ISO 9001 - 2015

ISSN 2349 - 4891

Monthly

IJRRAS

IF
4.665

Volume 4,Issue 4, April 2017

International Journal of

Recent Research and Applied Studies

SURRAGH PUBLICATIONS

ISSN: 2349 - 4891

International
Journal of Recent Research and Applied Studies
(Multidisciplinary Open Access Refereed e-Journal)

Effectiveness of Sensory Based Motor Praxis Training On Mirror Writing In Children with Slow Learners

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Received 12th March 2017, Accepted 1st April 2017

Abstract

To find out the effectiveness of Sensory Based Motor Praxis Training (SBMPT) on Mirror Writing in Children with Slow Learners. In India, around 13 to 14 per cent of all school children suffer from learning disorders. Children with slow learners often identified with Dyspraxia in nature, it involves poor motor coordination, timing, planning, organizing and sequencing. The main objectives of the study are to identify the mirror writing in children, to identify the sensory based motor praxis dysfunction, to plan and implement the sensory based motor praxis training in Occupational Therapy. Male and female children diagnosed with slow learners in the age group of 5 to 7 years were conveniently selected for this study in NIEPMD, Occupational Therapy. The subjects were assessed with Sensory Profile; Berry VMI and Sensory Based Motor Praxis Training (SBMPT) were implemented. It was found that there was a significant positive correlation between SBMPT and Mirror writing. SBMPT based Occupational Therapy was found to be effective in improving the writing skills in children with slow learners.

Keywords: Praxis, Sensory Based Motor Praxis (SBMPT), Mirror Writing.

Introduction

In India, around 13 to 14 per cent of all school children suffer from learning disorders. According to the National Center for Learning Disabilities, LD is a neurological disorder that affects the brain's ability to receive process, store and respond to information. The term learning disability is used to describe the seeming unexplained difficulty a person of at least average intelligence has in acquiring basic academic skills. These skills are essential for success at school and at workplace and for coping with life in general. (Sadaket Malik 2009). LD is not a single disorder. Learning disabilities can affect a person's ability in the areas of listening, speaking, reading writing and mathematics and is often first suspected when there is a clear and unexplained gap between an individual's level of expected and actual levels of achievement. Learning disabilities also can encompass problems in the area of social-emotional skills and behaviour, and some individuals with learning disabilities struggle with peer relationships and social interactions in addition to academic challenges. (Sadaket Malik 2009).

The good news is that during the past three decades, RCI and Ministry of HRD, Ministry of Social Justice and Empowerment, Government of India with the help and intervention of country's strong academic community and specialists studied the instructional techniques, strategies and conditions that best enable students to learn critical skills, especially in the area of reading. The first step in this strategy should be early detection, acceptance by parents and broad awareness among the academic community and above all a mature handling of the problem. At the government Level, there is a need to formulate a constructive policy in this regard. To see that these steps are implemented, school vigilance and parental awareness is equally essential. (Sadaket Malik 2009). Mirror writing is an unusual script, in which the writing runs in the opposite direction to normal, with individual letters reversed, so that it is most easily read using a mirror. This writing is seen in healthy individuals; it is also associated with various focal lesions that most commonly involve the left hemisphere, as well as with certain diffuse cerebral disorders. Mirror writing is nearly always undertaken with the left hand, and left-handers, and those whose languages are written leftwards, have an unusual facility for this writing. (GD Schott 2006).

Robert D. McIntosh and Sergio Della Sala explore some intriguing phenomena Mirror-writing is the production of letters, words or sentences in reverse direction, so that they look normal when viewed in a mirror. Some people may mirror-write intentionally; but unintentional mirror-writing is surprisingly common amongst young children, and in brain-damaged adults. Unintentional mirror-writing suggests a tension between

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a tendency for our brains to treat mirror-images as equivalent, and a culturally imposed need to distinguish between them for written language. This article explores the various manifestations of mirror-writing, and the ideas put forward to account for it. Mirrored-forms emerge in children, due to incompletely established hemispheric dominance, but are suppressed in adults unless released by left-hemisphere damage. Subsequent perceptual accounts, such as the spatial disorientation hypothesis (Heilman et al., 1980), share the core idea that mirror-writing is one aspect of a more general mirror-confusion. Perceptual explanations predict that mirror-writing should be associated with perceptual Confusion, and even with fluent reading of reversed text. And if the mirroring arises at a perceptual level, then Mirror-writing should emerge regardless of which hand is used.

Mirror-writing is very common amongst children learning to write. These productions are not mere confusions of legal mirror-image characters (such as ‘b’ and ‘d’) but can involve the reversal of any character, and even whole words and phrases. A child may sign her name neatly but back-to front. Interestingly, some characters are more likely to be reversed than others, particularly those such as ‘3’ or ‘J’ in which the correct form ‘faces’ leftwards. This suggests that during exposure to written language, the child implicitly extracts the statistical regularity that most characters ‘face’ to the right, then over-applies this ‘right writing rule’ (Fischer, 2011). Sensory based motor disorder: Those with Sensory Based Motor Disorders (SBMD) have difficulty navigating this world. Their bodies simply don't do what their brains tell them to do. SBMD has been broken down into two different categories. The first is Dyspraxia, taken from the Greek word 'praxis' (to do) and the Latin prefix 'dys' (badly), and involves poor motor coordination, timing, planning, organizing and sequencing. This present study was considered to decrease the mirror writing pattern of children with slow learners. Based on the research evidence the study was to find out the effectiveness of Sensory Based Motor Praxis Training (SBMPT) to reduce mirror writing pattern of children with slow learners.

Hypothesis

There is a significant difference between the motor praxis and mirror writing in children with slow learners.

Null Hypothesis

There is no significant difference between the motor praxis and mirror writing in children with slow learners.

Aim

To find the effectiveness of Sensory Based Motor Praxis Training to reduce the Mirror Writing in Children with Slow Learners.

Objectives

- To identify the mirror writing in children
- To identify the sensory based motor praxis dysfunction
- To plan and implement the sensory based motor praxis training
- To evaluate and correlate the motor praxis and mirror writing

Inclusion criteria

- Both male and female
- Children diagnosed as Slow Learners
- Age group of 5 to 7

Exclusion criteria

- Orthopedic conditions
- Other loco-motor disability,
- Visual and Hearing deficits
- Intellectual Disabilities
- Untreated seizures disorder

Procedure

Children were diagnosed as slow learners from the department of clinical psychology of NIEPMD, age group of 5 to 7 years were conveniently selected for this study. The subjects were screened with Sensory Profile to rule out the sensory based motor dysfunction; based on the outcome, the pretest was conducted with Beery VMI score to find out the mirror writing pattern of the children. Sensory Based Motor Praxis Training (SBMPT) was developed (Annexure – II) and implemented to the children thrice in a week/ 45 minutes duration. The post test was conducted at the end of 30 days and result was statistically analyzed and displayed in tabular and graphic format.

Result and Discussion

The Paired t test was used to compare pre and post test within the group. The aim of the study was to find the effectiveness of SBMPT to reduce mirror writing pattern in children with slow learners. For this study the graph 1 showed the percentage of 15 subjects of slow learners, males are 33 % and females are 67 % were participated

Graph I
Comparison of gender differences in slow learners

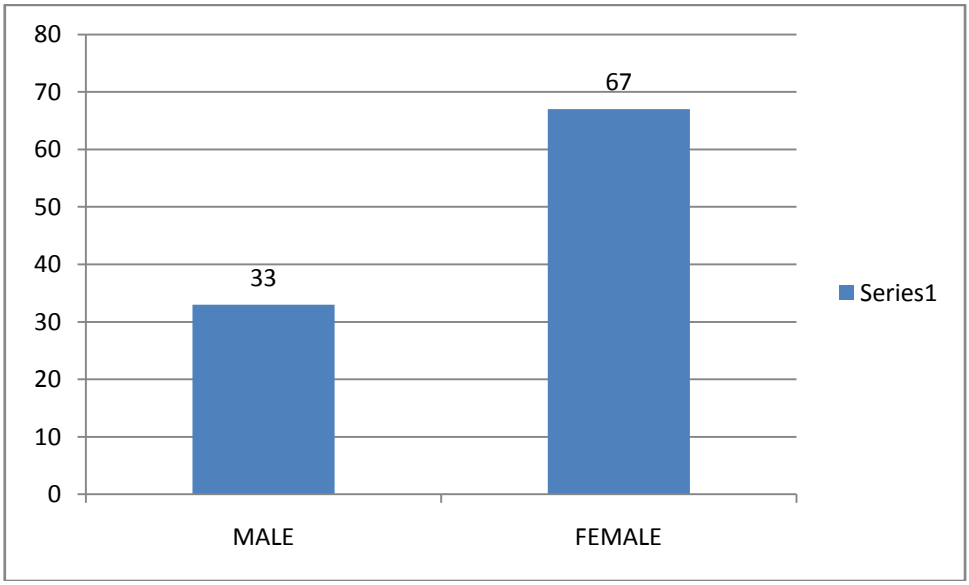

Table 1
Comparison of pre – post test score of BVMI of children with slow learners

Variable	Number	Test	Mean	SD	T- Test	P- Value
BVMI	15	Pre Test	46.6	2.61	14.28	0.0001
		Post - Test	54.46	3.22		

Graph II
Comparison of pre- post test of BVMI of children with slow learners

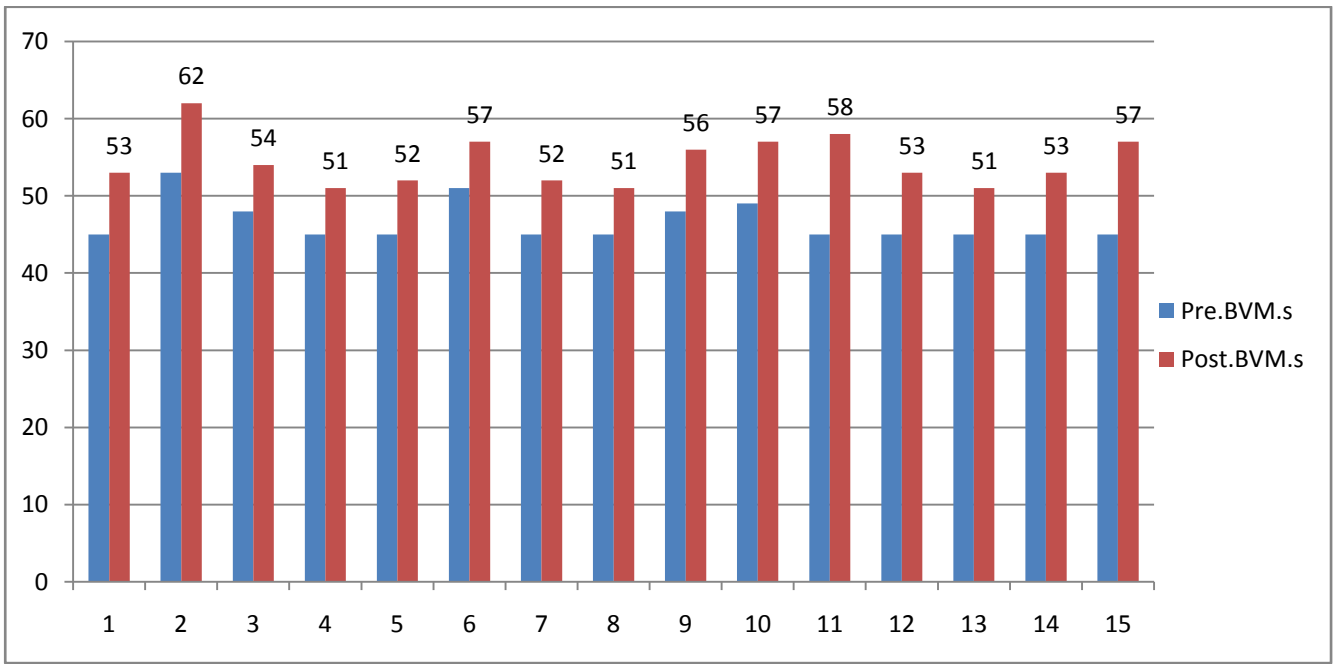

Table 1 and graph II showed the value of comparison of pre – post test score of BVMI of children with slow learners. The result was analyzed by using paired t test, the mean value of pre test score is 46.6 and post test score is 54.46, the paired t test score is 14.28 .This results revealed that there was significant different founded in decrease of mirror writing pattern in BVMI score in children with slow learners. The result also supported by Rhoda P.Erhardt (2005) conducted study about improving handwriting without teaching handwriting: The consultative clinical reasoning process. From this the author were concluded the Clinical decisions for selecting and modifying intervention techniques can be derived from assessment of occupational performance areas and performance components (underlying motor, sensory, and perceptual deficits interfering with the production of legible handwriting), within relevant performance contexts. The evidence shows that the children with slow learners having problem in motor praxis skills. The motor planning activities will improve the praxis ability and it will impact on mirror writing pattern.

Limitation

1. Small sample size was relatively small; hence the results cannot be generalized to masses.
2. The range of age group of the sample size was small, hence the result cannot be generalized to other age group.
3. Short sample duration.

Future Recommendation

1. Hand dominance can be categorized/ specified
2. Larger sample size
3. Intervention can be compared with other treatment approaches

Conclusion

SBMPT based Occupational Therapy was found to be effective in improving the writing skills in children with slow learners.

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