

# The Impact of the Sensory Integration Approach on Positive and Negative Symptoms in a Patient With Non-Paranoid Schizophrenia: A Case Report

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## Abstract

**Introduction:** One of the problems that people with schizophrenia face is the inability to understand and interpret the sensory input from the environment. This report aims to describe the effects of the sensory integration approach on non-paranoid schizophrenia. The treatment involved eight sessions held 3 days a week and lasting 45 minutes each. The patient had a defined Iranian form social relationships schizophrenia evaluated and treatment. Sensory integration therapy in these patients focused on the following elements: vestibular and proprioceptive senses, exercises to improve walking, improving upper extremity coordination and movement, writing activities, cognitive skills, activities of daily living, and family therapy.

**Case Presentation:** The subject (A.H.) was a 32-year-old male graduate student with no history of previous hospitalization. His diagnosis was schizophrenia. The reason for his hospitalization was that he was angry and violent toward his family. In addition, the patient had limited verbal and nonverbal skills, issues with self-control, and restricted community involvement. The results of the patient's treatment for schizophrenia was assessed via a questionnaire on social skills.

**Conclusions:** After eight sessions, increased awareness of the environment, improved posture and gait pattern, improved motivation and enjoyment, improved patient tolerance, improved appearance and personal hygiene, loss of purposeful behavior, a realistic plan of action every day, improved attention span, improved decision-making skills, and improved community involvement and coping skills were achieved. The environment is rich in sensory stimuli. The integration and processing of each individual senses creates different behavioral responses. The results showed that a sensory integration approach combined with drug therapy is an effective treatment for patients with schizophrenia.

**Keywords:** Sensory Integration Approach, Schizophrenia, Non-Paranoid

## 1. Introduction

Schizophrenia is a combination of two words, namely schizo (break) and pheren (thought). According to the DSM-5 prevalence of schizophrenia is about 0.3% - 0.7% (1). Recently, schizophrenia has been divided into two categories, as follows: non-defect schizophrenia, which is characterized by negative symptoms, and defect schizophrenia, which is characterized by positive symptoms (2). There are various interventions for schizophrenic patients, including pharmacotherapy, psychotherapy, using structured activities, expressive and non-expressive activities, emotional regulation, education, activities of daily living, social participation, and vocational training (2, 3). One effective treatment is the use of the sensory integration approach. Jane Ayres (1964) first used this method in the treatment of children with learning disorders. After 30 years, occupational therapists had come to use many el-

ements of this approach in the treatment of adult patients with psychiatric disorders (4). Proprioception and vestibular disorders result in poor movement patterns, spatial awareness, fear of falling (5), disorders of the sense of touch (6), vision and hearing defect in visual perception, auditory and tactile (hallucinations and delusions) (7), cognitive problems (delirium, deficits in information-processing, problem-solving, and decision-making ability), and social behavior (irritability and isolation) (1, 2). Contrary to the impression of many occupational therapists that have used this approach in the treatment of children with sensory perception disorder, as well as cognitive and mental problems, this method is also used in cases of adult psychiatric disorders.

Environments are rich in sensory stimuli. Sensory integration is a process of cognitive neuropsychology where sensory data from the environment are received and processed, and appropriate responses and adaptive behavior

are provided (4). Sensory processing disorders lead to a misunderstanding of the environment, depersonalization, and distorted reality. The sensory integration approach aims to increase awareness and improve the body schema, emotional responses, and social participation to help in the treatment of individuals with sensory processing disorders. One aspect of schizophrenia is complexity in processing sensory information. Sensory sensitivity, avoiding common sense, and low treatment response have been reported in schizophrenic patients. Usually, such individuals are extremely sensitive to sensory inputs. Many studies have suggested it has the inhibitory techniques. Sometimes, studies have reported the opposite. The half-hearted protests and pleasure, speed of information processing, and thus slow down the reflected (8).

Due to incorrect processing of sensory input from near and distant sources, a person with schizophrenia exhibits symptoms of a sensory processing deficit, including the tactile, vestibular, and proprioceptive systems. The vestibular system is responsible for coordinating the head and body in space, the consistency of the muscle condition, and control of eye movements during changes in head position in space. Proprioception involves awareness of body position, distinguishing the texture of objects through touch, coordination, and fine motor skills. One of the reasons for monitoring the body condition of schizophrenics is that they display reduced proprioceptive and vestibular ability. By stimulating the senses, awareness and consciousness of the environment is increased. Disruption of the senses cause individuals to have difficulty walking and drag their feet on the ground, with a lack of grip in the heel, alternating hands, and staggering due to a lack of movement relative to the trunk. In terms of gait pattern, patients are seen to have a shuffling gait. A curved pattern and internal organs in a state of constant rotation are seen in standing and sitting. This results in limited movement of the shoulder girdle and neck.

The sensory defects go unnoticed by many therapists, and banal individual treatment is repeatedly used by therapists, who consider that disease symptoms recur even after the sensory integration approach is employed. However, the introduction of sensory treatment has generated new possibility for the treatment of patients with sensory problems. The only study conducted to evaluate the effect of sensory integration approach in non-paranoid schizophrenic was conducted in 1974 by King and his colleagues. This study on the necessity of sensory integration reported the improvement of gross motor function, body language, and appearance in patients with schizophrenia, but the researchers did not consider the impact on patients' social skills are ignored, as well as the passage of time and the days of symptoms. There has been a lack of re-

search evaluating the effectiveness of this therapeutic approach in adults with psychiatric problems. The present case report was conducted to consider the importance of healthy sensory perception in relation to positive and negative symptoms and the effect of the sensory integration approach on a non-paranoid schizophrenic.

## 2. Case Presentation

The subject (A.H.) was a 32-year-old male graduate student. He lived in Semnan, Iran, was unmarried, and had no history of previous hospitalization. Treatment was provided in eight sessions that took place 3 days a week and lasted 45 minutes each. Written consent was obtained from the participant during the first session of treatment, during which the purpose of evaluation and treatment was explained. The patient met the assessment criteria of positive and negative symptoms of schizophrenia and defined form of the occupational therapy department of Semnan University of Medical Sciences, Iran and from social relationships; from this information, his symptoms were evaluated before and after the intervention. The patient received a full briefing before and after treatment and the social skills questionnaire for Iranian schizophrenic patients was administered. After a comprehensive evaluation, the treatment approach was designed reference circuit.

For this schizophrenic patient, sensory integration therapy focused on vestibular and proprioceptive senses, exercises to improve walking in a spiral pattern, walking on a treadmill and correction pattern and physical condition, roping, and jumping over obstacles. Shoulder and neck exercises to improve the range of motion included darts, ping-pong, and catching and throwing a ball at different angles and distances. Writing activities were aimed at stimulating the sense of touch, hand coordination, and fine motor skills. Intellectual games were used to turn attention of psychotic symptoms, as well as to increase the accuracy and rapid processing of cognitive information. Along with sensory integration therapy, social skills were targeted through participation in group therapy sessions, membership in sports, and teaching body. Intervention to enhance independence in activities of daily living was carried out; these activities included education, grooming and hygiene, independence in food preparation, grocery shopping, money management, identifying interests, keeping track of leisure activities, vocational training and basic job skills identification, and holding a job. Family therapy and support was fostered to create a sense of belonging and friendship between the members of the community (9, 10).

Molavi et al. stated that social skills appropriate to the culture should be determined using foreign authen-

tic scale programs like social interaction. Goldstein, Krasner and Garfield (1989) developed a program that enhances interactive skills. Meanwhile, Ackley (1985) developed the Beck depression inventory. This questionnaire comprises 14 questions that can be scored from 0 to 3. Values for solidarity and test-retest reliability have been reported as 0.93 and 0.91, respectively, for this questionnaire (11).

The main complaints were that the patient used “angry” and aggressive language, and that he was violent toward his family members. He lived in a family of four with his parents and sister. His father worked, his mother was a housewife, and his sister was an art student. As the patient stated, “My father puts great responsibility on me, and I am afraid that I cannot fulfill my obligations as a son and brother. In the hours that my father is not at home, I take care of my mother and sister. This makes me sad and angry. I also cover their weakness through aggression. When I was growing up, because I had nystagmus, I was exempt from military service. That’s why I got to thinking about studying. I was interested in the field of electronics. However, after four semesters, an inner sense of reluctance and failure stopped me from pursuing my goal. I had to leave school for a little rest. During this time, in my electronic repair shop students remains. This led to isolation and a lack of desire to go to work. I became aggressive because I did not know the cause of these behaviors. Because I felt frustrated with life, my futile aggressive behavior to those around me was aggravated. As a result of this, my mother went to a psychiatrist and was ordered to stay in the psychiatric ward.”

### 2.1. Data Analysis

The software used to analyze the data was SPSS-18, and the mean and standard deviation (SD) were employed to express the results.

After eight sessions of therapy, the patient showed increased awareness of the environment, improved posture and gait patterns, improve motivation and enjoyment, improved patience at work, improved appearance and hygiene, reduction in the targeted behavior, realistic planning of daily activities, improved attention span, improved decision making, and enhanced community participation and interpersonal skills. The authors were satisfied with the treatment results, as the patient achieved a higher level of awareness of his abilities and disabilities. Table 1 shows the raw scores (percent) and social skills evaluation for the individual with schizophrenia participating in the study.

**Table 1.** Social Relationship Scores Before and After Treatment, Raw Schizophrenia Score Before Treatment (Percent), and the Difference in Raw Scores Before and After Treatment<sup>a</sup>

| Variable  | Raw Score Before Treatment | After Treatment Difference | Raw Scores Before and After Treatment |
|---|----------------------------|----------------------------|---------------------------------------|
| Eye contact   | 1 (0.33)                   | 2 (0.66)                   | 0.33                                  |
| Speech value  | 1 (0.33)                   | 2 (0.66)                   | 0.33                                  |
| Speech rate   | 2 (0.66)                   | 2 (0.66)                   | 0                                     |
| Volume  | 2 (0.66)                   | 2 (0.66)                   | 0                                     |
| Sound track   | 2 (0.66)                   | 3 (100)                    | 0.34                                  |
| Intelligibility of speech (speech integrity or relevance) | 2                          | 2                          | 0                                     |
| Appropriateness of speech (being accepted, relevance)     | 2                          | 3 (100)                    | 0.34                                  |
| Condition and cleanliness of clothing                     | 2 (0.66)                   | 3 (100)                    | 0.34                                  |
| Appearance  | 2 (0.66)                   | 3 (100)                    | 0.34                                  |
| Appropriate behavior during meals                         | 2 (0.66)                   | 3 (100)                    | 0.34                                  |
| Dialogue with others                                      | 2 (0.66)                   | 3 (100)                    | 0.34                                  |
| Acceptance of the provisions of                           | 2 (0.66)                   | 2 (0.66)                   | 0                                     |
| Attract others  | 2 (0.66)                   | 2 (0.66)                   | 0                                     |
| Care of the environment                                   | 1 (0.33)                   | 1 (0.33)                   | 0                                     |
| <b>Total score</b>  | <b>25 (59.52)</b>          | <b>33 (78.57)</b>          | <b>78.57</b>                          |

<sup>a</sup>Values are expressed as No. (%) or %.

### 3. Discussion

Sensory impairment as one of the first signs of “preference” of schizophrenia were not investigated because it was thought that sensory functions are not affected by the disorder or seen in patient testimonials relating to sensory or cognitive emotional interpretation. Weaknesses in the processing of sensory information, cognitive functions, and diversion remains a sense in person. However, new approaches to dealing with sensory deficits in schizophrenia, such as sensory therapy, have paved the way for sensory integration in these patients (2). In this study, the total score after treatment was slightly better than that before treatment. The patient showed improvement in skills

like eye contact, speech content, song sound, relevance of speech, cleanliness of clothes, the makeup, appropriate behavior when eating, and dialogue with others had improved. In contrast, speech rate, volume, the adoption of regulation, attract attention, and attention to the environment remained unchanged.

The results showed that a sensory integration approach combined with drug therapy is an effective treatment for patients with schizophrenia. While many occupational therapists have used this approach in the treatment of mental motor disorders, the approach has also been used in adult psychiatric disorders (4).

The environment is rich in sensory stimuli. As a result of integration and processing, each individual senses creates different behavioral responses (10). The field of disabilities since childhood, these people will be there and with increasing age (4). People with an impaired perception of the surrounding world can completely cut off their relationships with others. They speak of themselves in the third person, have a reduced sense of empathy, and cannot detect emotional states in others (5) Sensory-motor training not only affects the body but can also modify negative symptoms related to interpersonal communication and verbal/non-verbal expression. Finally, it enhances patients' motivation.

The results obtained in this study showed improved social skills in the participant. A rate of change of 19.5% was achieved. In their investigation of sensory processing in patients with bipolar disorder and schizophrenia, Brown et al. (2002) found that both groups had high scores on avoidance responses. In addition, people with schizophrenia obtained lower scores in the wild and active search for the record (12). Leitman et al. (2005) examined the role of information processing in anticipation of their symptoms. They found defects in the processing of data in terms of the ability to detect emotional states, predictable and purposeful behavior, and the intensification of negative symptoms in these patients (13). The results of the present study are consistent with those of Javitt et al. (2009) is consistent (9).

In this study, the patient complied with therapy during hospitalization, but due to the process of re-registration and lack of access, the patient's treatment was abandoned, which constitutes a limitation of the research. Another limitation was the use of a questionnaire to assess adult sensory evaluation more accurately. It is suggested that follow-up treatment should be carried out after discharge to help patients to maintain a normal life. This approach can also apply to other psychiatric disorders, and the results are compared.

### 3.1. Conclusions

One of the problems that people with schizophrenia face is the inability to understand and interpret sensory input from the environment. Considering other signs of intensifying symptoms, the therapist can help to reduce secondary problems. This study highlights the importance of the problems dealt with by schizophrenics, as many occupational therapists have neglected the possibility of using this method in the treatment of people with schizophrenia. The study found that although long-term therapy is needed to obtain significant results, this therapy could help these patients increase their quality of their lives and their ability to cope with the environment.

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### Footnotes

**Authors' Contribution:** Study concept and design: Mina Sadat Mirshoja; acquisition of data: Jinoos Jadidi; analysis and interpretation of data: Mina Sadat Mirshoja; drafting of the manuscript: Mina Sadat Mirshoja; critical revision of the manuscript for important intellectual content: Mina Sadat Mirshoja; statistical analysis: Mina Sadat Mirshoja; administrative, technical, and material support: Mina Sadat Mirshoja; study supervision: Mina Sadat Mirshoja.

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