Patient Safety & Quality Improvement Journal
http://psj.mums.ac.ir
PSQI

Evaluation The Projection Indices in Multiple Sclerosis Patients with Optic Neuritis and Its Relationship with The Severity of MS Disease

Abolfazl Atalu[1], Mehriar Nadermohammadi[2], Firouz Amani[3]*, Mohammad Vejdani[4]

1. Department of Neurology, School of medicine, Ardabil university of medical science, Ardabil, Iran.
2. Department of Psychology, School of medicine, Ardabil university of medical science, Ardabil, Iran.
3. Department of Community Medicine, School of medicine, Ardabil university of medical science, Ardabil, Iran.
4. School of medicine, Ardabil university of medical science, Ardabil, Iran.

ARTICLEINFO

Article type:
Original Article

Article History:
Received:19 Jan 2026
Accepted: 06 Jun2026

Keywords:
Multiple sclerosis, Optic neuritis, Rorschach, Projection, Indices

ABSTRACT

Background:
The most common type of inflammatory and immune-mediated disease of the central nervous system is Multiple Sclerosis (MS). The Rorschach test is one of the most well-known evaluation tools for the assessment of broad and deep personality characteristics such as organization and personality function is among the unconscious defense mechanisms. Evaluation of projection indices of MS patients with optic neuritis and its relationship with MS disease severity.

methods:
The descriptive analytical study was done to evaluate the projection indices on 50 patients with multiple sclerosis who have optic neuritis using the Rorschach test. After examining the clinical history of the patients, those who had no history of psychiatric disorders and whose optic neuritis improved were selected for the study.

Results:
There was a significant difference between age groups in Zest and ZSUM indices, thus patients with age>50 had obtained higher scores. There was a significant difference between men and women in A and Ge indices, thus men had obtained higher scores.

Conclusions:
Adherence to treatment, quality of life of patients, communication with patients and understanding the risk of treatment are some important clinical issues that are influenced by the personality characteristics of MS patients.

► *Please cite this paper as:*
Atalu A, Nadermohammadi M, Amani F, Vejdani M . Evaluation The Projection Indices in Multiple Sclerosis Patients with Optic Neuritis and Its Relationship with The Severity of MS Disease. Journal of Patient Safety and Quality Improvement. 2026; 14(3): 155-163. Doi: 10.22038/psj.2026.94183.1522

Corresponding Author:
Department of Community Medicine, School of medicine, Ardabil university of medical science, Ardabil, Iran.
E-mail: banan87@yahoo.com

Introduction

Diseases that affect the myelin of the nervous system are classified into two types: demyelination (acquired, inflammatory) and dysmyelination (abnormal formation of myelin, usually with genetic origin). The most common type of inflammatory disease of the central nervous system is multiple sclerosis (MS), which does not have specific clinical manifestations, but some symptoms include sensory symptoms in the organs (31%), vision loss (16%), acute or subacute motor weakness (9%), double nose (7%), walking disorder (5%) and other problems have a diagnostic role (1). Cognitive impairment is an uncommon feature, occurring in less than five percent of patients and usually seen in severely affected individuals, and may be common at the onset of MS. The most common disorders in attention, executive function, abstract perception, short-term memory, word recall and information processing speed. Different stages of the disease may differ in terms of cognitive indicators. For example, there are some evidences that patients with relapsing-remitting MS generally have better cognitive performance than patients with progressive type MS (2). Demyelinating optic neuritis is the most common type of involvement of visual pathways caused by MS, which mostly occurs in women and usually occurs in patients between the ages of 20 and 40. Optic neuritis usually manifests as acute unilateral eye pain, which is aggravated by eye movements, followed by a degree of vision loss that mainly affects central vision (3). The present study was conducted using the Rorschach test to evaluate the projection indices in multiple sclerosis patients who suffered from optic neuritis during the course of the disease. Personality plays an important role in how people manage stressful experiences and when faced with stressful factors, the reaction to stressful factors affects the choice of coping and effective coping. It seems that there is a distinct relationship between personality traits and the choice of coping strategies in MS patients. The progression of the disease creates changed conditions that require self-care management and lifestyle adaptation skills. Considered that personality changes may not only indicate brain damage, but may be an attempt to adapt to neurological disease. Projection test is a type of personality test in which ambiguous scenes, images or words are presented to a person and he is asked to attribute answers or reactions to them. The purpose of these tests is to identify the conflicts and emotions hidden in the unconscious part of the person; It means discovering the parts that are not determined through objective tests and questions and answers. In fact, the unconscious parts of the personality are identified by using the responses that the person unconsciously shows to these things, or in other words by using the responses that the person projects to these ambiguous stimuli. One of the most famous and widely used projection tests is the Rorschach inkblot test, which was created in 1921 by Herman Rorschach. In the Rorschach test, a person is asked to attribute what comes to his mind to 10 cards that contain ambiguous spots. In addition to individual responses based on established criteria; His facial expressions, tone of voice and other reactions are also recorded. The Rorschach test, which is one of the personality tests, is designed to reveal the subject's unconscious thoughts, motives, and tendencies, and is a projective structural test. In 1919, Hermann Rorschach, who was working with schizophrenic patients, found that their responses to inkblot pictures that still resembled the original game were quite different from others. His purpose in creating the Rorschach test was not to create a projective personality test, but he was trying to use this test in the diagnosis of schizophrenia. There were different scoring systems for the Rorschach test. Although the Rorschach test has long been used as a common test in psychology, there are doubts about the value of this test. Research has

shown that about 43-77% of clinical psychologists use the Rorschach test as a tool to measure personality. However, some other studies have shown that the Rorschach inkblot has little diagnostic validity. Some articles have reported the diagnostic use of this test to diagnose schizophrenia, schizoid and bipolar personality disorder; But there is no research on the diagnostic effectiveness of this test for anxiety disorders, depression, conduct disorder, narcissistic personality disorder or antisocial personality disorder and MS. The aim of this study was to evaluate projection indices in MS patients with optic neuritis and its relationship with the severity of MS disease.

Material and Methods

Study design

This descriptive and analytical study was conducted in 1401 on 50 MS patients with optic neuritis registered in the clinical research unit of Alavi Hospital in Ardabil city. Rorschach test was used to evaluate the projection indices in these patients.

Rorschach test

The Rorschach Test is one of the most widely utilized projective tests. It is used to gain insight to an individual's personality. The assessment consists of a series 10 cards, each of which contains an inkblot of an ambiguous object that the examinee is asked to describe. The descriptions provided are said to elicit unconscious projections, which may provide insight to the examinee's unconscious needs and conflicts.

Rorschach's ink blot test is a projection test consisting of 10 symmetrically shaped ink blots in dimensions of 5*9. Five black and white tablets (I,IV,V,VI,VII), two black and white tablets with red parts (II, III), two tablets with a combination of pink, green and orange colors (IX, VIII and the other tablet (X) is a combination of blue, yellow, green and pink colors. The tablets are given to the subject in a certain order and in a certain direction. Then the examiner asks him, "What could this be?" they answers must be written down word by word. Then, in the verification phase, the location and specific characteristics of the spots that provoked the subject's responses are determined. After the responses were presented and recorded and the verification was also done, according to three categories A general score is given: a) "perception location"; the perception location is a space of the ink stain that is used to associate the answer. The place of perception may include the entire stain to the use of a small component. b) "Content"; Content scoring is based on the type and number of specific objects that the subjects perceive in their answers, such as humans, animals, plants, blood art, nature, etc. c) "determiner"; It is called a style or characteristic of the stain that causes the subject to respond; such as shape, color, texture, shading, etc (4-5).

Due to the fact that several systems have been discussed about the Rorschach test, in this research, the basis for the execution and scoring of the subjects' answers was Exner's comprehensive system (6).

The method of Rorschach test implementation in Exner's comprehensive system

The Rorschach test was criticized in the 1950s and 1960s due to the lack of standardized scoring methods and software. Before 1970, there were five scoring methods that differed so much that they represented five different Rorschach test types. In 1973, John Exner created a comprehensive scoring system that contained the most important and powerful factors of scoring systems. The same Exner system is still used today. In using the Rorschach test, its correct implementation is very important. Although the execution method is simple, it requires skill, sensitivity and proper judgment. Factors such as how to sit, instructions, recording answers and checking are very important. When the standard method is followed for each of these factors, valid results will be obtained (7).

50 patients who had no history of psychiatric disorders and whose optic neuritis had improved were randomly selected. Written consent was obtained from the patients before entering the study and performing the Rorschach test, and then the Rorschach test was performed according to the explained instructions. 4 of the patients withdrew from the study due to personal problems and 6 of the patients were excluded from the study due to not reaching the quorum of responses. Finally, the information obtained from 40 patients was

scored based on Exner's comprehensive system. This study was registered in the ethics committee of the university with the code IR.ARUMS.REC.1400.059. After collecting the data, it was entered into SPSS version 19 and described in the form of tables and graphs using statistical methods. To check the relationship between statistical data, various statistical tests including chi-square and independent t-test were used.

Results

Out of 50 participants in the study, 30 were women and 20 were men, and their average age was 33.84, and 15 of them were single and 35 were married. 68% of these people (34 people) had relapsing and recovering MS and 32% (16 people) had primary progressive MS, the average duration of their disease was 5.98 years and their average EDSS was 2.42.

There was a significant difference between age groups in Zest and ZSUM indices, thus patients with age>50 had obtained higher scores (Table 1).

Table 1. The mean score of projection indices in MS atients with optic neuritis by age

Age groups Projection Indices	**<20**	**20-30**	**30-40**	**40-50**	**>50**	*p-value
Response Frequency in the Rorschach (R)	17.6	21	18	18.63	23	0.92
Food (F)	5.8	7.92	6.9	6.13	10	0.82
Blend	4.6	3.85	3.3	3.88	5.5	0.88
Fr	0.4	0.31	0.6	0.5	0	0.93
Whole animal form (A)	9.2	7.85	7.1	8	10.5	0.89
Anatomy (An)	1.6	3.31	3.3	2.63	2	0.8
Human content (H)	1.2	1.77	1.7	2.25	2.5	0.9
Ge	0	0	0.2	0	1	-
Even	4.8	7.23	6.3	9.63	12	0.37
Zf	7	9.54	10.1	9.25	14	0.63
Zest	20.5	29.46	31.35	28.43	45.25	0.034*
ZSUM	17	26.15	29	27.5	44.5	0.007*
COP	0.2	0.23	0.6	1	0	0.99
GHR	1	1.77	1.5	3.25	2	0.48
PHR	1.2	1.69	1.05	1.28	2.5	0.74

t-test, *:p<0.05

There was a significant difference betweenmen and women in A and Ge indices, thus men had obtained higher scores (Table 2).

Table 2. The mean score of projection indices in MS atients with optic neuritis by gender

gender Projection Indices	Male	Female	p-value *
Response Frequency in the Rorschach (R)	18.93	19.88	0.328
Food (F)	7.86	6.62	0.21
Blend	3.86	4.04	0.75
Fr	1.08	0.61	0.33
Whole animal form (A)	6.81	8.81	0.02*
Anatomy (An)	2.86	2.81	0.94
Human content (H)	2	1.77	0.53
Ge	0.43	0	0.006*
Even	6.71	8.15	0.148
Zf	10.93	9.12	0.06
Zest	34.35	27.94	0.059
ZSUM	30.96	26.13	0.18
COP	0.5	0.42	0.79
GHR	1.79	2	0.65
PHR	1.43	1.46	0.94

t-test, *:p<0.05

There was a significant difference between employed and unemployed people in F indice, thus unemployed people had obtained higher scores (Table 3).

Table 3. The mean score of projection indices in MS atients with optic neuritis by job

Job status **Projection Indices**	Employee	Non-employee	p-value*
Response Frequency in the Rorschach (R)	19.31	21.75	0.11
Food (F)	6.89	10.5	0.001*
Blend	3.83	5.25	0.12
Fr	0.44	0	0.31
Whole animal form (A)	8.33	6.25	0.13
Anatomy (An)	2.64	4.5	0.061
Human content (H)	1.78	2.5	0.22
Ge	0.06	1	0
Even	7.47	9.25	0.264
Zf	9.53	11.75	0.15
Zest	29.38	37.33	0.144
ZSUM	26.91	36	0.11
COP	0.5	0	0.267
GHR	1.94	1.75	0.79
PHR	1.39	2	0.39

t-test, *:p<0.05

There was a significant difference between married and single people in the EVEN index, thus married people had higher scores (Table 4).

Table 4. The mean score of projection indices in MS atients with optic neuritis by marital status

Martital status **Indices**	Marid	Single	p-value*
Response Frequency in the Rorschach (R)	19.34	20.09	0.47
Food (F)	7.03	7.82	0.33

Blend	3.86	4.27	0.5
Fr	0.34	0.55	0.49
Whole animal form (A)	8.38	7.45	0.32
Anatomy (An)	2.79	2.91	0.87
Human content (H)	1.97	1.55	0.29
Ge	0.21	0	0.23
Even	8.28	6	0.029*
Zf	10.21	8.55	0.11
Zest	31.8	25.9	0.11
ZSUM	29.4	23.54	0.12
COP	0.55	0.18	0.22
GHR	2.14	1.36	0.12
PHR	1.41	1.55	0.78

t-test, *:p<0.05

There was a significant difference between smokers and non-smokers in F, Zf and Zest indices, thus smokers had higher scores (Table 5).

Table 5. The mean score of projection indices in MS atients with optic neuritis by smoking consumption

Smoking consumption Indices (response contents as)	+	-	p-value *
Response Frequency in the Rorschach (R)	21.17	19.26	0.14
Food (F)	9.17	6.91	0.021*
Blend	4	3.97	0.97
Fr	0	0.47	0.19
Whole animal form (A)	7.5	8.24	0.53
Anatomy (An)	3.33	2.74	0.48
Human content (H)	2.17	1.79	0.45
Geographic phenomena (Ge)	0.83	0.03	0.023*
Even	9.17	7.38	0.18
Zf	12	9.35	0.039*
Zest	38.16	28.77	0.038*
ZSUM	33.5	26.82	0.17
COP	0.17	0.5	0.38
GHR	1.67	1.97	0.63
PHR	2.33	1.29	0.075

t-test, *:p<0.05

There was a significant difference between people living in Ardabil and other cities in A, EVEN, and GHR indices, so people living in other cities had higher scores (Table 6). As seen, there is a significant correlation between EDSS and projection indices such as Fr, H, Zf, Zest, ZSUM, EVEN and COP.

Table 6. The mean score of projection indices in MS atients with optic neuritis by redidence place

Residency consumption Indices	Ardabil city	Other cities	p-value*

Response Frequency in the Rorschach (R)	19.36	20	0.53
Food (F)	7.29	7.17	0.88
Blend	4.18	3.5	0.25
Fr	0.43	0.33	0.74
Whole animal form (A)	7.43	9.75	0.007*
Anatomy (An)	3.14	2.08	0.106
Human content (H)	1.75	2.08	0.39
Ge	0.21	0	0.21
Even	6.64	10	0.001*
Zf	9.82	9.58	0.82
Zest	30.44	29.58	0.81
ZSUM	30.44	28.33	0.85
COP	0.32	0.75	0.144
GHR	1.61	2.67	0.027*
PHR	1.39	1.58	0.68

t-test, *:p<0.05

Discussion

The F index indicates how far the subject can separate emotions from the situation, and in fact, the F answer is related to attention and concentration, and is considered an indicator of emotional control and postponement of emotions (7). Considering the fact that the average F responses are higher in unemployed people than in employed people, and in smokers than in non-smokers, it can be concluded that in people with a higher score of behavioral patterns, there is a lack of expression of emotions and their inhibition.

EVEN and Fr indicators, which are actually pairs and reflections, are answers related to narcissistic personality traits. This trait is the core of the self and includes a strong tendency to evaluate oneself as a very important personality. In the conducted studies, the number of reflex responses and couples in younger ages is relatively common (8-10). But with reaching older ages, when social relationships become more important, the number of such responses also decreases, but in the present study, it was observed that the amount of these indicators was increased in people with MS at older ages, and also this The two indices EVEN and Fr had a direct relationship with EDSS of MS patients in such a way that the amount of these indices increased with the increase of EDSS, from this it can be concluded that the progress of the disease depends on the level of people's desire for interpersonal relationships, as in the section of interpersonal perception. It was explained that it has a negative effect.

Zf, Zest, and ZSUM indices are related to organizational activity and indicate the level of organization and optimal adaptation to environmental conditions. In this study, in patients with higher age, the scores of these indices were high. Also, it has a direct relationship with the EDSS of patients in such a way that with the increase of EDSS in people, the level of these indicators increases, considering that these indicators are considered as a sign of the amount of cognitive effort used to organize the environment and a direct relationship with processing It seems that people at older ages and people with higher EDSS show more cognitive effort in organizing to environmental conditions and stimuli, which ultimately leads to more successful and efficient action.

The presence of animal content indicates that the subject uses a universal and predictable method of answering (7). The number of animal responses "A" is more in men with MS compared to women with MS, this issue It can indicate the predictable approach of men with MS towards the world, because animal content is perceived in the easiest way. Also, a large number of A answers are often related to depression and the use of limited defensive behaviors.

Also, the component related to the tendency to isolation and withdrawal (Ge) is higher in men with MS compared to women with MS, and also in older people, the scores of this index are higher and these indicators are related to the EDSS of patients. It has a direct effect in such a way that with the increase of EDSS in people, the level of this index increases, which was also in accordance with the research of Barisik et al., study which in their study the level of self-attention was

high in these people, and their capacity for introversion tended to increase and the process of self-introversion due to emotional states were painful and negative and this finding is in line with the results of pairing and reflection (11).

Conclusion

The results of the present study strongly suggest that personality plays an important role in how individuals with multiple sclerosis (MS) cope with stressful experiences, influencing their exposure to stressors, reactivity, coping choices, and coping effectiveness. Given the uncertain course of this chronic neurological disease, attention must be paid to the specific relationship between personality traits and coping strategies in MS patients, as disease progression creates increasing demands for self-care, lifestyle adaptation, and maintaining a normal life. Personality changes may reflect not only brain pathology but also efforts to adapt to the disease. Key clinical issues influenced by personality characteristics include treatment adherence, quality of life, patient communication, and understanding treatment risks. Notably, a simplification style—attempting to reduce complex situations to immediate, practical solutions—was observed in our sample, raising concerns that patients' difficulty in taking a long-term view may lead them to prioritize observed short-term side effects over potential long-term benefits. To support these patients in achieving the best possible quality of life, basic and effective communication is essential. Patients need more guidance, with information presented simply and through multiple modes (oral, written, video, diagrams). Moreover, teaching once is insufficient; it is important to verify that the patient has understood the information.

Acknowledgments

none

Conflict of Interest

none declared

References

1. Weinshenker BG, Bass B, Rice GP, Noseworthy J, Carriere W, Baskerville J, et al. The natural history of multiple sclerosis: a geographically based study. I. Clinical course and disability. Brain 1989;112 :133-46. doi: 10.1093/brain/112.1.133.

2. Staff NP, Lucchinetti CF, Keegan BM. Multiple sclerosis with predominant, severe cognitive impairment. Arch Neurol 2009;66(9):1139-43. doi: 10.1001/archneurol.2009.190.

3. Biousse V, Newman NJ. Diagnosis and clinical features of common optic neuropathies. Lancet Neurol 2016;15(13):1355-1367. doi: 10.1016/S1474-4422(16)30237-X.

4.Katsuki R, Inoue A, Indias S, Kurahara K, Kuwano N, Funatsu F, et al. Clarifying Deeper Psychological Characteristics of Hikikomori Using the Rorschach Comprehensive System: A Pilot Case–Control Study. Frontiers in psychiatry 2019; 10:412.

5.Ožura A, Erdberg P, Šega S. Personality characteristics of multiple sclerosis patients: A Rorschach investigation. Clinical neurology and neurosurgery 2010;112(7):629-32.

6. Hansen KG. Rorschach Comprehensive System data for a sample of 75 Danish 9-year-old children: a pilot study. J Pers Assess 2007;89:S52-S56. doi: 10.1080/00223890701582947.

7. Balottin L, Mannarini S, Candeloro D, Mita A, Chiappedi M, Balottin U. Rorschach Evaluation of Personality and Emotional Characteristics in Adolescents with Migraine Versus Epilepsy and Controls. Front Neurol 2018;9:160. doi: 10.3389/fneur.2018.00160.

8. Kishimoto N, Yamamuro K, Iida J, Ota T, Tanaka S, Kyo M, et al. Distinctive Rorschach profiles of young adults with schizophrenia and autism spectrum disorder. Neuropsychiatr Dis Treat 2016;12:2403-2410. doi: 10.2147/NDT.S116223.

9.Palmieri A, Kleinbub J.R, Mannarini S, Molinaro S, Castriotta C, Scocco P. Rorschach assessment in suicide survivors: focus on suicidal ideation. Frontiers in public health 2019;6:382-8.

10. Giromini L, Viglione D.J, Brusadelli E, Lang M. Cross Cultural Validation of the Rorschach Developmental Index. Journal of Personality Assessment 2015;97(4): 348–353.

11. Barišić J, Milosavljević M, Duišin D, Batinić B, Vujović S, Milovanović S. Assessment of self-

perception of ms persons: pilot study of 50 patients. The Scientific World Journal 2014;2014:1-5.