A LONGITUDINAL PILOT STUDY OF THE RORSCHACH AS A NEUROPSYCHOLOGICAL INSTRUMENT

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Abstract

Six patients with organic mental disorders, in all cases including Korsakoff's amnestic disorder (KAD) and in four cases due to a complication after an aneurysm operation, were followed for up to two years. Each patient was assessed at least three times; the total number of assessment points was 26. The patients' neuropsychiatric status was assessed clinically according to the diagnostic system of Lindqvist & Malmgren. The severity of the individual disorders and the global severity of the neuropsychiatric disturbance were estimated on each occasion. The patients were assessed using memory, concentration and general intelligence tests, and independently

with Rorschach according to Bohm's method.

The scores on 38 selected Rorschach variables were compared with the clinical assessments and with the other test data. In accord with earlier studies we found that KAD has a Rorschach profile which differs significantly from the findings in patients where other organic mental disorders dominate the clinical picture. We also saw a previously not reported sign of KAD, namely, frequent contaminated whole responses.

A comparison with the judgments of global severity also gave some support to the thesis that the Rorschach is a valid indicator of organic mental disorder in general. Altogether the study shows that the longitudinal design offers great possibilities for the analysis of Rorschach signs of organic mental disorders.

Key Words:

Rorschach, Intracerebral aneurysm, Korsakoff's amnestic disorder, Organic mental disorders.

Introduction

The study of the Rorschach test in organic mental disorders has a long history, beginning with Rorschach's own investigations (1921 pp 171ff) of patients with dementia, Korsakoff's psychosis, general paresis and lethargic encephalitis. Other pioneer Swiss researchers in this field include Oberholzer (1931). Piotrowski's ten "organic signs" (Piotrowski 1937) also held early promise. A lot of research was done in the U.S.A. during the following decades to test and to improve Piotrowski's signs but with no great success except for establishing beyond reasonable doubt that Piotrowski's signs do have some validity in discriminating normal subjects from brain-damaged ones. For reviews see Goldfried et al (1971), Velez-Diaz (1973); much of the relevant work up to about 1970 in the classical European and the American Rorschach traditions has also been summarised by Bohm (1972 pp 320ff, 1975 pp 145 ff). During the 70's and 80's comparatively little research was done with the Rorschach regarding organic disorders (for an excellent review see Caputo 1989), and up until the past few years only sporadic attempts were made to use Exner's Rorschach in connection with neuropsychiatric conditions (but cf Ellis & Zahn 1985).

As has been noted by Velez-Diaz (1973), Caputo (1989) and others there are several major methodological problems involved in any study of the Rorschach in organic mental disorders. Two well-known such problems are:

• The Rorschach test is sensitive to so many dimensions of human personality that the variability due to the organic component may easily vanish in "noise" due to other sources.

• The organic mental disorders are a very heterogeneous family of disturbances which cannot be expected to produce a unitary Rorschach picture.

To these, two others must be added, the importance of which have in our opinion not been sufficiently appreciated:

• Much of the clinical psychiatric heterogeneity remains even if groups of patients with unitary etiology are studied. Compare for example the diversity of organic mental syndromes observed in a group of 100 patients having undergone trans-sphenoidal hypophysectomi (Lindqvist 1966).

• Many diagnostic difficulties in organic psychiatry, especially in cases with multiple simultaneous reaction forms, can be resolved only in a longitudinal perspective. Compare the problem — within the framework of DSM-III-R, 1987 — of diagnosing Dementia or Amnestic Syndrome in a patient fulfilling the criteria for Delirium (see also Malmgren & Lindqvist 1993).

These considerations imply the following methodological criteria:

(i) That the diagnostic framework which is used must define the organic mental disorders in terms of psychopathology (independently of etiology);

(ii) That the subjects studied should be carefully described with respect to the kinds, severity and time course of the organic mental disorders that they exhibit;

(iii) That a longitudinal (or mixed group/longitudinal) study design could offer great advantages, both by improving diagnostic precision and by reducing variability due to irrelevant factors.

The study reported on here fulfils these criteria. It is a pilot investigation, based on six cases of Korsakoff's amnestic disorder (KAD, see below), and its aims were:

• To present detailed case analyses of the time course of KAD;

• To explore the perceptual processes in Rorschach on the case level by comparing different protocols from the same patients in the amnestic state;

• To suggest new Rorschach indicators of KAD; and

• To explore on a pilot scale the possibilities of using the longitudinal approach for the formal testing of Rorschach criteria for organic mental disorders.

Some early results of the study were published in Swedish (Malmgren 1973, 1977), mainly focusing on case-oriented comparisons of tests of the same patient on different

occasions. After the publication of Lindqvist-Malmgren's system of organic psychiatry (the LM system, Lindqvist & Malmgren 1990, 1993), the clinical patient data were re-classified according to that system in order to enable a more stringent analysis.

The six main disorders recognised in the LM system are the following (for further explanations see also Lindqvist & Malmgren 1993):

1 Somnolence-sopor-coma disorder (SSCD), also known as "pathological impairment of wakefulness".

2 Astheno-emotional disorder (AED). The mild forms of AED, mainly manifesting themselves as concentration difficulties, mental fatigability, secondary memory disturbances and irritability, have traditionally been called "neurasthenia". The more severe forms often justify a diagnosis of dementia.

3 Confusional disorder (CD) or delirium.

4 Hallucination-cenestopathy-depersonalisation disorder (HCDD), a disorder which in its full-blown form comprises all three of the symptoms mentioned in its name.

5 Korsakoff's amnestic disorder (KAD), which is characterized by primary retrograde and anterograde amnesia, often together with confabulations. The DSM-III-R term for this disorder is "Amnestic Syndrome". As a rule, KAD is combined with the following disorder:

6 Emotional-motivational blunting disorder (EMD), also known as "the frontal lobe syndrome" although the underlying brain disturbance need not be localised to the frontal lobes.

These disorders often occur together in different combinations, sometimes giving rise to complicated clinical pictures which can be resolved into their components only by means of a careful longitudinal analysis.

The present paper aims at the evaluation of the following three hypotheses concerning the six patients studied (note that there is a potential conflict between the third hypothesis and the two first ones):

• The tests from all occasions when the subjects have significant organic mental disorders should fulfill suggested Rorschach criteria for organic disease in general;

• There should be a correlation between an independent estimate of global severity and Rorschach variables suggested as general signs of organic mental disorders;

• There should be a correlation between the degree of KAD (Korsakoff's amnestic disorder) and Rorschach variables described as characteristic of KAD (or related categories such as Korsakoff's syndrome).

Method

Subjects

Before the micro-neurosurgical era, operations for ruptured aneurysms on the anterior communicating artery often produced severe complications in the form of a transient or chronic mixed organic mental disorder dominated by memory disturbances of Korsakoff's type. This complication was first described by Lindqvist & Norlén (1966). In 1972-74, the first author (HM) had the unique opportunity to repeatedly administer the Rorschach to a number of patients with such ruptured aneurysms ("aneurysm patients") and to a small number of patients with Korsakoff's amnestic disorder due to other causes. Altogether, 11 patients were tested; six of these were selected for data analysis based on the following inclusion criteria: a verified KAD, long enough observation time, reasonably certain clinical diagnoses at the time of the testing, and a certified change in relevant neuropsychiatric variables between testing's. The remaining material comprises 4 aneurysm patients (one woman and three men, referred to below as Pats. A, B, C and G) and two other patients (both men: Pat. E, traumatic brain injury, and Pat. F, heart arrest). The age of the 6 patients at the first test ranged from 44 to 63 years, mean 54. For a detailed clinical description of the time course of the patients' organic mental disorders, see "Results and discussion".

Data

The first author (HM) tested all 6 patients repeatedly with the Rorschach according to Bohm's method (Bohm 1972). Three of the aneurysm patients (A, B and C) were tested also before the operation. Altogether 26 tests were performed, all except one in close temporal connection with regularly scheduled neuropsychiatric examinations. The follow-up time varied from 2 to 22 months. At most re-tests, there was a complete or near-complete amnesia for previous testings. At the time of each Rorschach test the clinical mental status of the patients was independently judged by GL, and complementary psychometric testing was performed by MB. The Rorschach protocols were scored by HM and GF in collaboration.

When the data were re-classified according to the LM system, the severity of each disorder on each occasion was first rated on a four-step scale (using 1, 2 and 3 for mild, moderate and severe disturbances respectively, but 0.5 for very mild forms) based on the clinical documentation and the psychometric data except Rorschach.

With the possible exception of the ratings for AED, these estimates are not sufficiently standardized to be used in precise inter-patient comparisons. On some occasions, the clinical judgment had to be based on an extrapolation from established knowledge about the natural course of the different organic mental disorders. Because of diagnostic difficulties no separation was made between SSCD and unspecific fatigue reactions (UF). An estimate of the global severity of the patient's disturbance was also made for each occasion. The primary ratings were adjusted according to the clinical judgments of improvement or deterioration, resulting in a more fine-grained picture of each patient's development over time.

The clinical psychopathological profiles and their time courses were compared with the findings on 37 Rorschach variables (*Table 1*), most of which have earlier been suggested as "organic" indicators. They include the individual Piotrowski signs and the Piotrowski index, most items in Bohm's (1975, p 147) "general organic Rorschach syndrome", most items in Bohm's list (1975, p 157) of findings in alcoholic Korsakoff's (*Table 2*), and finally a few variables the analysis of which were prompted by the data.

Table 1: Rorschach variables selected for analysis

Var.	Description	Exp.	Source
R	Total no. of responses	-/+	Piot 1, Bohm K
T/R	Time per response	+	Piot 2
W%	Percentage of whole resp. (not DW, WS)	+/(?)	Bohm G, K
*W%	Percentage of whole resp. (incl DW, WS)	+/(?)	Bohm G, K
DW-	Number of weak DW responses	+	Bohm G
*M+	Number of sharp movement responses (including MC+ and MCh+)	-/(?)	Piot 3, Bohm K
M-/M±	Number of weak movement responses	+	Bohm K
Ms	Number of small movement responses	+	Bohm K
F+%	Form level (Rorschach's method)	-	Piot 5, Bohm K

Conf 1	Number of clear confabulations	+	Bohm G
*Conf	Weighted index of confabulations	+	Bohm G
CoC 1	Number of clear confabulatory combs.	+	Bohm K
*CoC	Weighted index of confabulatory combs.	+	Bohm K
*Cr	Number of colour responses (all kinds)	-	Bohm G
CType	Colour type (Bash, numerical version)	+	Bohm G
CNam	Colour naming	+	Piot 4
A%	Percentage of animal responses	+/(?)	Bohm G, K
Libi 1	Number of clearly uninhibited responses		Study
*Libi	Weighted index of uninhibited responses		Study
V	Number of vulgar (popular) responses	-	Bohm G
V%	Percentage of vulgar (popular) responses	-	Piot 6
Orig +	Number of good original responses	-/(?)	Bohm G, K
Orig -	Number of weak original responses	+	Bohm G
Orig %	Percentage of original responses	+	Bohm G, K
Rej	Rejections	+	Bohm G
CoNe1	Number of clear contams./ neologisms		Study
*CoNe	Index of contaminations/ neologisms		Study
Pers G	Perseveration, gross organic type	+	Bohm G
*Pers	Perseveration, any kind	+	Piot 7
Rep	Repetitions	+	Bohm K
Stp	Stereotype phrases	+	Piot 10
Imp	Impotence	+	Piot 8
Plx	Perplexity	+	Piot 9

Loc d	Localization difficulties in Inquiry	+	Bohm G
Edg	Edging	+	Bohm G
LAw	Lowered awareness of interpretation	+	Bohm G
Piot	Piotrowski's index	+	Piot

Var., variable name. ***Exp***., *expected sign according to Piotrowski and Bohm of correlation between Rorschach variable and organic mental disorders: -/+, negative expected correlation with global severity, positive with KAD. -/(?), negative expected correlation with global severity, undetermined with KAD. +/(?), positive expected correlation with global severity, undetermined with KAD.* ***Abbreviations of sources:*** *Piot 1, Piotrowski's first sign, etc. Bohm G, Bohm's general organic Rorschach syndrome. Bohm K, Bohm's signs for alcoholic Korsakoff's. Study, variable derived from obvious trends in present data.*

There is a large amount of redundancy in the full set of variables, so for some of the tasks in the study a subsample consisting of 16 variables was used instead.

Table 2: Some suggested characteristics of alcoholic Korsakoff's syndrome

*Number of responses sometimes very high
*Not so few B
Introversive experience balance
*Often W as successive combinations or confabulatory combinations
*Tendency to small M responses
*Sporadic M- responses
*Considerably lowered F+%
*Medium A%
*Sometimes very high Orig% (±)
Manner of approach W± - D± - (Dd)
Loose succession
*Repetitions
Subject enjoys interpreting

*) means that the variable is investigated in the present study.

After Bohm (1972), p. 331. Compare also Bohm (1975), p. 157.

Analysis

Three different methods of statistical analysis were employed:

Statistical method 1

Descriptive statistics were collected on 16 Rorschach variables for all tests done when the subject had some significant organic mental disorders. This turned out to be all 26 occasions. In this way:

• The number of false negatives on Piotrowski's index could be calculated, and

• Caveats concerning a number of suggested "organic" signs could be formulated.

Statistical method 2

From the set of 26 protocols, two subsets were picked out. The first group (KAD+) consists of 14 protocols taken when KAD was judged to be the dominating organic mental disorder. This was always at or close to the height of the subject's global psychopathology. The second group (AED+) contains 7 protocols taken preoperatively or late in convalescence, when a mild AED was judged to be the dominating organic mental disorder (or one of the two equally dominating disorders). For natural reasons these two groups were "high" and "low", respectively, on the estimate of global severity. Descriptive statistics on the two groups were calculated for the 16 Rorschach variables, and the results were compared on an intuitive basis. The groups contain unequal numbers of protocols from the different patients, which makes formal significance testing of differences with standard methods impossible. The comparison was therefore mainly used heuristically:

• To suggest correlations between clinical and Rorschach variables;

• To help find tentative Rorschach patterns characteristic for patients with KAD and with a mild AED, respectively (the latter findings are not reported here).

Statistical method 3

For each patient, the correlation over time for a selected pair of measures was calculated, and the mean of all 6 intra-patient correlations was taken as an estimate of overall correlation of the two measures. The number of intra-patient correlation coefficients having the same sign was counted, and the Sign Test was used to assess whether the true mean of the coefficients differed from zero. The same analysis was repeated for a large number of pairs of measures, and it was thus tested

• To what extent the clinical syndromes correlated with each other and with global severity, and

• To what extent global severity and severity of KAD correlated with the 37 Rorschach variables in the way expected from our hypotheses.

It should be noted that with a sample size of six patients, sign test significance at the 5% level requires that all 6 correlations have the same sign.

Results and discussion

Clinical courses

Four of the six main disorders of the LM system were represented on at least one test occasion, namely, SSCD (possibly mixed with UF), AED, KAD and EMD. In Figure 1, the severity of these disorders and the estimated global severity are shown for each test occasion. It can easily be seen that although both the time course and the state at the end of follow-up vary considerably between patients, there was a consistent trend towards final improvement in all clinical variables except AED. SSCD/UF was rare and generally mild and transient, AED was omnipresent, mild and stationary, while the amounts of KAD and to a lesser degree EMD varied considerably from patient to patient and between different test occasions. There was no test occasion without the presence of any significant organic mental disorder.

Time courses of the different organic mental disorders in patients A-C. Abbreviations:
A1 = patient A, first test occasion (etc)
Global = estimate of global severity
SSCD/UF = somnolence-sopor-coma disorder, and/or unspecific fatigue
KAD = Korsakoff´s amnestic disorder
AED = astheno-emotional disorder
EMD = emotional-motivational blunting disorder
Arrow: operation or (for patients E and F) other main causative event
Figures below each occasion: days before (-) or after main event

Time courses of the different organic mental disorders in patients E-G. Abbreviations:
A1 = patient A, first test occasion (etc)
Global = estimate of global severity

SSCD/UF = somnolence-sopor-coma disorder, and/or unspecific fatigue
KAD = Korsakoff´s amnestic disorder
AED = astheno-emotional disorder
EMD = emotional-motivational blunting disorder
Arrow: operation or (for patients E and F) other main causative event
Figures below each occasion: days before (-) or after main event

The correlations between the estimate of global severity (Global) and the severity of the specific organic mental disorders, and between these disorders themselves, were analyzed according to the third method mentioned above (intra-individual correlation coefficients and sign test). All coefficient means were positive except that between KAD and SSCD/UF which was weakly negative. The correlations between Global and KAD, between EMD and KAD, and between Global and EMD, were all strongly positive, and the two first ones approach significance on the sign test (p = .0625).

The results imply that intra-individual variability in the global severity score was probably mostly due to the amount of KAD (and to a lesser degree, EMD) present. They also indicate that it is virtually impossible to disentangle the effects of KAD from those of EMD in the present study. However, since EMD is most probably an invariable accompaniment of KAD, this impossibility need not detract much from the clinical value of our results. For the same reason, we have chosen to simplify the following discussion by leaving out most references to EMD.

Rorschach data

Statistical method 1

In Table 3, the basic descriptive statistics for 16 selected Rorschach variables in the whole group of 26 protocols is shown. If seen only in the light of certain suggested Rorschach signs of organic mental disorders in general, some of our data may at first sight seem surprising, namely:

• The median of the number of positive Piotrowski signs was 4 which, even taking into account the fact that we score "Impotence" conservatively means that the false negatives (using 5 as the cut-off point) make up at least 50% of the group.

• The medians of R, F+% and M+ were 19, 81.5% and 2, which should be compared with the Piotrowski cutting points of 15, 70% and 1, respectively.

Table 3: Basic descriptive statistics, for the whole sample of 26 protocols, on the 37 Rorschach variables described in Table 1. For explanations of variable names, see

Table 1

	Mean	Std.dev.	Count	Minimum	Maximum	Median
R	19,2	7,4	26	8,0	40,0	19,0
T/R	89,2	34,4	26	48,0	155,0	78,5
W%	40,7	15,8	26	9,5	78,9	39,6
*W%	51,4	17,8	26	20,0	78,9	52,1
DW-	0,3	0,6	26	0	2,0	0
*M+	1,9	1,4	26	0	5,0	2,0
M-/ M±	0,2	0,3	26	0	1,0	0
Ms	0,04	0,2	26	0	1,0	0
F+%	75,8	17,7	26	38,0	100,0	80,5
Conf 1	0,7	1,0	26	0	3,0	0
*Conf	1,1	1,1	26	0	3,5	1,0
CoC 1	0,5	0,9	26	0	3,0	0
*CoC	1,9	2,0	26	0	7,0	1,0
*Cr	2,8	2,1	26	0	9,0	2,0
CType	0,9	0,1	23	0,8	1,2	0,9
CNam	0	0	26	0	0	0
A%	55,7	15,5	26	31,0	85,0	53,0
Libi1	1,7	1,8	26	0	6,0	1,0
*Libi	3,6	3,6	26	0	12,0	2,0
V	5,5	2,4	26	2,0	10,0	5,0
V%	30,1	11,1	26	8,0	50,0	31,5
Orig +	1,5	2,1	26	0	6,0	0
Orig-	3,3	2,9	26	0	10,0	2,0
Orig %	26,8	16,4	26	0	57,9	26,3
Rej	0,5	1,0	26	0	4,0	0
CoNe 1	1,0	1,3	26	0	6,0	1,0
*CoNe	2,9	3,2	26	0	13,0	2,5

Pers G	0,4	0,4	26	0	1,0	0,5
*Pers	1,8	1,1	26	0,5	4,5	1,5
Rep	0,7	0,8	26	0	2,0	0
Stp	0,1	0,2	26	0	1,0	0
Imp	0,1	0,3	26	0	1,0	0
Plx	1,0	0	26	1,0	1,0	1,0
Locd	0,7	0,5	26	0	1,0	1,0
Edg	0,2	0,5	26	0	2,0	0
LAw	1,0	0,2	26	0	1,0	1,0
Piot	4,1	1,3	26	2,0	6,5	4,0

We think that these aberrations from "expected" values can all be explained by the peculiarities of the KAD (and/or EMD, cf above). It has already been noted by other investigators that R and M+ do not behave in the same way in patients with (alcohol-induced) KAD as in other "organics" (cf *Table 2*). Occurrences of high F+% would accord with the clinical observation that KAD patients are often well preserved intellectually. A very low F+% has been suggested as typical for alcoholic KAD (*Table 2*), but it should be emphasized that the alcoholic cases most probably differ from the post-operative ones by having much more other organic psychopathology.

Another noteworthy finding in *Table 3* is the following:

• Contaminations and neologisms (CoNe) are rare in the general population, and they have not been suggested as signs of organicity in general. In the present sample, however, they were frequent. We interpret this as evidence that they are due to the presence of KAD (cf also below).

Statistical method 2

In Figure 3, the means (± 2SE) for KAD, AED, Global and 16 selected Rorschach variables in the two groups of protocols KAD+ and AED+ (as defined in Method) are shown. The results of this comparison may be summarised as follows.

• Most of the Rorschach variables behaved as would be expected from Piotrowski's and Bohm's criteria (Table 1), considering the inter-group difference in global severity.

• The exceptions are R, T/R, W% and CoNe.

Mean values (± 2 SE) of 16 selected Rorschach variables and 3 clinical variables for two sets of protocols. Abbreviations:
AED+ = protocols from occasions when AED was judged to be the dominant organic mental disorder (or one of the two dominant ones); the 7 occasions were A1, A4, A5, C3, E3, E4 and G4.
KAD+ = protocols from occasions when KAD was judged to be the dominant organic mental disorder; the 14 occasions were A2, A3, B3, B4, B5, C2, E1, E2, F1, F2, F3, G1, G2 and G3.
Rorschach variables as in Table 1; note that the following variables have been scaled by a factor of 10: *M+, *CoC, CType, *Libi, *CoNe, *Pers, Edg and Piot. Clinical variables, scaled by a factor of 10: Glob = estimate of global severity. AED = astheno-emotional disorder. KAD = Korsakoff´s amnestic disorder.

All but the second of these exceptions can again be explained by the peculiarities of KAD (cf Table 3 and above). The second exception may also have to do with the nature of a mild AED. In typical cases of this condition the patients cognitive ambitions are high, but to live up to them he must use a continuous, energy-consuming conscious effort (cf also Lindqvist & Malmgren 1990, Chapter III: 2). In contrast, the typical KAD patient is much less self-critical and can therefore use faster strategies.

Statistical method 3

For each item in the full set of 37 selected Rorschach variables, an attempt was made to determine an "expected" direction of its correlation with the clinical variable Global, using Tables 1-2 and the known correlation (in the present sample) between Global and KAD. Actual intra-patient correlations between the Rorschach variables and Global were then calculated, and significance testing was performed as described in "Method". Figure 3 illustrates one essential step of the analysis. It shows the courses of Global and 16 Rorschach variables in Patient B and the coefficient of correlation (over time) between each variable and Global for this patient.

Values of 16 selected Rorschach variables in the 5 tests of patient B in relation to the global severity of organic mental symptoms (Glob, scaled by a factor of 10). Corr = intrapatient correlation coefficient between Rorschach variable and Global. Rorschach variables as in Table 1; note that the following variables have been scaled by a factor of 10: *M+, *CoC, CType, *Libi, *CoNe, *Pers, Edg and Piot.

The results for the whole sample and all 37 variables are shown in Table 4. For each Rorschach variable, Table 4 lists: the expected sign (if any) of the correlation coefficient; the actual number of positive, negative and zero intra-patient correlations; the mean correlation coefficient; the P value (using the sign test) for the null hypothesis that the correlation mean was zero; and finally a brief evaluation to what degree each result supports or disconfirms our hypotheses. The main findings are the following:

• Four of the significant results concern Libi1, Libi, CoNe1 and CoNe, none of which had any "expected" sign of correlation. Although uninhibited contents do not belong to the Piotrowski or Bohm general signs of organic disorders (Table 1), we do not believe that the high scores on Libi1 and Libi were specifically due to the presence of KAD (or EMD). Uninhibited contents are probably best regarded as very unspecific indicators of impaired ego functioning; cf also the use of "De-repressed Contents" in the Ego Impairment Index of Perry & Viglione (1991).

Concerning contaminations and neologisms see above.

• Although there were only 3 other significant results, 25 of those 31 variables which had an "expected" direction of correlation did tend to have a correlation in that direction, while there were only 3 (weakly) disconfirming and 3 ambiguous trends. This "variable count" must of course be interpreted with great caution, since there are many conceptual dependencies among the variables.

Table 4: Intrapatient correlations between Rorschach variables and global severity

Var.	Exp.	No of corr			Mean	ST	Eval.	Comment
		+	0	-				
R	-/+	4	0	2	.158	>.3	X	
T/R	+	5	0	1	.337	.219	E	
W%	+/ (?)	5	0	1	.252	.219	E	
*W%	+/ (?)	5	0	1	.283	.219	E	
DW-	+	2	0	1	.365	>.3	(E)	
*M+	-/ (?)	1	1	3	-.405	>.3	(E)	
M-/M	+	4	0	1	.385	>.3	(E)	
Ms	+	0	0	1	-.864	>.3	(U)	Only in B1

F+%	-	0	0	6	-.682	.0312	E!	
Conf1	+	5	0	1	.371	.219	E	
*Conf	+	5	0	1	.410	.219	E	
CoC1	+	3	0	0	.672	.250	E	
*CoC	+	4	0	2	.237	>.3	(E)	
*Cr	-	4	0	2	.023	>.3	(U)	
CType	+	4	0	1	.340	>.3	(E)	
CNam	+						A	Not seen (unexpectedly rare, Piot 4)
A%	+/ (?)	4	0	2	.126	>.3	(E)	
Libi1		6	0	0	.532	.0312	!	
*Libi		6	0	0	.588	.0312	!	
V	-	0	0	6	-.568	.0312	E!	
V%	-	1	0	5	-.353	.219	E	
Orig+	-/ (?)	2	0	2	.092	>.3	A	
Orig-	+	6	0	0	.723	.0312	E!	
Orig%	+	4	0	2	.399	>.3	(E)	
Rej	+/-	1	0	2	-.070	>.3	X	
CoNe1		6	0	0	.703	.0312	!	
*CoNe		6	0	0	.733	.0312	!	
PersG	+	4	1	1	.140	>.3	(E)	
*Pers	+	5	0	1	.395	.219	E	
Rep	+	3	0	1	.175	>.3	(E)	
Stp	+	0	0	2	-.417	>.3	(U)	
Imp	+	2	0	0	.439	>.3	(E)	Unexpectedly rare, Piot 8.

Var	Exp	+	0	-	Mean	ST	Eval	Comment
Plx	+						A	All protocols (accords with Piot 9).
Locd	+	5	0	1	.606	.219	E	
Edg	+	3	0	0	.484	.250	E	
LAw	+	1	0	0	.866	>.3	(E)	All except C3 (accords w. Bohm G).
Piot	+	5	0	1	.493	.219	E	

*Var., variable name; for variable descriptions see Table 1. **Exp.**, expected sign according to Piotrowski and Bohm of correlation between Rorschach variable and organic mental disorders: -/+, negative expected correlation with global severity, positive with KAD. -/(?), negative expected correlation with global severity, undetermined with KAD. +/(?), positive expected correlation with global severity, undetermined with KAD. **No of corr**, number of positive (+), zero (0) and negative (-) intrapatient correlations. **ST**, P value with the Sign Test. **Mean**, mean correlation. **Eval.**, evaluation of results from longitudinal data: E!, significant result in the expected direction. E, clear but non-significant trend in the expected direction. (E), weak trend in the expected direction. A, ambiguous data (too few correlations or no trend in data). (U), weak trend opposite to the expected direction. X, no definite prediction from Bohm or Piotrowski. !, other significant result. **Comment**, verbal comment, including other than longitudinal results. B1, protocol 1 from patient B. Piot 4, Piotrowski's fourth sign, etc. Bohm G, Bohm's general organic Rorschach syndrome.*

A similar analysis correlating the degree of KAD with the same 37 Rorschach variables was performed, but the results are not tabulated since there were very few differences from the one analysis to the other. This is of course expected in view of the heavy positive inter-correlation between KAD and Global.

Conclusions

Almost every single Rorschach sign is polyvalent, i.e. it has a context-dependent significance, and a simple "sign approach" like the one used here cannot even come close to mimicking the holistic judgment of the qualified clinician. On the other hand, the size of the present sample hardly justifies the use of multivariate or other more

advanced analytic methods. In spite of this, the study gives strong support to the idea that the nature and degree of a patient's organic mental disorder is to a large extent reflected in his Rorschach. Most suggested signs of organic mental disorder in general, and of KAD or related categories, behave as expected; however, for a few such signs the data tend to disconfirm earlier suggestions. Concerning Piotrowski's index, our results are in line with the main trend of earlier research.

Several of the supported "organic" Rorschach signs do not occur in Exner's "Comprehensive System" (Exner 1993), for example T/R, Orig-, Orig% and LAw. Others may be difficult to evaluate in Exner's system due to peculiarities of his rules of administration, notably R and Rejections when the number of *spontaneous* responses is very low and the patient has to be encouraged very much in order to fulfill the desideratum for a minimum number of responses. This casts some doubts on the sufficiency of Exner's system for an adequate analysis of "organic" cases.

References

Bohm, E. (1972). **Lehrbuch der Rorschach-Psychodiagnostik.** (4 ed.). Bern: Huber.

Bohm, E. (1975). **Psychodiagnostisches Vademecum.** (3 ed.). Bern: Huber.

Caputo, J. (1989). **Rorschach studies of neuropsychological groups of the past, present and future.** Unpublished thesis for the degree of Psy.D., Central Michigan University, Mount Pleasant, MI.

Ellis, D., & Zahn, B. (1985). *Psychological functioning after severe closed head injury.* **Journal of Personality Assessment, 49,** 125-128.

Exner, J. (1993). **The Rorschach: A comprehensive system. (3 ed.). (Vol. 1).** New York: Wiley.

Goldfried, M., Stricker, G., & Weiner, I. (Eds.). (1971). **Rorschach handbook of clinical and research applications.** Englewood Cliffs, NJ: Prentice-Hall.

Lindqvist, G. (1966). **Mental change after transsphenoidal hypophysectomy. Acta Psychiatrica Scandinavica, 42 (Suppl. 190).**

Lindqvist, G., & Malmgren, H. (1990). **Organisk psykiatri.** Stockholm: Almqvist & Wiksell.

Lindqvist, G., & Malmgren, H. (1993). *Organic mental disorders as hypothetical pathogenetic processes.* **Acta Psychiatrica Scandinavica, 88 (Suppl. 373),** 5-17.

Lindqvist, G., & Norlén, G. (1966). *Korsakoff's syndrome after operation on ruptured aneurysm of the anterior communicating artery.* **Acta Psychiatrica Scandinavica, 42,** 24-34.

Malmgren, H. (1973). *Några Rorschach-fynd vid postoperativa Korsakowiska minnessvårigheter.* **Nordisk Psykiatrisk Tidskrift, 27,** 530-538.

Malmgren, H. (1977). *Rorschach-testets validitet studerad på Korsakow-patienter.* In H. Malmgren (Ed.), **Plumpar i protokollet.** Göteborg: Göteborg University.

Malmgren, H., & Lindqvist, G. (1993). *The semantic status of diagnostic criteria for organic mental syndromes and disorders in DSM-III and DSM-III-R*. **Acta Psychiatrica Scandinavica, 88 (Suppl. 373),** 33-47.

Oberholzer, E. (1931). *Zur Differentialdiagnose psychischer Folgezustande nach Schädeltrauma mittels des Rorschachschen Formdeutversuches*. **Zeitschrift für die gesamte Neurologie und Psychiatrie, 136,** 596-629.

Perry, W., & Viglione, D. (1991). *The Ego Impairment Index as a predictor of outcome in melancholic depressed patients treated with tricyclic antidepressants*. **Journal of Personality Assessment, 56,** 487-501.

Piotrowski, Z. (1937). *The Rorschach inkblot method in organic disturbances of the central nervous system*. **Journal of Nervous and Mental Disease, 86,** 525-537.

Rorschach, H. (1921). **Psychodiagnostik.** Bern: Bircher.

Velez-Diaz, A. (1973). **Rorschach test in the assessment of organic brain damage in adults: A review of the post-1954 literature.** San Juan: Veterans Administration Center.