

Brief report

Rorschach markers in offspring of manic-depressive patients

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Abstract

Background: Previously published data show large differences between euthymic Israeli adult bipolar patients and US normative data on several measures of psychological functioning as assessed with a sensitive projective measure (Rorschach Inkblot Test). The current study examines the Rorschach performance of healthy offspring of bipolar parents and compares them to matched normal controls. **Methods:** 14 asymptomatic offspring of Israeli manic-depressive parents were matched for age, gender, and other demographic variables with 14 children of normal parents. All subjects were individually administered the Rorschach Inkblot Test, and protocols were scored blindly according to the Exner Comprehensive System. **Results:** Offspring of bipolar parents, like bipolar patients themselves, show significantly increased incidence and severity of thought disorder (as defined by Exner), lower numbers of cognitively mediated affective responses, and fewer responses indicating conventional perceptions. **Limitations and conclusions:** Although the sample size is small, this study strengthens the possibility that these measures of psychological functioning may serve as markers for manic-depressive illness. © 2000 Elsevier Science B.V. All rights reserved.

Keywords: Rorschach; Manic-depressive illness; Children of bipolars

1. Introduction

The classic conception of manic-depressive or bipolar (BP) illness (Kraepelin, 1921) revolves around discrete episodes of acute illness (either mania or depression) interposed on a background of periods of ‘normalcy’, in which the remitted (euthymic) patient is presumed to be essentially no different from persons who were never ill. Although some psychoanalytically oriented writers have ex-

plored the possibility that bipolar patients share a particular personality structure (Cohen et al., 1954; Arieti, 1957), subsequent research has generally failed to find consistent personality differences between these patients and normal control groups (Goodwin and Jamison, 1990). One line of investigation suggests that an underlying temperament trait of low Persistence (Cloninger et al., 1993) may characterize BP patients even when euthymic (Osher et al., 1996, 1999), but it may be that this conception is simplistic in that it does not address important dimensions of psychological functioning such as cognition and affect. In addition, two preliminary

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reports (Scharfetter et al., 1997; Mirene et al., 1998) raise questions as to the robustness of the finding of low Persistence in euthymic BPs.

The Rorschach Inkblot Test (Rorschach, 1921) is one psychological assessment instrument which measures functioning across a wide range of indices — perceptual, cognitive, affective, interpersonal, and others. The Rorschach is a very popular instrument among clinicians (Lubin et al., 1984) as well as among researchers, with over 6000 research studies published by the early 1980s (Aiken, 1996). The Rorschach was not universally well regarded among researchers, however, partly because of the clinical and intuitive approach often associated with the interpretation of this test. The utility of the instrument in quantitative research was improved by the work of Exner, whose Comprehensive System (Exner, 1974, 1995) has distilled the several older, competing methods of scoring and interpretation into one uniform, systematic, and empirically validated system. The Exner system has been utilized in Rorschach studies of diverse disorders, including PTSD (Goldfinger et al., 1998), schizophrenia (Adair and Wagner, 1992), and childhood attention deficit and hyperactivity disorder (Bartell and Solanto, 1995).

Decina et al. (1983), comparing 31 children of BP parents to 18 normal controls, noted that children of BPs had significantly higher ratios of color to movement responses. Approximately half of the experimental group, however, received a clinical diagnosis, which makes it difficult to know the extent to which this finding reflects pathology rather than underlying predisposition. These Rorschachs were scored using the Klopfer system, and other indices do not appear to have been examined. An early version of Exner was used by Mandel et al. (1984) in comparing the Rorschach performance of 35 euthymic BP patients with existing US norms. Highly significant ($P < 0.0001$) differences were found on nine variables, with BP patients showing lower levels of cognitively-modulated affective responses, poorer overall reality testing, and higher levels of formal thought disorder. It is not impossible that the observed differences were due to residual illness, to the effects of repeated episodes of acute illness, or to the effects of psychotropic medication (taken by almost all BP patients over the course of

the illness). If, on the other hand, these Rorschach differences are part of the psychological expression of the genetic diathesis to manic-depressive illness (Belmaker and Biederman, 1994), they should be present before the actual onset of the illness itself. In order to test the hypothesis that the differences are psychological markers of the genetic diathesis for BP disorder, the current study compares the Rorschach protocols of the asymptomatic offspring of bipolar parents (OBP) to the protocols of children of normal parents (controls). Since the Rorschach is very sensitive to developmental processes, the children were matched for age and grade level as well as for sex, ethnic background, and parental socio-economic status. A preliminary analysis of the data (Last et al., 1989) discussed the similarities between the adult bipolar protocols and the protocols of the children of bipolar patients but, at that time, the children's protocols were translated into English (from the original Hebrew) and scored in translation; in addition, an earlier version of the Exner Comprehensive System was employed. The present paper reports the results of final analyses conducted on the original protocols, scored from the original Hebrew transcripts, and in accordance with the 1995 version of the Exner scoring system (Exner, 1995).

2. Methods

2.1. Subjects

Nine parents of school-aged children were identified from the Jerusalem BP clinic of RHB. All of these parents were diagnosed as manic-depressive by DSM III criteria, were in a stable marriage, were euthymic for at least 3 months prior to the start of the study and remained euthymic throughout the study period. All parents consented to their children's participation in the study.

From the nine proband families, 20 children were identified who met all of the following criteria: between the ages of 7 and 16, performing adequately in a regular classroom environment, had no history of psychiatric treatment and were in good medical health.

Matching: each OBP child was matched with a child of normal parents; children were individually

matched for age, sex, grade level, parental socioeconomic status, and ethnic background (Ashkenazi/Sepharadi); an attempt was made to the furthest extent possible to match also for family size, ordinal position, and religiosity (religious vs. secular). Most controls were identified with the help of the school psychologist, who recommended non-problematic children who met the required profile. The majority of the controls were drawn from the same school as the matched subject. Parents of controls gave informed consent to the participation of their children in the study. At the time of this reanalysis, six pairs were dropped from the study, four because technical difficulties in the records rendered parts of a protocol unscorable, and two because of loss of material. The subject group as analyzed consists of 14 OBP (drawn from five families) and 14 matched controls (drawn from four families). Demographic data are summarized in Table 1.

2.2. Procedure

The full Rorschach (10 blots) was individually administered to each child by the same examiner (BM). Both the administration and inquiry phases of the test were conducted in accordance with standard procedure as outlined by Exner (1974).

Protocols were scored by an expert clinical psychologist (YO) blind to subject identity and status (OBP vs. control). Scoring was carried out in accordance with the most current available version of the Comprehensive System (Exner, 1995). Psychogrammes were constructed with the aid of the RIAP3 Plus computer software package (Exner and Ona, 1995). Four protocols (14%), randomly selected, were independently rescored under the supervision of a clinical psychologist extensively trained in the

Exner system in order to evaluate inter-rater reliability.

3. Results

Inter-rater agreement rates on scoring categories were 94% for location, 81% for determinants, and 77% for form quality.

An initial analysis was done to check that the total number of responses (R) did not differ between the groups, as this would affect other variables analyzed. Group *t*-test revealed that there was no significant difference between the groups on total number of responses given ($t = -0.12$, $df = 26$, $P < 0.91$).

Group *t*-tests for independent samples were performed to compare the offspring of the bipolar patients (OBP) to the children of normal parents. Results are summarized in Table 2. Of the nine variables where at least 50% of the adult euthymic BP patients had scored more than one standard deviation away from Exner's norms (Mandel et al., 1984), we found statistically significant differences for three: OBPs showed fewer cognitively-mediated affective responses (FC) ($P < 0.005$), fewer Human Movement responses (M) ($P < 0.05$), and a higher number of special scores [deviant verbalizations, deviant responses, incongruous combinations, fabulized combinations, contaminations, inappropriate logic] (Sum6) ($P < 0.05$). Bipolar offspring showed significantly more severe thought disorder, whether the number of severely aberrant responses (Level2) is simply counted ($P < 0.02$) or Exner's weighting scale is used to arrive at a weighted total expressing the severity of thought disorder across the six major Special Scores categories (WSum6) ($P < 0.02$). Finally, while the groups did not differ on the number of responses incorporating the use of space (S), OBPs did give significantly fewer conventional or popular (P) responses than did the controls ($P < 0.02$). There were no significant differences on four of the variables where at least 50% of the adult euthymic BP patients had scored more than one standard deviation away from Exner's norms (Mandel et al., 1984): pure form quality (F+%), frequency of organizational activity (ZF), number of responses containing multiple determinants (Blends), and number of 'pair' responses.

Table 1
Demographic data

	Offspring of bipolar patients ($N = 14$)	Matched controls ($N = 14$)
Age		
Mean (SD)	12.29 (3.0)	12.43 (3.1)
Sex		
Male	4	4
Female	10	10

Table 2
Comparison of Rorschach variables: offspring of bipolars vs. normal controls

Variable	Offspring of BPs		Control subjects		<i>t</i> (df=26)	95% CI	Significance
	Mean	SD	Mean	SD			
R	23.29	10.8	22.86	7.9	-0.12	-7.79, 6.93	NS
F+%	46.21	19.0	47.36	25.2	0.14	-16.18, 18.46	NS
ZF	9.93	3.4	8.00	4.8	1.22	-1.32, 5.18	NS
Blends	1.93	2.0	2.86	2.4	1.10	-0.80, 2.66	NS
Pairs	7.86	6.4	7.07	3.6	-0.40	-4.83, 3.26	NS
FC	0.43	0.5	1.50	1.2	3.16	0.36, 1.78	<i>P</i> = 0.005 ^a
M	2.29	1.9	4.50	3.4	2.14	0.09, 4.34	<i>P</i> < 0.05
Sum6	2.14	1.3	1.29	1.3	-1.73	-1.87, 0.16	NS
Level2	0.57	0.5	0.14	0.4	-2.55	-0.78, -0.08	<i>P</i> < 0.02 ^b
WSum6	6.14	3.9	2.93	2.8	-2.49	-5.88, -0.56	<i>P</i> < 0.02
S	1.93	2.4	2.00	2.0	-0.08	-1.80, 1.66	NS
P	3.00	1.9	4.71	1.6	2.57	0.34, 3.08	<i>P</i> < 0.02

^a *t*-Test for means with unequal variances, df=17.91.

^b *t*-Test for means with unequal variances, df=23.51.

In Exner's system, empirically derived and validated indexes are compiled in which certain constellations of variables are examined to suggest the presence or absence of depression, schizophrenia, coping deficits, and suicidal potential. Using the Exner cut-off points to recode each of the first three indexes into 'positive' or 'negative', chi-square analyses (or Fisher exact, for cells with expected frequencies of less than five) were performed. The suicide index was not analyzed since it is considered unvalidated for children under the age of 14. While no significant difference was found on the Depres-

sion Index (Fisher exact one-tail, *P* = 0.50) or on the Schizophrenia Index (Fisher exact one-tail, *P* = 0.50), there was found to be a trend towards OBPs being more likely than controls to score positive on the Coping Deficit Index ($\chi^2_{1,1} = 3.59$, *P* = 0.058). These results are summarized in Table 3.

4. Discussion

The current study constitutes partial support for the earlier findings of Mandel et al. (1984). Many specific aspects of psychological functioning, as measured by the Rorschach Inkblot Test, are unusual both in euthymic bipolar (manic-depressive) patients and in their overtly asymptomatic offspring. Both bipolar adults and their children show an usually high degree of thought disorder, a dearth of cognitively-mediated affective responses, and a poor capacity for conventional perception. We found that the offspring of bipolars, like their parents, produce fewer human movement responses, suggesting impaired capacity for empathy (Kleinmuntz, 1977). Finally, there is a strong tendency for the children of bipolar patients to produce higher scores on an index of coping skills deficits, although this index was not assessed for the adults. It should be noted that, in almost every other case of variables which differentiated the bipolar adults from US normals, the

Table 3
Comparison of Rorschach indexes: offspring of bipolars vs. normal controls

Index	Positive	Negative	% Positive	Significance
<i>Coping deficit</i>				
Subjects	10	4	71.4	<i>P</i> < 0.06 ^a
Controls	5	9	35.7	
<i>Schizophrenia</i>				
Subjects	3	11	21.4	NS ^b
Controls	2	12	14.3	
<i>Depression</i>				
Subjects	0	14		NS ^b
Controls	1	13	7.1	

^a Chi-square.

^b Fisher's exact test (one-tailed) for 2×2 tables with cells that have expected frequencies of less than five.

children of bipolars differed from the matched control group in the expected direction; replication with a larger *N* may confirm the adult findings for several additional variables (see Last et al., 1989). Reduced number of movement responses among our OBPs is consistent with the Decina et al. (1983) report of higher ratios of color to movement determinants in Rorschach protocols of children of bipolars as compared to normal controls. Our findings of elevated levels of thought disorder are consistent with earlier studies reporting elevated levels of thought disorder in first degree relatives (Shenton et al., 1989) and offspring (Arboleda and Holzman, 1985) of bipolar probands. One study even suggests that elevated levels of thought disorder (as measured by Exner's system but which they refer to as 'cognitive slippage') may differentiate between bipolar patients (manic OR depressed) and depressed unipolar patients (Singer and Brabender, 1993).

As the differences reported here are apparent in the children many years before the actual onset of the disease itself would be expected, and in children who are currently functioning well and not evidencing any overt symptomatology, it appears that the case for these indices as psychological markers of the genetic diathesis for bipolar disorder has been strengthened. Our sample size is small, the observations are not completely independent (due to the recruitment of siblings) and, furthermore, additional studies using twin and adoption designs will be required before it will be possible to state with certainty that the observed differences are due to genetics and not to environmental influences. If confirmed, however, these findings may have potential significance for the search for the underlying genetic mechanisms of transmission of manic-depressive illness (Leboyer et al., 1998) as well as potential significance for the development of early intervention/prevention programs for children at risk (Thomas et al., 1997).

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