
|---|------------------|-----------------|---------------|---------------------|-----------------|---------------|
| | Chronic females. | Recent females. | Recent males. | Chronic females. | Recent females. | Recent males. |
| No. of cases | 35 | 51 | 24 | 15 | 40 | 11 |
| No. showing— | | | | | | |
| 1. <i>Bright</i> paintings | 18 | 29 | 16 | 11 | 19 | 4 |
| 2. <i>Dull</i> paintings | 6 | 17 | 8 | 3 | 10 | 4 |
| 3. <i>Pale</i> paintings | 10 | 24 | 9 | 7 | 18 | 3 |
| 4. <i>Heavy</i> paintings | 27 | 27 | 15 | 10 | 17 | 5 |
| 5. <i>Unrealistic</i> colours | 11 | 9 | 7 | 2 | 5 | 1 |
| 6. <i>Displeasing</i> colour combinations | 24 | 19 | 12 | 8 | 16 | 5 |
| 7. <i>Patterned</i> colours | 25 | 35 | 18 | 11 | 25 | 9 |
| XCVIII | | | | | 12 | |

Statistically significant differences are confined to the comparison chronic versus recent female schizophrenics. The chronics have significantly fewer dull ($p=0.051$) and pale ($p=0.041$) paintings, and very significantly more heavy paintings ($p=0.014$) and displeasing colour-combinations ($p=0.005$). In these comparisons the use of unrealistic colours is commoner among schizophrenics but the difference is not statistically significant. If the total schizophrenics, however, are compared with the total non-schizophrenics there is a statistically significant difference ($p=0.021$).

COLOURING A DRAWING.

In the experimental parts of the investigation, conducted simultaneously with the foregoing counts, 36 schizophrenics were contrasted with 36 non-schizophrenics (depressives and psycho-neurotics), all female chronic in-patients of Netherne Hospital. Both samples were contrasted with eighteen student nurses as normal controls. The chronic patients were distinct from those whose paintings have just been considered. The schizophrenics in the experimental sample were closely similar in degree of illness to the chronic schizophrenic painters but, inadvertently, the non-schizophrenics were for the most part less seriously ill than those among the painters.

The drawing to be coloured represented in the foreground a group of young girls in a garden, three sitting or kneeling on a lawn, one talking to them from a deck-chair. In the background there were trees, grass, flowers, the sky and clouds. The experimental subjects were each given a box of Reeve's terra-chrome crayons and asked to colour the drawing. The colours provided were light and dark red, light and dark yellow, light and dark green, light and dark blue, purple, mauve, black, brown, grey and white. The extent to which each colour was used was rated on a scale: 0, absent; 1, small amount; 2, fair amount; 3, considerable amount; 4, extreme amount. Differences in mean-ratings for each colour amongst schizophrenics, non-schizophrenics and nurses were tested by Student's *t*-ratio. The only significant differences were that the schizophrenics used purple and mauve, the non-schizophrenics light red, more abundantly than others.

The use of bright, dull, pale and heavy colouring and the total number of colours employed were examined but there were no significant differences. The way in which the colouring was executed was carefully observed in each individual. There were three basic levels of approach:

- (a) the colours were placed haphazard;
- (b) the colours were inserted according to realistic canons—"how it would look";
- (c) the colours were not only inserted realistically but were also patterned in an aesthetic scheme.

These might be mixed in the same drawing. Unrealistic colouring easily arose from haphazard placement, but in two instances (both schizophrenics) it was deliberate, once with patterning in order to gain strong aesthetic effects and once without patterning for negativistic reasons, "because it

wouldn't be like that." Haphazard placement occurred in 9 schizophrenics and 6 non-schizophrenics but was absent in the nurses ; the difference between schizophrenics and nurses is statistically significant ($p = .018$). Aesthetic patterning occurred without significant differences (7 schizophrenics, 5 non-schizophrenics, 5 nurses).

REALISTIC AND UNREALISTIC COLOURINGS.

Separate parts of the drawing just described (skin of hands and faces, hair, trees and grass, sky, clouds) were isolatedly painted light red, light yellow, light green, light blue, purple, black and white. Each of these 35 possibilities was shown in turn in pre-determined random orders to the subjects, who were asked to say whether they liked or disliked it. Each subject was given an unrealistic score (maximum 15) for her total number of likings to the following : skin green, blue, purple ; hair green, blue, purple ; trees and grass red, yellow, blue, purple, white ; sky green, purple ; clouds green, purple. The mean unrealistic scores were 5.72 for schizophrenics, 3.33 for non-schizophrenics, and 2.00 for nurses. The schizophrenics differed significantly from the others ($t = 2.419$, $df. 70$, and 3.080 , $df. 52$).

The subjects with an unrealistic score in excess of the schizophrenic mean were shown their unrealistic likings again and asked to explain why they liked colourings that were "unnatural." Their answers were classified as : *Generally indifferent*, expressing a weak feeling or concern about the matter ; *reversing*, definitely stating that the colours were liked as a reversal of actuality ; and *aesthetic*, adducing the artistic effect or the interest of the study in colour. The totals for these answers are shown in Table IV. It will be seen that

TABLE IV.—*Unrealistic colours : Reasons for liking.*

| | Schizophrenics. | Non-Schizophrenics. | Nurses. | Totals. |
|---------------------------------|-----------------|---------------------|---------|---------|
| Number above schizophrenic mean | | | | |
| unrealistic score | 18 | 8 | 4 | 30 |
| Generally indifferent | 14 | 7 | 1 | 22 |
| Reversing | 3 | 0 | 1 | 4 |
| Aesthetic | 1 | 1 | 2 | 4 |

whilst reversal and aesthetic interest are determinants of an apparent liking for unrealistic colours, they are much less important than sheer indifference to the effect.

LIKING FOR ISOLATED COLOURS.

Cards of thick cartridge paper 10 cm. square were painted with the principal colours used by the patients in their paintings. These were presented in systematically randomized orders to the subjects, who were asked to rank them in order of preference. Stress was laid on the fact that it was liking for the colour in itself and not the colour as something to be worn that was in question.

The colours presented and the mean ranks for each class of subjects are shown in Table V. Statistically significant differences were :

- (a) the schizophrenics liked dark green better and white worse than did the non-schizophrenics ($t = 2.175$ and 2.182 , df. 70) ;
 (b) the schizophrenics liked mauve better and white worse than did the nurses ($t = 2.043$ and 2.327 , df. 52) ;
 (c) the non-schizophrenics liked dark green worse than did the nurses ($t = 2.544$, df. 52).

TABLE V.—*Colour preferences : mean ranks.*

| Colours. | Schizophrenics. | Non-schizophrenics. | Nurses. |
|------------------------|-----------------|---------------------|---------|
| Dark red | 6.72 | 6.39 | 5.33 |
| Light red | 7.36 | 7.00 | 7.22 |
| Dark yellow | 8.06 | 8.33 | 10.00 |
| Light yellow | 7.89 | 7.94 | 8.17 |
| Dark green | 6.03 | 8.22 | 5.89 |
| Light green | 6.42 | 7.11 | 7.17 |
| Dark blue | 6.72 | 7.61 | 6.56 |
| Light blue | 5.39 | 3.03 | 3.83 |
| Purple | 8.31 | 9.33 | 9.56 |
| Mauve | 8.03 | 9.81 | 10.44 |
| Black | 8.86 | 9.25 | 9.89 |
| Brown | 9.53 | 8.89 | 9.89 |
| Grey | 7.47 | 6.06 | 5.72 |
| White | 8.19 | 6.03 | 5.33 |

LIKING FOR COLOURS IN COMBINATION.

Combinations of colours were presented to the subjects by means of sets of cards identical with those used to present isolated colours. Each of the 14 colours was displayed as a temporary constant paired in turn with each of the 14 as values of the variable. There were thus 91 pairs of different colours, each being shown on two occasions, the first time with one colour, the second time with the other, as the constant. Each colour as constant was shown paired with itself as the variable ; this combination of course was not repeated. Three randomly determined orders were used for the presentation of the constants, and, within each constant, for the presentation of the variable. The variable colour was displayed alternatively to the right and to the left of the constant.

The subjects were asked to rate their liking for the colour-combinations on the following scale, using the simple symbolic equivalents named :

- Two ticks* : It gives me great pleasure ;
single tick : I like it ;
nought : I feel indifferent ;
tick and cross : I like and dislike it at the same time
single cross : I dislike it ;
two crosses : Most unpleasant ; I hate it.

It was emphasized that not the separate colours but their combination came into question and that this should be considered without reference to clothes.

By inspection it was evident that the schizophrenics made much more use of the "like" categories than did the others. If the double and single tick answers were added, the mean "like" scores were: schizophrenics 107.86, non-schizophrenics 99.33, nurses 79.56, the maximum possible score being 196. The schizophrenics differed very significantly from both the non-schizophrenics ($t = 3.709$, *df.* 70) and the nurses ($t = 3.696$, *df.* 52), and the non-schizophrenics differed significantly from the nurses ($t = 2.070$, *df.* 52). There were similar differences in the opposite direction with regard to "dislike" scores. There were no significant differences, however, in the summed "double" scores, the "indifferent" scores or the "like and dislike" scores.

For investigation of the 196 pairings it was convenient to take the total "like" scores (single and double ticks) as opposed to the total of the remaining categories. There were significant differences amongst schizophrenics, non-schizophrenics and nurses in 87 pairs. There were also significant differences amongst the three orders of presentation in the case of 38 pairs.

The differences between the three classes of subjects were carefully scrutinized for consistent principles that ran through them. The only principle found was that differences tended to appear if certain colours were present in the combination, either as constant or as variable, and not to appear if the colours were absent. No general tendency could be found for schizophrenics to show a greater liking for unpleasing combinations, as judged by any of the criteria recorded in the literature or otherwise suggested. No consistent principles ran through the differences between orders of presentation and they are almost certainly chance effects. Differences between colours as constants and as variables were examined but none were statistically significant.

In the circumstances the best way of dealing with the data of the colour combinations seemed to be to count the total number of "like" answers per individual for each colour combined either as constant or as variable. If the occasion that a colour occurred both as constant and as variable, i.e., when it was paired with itself, were counted once only, this gave 27 as the maximum number of "like" answers for each colour. Because of the significant differences amongst classes of subjects in their tendencies to give "like" answers, the 14 scores per individual were converted into standard measure in terms of their distribution in that individual. Statistically significant differences of means amongst schizophrenics, non-schizophrenics and nurses were as follows:

- (a) the schizophrenics showed greater liking for combinations containing mauve and less for those containing white than did the non-schizophrenics ($t = 2.500$ and 3.490 , *df.* 70);
- (b) the schizophrenics showed greater liking for combinations containing dark-red or mauve and less for those containing white than did the nurses ($t = 2.427$, 2.049 , 2.819 , *df.* 52);
- (c) the non-schizophrenics showed greater liking for combinations containing dark-red and less for those containing dark yellow than did the nurses ($t = 2.520$, 2.375 , *df.* 52).

As each combination of different colours was presented twice it was of interest to compare the consistency of the subjects in their answers. An alteration from like to dislike or vice versa was counted as a major change of feeling. The schizophrenic mean change was 25.17, the non-schizophrenic 16.69, the nurses' mean change was 12.00, out of a maximum possible of 91. The schizophrenics differed very significantly from the other two classes ($t = 2.944$, $df. 70$, and 3.792 , $df. 52$).

STRENGTH OF FEELING.

Before rating the colour-combinations the subjects were questioned about their interest in colour, their painting experience, their attendance at art exhibitions and their knowledge of pictorial art as shown in the naming of favourite painters. There were no significant differences amongst the classes. After they had been shown the pairs of colours they were asked; "Would you say that colours rouse strong feelings in you or not? You've had a very good opportunity to decide that." Affirmative answers were given by 15 schizophrenics, 27 non-schizophrenics and 14 nurses; negative answers were given by 21 schizophrenics, 9 non-schizophrenics and 4 nurses. The schizophrenics differed significantly from the others ($p = .003$ and $= .010$).

ASSOCIATIONS WITH COLOURS.

The subjects were shown the fourteen painted cards in randomized orders and asked to say in one word what they associated with each colour or what it called to their minds. The associations were classified as:—natural objects; outdoor artificial objects; indoor artificial objects; clothes; body-parts (blood, eyes, etc.); death; religion; feelings; valuations; symbols; deviant (irrelevant or peculiar); blanks (failure to give an association); and miscellaneous.

In the total 14 associations there were significant or almost significant differences as follows:

- (a) schizophrenics associated more body-parts, fewer religious references, more feelings, valuations, symbols, and deviants, and fewer blanks than non-schizophrenics;
- (b) schizophrenics associated more clothing references, more body-parts, more deviants and fewer blanks than the nurses;
- (c) non-schizophrenics associated more clothing and religious references and fewer feelings, valuations and symbols than the nurses.

With regard to particular colours, however, there was no evidence of differences amongst the classes in the associations that they offered.

DISCUSSION.

In the actual paintings differences between schizophrenics and non-schizophrenics were inconsiderable compared with those between chronic and recent patients. There were quite a few differences between schizophrenics and non-schizophrenics in the supplementary experiments, but subsequent study of the

case-histories indicated that these non-schizophrenics were really nearer to recent than to chronic patients in their degree of illness and their isolation from the standards and values of everyday life. It is desirable, therefore, to leave on one side the question of schizophrenic reactivity and pose the differences as those between seriously disordered and much less seriously disordered persons.

One strongly supported finding was that the seriously disordered patients used or liked colours of the blue-red series (all hues, not merely mauvish-red) more than did other patients and normals.

A second well-supported finding was that the seriously disordered patients displayed weaker feeling in relation to colour than did the others. This was expressed in their own statements, in their readiness to say that they liked colour combinations, and in their greater inconsistency of feeling about colour combinations. The less seriously disordered patients were intermediate in this regard between the seriously disordered patients and the normals. This finding is in accord with the views of Kretschmer (1951) but contrary to those of Goldstein (1942), who stated that the influence of colours is increased in psychotics.

Other consistent findings were that the seriously disordered patients used grey and liked white less than did the others, employed heavy colouring more often and dull or pale colouring less often, and more often expressed a liking for unrealistic colourings. In the paintings but not in colouring a drawing, they made more use than the others of displeasing colour combinations.

There was no evidence to support the frequently made contention (e.g., Mosse, 1942; Emery, 1942; Birren, 1950) that schizophrenics have a particular fondness for yellow. There was likewise no evidence to support the view of Mosse and others that depressives make great use of black. There was some evidence of a tendency for the non-schizophrenic patients to like red better than did others, which might support Emery's view that depressives favour red, but within the non-schizophrenic sample there were no significant differences between depressives and psycho-neurotics in this regard.

It would appear that the central factor underlying all the peculiarities in the use of colour in painting by seriously disordered patients is a diminished feeling for colour or a weakened reactivity to it. To produce an appreciable effect they feel a need to use heavy or bold colourings; for the same reason they avoid dull or pale colourings. Displeasing colour combinations make less impact on them. A weakened reactivity to colour, in conjunction with impaired self-criticism, leads to haphazard placement and so to the production of unrealistic colourings. In rare instances, however, unrealistic colouring is deliberate, and may spring either from a negativistic motivation or from aesthetic experimentation. Avoidance of grey and relative dislike for white also seem to depend on a need for stronger stimulation to produce an effect, though the attitude to white may have some other explanation. The operative fact about the blue-red series seems to be that normal persons tend to dislike its hues, presumably because they simultaneously present the disturbing effect of red and the calming effect of blue (cf. Goldstein, 1939 and 1942; Kouwer, 1949), and hence occasion an experience of conflict. As the seriously

disturbed patients are not so responsive to colour they feel the unpleasant effects of this conflict less. At any rate it seems to be quite definite that the differences cannot be accounted for in terms of special associations with purple or mauve.

The physiological conditions on which the reduced reactivity to colour depends invite further investigation with reference, for instance, to the findings of Goldstein (1942) about the varying effects of differently coloured lights on motor activities, or those of Reeder (1944) that in maladjusted persons the retinal fields for colour show alterations and inversions.

SUMMARY.

1. An examination was made of the frequencies with which different colours were used and with which certain other characteristics appeared in the paintings of patients at Netherne Hospital.

2. Some supplementary investigations were conducted into the colour preferences and other attitudes to colours of mental-hospital patients, with nurses as a control group.

3. The principal findings were that seriously disordered patients used or liked colours of the blue-red series (purple and mauve) more than the others did, and displayed a weaker feeling in relation to colour. There were also some other consistent differences.

4. It is suggested that the central factor underlying all the peculiarities in the use of colour in painting by seriously disordered patients is a diminished feeling for colour or a weakened reactivity to it.

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