

AN EVALUATION OF THE RORSCHACH TEST AS A PROGNOSTIC
AID IN THE TREATMENT OF SCHIZOPHRENIA BY INSULIN
COMA THERAPY, ELECTRONARCOSIS, ELECTROCONVULSIVE
THERAPY AND LEUCOTOMY.

By W. LINFORD REES, M.D., B.Sc., M.R.C.P., D.P.M.,
Regional Adviser in Psychiatry for Wales and Monmouthshire,

and

A. M. JONES, B.A., B.Ed.,
Psychologist, Whitchurch Hospital.

THE possibility of using the Rorschach test to predict outcome of insulin coma treatment of schizophrenia has been investigated by Piotrowski (1938, 1939 and 1941).

In a preliminary study Piotrowski (1938) found that schizophrenics who improved with insulin therapy differed from unimproved patients in pre-treatment Rorschach records in a number of respects. The improved group showed in their responses to the Rorschach ink blots evidence of a greater degree of emotional responsivity, excitability and lability than unimproved patients, indicative of a closer emotional contact with the environment.

Piotrowski (1940) attempted to determine with greater precision the personality level below which insulin therapy would be ineffective. He contended that the improvement with treatment varied inversely with the deviation of the patient's personality from the norm of healthy adults.

Subsequent investigations led Piotrowski (1941) to select six signs as being the most highly prognostic in value. The signs related to the intellectual and emotional traits, and it was postulated that the greater the intellectual deterioration the smaller the chance of improvement and the greater the emotional regression the better were the chances for improvement with the insulin coma treatment of schizophrenia.

Halpern (1940) carried out Rorschach studies on 17 male schizophrenics treated by insulin coma therapy and found significant differences in Rorschach responses between improved and unimproved patients. The recovered and improved patients gave responses indicative of a greater variety of association and a willingness to enter into the task, an absence of blocking and inhibiting factors, a greater emotional range and greater capacity for empathy. She concludes that while the Rorschach test gives prognostic pointers, it could not be used for selecting patients for treatment.

In view of the lack of agreement on the precise value of the test in predicting outcome of treatment, a special Rorschach study was undertaken of schizo-

phrenic patients treated by different methods of treatment with the aim of determining to what extent the test may be of value in assessing prognosis of schizophrenia treated by various methods.

MATERIAL.

The material of the study consists of the following groups of patients :

35 patients treated by insulin coma therapy comprising 35-50 comas.

19 patients treated by electronarcosis comprising 12-24 treatments.

22 patients treated by electroconvulsive therapy consisting of 12-24 treatments.

10 patients treated by prefrontal leucotomy.

METHODS.

The Rorschach test was given by A. M. J., using the standard method, and the assessment of clinical status, degree of recovery and follow-up investigation was carried out independently by L. R. The Rorschach and clinical data were finally transcribed to punched cards and analyses carried out by the Hollerith sorting machine.

The assessment of response to treatment was made at two stages, firstly the immediate results assessed after cessation of treatment, and secondly follow-up studies carried out at intervals up to 3 years.

The immediate results were classified as follows :

1. Recovered : This indicated freedom from symptoms and signs, and assessed as probably being able to return to previous or equivalent employment.

2. Improved and discharged : Able to return to previous social environment in spite of presence of minor signs.

3. Improved, remaining in hospital.

4. Not improved.

The follow-up assessments were graded as follows :

(1) Total recovery : Freedom from symptoms and signs. Return to previous social environment and to previous or equivalent occupation.

(2) Social recovery : Able to return to same or equivalent occupation in spite of minor symptoms and signs.

(3) Social defect : Presence of minor signs or symptoms, with incapacity to carry out work of previous level and failure to maintain self in same degree of social adaptation.

(4) Family invalids were those patients with well-marked symptoms and incapacity to carry out any useful occupation, but manageable at home.

(5) Hospital invalid : Those relapsed and readmitted to hospital.

The Rorschach responses were analysed and assessed by two methods. In the first method the prognostic signs described by Piotrowski (1941) were used, and in the second the modified Rorschach method described by Munroe (1945). The latter method was chosen, as it afforded a relatively objective method of assessing the various responses in terms of deviation from the normal and provided a total index of "abnormality" which might be prognostically valuable.

RESULTS.

Application of Piotrowski's (1941) Criteria.

The following Rorschach signs were selected by Piotrowski for predicting success or failure in the treatment of schizophrenia by insulin coma therapy :

1. Variety (Vrt) : This is when no percept is used more than twice.
2. Generic term (GT) is applied when the patient is aware of the difference between generic and specific terms, recognizing the existence of a logical hierarchy.
3. Evidence (Evd) that the patient is conscious of the distinction between a percept and its respective ink-blot.
4. Colour response (CR), colour being a contributing determinant.
5. Indirect colour approach (IC) when there is an evasion of colours of emotional attitude in reference to colours.
6. Demurring (Dmr) when there is withholding of interpretations for fear of failure or embarrassment.

Piotrowski claimed that if three or more of the signs were present, improvement could be expected with insulin coma therapy, giving a predictive accuracy of 93.3 per cent.

Taking three or more signs as the criterion for predicting improvement the following results were obtained :

TABLE I.

Treatment.	Number.	χ^2 .	P.
Insulin coma therapy	35	0.63	Between 0.3 and 0.5
Electronarcosis	19	0.2	" 0.5 " 0.7
Electroconvulsive therapy	22	0.17	" 0.7 " 0.8
Leucotomy	10	1.6	" 0.2 " 0.3

The results are well below even the 5 per cent. level of significance. The correct forecasts therefore could have been due to chance.

Inspection Rorschach.

The inspection Rorschach method of Munroe (1945) is an objective and rapid method of scoring and rating Rorschach responses. The method is derived directly from the standard method of Rorschach and based on the fundamental principles of Rorschach interpretation.

The method takes into account the fact that individual items in themselves are rarely of value, and that evaluation of the response either in relationship to normal people or in relation to other types of response is more valuable. The main difference from the standard Rorschach procedure is in method of tabulation. Special importance is attached to responses outside the normal range. One check is entered for each item which deviates from the normal range, and two or even three checks of the deviation is extreme.

Table II gives the distribution of the number of responses.

It will be seen that no patient who fully recovered gives over 31 responses, whereas 24 per cent. of the unimproved group gave over 31 responses.

Taking responses under 10 we find that there are no significant differences between recovered and unimproved groups.

TABLE II.

Number of responses	0-10.	11-20.	21-30.	31.
<i>Total Group.</i>				
Recovered, 9	44.4	22.2	33.0	0
Improved and discharged, 24	20.8	50	12.5	16.6
Improved, remaining in hospital, 5	20	40	20	20
Not improved, 50	40	26	10	24
<i>Insulin Coma Therapy.</i>				
Recovered, 5	40	20	40	0
Improved and discharged, 11	18	45	18	18
Improved, remaining in hospital, 0	—	—	—	—
Not improved, 19	31.6	36	5	26
<i>Electroconvulsive Therapy.</i>				
Recovered	} 7	42	58	—
Improved and discharged				
Improved, remaining in hospital, 2	50	—	—	50
Not improved, 15	40	27	6.5	26.5
<i>Electronarcosis.</i>				
Recovered	} 6	33	16.5	33
Improved and discharged				
Improved, remaining in hospital	—	—	—	—
Not improved, 12	42	16	16	24
<i>Leucotomy.</i>				
Recovered	} 4	—	75	—
Improved and discharged				
Improved, remaining in hospital, 2	50	50	—	—
Not improved, 4	75	—	25	—

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	TR.	Refusal.	W.	Dd.	S.	PP. Com.	At. Sex.	Re
<i>Total Group.</i>								
Recovered	22.2	66.6	11	11	0	77.7	88.8	
Improved and discharged, 24	8.3	37	29	8.3	12.5	70	37	
Improved, remaining in hospital, 5	20	40	40	20	20	60	80	
Not improved, 50	34	46	34	8	16	68	46	
<i>Insulin Coma Therapy.</i>								
Recovered, 5	40	80	20	20	0	80	80	
Improved and discharged, 11	9	27	36	18	27	62	36	
Improved, remaining in hospital, 0	—	—	—	—	—	—	—	
Not improved, 19	26	47	32	10	15	64	42	
<i>Electroconvulsive Therapy.</i>								
Recovered	} 7	70	14	0	0	70	28	
Improved and discharged								
Improved, remaining in hospital, 2	—	—	—	—	—	—	—	
Not improved, 15	27	39	40	8	20	67	40	
<i>Electronarcosis.</i>								
Recovered	} 6	33	15	0	0	66	66	
Improved and discharged								
Improved, remaining in hospital, 1	—	—	—	—	—	—	—	
Not improved, 12	50	41	33	8	8	74	74	
<i>Leucotomy.</i>								
Recovered	} 4	25	50	25	—	75	75	
Improved and discharged								
Improved, remaining in hospital, 2	—	—	—	—	—	—	—	
Not improved, 4	50	75	50	—	—	75	0	

Average Time per Response.

From Table III it will be seen that the percentage of responses with an average time of over 60 seconds is higher in the not improved group than recovered groups (34 per cent. and 22.2 per cent. respectively critical ratio (CR) = 0.7).

The various treatment groups conform to this trend but none of the differences are statistically significant.

Refusal.

This is recorded if the patient fails to find any response to one or more cards, and suggests severe blocking.

The most striking differences are found in the insulin-treated group (recovered, 80 per cent.; not improved, 47 per cent.). The difference, however, does not reach statistical significance (CR = 1.6).

Thus in schizophrenia treated by insulin coma therapy the patients who recover show evidence of a greater incidence of blocking than the not improved group.

Whole Responses (W).

In Table III the percentage of patients giving over 60 per cent. whole responses is shown. The differences are not statistically significant.

Piotrowski (1938) found that improved patients had more of whole and less of detailed responses, but this was not borne out in our series.

r t.	F.	FK.	KK.	FM.	FM. M.	Lack of total move- ment.	Colour shock.	FC.	CF.	CF. FC.	Cn.	Total colour.	Colour Movement.	
													+	-
1	22	44.4	33	22	11	22	22	77	0	11.1	55	33	0	33
2	41	45	57	70	0	78	8.3	79	0	12.5	25	66	8.3	12.5
3	40	40	40	60	0	80	0	60	0	0	20	60	20	20
4	40	26	46	44	6	66	0	70	8	14	18	54	26	30
5	20	60	20	20	20	20	0	80	0	20	60	40	0	40
6	36	64	54	54	0	72	9	100	0	9	45	45	9	54
7	42	10	52	47	5	63	0	63	10	15	20	47	26	26
8	15	39	39	85	0	85	28	70	0	14	14	70	0	42
9	26	27	40	40	6.5	60	0	80	13	20	26	40	27	20
10	50	15	66	50	0	50	15	85	—	—	50	50	15	30
11	50	50	41	50	8	74	0	58	—	8	8	74	58	16
12	75	25	75	75	—	75	—	25	0	25	0	100	0	50
13	50	25	50	25	—	75	—	100	0	0	0	75	0	25

Responses using Small or Rare Details (Dd).

These responses represent an important break in the normal spatial gestalt of the blots. The differences shown in Table III in this feature are not significantly different.

Use of White Spaces (S).

This represents a reversal of figure and ground and is regarded as indicating an oppositional tendency. None of the fully recovered patients showed this feature. It is interesting to note that in the insulin group the improved and discharged group had a higher incidence of this feature than the unimproved group although the difference is not statistically significant.

Popular and Common Responses (P.Com.).

This refers to responses very frequently given by normal people. Failure to see a fair proportion of the blots more or less as other people see them is one measure of abnormality or eccentricity. The proportion of popular and common responses shows no significant differences between the various groups.

Anatomy and Sex Responses (At.Sex).

The recovered group has a statistically significantly higher incidence of anatomy and sex responses (Table III) than the unimproved patients (CR is over 3). The difference is particularly striking in the insulin group.

Form Only.

The percentage of responses using the shape or form of the blots only is interpreted as an indication of "rational" conscious control (Munroe, 1945). The improved and discharged patients have a significantly higher evidence of this feature than the unimproved patients (CR = 2).

Form Quality.

Bad form quality was found in 40 per cent. of the unimproved patients compared with 22.2 per cent. of recovered patients (CR = 1.1).

Shading Area.

Responses using shading as subordinate to form (FK) are regarded as indicating a more refined emotional control than pure F responses. An absence of (FK) is higher in the recovered than not improved groups (44.4 per cent. recovered, 26 per cent. not improved. CR = 1.0).

Vista responses (Fk) also showed no significant differences.

Movement Area.

Seeing action in the blots appears to involve a certain empathy and a projection of the subject's inner feelings.

Human figures in action (M) were found in 72 per cent. of the unimproved patients and only 33 per cent. of recovered patients (CR = 2). This is surprising, as M responses are usually regarded as stabilizing factors in personality and were found by Piotrowski (1938) to be prognostically favourable.

Seeing animals in action (FM) appears to reflect more primitive immature inner strivings. Absence of FM is regarded as an undesirable feature, and was found in 44 per cent. of the unimproved group and 22 per cent. in the recovered group. This difference is not statistically significant ($CR = 1.4$).

The ratio of animal (FM) to total movement (M) gives a measure of emotional immaturity, immaturity being indicated when FM responses are greatly in excess of M responses. The ratio of FM to M responses showed no significant differences.

Total Movement (M).

The unimproved patients showed an absence of M compared in a significantly higher proportion than the recovered patients (not improved, 72 per cent. ; recovered, 33 per cent. $CR = 2.3$).

Total M responses indicate the extent to which the reactions of the patient are determined from within, i.e., from inner strivings rather than from immediate surroundings. An absence of M is therefore associated with failure to improve. The differences are particularly notable in insulin and electro-narcosis groups.

Colour Area.

Response to colour is interpreted as reflecting the emotional reaction of the subject to his surroundings. Sometimes the appearance of colour interrupts the flow of responses characteristic for the subject. Colour blocking was found in 22 per cent. of recovered and in none of the unimproved patients. Colour shock is regarded as being indicative of neurotic traits.

Colour used as subordinate to form (FC) suggests reasonable control of emotional responses. Lack of FC is regarded as an unfavourable personality feature, and was found in 77 per cent. recovered and 70 per cent. unimproved patients. The differences are not statistically significant.

There were no significant differences in CF responses—i.e., responses dominated by colour but form not altogether neglected. A preponderance of CF responses over controlled emotional responses (FC) is regarded by Munroe (1945) as an unfavourable personality feature. This did not show any significant differences.

A response which merely names the colours (Cn) is different from a meaningful colour response. This type of response occurred in a significantly greater proportion of recovered patients (55 per cent. recovered ; 18 per cent. unimproved. $CR = 2.1$). The difference is noteworthy in insulin and electro-narcosis groups.

Total Colour.

This gives an indication of the extent to which the subject reacts to immediate external stimulation in contrast to inner dictates.

The unimproved group had 54 per cent. with low colour response compared with 33 per cent. in recovered groups. This difference is not statistically significant.

The Ratio of Colour to Movement Responses.

The unimproved group had preponderance of movement to colour in 26 per cent. compared with *nil* in recovered groups.

Index of Abnormality.

The sum total of checks gives a composite measure of the individual's deviation from the norm.

It was found to be a valuable index of maladjustment in students by Munroe, and had high predictive value in forecasting success in College. Taking 15 checks as a suitable point of demarcation we find marked differences in recovered and unimproved groups.

TABLE IV.

Number of checks.	Recovered.					Improved.					Not improved.				
	Total.	I.C.T.	E.N.T.	E.C.T.	Leucotomy.	Total.	I.C.T.	E.N.T.	E.C.T.	Leucotomy.	Total.	I.C.T.	E.N.T.	E.C.T.	Leucotomy.
Less than 15	55.5	40	100	50	0	16.5	18	25	50	0	24	26	25	20	25
Over 15	44.5	60	0	50	0	83.5	82	75	50	100	76	74	75	80	75

It will be seen that 76 per cent. of the not improved group had over 15 checks compared with 44.5 per cent. of the recovered group. This difference approaches statistical significance (CR = 1.7).

The unimproved group has therefore a higher proportion of patients with marked deviation from the normal in Rorschach responses.

It is noteworthy that 60 per cent. of the recovered insulin-treated patients had over 15 checks, whereas none of the E.N.T. patients who recovered had over 15 checks.

Improvement not amounting to full recovery did not show this trend, and 83.5 per cent. had over 15 checks compared with 44.5 in recovered and not improved groups. The improved patients are more similar to not improved patients in distribution of total number of checks.

It is interesting to note that follow-up results showed that the improved patients had a higher tendency to relapse than recovered patients.

While such differences are found it remains to be seen how useful the criterion can be on predicting recovery or failure to improve with various methods of treatment.

Taking 15 checks and over as a criterion for predicting failure and under 15 checks as predicting success, we find that—

Total group	. . . . .	$\chi^2 = .0007$	. P = > .95
Insulin coma therapy	. . . . .	$\chi^2 = .09$	. P = between .7 and .8
Electroconvulsive therapy	. . . . .	$\chi^2 = .0009$	. P = .99
Electronarcosis	. . . . .	$\chi^2 = .28$	. P = between .5 and .7
Leucotomy	. . . . .	$\chi^2 = .03$	. P = between .7 and .8

Thus the correct predictions are no better than could be accounted for by chance.

SUMMARY.

(1) The Rorschach test was given before treatment to groups of schizophrenic patients due to receive insulin coma therapy, electronarcosis, electroconvulsive therapy and prefrontal leucotomy. Clinical status, degree of recovery and follow-up assessment were carried out independently by standardized procedures.

(2) The Rorschach responses and clinical data were transcribed to punched cards and analyses carried out by the Hollerith machine.

(3) The criteria described by Piotrowski were applied and their forecasting efficiency subjected to statistical analysis. The results could have been attributable to chance.

(4) A detailed analysis of responses using the modified Rorschach method of Munroe was carried out. A number of features showed statistically significant differences between the recovered and not improved groups, but none of these showed a statistically significant predictive value.

(5) The investigations show that there are significant differences between the pre-treatment Rorschach responses between schizophrenics who recover and those who fail to improve with various methods of treatment, but provides no evidence that the test is of value in selecting patients for treatment.

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