Rorschach inkblot test and psychopathology among patients suffering from schizophrenia: A correlational study

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ABSTRACT

Background: Rorschach test has been considered a well-known and most widely used projective test for the assessment of personality and diagnostic evaluation in various psychiatric disorders. Schizophrenia is considered to be the major psychiatric illness characterized by gross distortion of reality, the disorganization and fragmentation of perception, thought, emotion, and withdrawal from social interaction. Rorschach provides both specific and general knowledge about the different areas of personality functioning, such as coping style, emotions, managing stress, mediation, ideation, self-perception, and interpersonal relationships along with correlating with the psychopathology of the schizophrenia patients. **Aim:** The aim of the present study is to assess the relationship between Rorschach response pattern different symptoms in schizophrenia patients. **Methodology:** After having informed consent, 100 patients of schizophrenia group were included as per the International Classification of Diseases 10th Revision Diagnostic Criteria for Research (ICD-10 DCR) criteria. Information about sociodemographic data and clinical details was collected using the sociodemographic and clinical data sheet from the drawn sample. For the assessment of symptoms of schizophrenia patients, Scale for the Assessment of Positive Symptom and Scale for the Assessment of Negative Symptom have been used. After that Rorschach test was administered individually to all the participants to assess the personality structure of each schizophrenia patients. **Results:** The results showed that there is a significant positive and negative correlation among positive, negative schizophrenia symptoms, and different Rorschach variables. **Conclusion:** Schizophrenia patients having positive and negative symptoms would be giving Rorschach variables indicative of moderate level of cognitive distortions, poorly controlled and disorganized affect, less conventional form of responses, poor perception and loss with reality, poor interpersonal relationships, presence of anxiety, and aggression.

Keywords: Psychopathology, Rorschach test, schizophrenia

Rorschach test is a personality assessment instrument having unstructured stimuli, both objective and subjective features and constituting both a perceptual-cognitive task and a stimulus to fantasy and it functions both as a measure of perception and as a measure of association. Rorschach pioneers who regarded the instrument primarily as a measure of perception tended to regard it mainly as a way of identifying states and traits, that is, structural elements of personality. Hence, in common with other complex and multifaceted personality assessment instruments, the Rorschach test serves not just as a test but as a method of generating data that identifies many different aspects of personality functioning.

Schizophrenia has been considered to be a major psychiatric illness characterized by disturbances in thought and speech disorders which include distorted

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thinking (thinking governed by private and illogical rules), loosening of associations (pattern of spontaneous speech in which the things said in juxtaposition lack a meaningful relationship), thought blocking (sudden interruption of stream of speech before the thought is completed), neologisms (newly formed words whose derivation cannot be understood), poverty of speech (decreased production in speech), perception which includes hallucinations (perceptions without stimuli) mostly third person auditory hallucinations and visual hallucinations, affect which include apathy, emotional blunting, emotional shallowness, anhedonia (incapability of experiencing pleasure), inappropriate emotional responses (emotional response inappropriate to thought), motor behavior which includes decrease psychomotor activity (decreased spontaneity, stupor, and inertia) or increase in activity (aggression, excitement, restlessness, and agitation), mannerisms, grimacing, stereotypies (repetitive strange behavior), and decreased self-care. The prominent negative symptoms of schizophrenia include affective flattening or blunting, attentional impairment, avolition-apathy (lack of initiative), anhedonia, asociality (social withdrawal), and alogia (lack of speech output).

Although the Rorschach test was not developed as an intelligence test, it is purported by numerous psychologists to show intellectual levels. Rorschach[1] claimed that the test is an accurate gauge of intelligence. Klopfer *et al.*[2] state that "It is a customary part of Rorschach analysis to estimate the levels of intellectual capacity and efficiency of the subject. This is not considered a substitute for a test of general intelligence although for some purposes such an estimate might be all that is required, thus making an intelligence test unnecessary." Beck[3] concluded that the test offers possibilities of an excellent instrument for the diagnosis of personality in both the intellectual and affective functioning. These are only a few of the many claims made by psychologists concerning the validity of the Rorschach test as an instrument for measuring intelligence. There are many signs and constellations of signs which have been derived from the test and which are used as indices of intelligence. The ones most widely used are: W, M, F+%, A%, 0%, variety of content, and succession of responses.

There has been much research and discussion on the personality characteristics of patients with schizophrenia. Such patients have been found to have problems in different areas of personality functioning. The Rorschach test provides both specific and general knowledge about different areas of personality functioning, such as coping style, emotions, managing stress, mediation, ideation, self-perception, and interpersonal relationships. Problems

in these areas mostly equate directly with psychopathology, but they may relate to difficulties and maladjustment.[4-6] Much of the disordered thinking in schizophrenia is related to conflicts surrounding the expression or internalization of affect.[7-9] Forty percent of first-episode patients have been found to show affect-modulating problems, becoming overly intense in their emotional expressions and showing emotional impulsiveness.[8] About half of psychotic patients with first-episode psychosis have been found to avoid emotional stimuli[8] and one third to experience emotional distress.[7] Patients suffering from first-episode psychosis have been found to show impoverished or unrewarding social relationships.[8,10] They also show ineffective coping and lack of coping skills.[8] They tend to show less reality-based perceptions of others,[8] leading to difficulties in interpersonal functioning.[9] Nearly half of patients with first-episode psychosis have been found to show negative sense of self-worth.[7,11] According to Exner,[8] one-third of the patients with first-episode psychosis also show an excess of focusing on the self at the expense of concern with the social environment. In his study,[12] the researcher evaluated the relationship between the Perceptual Thinking Index Criteria and the Positive and Negative Syndrome Scale (PANSS) scores in schizophrenia patients. The PTI positively correlated with the PANSS total score. The PTI1 and PTI2 criteria significantly correlated with the PANSS negative score, the PTI4 and PTI5 with the positive. The Rorschach variable X-% significantly correlated with the negative symptoms; the WSum6 with thought disorders; and the M-with delusions. PTI score, X-% and WSum6 predicted impaired judgment and insight.

Personality testing is a field that covers a vast range of tools and tests. Some of these use many questions to measure dozens of variables; others simply identify a person as belonging to a certain category. All these approaches offer the same underlying solution; they identify features of a personality in a way that's intended to be useful in understanding and predicting their behavior. It is basically a means of measuring an individual's personality in a particular situation. It is not a measure of intelligence or ability but of behavior. It provides a snapshot view of the preferred behavior that comes subconsciously to most people. Rorschach test is used for psychological evaluation and to provide data about cognition and personality variables such as motivations, response tendencies, cognitive operations, affectivity, and personal/interpersonal perceptions of an individual. Numerous studies are conducted using Rorschach test on clinical populations including schizophrenia patients as well as on normal population. However, studies relating to establishing correlation between personality variables and positive symptoms, negative symptoms are rare and negligible. Thus, present research is an attempt to study

the relationship among the personality variables with the aforesaid psychopathology of schizophrenia patients.

METHODOLOGY

Sample
The present study was conducted at Ranchi Institute of Neuro-Psychiatry and Allied Sciences (RINPAS), Kanke, Ranchi, Jharkhand, India. Sample has been collected from RINPAS, Kanke, Ranchi, Jharkhand. The design used for this present study is single group design, and it is a single-center-based correlational study. One hundred schizophrenia patients were chosen from different wards and outpatient department of RINPAS, Kanke, Ranchi, on the basis of inclusion criteria. Patients were selected through the purposive sampling technique. The inclusion criteria for schizophrenia patients is patients with a diagnosis of schizophrenia according to ICD-10 DCR, aged between 25 and 45 years, duration of illness for minimum 1 year, with the education of minimum 8th class, who are able to understand Hindi and cooperative, both males and females were included for the study. Patients with a history suggestive of substance abuse, head injury, mental retardation, other comorbid psychiatric disorders, with significant physical or neurological problems, having hearing or vision impairment were excluded from the study.

Tools used
Sociodemographic and clinical data sheet
A self-prepared semi-structured data sheet was used for the patient group. It was divided into sociodemographic and clinical data for the patient group. The sociodemographic variables were name, age, sex, marital status, education, occupation, etc. The variables in the clinical data were duration of illness, diagnosis, and duration of treatment.

Rorschach test
Rorschach test was developed by Hermann Rorschach in 1921[1]. This test was reportedly designed to reflect unconscious parts of the personality that "project" onto the stimuli. It consists of 10 cards with bilaterally symmetrical inkblots on each of them. Each of the cards is 18 cm × 24 cm in size. Five cards are of achromatic nature, two are of black and red ink, three are chromatic on a white background. Interscorer reliabilities of 0.85 or higher. Early meta-analyses indicated that validity ranged from 0.40 to 0.50.

Scale for assessment of positive symptoms
The Scale for Assessment of Positive Symptoms (SAPSs) is a 34-item scale, developed[13] for the assessment of positive symptoms in individuals with schizophrenia. The SAPS is administered through a general interview, plus a series of standardized questions. The SAPS evaluates positive symptoms in great detail (e.g., hallucinations, delusions, bizarre behavior, and formal thought disorder). Items are scored on a 0–5 (0 = no abnormality and 5 = severe) scale. It is utilized to assess the baseline clinical status and change over time in individuals with schizophrenia. This test will be used in this present study to assess positive symptoms in schizophrenia patients. There is less reliability data for SAPS. Interrater reliability for the SAPS is generally good. Weighted kappas for most items have been reported to range from 0.7 to 1.00.

Scale for assessment of negative symptoms
The Scale for Assessment of Negative Symptoms (SANS) is a 25-item scale, developed[14] for the assessment of negative symptoms in individuals with schizophrenia. The SANS items are rated on the basis of a clinical interview, direct observation, and any additional sources of information including clinical staff or family member reports. The SANS evaluates five domains of negative symptom complex including alogia, affective flattening, avolition-apathy, anhedonia-asociality, and attention. The scale is rated on a 0–5 spectrum (0 = no abnormality and 5 = severe). Strengths of the SANS include its relative ease of administration and well-researched reliability. It is utilized to assess baseline clinical status and change over time in individuals with schizophrenia. The SANS has been demonstrated to have good internal consistency, with Cronbach's alpha values from 0.67 to 0.90 for the five subscales. This test will be used to assess the negative symptoms in schizophrenia patients.

Procedure
After having informed consent, patients of schizophrenia group were selected according to the inclusion and exclusion criteria. Information about sociodemographic data and clinical details were collected using the sociodemographic and clinical data sheet from the drawn sample. Then, scales were administered to assess the positive and negative symptoms of the schizophrenia patients. After that Rorschach test was administered to assess the personality structure of each schizophrenia patient. Rorschach protocols were scored using Exner Comprehensive System. The statistical analysis was done with the help of IBM Corp. Released 2009. IBM SPSS Statistics for Windows, Version 17.0. (Armonk, NY: IBM Corp.) for windows. For the analysis of sociodemographic variables (continuous variables), *t*-test was applied, and for other categorical variables of sociodemographic variables, the Chi-square test was applied. For clinical details and symptom assessment of the patients with schizophrenia, mean and standard deviation (SD) was applied. For the assessment of correlation, Pearson product moment correlation was applied.

RESULTS

On assessing the sociodemographic details, it has been found that in the group of schizophrenia patients' age ranges from 27 to 45 years with a mean of 34.92 and SD of 5.47. Regarding the other sociodemographic details, it can be said that most of the schizophrenia patients were males (65%), having primary level of education (57%), from rural background (65%), married (96%), Hindu (62%), and unemployed (56%). In terms of the clinical details of the schizophrenia patients, it has been found that the age of onset of the illness ranges from 24 years to 45 years where majority of the patient falls in 36–45 years of age range (56.00%). The remaining were in the age range of 24–35 years (44.00%). The duration of illness ranges from 1.5 years to 7 years where 53.00% of the patient falls in 1–4 years of duration of illness followed by 47.00% of patients who falls in 5–7 years of duration of illness [Table 1a and b].

Table 2 shows the correlation between SAPS, SANS, and location (L) of responses of schizophrenia patients. A significant positive correlation has been found Space (S) responses and SAPS delusions ($r = 0.16$, $P < 0.01$). A significant negative correlation has been found between whole responses (W) and SAPS positive formal thought disorder ($r = -0.15$, $P < 0.01$). It can also be seen that there is a significant positive correlation between minor detail responses (Dd) and SANS affective flattening ($r = 0.14$, $P < 0.05$) and SANS avolition-apathy ($r = 0.12$, $P < 0.05$).

It is observed from Table 3 about the correlation between SAPS, SANS, and developmental quality (DQ) of Rorschach responses of schizophrenia patients. It can be seen that there is a significant negative correlation between synthesized responses and SAPS delusion ($r = -0.02$, $P < 0.01$), and SAPS Bizarre behavior ($r = -0.05$, $P < 0.01$). There is a significant negative correlation between DQ Ordinary (DQo) Responses and SANS Alogia ($r = 0.14$, $P < 0.05$), and SANS attention ($r = 0.11$, $P < 0.05$).

Table 4 depicts the correlation between SAPS, SANS, and determinants of Rorschach responses of schizophrenia patients. It can be seen that there is a significant positive correlation between animal movement responses (FM) and SANS Alogia ($r = 0.11$, $P < 0.05$). A significant positive correlation has been found between pure color (C) responses and SAPS hallucinations ($r = 0.14$, $P < 0.05$), SAPS delusion ($r = 0.16$, $P < 0.01$), SAPS Bizarre behavior ($r = 0.22$, $P < 0.01$), and SANS alogia ($r = 0.11$, $P < 0.05$). A significant negative correlation has also been found between pure color responses (C)

and SANS affective flattening ($r = -0.22$, $P < 0.01$), SANS avolition-apathy ($r = -0.16$, $P < 0.01$), SANS anhedonia-asociality ($r = -0.14$, $P < 0.05$), and SANS attention ($r = -0.16$, $P < 0.01$). A significant positive correlation is found between color-form responses and SAPS Bizarre Behavior ($r = 0.11$, $P < 0.05$). A significant negative correlation has been found between form-color responses (FC) and SAPS Bizarre Behavior ($r = -0.14$, $P < 0.01$) and positive correlation with SANS Affective Flattening ($r = 0.11$, $P < 0.05$). A significant positive correlation has been found between form-texture responses (FT) and SAPS positive formal thought disorder ($r = 0.15$, $P < 0.01$), and SANS affective flattening ($r = 0.15$, $P < 0.01$). A significant positive correlation is found between Blend responses and SAPS positive formal thought disorder ($r = 0.23$, $P < 0.01$).

Table 1a: Sociodemographic details of patients with schizophrenia

Variables	Participants
	Schizophrenia patients (*n*=100), *n* (%)
Age (years), mean (SD)	34.92 (5.47)
Sex	
Male	65 (65.00)
Female	35 (35.00)
Education	
Primary	57 (57.00)
Secondary	40 (40.00)
Graduate	3 (3.00)
Occupation	
Employed	24 (24.00)
Unemployed	56 (56.00)
Homemaker	20 (20.00)
Marital status	
Married	96 (96.00)
Unmarried	4 (4.00)
Domicile	
Urban	11 (11.00)
Semi-urban	24 (24.00)
Rural	65 (65.00)
Religion	
Hindu	62 (62.00)
Muslim	7 (7.00)
Christian, Sarana etc.	31 (31.00)

SD - Standard deviation

Table 1b: Clinical characteristics of the schizophrenia patients

Variables	Schizophrenia patients (*n*=100), *n* (%)
Age of onset (years)	
24-35	44 (44.00)
36-45	56 (56.00)
Duration of illness (years)	
1-4	53 (53.00)
5-7	47 (47.00)

Table 5 suggests the correlation between SAPS, SANS, and form quality (FQ) of Rorschach responses of schizophrenia patients. It can be seen that there is a significant positive correlation among FQ minus (−) responses and SAPS hallucinations ($r = 0.05$, $P < 0.01$), SAPS delusions ($r = 0.05$, $P < 0.01$), and SAPS Bizarre behavior ($r = 0.34$, $P < 0.01$).

A significant negative correlation has also been found between FQ ordinary elaborated (+) responses and SAPS hallucinations ($r = −0.36$, $P < 0.01$), SAPS delusion ($r = −0.01$, $P < 0.01$), and SAPS Bizarre behavior ($r = −0.03$, $P < 0.01$). A significant negative correlation has also been found between FQ ordinary (o)

Table 2: Correlation between location variable of Rorschach test and positive and negative symptoms in the group of schizophrenia patients

Rorschach variables	Psychopathology			
	SAPS delusions	SAPS positive formal thought disorder	SANS affective flattening	SANS avolition-apathy
Whole responses (W)	−0.04	−0.15**	0.00	0.05
Common detail responses (D)	−0.06	−0.04	0.01	0.02
Minor detail responses (Dd)	−0.06	−0.06	0.14*	0.12*
Space responses (S)	0.16**	0.01	−0.04	−0.02

*Correlation is significant at the 0.05 level (two-tailed), **Correlation is significant at the 0.01 level (two-tailed). SAPS - Scale for the Assessment of Positive Symptoms; SANS - Scale for the Assessment of Negative Symptoms

Table 3: Correlation between developmental quality variable of Rorschach test and positive and negative symptoms in the group of schizophrenia patients

Rorschach variables	Psychopathology			
	SAPS delusions	SAPS bizarre behaviour	SANS alogia	SANS attention
DQ synthesized response (+)	−0.02**	−0.05**	−0.01	0.00
DQ ordinary response (o)	−0.07	−0.07	−0.14*	−0.11*
DQ synthesized response (v/+)	0.00	0.00	0.03	0.00
DQ vague (V)	−0.03	−0.02	0.01	0.05

*Correlation is significant at the 0.05 level (two-tailed), **Correlation is significant at the 0.01 level (two-tailed). SAPS - Scale for the Assessment of Positive Symptoms; SANS - Scale for the Assessment of Negative Symptoms; DQ - Developmental quality

Table 4: Correlation between determinant variables of Rorschach test and positive and negative symptoms in the group of schizophrenia patients

Rorschach variables	Psychopathology								
	SAPS hallucinations	SAPS delusions	SAPS bizarre behaviour	SAPS positive formal thought disorder	SANS affective flattening	SANS Alogia	SANS avolition-apathy	SANS anhedonia-asociality	SANS attention
Animal movement (FM)	0.10	−0.03	−0.07	0.02	0.07	0.11*	0.10	0.05	0.08
Pure color response (C)	0.14*	0.16**	0.22**	−0.11	−0.22**	0.11*	−0.16**	−0.14*	−0.16**
Color-form response (CF)	−0.07	−0.10	0.11*	−0.01	0.07	0.09	0.06	0.06	0.07
Form-color response (FC)	−0.07	−0.10	−0.14**	−0.02	0.11*	0.07	0.07	0.07	0.10
Form-texture response (FT)	0.02	0.04	0.06	0.15**	0.15**	−0.02	0.04	0.00	0.00
Blend response	0.07	−0.03	−0.06	0.23**	0.02	0.06	0.04	0.10	0.02

*Correlation is significant at the 0.05 level (two-tailed), **Correlation is significant at the 0.01 level (two-tailed). SAPS - Scale for the Assessment of Positive Symptoms; SANS - Scale for Assessment of Negative Symptoms

Table 5: Correlation between form quality variables of Rorschach test and positive and negative symptoms in the group of schizophrenia patients

Rorschach variables	Psychopathology			
	SAPS hallucinations	SAPS delusions	SAPS bizarre behaviour	SANS anhedonia-asociality
FQ ordinary elaborated (+)	−0.36**	−0.01**	−0.03**	0.00
FQ ordinary (o)	−0.04	−0.05*	−0.10**	0.04
FQ unusual (u)	−0.01	−0.05	−0.04	0.05
FQ minus (−)	0.03**	0.05**	0.05**	0.10*

*Correlation is significant at the 0.05 level (two-tailed), **Correlation is significant at the 0.01 level (two-tailed). SAPS - Scale for the Assessment of Positive Symptoms; SANS - Scale for the Assessment of Negative Symptoms; FQ - Form quality

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responses and SAPS delusions ($r = -0.05$, $P < 0.05$), and SAPS Bizarre behaviour ($r = -0.10$, $P < 0.01$). A significant positive correlation has also been found among FQ minus (−) responses and SANS Anhedonia-Asociality ($r = 0.10$, $P < 0.05$).

Table 6 reflects the correlation between SAPS, SANS, and contents of Rorschach responses of schizophrenia patients. There is also a significant negative correlation between whole human responses (H) and SAPS hallucinations ($r = -0.14$, $P < 0.05$). It can be seen that there is a significant positive correlation between animal details (Ad) and SAPS delusions ($r = 0.12$, $P < 0.05$), and SAPS Bizarre behavior ($r = 0.13$, $P < 0.05$). A significant positive correlation has also been found between fire (Fi) responses and SAPS positive formal thought disorder ($r = 0.18$, $P < 0.01$). A significant positive correlation has also been found between food (Fd) responses and SAPS Bizarre behavior ($r = 0.12$, $P < 0.05$) between geography (Ge) responses and SAPS delusions ($r = 0.14$, $P < 0.05$), and SAPS Bizarre behavior ($r = 0.14$, $P < 0.05$). A significant positive correlation has been found between animal details (Ad) and SANS affective flattening ($r = 0.12$, $P < 0.05$). A significant positive correlation has been found between the geography (Ge) responses and SANS affective flattening ($r = 0.14$, $P < 0.05$), SANS avolition-apathy ($r = 0.14$, $P < 0.01$), and SANS attention ($r = 0.12$, $P < 0.05$). A significant negative correlation has been found between landscape (Ls) responses and SANS avolition-apathy ($r = -0.11$, $P < 0.05$).

Table 7 shows the correlation between SAPS, SANS, and special scores of responses of schizophrenia patients. A significant positive correlation has been found between deviant verbalization level 1 (DV1) responses and SAPS Positive Formal Thought Disorder ($r = 0.14$, $P < 0.05$). A significant positive correlation has been found between aggressive movement (AG) responses and SAPS delusions ($r = 0.11$, $P < 0.05$), and SAPS Bizarre behavior ($r = 0.12$, $P < 0.05$). A significant positive correlation has also been found between Incongruous Combination Level 2 (INCOM2) responses and SAPS Hallucinations ($r = 0.11$, $P < 0.05$). A significant positive correlation has been found between good human responses (GHR) and SAPS positive formal thought disorder ($r = -0.14$, $P < 0.05$). It has been found that there is a significant positive correlation between deviant responses Level 1 (DR1) and SANS avolition-apathy ($r = 0.16$, $P < 0.01$). A significant positive correlation has also been between INCOM2 and SANS Avolition-Apathy ($r = 0.11$, $P < 0.05$) and SANS Anhedonia-Asociality ($r = 0.13$, $P < 0.05$).

DISCUSSION

Personality assessment is a means of measuring and evaluating an individual's personality attributes, values, and life skills in a particular situation. The Rorschach method is one of the oldest personality assessment and one of the most widely used projective technique. It also makes possible to know if something is not right in a given personality and helps in understanding what and why factor which makes the Rorschach test a unique personality assessment instrument (Fernandes, 1994b). Both general and specific knowledge about different areas of personality functioning such as coping style, emotions, managing stress, mediation, ideation, self-perception, and interpersonal relationships can be obtained from the Rorschach test. These problems may relate to psychopathology and maladjustment (Exner, 1992).

Keeping in view of the above facts, the need for personality assessment on patients with schizophrenia using Rorschach test and lack of literature on correlation between personality profile and symptoms of patients with schizophrenia in India, the present study was conducted to assess the personality structure of the patients suffering from schizophrenia and also to find out the correlation between personality profile and positive symptoms and negative symptoms of the patients suffering from schizophrenia.

In terms of sociodemographic details, the low percentage of female schizophrenia patients might be a reflection of negligence of female mental health as female patients are brought less often for treatment of psychiatric conditions due to traditional views. Majority of the patients having primary level of education reflects the lower education and literacy rates in the rural parts. Unemployment found in the majority of schizophrenia patients was due to psychosocial impairment because of psychiatric illness as they were unable to cope up with their occupational front [Table 1a and b].

The other findings have been discussed in the following sections:

Location of responses and positive and negative symptoms
In the present study, it has been found that whole responses (W) were correlated negatively with positive formal thought disorder. The finding of the present study demonstrates traditional conceptualization that schizophrenia patients having severe form of thought disorder would be having inability to organize and integrate the available resources of their environment. Space responses (S) are found to be positively correlated with

Table 6: Correlation between content variables of Rorschach test and positive and negative symptoms in the group of schizophrenia patients

Rorschach variables	Psychopathology							
	SAPS hallucinations	SAPS delusions	SAPS bizarre behaviour	SAPS positive formal thought disorder	SANS affective flattening	SANS alogia	SANS avolition-apathy	SANS attention
Whole human	−0.14*	0.00	−0.03	−0.12*	−0.02	0.02	0.04	0.02
Ad	−0.08	0.14*	0.13*	−0.04	0.12*	0.11	0.09	0.12
Fi	0.00	0.00	0.00	0.18**	0.00	-0.04	0.07	0.00
Fd	0.11*	--0.07	0.12*	0.00	0.11	0.02	0.06	0.08
Ge	−0.08	0.14*	0.14*	0.00	0.14*	0.07	0.14**	0.12*
Ls	−0.07	0.03	0.07	−0.02	−0.04	−0.10	−0.11*	−0.07

*Correlation is significant at the 0.05 level (two-tailed), **Correlation is significant at the 0.01 level (two-tailed). SAPS - Scale for the Assessment of Positive Symptoms; SANS - Scale for the Assessment of Negative Symptoms; Ad - Animal detail; FD - Food; GE - Geography; LS - Landscape; Fi - Fire

Table 7: Correlation between special scores variables of Rorschach test and positive, negative symptoms in the group of schizophrenia patients

Rorschach variables	Psychopathology						
	SAPS hallucinations	SAPS delusions	SAPS bizarre behaviour	SAPS positive formal thought disorder	SANS avolition-apathy	SANS anhedonia-asociality	SANS attention
DV1	−0.04	0.07	0.05	0.14*	−0.03	−0.01	−0.03
DR1	−0.04	−0.08	−0.09	0.09	0.16**	0.08	0.04
INCOM2	0.11*	−0.09	−0.08	0.04	0.11*	0.13*	0.13
Aggressive movement (AG)	0.08	0.11*	0.12*	0.04	0.02	0.05	−0.02
GHR	−0.03	0.06	0.03	−0.14*	0.01	-0.04	−0.03

*Correlation is significant at the 0.05 level (two-tailed), **Correlation is significant at the 0.01 level (two-tailed). SAPS - Scale for Assessment of Positive Symptoms; SANS - Scale for Assessment of Negative Symptoms; DV - Deviant verbalization; DR - Deviant responses; INCOM2 - Incongruous combination level 2; GHR - Good human responses

delusions which demonstrates that the individual having high scores of delusion would be indicating production of space responses which has been marked as one of the indicators of paranoid schizophrenia symptomatology. It has been found that the schizophrenia patients having symptom of affective flattening and avolition-apathy are positively correlated with minor detail responses (Dd) indicating that more the symptom increases, high is the number of Dd responses suggesting that narrowing down emotional expressiveness also narrows down of their perceptions of the environment as per the traditional views in terms of Rorschach variables and schizophrenia demonstrating traditional conceptualization [Table 2].

Developmental quality and positive and negative symptoms

The present study suggests that DQ Synthesized Responses (+) is negatively correlated with delusions and bizarre behavior indicating that increase in the symptom of delusion and bizarre behavior may lead to decrease in DQ + responses reflecting that delusions which is described as false, unshakeable belief, and often leads to a form of cognitive activity which is less concrete and more immature, thus producing less DQ + responses. The

present study also shows that the schizophrenia patients having symptom of alogia and attention are negatively correlated with DQo responses indicating that as the symptom increases, the number of responses decreases suggesting that alogia (poverty of speech) and attentional problems which are common symptoms in schizophrenia patients along with a conservative cognitive functioning and unable to use more cognitive processing led to the production of less number of DQo responses as supported by traditional views in terms of Rorschach variables and schizophrenia [Table 3].

Determinants and positive and negative symptoms

Animal movement responses (FM) are positively correlated with the symptom of Alogia which indicates that increase in the symptom will increase the number of animal movement responses reflecting that in case of poverty of speech in schizophrenia patients, the uncontrolled impulses provoked by situations beyond the patient's control usually is suggested to the production of more number of animal responses. It has been found that color responses (C) are positively correlated with the symptom of alogia which indicates that more the symptom of alogia more is the number of color responses. Since in

the condition of alogia, there is poverty of speech, hence emotional responsiveness is also found to be expressed in the form of giving more number of color responses. The present study also shows that color responses are negatively correlated with affective flattening, avolition-apathy, anhedonia-asociality, and attention indicating that more the symptoms the number of color responses decreased. It is due to the fact that symptoms of emotional constriction, unchanged facial expression, affective nonresponsiveness, poor grooming of personal hygiene, unable to maintain any work, reduced interest in recreational activities, inability to form intimate and close relationships with family members, friends and peers, unable to focus on the stimulus object found in schizophrenia patients leads to reduced production of color responses. FC responses are negatively correlated with bizarre behavior indicating that increase in symptom of bizarre behavior may lead to decrease of FC responses suggesting that the schizophrenia patients delay their responses were thinking plays a more important role than affect. In this study, FC responses are also positively correlated with affective flattening indicating that more the affective flattening symptom, the number of FC responses increase indicating that since affective flattening reflects constriction of emotions, unchanged facial expression, affective non responsiveness, the emotion shown will be more controlled, constricted, delayed leading to production of more FC responses as supported by traditional views in terms of Rorschach variables and schizophrenia. FT responses are positively correlated with positive formal thought disorder and affective flattening indicating that more the symptom, less is the number of FT responses reflecting that emotional unresponsiveness, affective blunting and loss of consistency, continuity and organization of thought which leads to an internal painful experience for the schizophrenia patients making them to produce less number of FT responses.[2,15] Positive formal thought disorder is a type of thought disturbance of form where the consistency, continuity, and organization of thought is lost leading to difficulty in cognitive analysis and synthesis producing more blend responses [Table 4].

Form quality and positive and negative symptoms

FQ ordinary elaborated (+) responses are found to be negatively correlated with the symptoms of hallucinations, delusions, and bizarre behavior which indicate that the increase of symptoms may decrease the number of FQ + responses. The presence of hallucinations and delusions often leads to aggressive, abusive behavior, and touch with reality is completely lost, leading to responses which show not elaborated forms and loss of touch with reality. FQ ordinary (o) responses are found to be negatively correlated with the symptoms of delusions and bizarre behavior which indicates that the increase of symptoms may decrease the number of FQ

ordinary responses reflecting that thought disturbances lead to loss of reality and causes aggressive behavior in schizophrenia patients causing production of less number of FQ ordinary (o) responses. FQ minus (−) responses are found to be positively correlated with the symptoms of hallucinations, delusions, bizarre behavior, and anhedonia-asociality which indicates that the increase of symptoms may increase the number of FQ minus responses suggesting that the FQ minus (−) responses involve the strange properties of the stimulus leading to serious cognitive disturbances where the schizophrenia patients does not have touch with reality reflecting that symptoms of hallucinations, delusions, bizarre behavior, and anhedonia-asociality lead to such strange forms of responses [Table 5].

Content and positive and negative symptoms

In this study, human content (H) is found to be negatively correlated with hallucinations which indicates that when the symptoms in the patient increases, the number of human content decreases reflecting that perceptual disturbances often result in the aggressive and assaultive behavior of the schizophrenia patients toward his/her family members which results in poor interpersonal relationships. In this study, animal details (Ad) responses are positively correlated with delusion, bizarre behavior, affective flattening suggesting that the schizophrenia patients mostly lose their reality contact due to thought disturbances leading to abusive, assaultive behavior, at times showing affective nonresponsiveness and emotional delay thus producing high number of animal detail responses.[16-20] In this study, fire (Fi) responses are found to be positively correlated with positive formal thought disorder indicating that more the presence of symptom, more is the presence of fire responses reflecting that this disorder of thought form where integration of reality is lost often leads to aggressive behavior in the patients with schizophrenia causing them to produce more number of fire responses showing the presence of anxiety and aggression in them. In schizophrenia patients, perceptual disturbances are common which require extensive help and guidance from other people, showing dependency which leads to production of high number of food responses (Fd) in schizophrenia patients.[21] The presence of thought disturbances in schizophrenia patients often leads to bizarre behavior such as aggression, abusive, and assaultive behavior accompanied by sometimes with constriction of emotions, emotional delay, unable to take care of personal hygiene, paying attention more superficially to surroundings which can be attributed to cognitive inadequacy and is reflected in the production of high number of geography responses (Ge). It is found from the study that the symptom of avolition-apathy is positively correlated with landscape responses indicating that more

the symptom, high is the number of landscape responses reflecting that in schizophrenia patients their power of observation is decreased often and becomes insensitive to their environment leading to more number of landscape responses (Ls). The findings of this section demonstrate traditional conceptualization about schizophrenia patients and the responses given [Table 6].

Special scores and positive and negative symptoms

DV1 responses are found to be positively correlated with the symptoms of positive formal thought disorder which indicates that the increase of symptoms may increase the number of responses showing more mild level of cognitive distortions. It is found from the study that the symptom of avolition-apathy is positively correlated with DR1 responses indicating that more the symptom, high is the number of DR1 responses reflecting that schizophrenia patients are often found to be seated alone for hours engrossed in their own world and becomes insensitive to their environment, losing contact with their reality leading to producing more responses of cognitive distortions of mild type. Incongruous combinations level 2 (INCOM2) responses are found to be positively correlated with the symptoms of hallucinations, avolition-apathy, and anhedonia-asociality which indicates that the increase of symptoms may increase the number of INCOM2 responses reflecting that perceptual disturbances are suggestive of losing contact with reality accompanied by becoming insensitive and perceiving their environment in a strange manner leading to difficulty in reality testing in schizophrenia patients thus producing more responses suggestive of moderate level of cognitive disturbances. Aggressive (AG) responses are found to be positively correlated with the symptoms of delusions and bizarre behavior which indicates that the increase of symptoms may increase the number of aggressive responses suggestive of the fact that disturbances of thought often leads to aggressive behavior which in turn leads to more responses of aggression type. In this study, schizophrenia patients having symptoms of positive formal thought disorder were found to produce less number of GHR reflecting that this type of thought disorder of form leads to other disturbances in speech, affect and interpersonal areas leading to production of low number of good human responses.[4] These findings are supported by the traditional views in terms of Rorschach variables and schizophrenia [Table 7].

CONCLUSION

The overall results of the study confirm significant positive and negative correlations have been found when Rorschach indices were correlated with positive symptoms and negative symptoms in schizophrenia patients. The limitations and future directions of the study are as follows:

the study was conducted on a relatively small sample of schizophrenia patients. The study can be conducted by increasing the sample size of schizophrenia patients in terms of a normative study. The present study can be conducted in the form of a gender-based difference study between males and female schizophrenia patients. The study can be conducted on other psychiatric disorders also. Many countries have a number of studies and researches keeping in mind about the fact that different people belong to different cultures and have different personality styles. However, a country like India having modest population has a dearth of studies, normative too and seeks help in the form of using norms based on the Western population. One of the many advantages of Rorschach is its extensive use for assessing personality. It has been inspiring many lovers of research for ages. This application is universal and helped a large number of people who want to pursue further research in light of previous results given by others. This present study will benefit the existing knowledge of projective psychology in an immense way. Previously, attempt has been made to underline the important difference between Indian and Western cultures and their possible consequences on Rorschach profiles, and it is clear that there is a reasonable amount of overlap of culture and personality characteristics between the Indian and Western cultures. Indians gives responses at times, which are indicative of their unique personality in a different way which is not possible to understand through Western norms and that have a significant impact on personality. Overall, these results will help the Rorschach researcher to understand the response pattern and overall personality type of schizophrenia patients in India. It will also help in understanding a person as an individual who is required for selecting treatment strategies or targets or to make some important decisions concerning the individual.

Conflicts of interest
There are no conflicts of interest.

REFERENCES

1. Rorschach H. Psychodiagnostik: Methodik und Ergebnisse eines wahrnehmungsdiagnostischen Experiments (Dentenlassen von Zufallsformen). Bern: Ernst Bircher; 1921.
2. Klopfer B, Ainsworth MD, Klopfer WG, Holt RR. Developments in the Rorschach Technique: Technique and Theory. Vol. I. Yonkers-on-Hudson, NY: World Books Co.; 1954.
3. Beck SJ. Personality diagnosis by means of Rorschach test. Am J Orthopsychiatry 1930;1:81-8.
4. Exner JE. The Rorschach: A Comprehensive System. Basic Foundations. 4th ed., Vol. 1. New York: Wiley; 2003.
5. Weiner IB, Exner JE Jr. Rorschach changes in long-term and short-term psychotherapy. J Pers Assess 1991;56:453-65.

6. Exner JE Jr, Andronikof-Sanglade A. Rorschach changes following brief and short-term therapy. J Pers Assess 1992;59:59-71.
7. Exner JE. The Rorschach: A Comprehensive System. Basic Foundations. 2nd ed., Vol. 1. New York: Wiley; 1986.
8. Exner JE. The Rorschach: A Comprehensive System. Interpretation. 2nd ed., Vol. 2. New York: Wiley; 1991.
9. Mason BJ, Cohen JB, Exner JE Jr. Schizophrenic, depressive, and nonpatient personality organizations described by Rorschach factor structures. J Pers Assess 1985;49:295-305.
10. Ilonen T, Tiaminen T, Karlsson H, Lauerma H, Leinonen KM, Wallenius E, et al. Diagnostic efficacy of the Rorschach schizophrenia and depression indices in identifying first-episode schizophrenia and severe depression. Psychiatry Res 1999;87;183-92.
11. Archer RP, Gordon RA. MMPI and Rorschach indices of schizophrenic and depressive diagnoses among adolescent inpatients. J Pers Assess 1988;52:276-87.
12. Biagiarelli M, Roma P, Comparelli A, Andraos MP, Di Pomponio I, Corigliano V, et al. Relationship between the rorschach perceptual thinking index (PTI) and the positive and negative syndrome scale (PANSS) in psychotic patients: A validity study. Psychiatry Res 2015;225:315-21.
13. Andreasen NC. The Scale for the Assessment of Negative Symptoms (SANS). Iowa City, IA: The University of Iowa; 1983.
14. Andreasen NC. The Scale for the Assessment of Positive Symptoms (SAPS). Iowa City, IA: The University of Iowa; 1984.
15. Beck SJ. Reality, Rorschach and perceptual theory. In: Rabin AI, editor. Projective Techniques in Personality Assessment. New York: Springer; 1968.
16. Draguns JG, Haley EM, Phillips L. Studies of Rorschach content: A review of the research literature. 1. Traditional content categories. J Proj Tech Pers Assess 1967;31:3-32.
17. Klopfer B, Davidson H. The Rorschach Technique: An Introductory Manual. New York: Harcourt, Brace, Jovanovich; 1962.
18. Levitt EE, Truumaa A. The Rorschach Technique with Children and Adolescents: Applications and Norms. New York: Grune & Stratton; 1972.
19. Beck SJ. Rorschach's Test: A Variety of Personality Pictures. Vol. 2. New York: Grune & Stratton; 1945.
20. Beck SJ. The Rorschach Experiment. New York: Grune & Stratton; 1960.
21. Exner JE. The Rorschach: A Comprehensive System. Basic Foundations. 3rd ed., Vol. 1. New York: Wiley; 1993.