

Gender differences in schizophrenia as seen in the Rorschach

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Abstract

Research has shown the importance of sex differences for various aspects of schizophrenia. This study focused on gender-related differences in thought processing as shown in the Rorschach test.

Thirty-six schizophrenic patients (18 men and 18 women) were tested with the Rorschach according to the Comprehensive System.

The results showed that the female patients were more active in handling information input but exhibited more impairment in conceptualization. The male patients showed more perceptual disturbance.

It was concluded that the Rorschach might add information in differentiating among subtle thought disturbances. It might even be useful to detect relationships between thought processes and neuroleptic medication.

* Schizophrenia, Gender, Rorschach.

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Gender differences in schizophrenia have been demonstrated in many studies. A review of this research was given by Räsänen et al. (1), who concluded that female schizophrenic patients generally have a more benign form of the disease with a better social functioning and a more favorable general outcome than the male patients.

In a study where the Rorschach Comprehensive System, CS, (2) has been used, the issue of gender and thought processes in schizophrenia has been addressed by Perry et al (3). Using the Ego Impairment Index (EII) (4) they showed that the Rorschach test was sensitive in capturing subtle differences in schizophrenic thought disturbance. They found that male schizophrenic patients suffered from a greater impairment in thinking than female patients did.

The aim of the present study was to find out if there was a gender-related difference in thought processing in our sample. The relationship between neuroleptic medication and thinking processes was also examined.

Subjects and methods

Subjects

Patients with psychotic symptoms were consecutively recruited for a series of neuropsychobiological investigations during the years 1994-96, on admittance to a psychiatric clinic in Stockholm, both inpatient and outpatient facilities (5, 6). Of 66 patients screened, 18 did not meet the inclusion criteria and 11 did not give informed consent. Thus the remaining 37 patients were asked to do the Rorschach test and all agreed. One interrupted the test halfway. Consequently, the material for the present study consists of the Rorschach protocols of 36 schizophrenic patients, 18 male and 18 female. All the Rorschach tests were administered by one of the authors (K.D.) according to the Rorschach Comprehensive System.

Inclusion criteria were DSM III-R diagnosis of schizophrenia and age between 18 - 45. The diagnose was made by two independent clinicians, a psychiatrist and a psychologist (L.F., G.E.). The former performed a standard clinical diagnostic interview and the latter, the structured clinical interview for the DSM III-R. The inter-rater reliability was high (96%). There was a disagreement in one case but consensus was reached after consultation. In case of a history of illness less than 6 months, patients with first-episode psychosis were followed up to confirm the diagnosis of schizophrenia. Exclusion criteria were drug abuse, head injury, neurological or serious somatic disease.

Clinical assessments

The clinical characteristics of the patients are shown gender-wise in table 1.

Table 1. Clinical characteristics of 36 schizophrenic patients by gender

	Males N = 18		Females N = 18	
	m	(SD)	m	(SD)
Age (years)	30.6	(6.6)	30.1	(8.0)
Age at onset	23.9	(5.5)	23.6	(6.8)
Education (years)	12.6	(2.5)	12.9	(3.4)
Days in hospital	238.3	(427.5)	242.2	(313.9)
Duration of illness:				
first episode, n		n = 8		n = 11
chronic, n		n = 10		n = 7
Duration of neuroleptic medication (months)	39.0	(54.3)	42.6	(51.7)
Daily dosage of hlb-eq (mg)*	237.5	(207.6)	231.9	(131.4)
GAF	47.9	(11.9)	45.7	(13.3)
PANSS				
Positive Symptoms Scale	16.8	(7.2)	17.1	(5.7)
Negative Symptoms Scale	19.9	(6.7)	17.6	(6.5)
General Symptoms Scale	35.1	(9.5)	36.2	(9.8)
Composite Index	-3.1	(11.0)	-0.6	(8.6)

All neuroleptic medication was transformed into a standardized measure called chlorpromazine-equivalent (9).

The symptoms of illness were rated according to the Positive and Negative Symptoms of Schizophrenia scale the Positive and Negative Syndrome Scale for Schizophrenia (PANSS) (7). The Global Assessment of Functioning scale (GAF – Ref. DSM-III-R, APA, 1987) (8) was used to rate the level of functioning.

No significant gender difference was found in education, age, age at onset, dosage or duration of medication, months in hospital or global functioning (GAF).

No statistically significant gender differences in the PANSS scales were found.

Of the 36 patients, 17 were chronically ill patients (10 men, 7 women) with a mean age of 33.8 years (range 23 – 45 years). In the first-episode group there were 19 patients (8 men, 11 women) with an average age of 27.1 years (range 19 – 42 years).

Four of the first-episode schizophrenics were drug naive and two of the chronically ill patients were off neuroleptic medication since 6 months. Twenty-two patients were treated with conventional neuroleptics and eight with clozapine (table 1).

Additional medication for day and night time sedation (benzodiazepines) was allowed and a few patients were on low dosages of oxazepam and nitrazepam.

The Rorschach Comprehensive System

The Comprehensive System, (2) is based upon normative data for 700 adult nonpatients and reference samples from psychiatric groups in the United States. (Unfortunately, there are no normative data for the Scandinavian countries.) The gender differences among non-patients were found to be inconsequential for almost all variables. The CS schizophrenic reference group consists of data from 320 inpatient schizophrenics, 48% male, and 52% female. Scores and indices are not specified by gender and no gender-related differences are shown in the schizophrenic reference group.

Rorschach measures used in this study:

THE SCHIZOPHRENIA INDEX (SCZI)

SCZI is empirically based upon data from schizophrenic patients. It is composed to assess reality testing, thought disorder, inaccuracy of perception and interpersonal ineptness. The SCZI consists of six items and gives a score from 0 to 6. The score of 4 or higher is a signal that psychotic disorder should be seriously considered.

INFORMATION PROCESSING

The synthetic functions of the ego are here defined by the CS variables Lambda, DQ+, Zf and Blends. Lambda indicates how much a person is willing or capable to perceive an ambiguous stimulus field. The variables Zf, DQ+ and Blends are all measures of cognitive organizing activity, where the variable Blends also involves affective experience.

COGNITIVE MEDIATION

Conventionality and form-quality in responses estimate how inputs are translated into percepts and how reality orientation is achieved. Rorschach variables used here are x-% and Populars. The x-% is a variable for bad form-quality suggesting mediational distortion and perceptual inaccuracy. The variable Populars indicate readiness to perceive and act upon the obvious and the conventional.

IDEATION

This is the process when translations of inputs are organized into symbols or concepts, making up the inner world. Rorschach variables for ideation used here are MOR (pessimistic and negative thinking); M- (delusions especially regarding interpersonal issues); DR (redundant and circumstantial thinking) and FABCOM (loose associations and fabulized combinations). WSum6 (Weighted Sum of the six Special Scores) is the

sum of scores from six variables measuring special kinds of thought disturbances, scores weighted for increasing severity. FABCOM and DR are two of the six special scores.

THE EGO IMPAIRMENT INDEX (EII) was derived from the CS to assess reality testing, cognitive distortion, strained and illogical reasoning, failure of repression, and object relations (4). The EII gives a composite score with values above 0 showing an increasing degree of disturbance. The EII was constructed with the aim to measure thought disorder within a theoretical framework.

Statistics

Most Rorschach variables are not normally distributed. Mean differences were compared with the sample split according to gender and calculated with the Mann-Whitney U-test. The Kendall rank correlation was used to measure relationships between different variables.

The validity of the 36 protocols was judged to be acceptable³. The 36 protocols were administered and scored by the author. Fifty percent of the protocols were randomly chosen and independently re-scored by an experienced psychologist (AMC) who was not blind to the diagnosis of schizophrenia but to gender. The reliability was calculated using the intra-class correlation coefficient (ICC) for protocol-wise agreement (10,11). Correlation coefficients (ICC) for Rorschach measures used in this investigation ranged from 0.69 to 0.98.⁴

³ Of the 36 patients, 11 had a Lambda >0.99. The mean Lambda was 0.76, (SD 0.49) and the max value 6.00. Since the average Lambda for the CS schizophrenic norm-group is higher than for other norm-groups it was decided not to exclude the one outlier protocol with Lambda 6.00. The Lambda range for the other 35 protocols ranged from 0.07 to 1.83.

⁴ Reliability coefficients (ICC) were: SCZI 0.77; EII 0.94; Lambda 0.98; DQ+ 0.96; Zf 0.98; Blends 0.95; x-% 0.77; Populars 0.90; MOR 0.73; M- 0.74; DR 0.69; FABCOM 0.74; WSum6 0.87.

Results

Thought processes and gender differences

Statistically significant gender differences were found in two of the cognitive clusters, namely information processing and ideation (table 2). The male patients showed less activity in synthetic thinking activities than the female patients, while the female patients showed more impairment in ideation.

Table 2. Gender differences in thought processes. 36 schizophrenic patients (18 male, 18 female).

Rorschach variable		male patients N=18 Mean (SD)	female patients N=18 Mean (SD)	p
SCZI	<i>Index</i> index of schizophrenia	1.8 (1.2)	2.5 (1.7)	0.178
EII	ego impairment index	0.31 (1.24)	1.35 (1.80)	0.074
	<i>Information processing</i>			
Lambda	degree of motivation or involvement with the stimulus field	1.16 (1.31)	0.70 (0.44)	0.367
DQ+	organized synthetic activity	5.2 (3.1)	6.6 (3.6)	0.042
Zf	processing effort	12.0 (4.8)	12.7 (4.0)	0.589
Blends	complex affective activity	0.12 (0.09)	0.20 (0.09)	0.015
	<i>Cognitive mediation</i>			
x-%	perceptual distortion	0.18 (0.12)	0.23 (0.10)	0.261
Populars	conventional responsiveness in obvious situations	5.1 (1.5)	5.8 (1.6)	0.162
	<i>Ideation</i>			
MOR	negative and pessimistic thinking	1.1 (1.0)	1.9 (2.3)	0.566
M-	distorted perception and delusional thinking about other people	0.9 (1.9)	1.6 (1.4)	0.027
DR (Lv1 + Lv2)	redundant and circumstantial thinking	1.4 (1.5)	2.0 (3.1)	0.868
FABCOM (Lv1 + Lv2)	fabulated combinations and disruption in conceptualization	0.6 (0.9)	1.6 (1.7)	0.020
WSum6	weighted sum of thought disturbances	15.6 (16.7)	24.3 (22.4)	0.211

Mann-Whitney U-test, two-tailed.

THE INDEX SCZI scored lower than expected for the whole sample. In the present study, only 22 % had a significant SCZI score, compared to the CS schizophrenic reference group where 82 % had a SCZI score that was significant. The female patients scored higher than the male patients but the difference was not statistically significant (table 2).

The SCZI was significantly correlated with the PANSS Composite Index (0.29, $p < .022$) which is a weighted index of negative and positive symptomatology (7).

THE INDEX EII had a mean composite score of 0.8 for the whole sample, which is lower than the mean 1.6 in the schizophrenic sample in Perry's work (3). In this sample the correlation between SCZI and EII was 0.58, $p < .000$. The gender-related mean difference in this investigation showed the same tendency as with the SCZI, female patients having higher mean score than the males. The difference was not statistically significant.

INFORMATION PROCESSING

Female patients as a group seemed less impaired than male patients in handling information input. Female patients had a higher DQ+ mean score which means that they generally were more involved with stimuli, more elaborate with details and more active in organizing percepts than male patients. The response-pattern of female subjects was also more complex in an affect-oriented style (Blends). These differences were statistically significant. The same tendency but not statistically significant was found for the variable Lambda, male patients showing a higher mean score implicating lack of motivation or staying off from involvement.

COGNITIVE MEDIATION

Regarding the capacity to identify and translate information no statistically significant gender-related difference was found (table 2)

IDEATION

Female patients had a higher mean score in the variable M-, indicating unclear thinking and distorted perception about other people. Female patients also showed more impairment in conceptualization (FABCOM level 1 + 2). These differences were statistically significant. The same tendency but not statistically significant was found when different kinds of thought disorders were weighted according to severity (WSum6), female patients showing more serious impairment. They had a higher mean score of redundant and circumstantial thinking (DR) and pessimistic thinking about self and others (MOR) but the variation in the group was higher than in the male group.

Neuroleptic medication and thought processes

Of these 36 patients, only 8 had a critical SCZI score. Patients treated with high dosages of neuroleptic medicine scored lower on the SCZI than patients with lower dosage. The correlation was statistically significant (-0.41, $p < 0.002$)

Table 3. Correlations (Kendall's Tau¹) by gender between neuroleptics (dosage and duration) and Rorschach variables for thought processes. 36 schizophrenic patients (18 male, 18 female)

	Rorschach variables	males		females	
		tau	p	tau	p
Indices	SCZI/dosage	-0.56	0.005	-0.31	0.104
	SCZI/duration	-0.36	0.061	-0.14	0.468
	EII/dosage	-0.22	0.226	-0.12	0.512
	EII/duration	-0.09	0.593	0.15	0.380
Information processing	Lambda/dosage	-0.04	0.845	0.17	0.355
	Lambda/duration	0.05	0.760	0.03	0.879
	DQ+/dosage	-0.09	0.635	-0.53	0.004
	DQ+/duration	-0.13	0.486	-0.21	0.248
	Zf/ dosage	0.06	0.753	-0.49	0.008
	Zf/ duration	-0.10	0.564	-0.13	0.487
	Blends/dosage	-0.01	0.938	-0.14	0.440
	Blends/duration	-0.14	0.421	0.08	0.646
Cognitive mediation	x-%/ dosage	-0.53	0.004	-0.13	0.464
	x-%/duration	-0.46	0.009	-0.01	0.970
	Populars/dosage	-0.21	0.288	0.17	0.362
	Populars/duration	-0.31	0.100	-0.07	0.694
Ideation	MOR/dosage	-0.02	0.934	0.04	0.842
	MOR/duration	0.02	0.935	0.26	0.165
	M-/dosage	-0.28	0.172	-0.29	0.128
	M-/duration	-0.29	0.154	-0.15	0.427
	FAB/dosage	-0.06	0.778	-0.08	0.660
	FAB/duration	-0.14	0.490	0.01	0.968
	DR/dosage	-0.02	0.935	0.06	0.772
	DR/duration	0.14	0.473	0.28	0.139
	WSum6/dosage	-0.04	0.845	-0.07	0.699
	WSum6/duration	0.06	0.759	0.15	0.400

¹⁾ The Kendall rank correlation coefficients, 2-tailed significance.

No significant relationship between the Ego Impairment Index (EII) and neuroleptic medication was found (table 3).

In the cluster cognitive mediation, the variable for perceptual distortion (x-%) correlated significantly with medication for the whole sample (table 3).

Neuroleptic medication and gender-related differences in thought processes

Male and female patients were compared regarding the relationship between thought processes and neuroleptic medication.

In the female group, neuroleptic dosage correlated negatively and statistically significant with DQ+ (the capacity to organize and integrate details in the stimulus field in a meaningful way). The relationship between DQ+ and duration of medication showed the same tendency but not statistically significant. In the male group there was no such relationship between neuroleptic medication and DQ+ (table 3).

The relationship between neuroleptic medication and the variable x-% (distorted perception) was different in male and female subjects. The correlation was negative and statistically significant in the male group but not in the female group (table 3).

Discussion

Though the sample in this study is small, it provides some support for the existence of gender differences in thought processes in schizophrenia. It is suggested that neuroleptic medication is differently associated with these thought processes in male and female schizophrenic patients. Further it is indicated that the Rorschach might be a useful method in differentiating among thought processes.

The female patients in the present study showed more impaired conceptualization and had more loose associations, marked by fabrications and delusions, than the male patients. On the other hand, which seems contradictory, the women seemed to have more access to psychologically complex inner resources than the men.

The male patients showed less activity in elaborating thoughts and organizing concepts than the females patients. This gender difference may be interpreted as women having reached a higher cognitive level than men before getting ill. It may also be a sign of men being more affected by negative symptoms than women.

The results support earlier findings in which female schizophrenic patients as a group are more affect-oriented while male schizophrenic patients have more negative symptoms (12,13).

Medication and thought processes correlated differently in the male and the female group of patients. For women, the correlation was most pronounced in the synthesizing function and for men, in perception. In the female patients, the synthetic and organizing function had a significant negative correlation with neuroleptic medication. In the male patients on the other hand, the perceptual inaccuracy variable x-% had a significant negative correlation with medication.

In a prospective study, the hypothesis might be posed that male schizophrenic patients with perceptual difficulties are helped by neuroleptic medication. For female patients, the hypothesis would be that their organizing thought activities are slowed down by medication. Unless this is a moderation of too much activity such as in positive symptomatology, it addresses the possible risk of damage especially to female schizophrenic patients' thought processes by neuroleptic medication.

Only 8 out of the 36 schizophrenic patients had a significant SCZI score. These 8 patients, except one, were on no medication or had a very low dosage. Drawing a conclusion from the present study would be that testing patients while un-medicated seems necessary for the SCZI to have a diagnostic value. This is in line with a study by Hilsenroth et al (14) where the Rorschach was taken before medication. The SCZI then held a good diagnostic power.

Fabulated combinations is a kind of thought disturbance that signals excessive on-going thinking activity while on the other hand negative symptomatology implies a slowing down of the thought process. Fabrications may be a good prognostic sign showing that the mind is working hard even if its results appear strange. In non-psychotic persons, a moderately elevated SCZI has been shown to associate with some kind of creativity (15). Looking for disturbances in the Rorschach carries the risk that

”the fever is taken for the illness”. Paradoxically, the finding that women had a higher mean SCZI might be in concordance with the general finding that women have a more benign form of schizophrenia.

Perry et al (3) found gender differences in schizophrenia using the Ego Impairment Index, male schizophrenic patients showing more thought impairment than females. In the present study the mean score for the EII was higher for the women, indicating more thought disturbances for the female group. The difference was not statistically significant.

The reason that the results differ may be explained by the the clinical characteristics in the patient groups. In Perry’s sample, the mean age was higher and age at onset lower than in the present study. Further, the mean GAF score was 27 for the male patients and 25 for the females, indicating that that group was on a lower global functioning level than the patients in the present study. The patient group in the investigation by Perry et al thus seems to have been older, more chronic and more heavily medicated. Patients with better prognosis are more scarce in such a group than in the present investigation, where half of the patients were first episode. These demographic differences are so important that they make any meaningful comparison between the two studies impossible.

The sample size is too small to give weight to definite conclusions. Clinical characteristics were checked but even so there are unknown factors that may confound results in such a small sample, such as premorbid personality.

Another limitation of the present study is that it is cross sectional. A prospective study would add to the usefulness of the Rorschach and possibly reveal what factors in the Rorschach can be recognized as prognostic signs.

The decision not to use a control group was made since, according to the American Comprehensive System, gender differences among nonpatients are insignificant. The

basic assumption that gender differences are not usually found in the Rorschach and should be interpreted as deviations may not be sufficiently supported by newer data. This study shows the possibility of using the Rorschach as a method to assess subtle thought processes in schizophrenia. It could be useful in measuring treatment effects in a precise and calibrated manner, making possible individualized considerations.

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