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Implementing Psychosocial Intervention to Improve the Neuropsychological Functioning of Students with Learning Disabilities: A Therapeutic Approach

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ABSTRACT

The present study describes and assesses the effectiveness of a psychosocial intervention. We assessed the Neuro psychological functioning of 10 adolescents between the ages of 13 and 15 in the 8th, 9th and 10th grade respectively. They visited the outpatient department of the clinic and were screened for learning disability. A psychosocial intervention that addressed concerns in academic skills, behavioural adjustment and sociability was designed and implemented for duration of six months. Standardised inventories namely Wechsler's Intelligence Scale for Children (WISC-IV), the Vineland Social Maturity Scale (VSMS), the Draw-a-family test and The Connors Parent and Teacher Rating Scales (Short forms) were administered prior and post intervention. Participant and parent interviews were used in understanding underlying issues of concern. Prior to the intervention scores on the WISC-IV, Draw-a-family test and the Connors Parent and Teacher Rating Scale revealed significant deficits in intellectual functioning, interpersonal conflicts and behavioural problems. Post intervention, there were significant improvements in scores which clearly implied that the intervention was effective.

Keywords: Learning disabilities, adolescents, behaviour, cognition, socialisation

INTRODUCTION

Learning disability can best be described as a disorder in which one or more of the basic psychological processes involved in understanding or in using language, spoken or written, manifests itself as an imperfect ability to listen, think, speak, read, write, spell, or do mathematical calculations

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(Rathus, 2008). The most common learning disability is developmental dyslexia that accounts for nearly 70%-80% of cases. This can affect any part of the reading process, including difficulty with accurate or fluent word recognition, word decoding, reading rate, prosody and reading comprehension (Peterson, 2012)

Common indicators of reading disability include difficulty with phonemic awareness also known as sound-symbol correspondence (Peer, 2014). Impaired ability in written language may include weak handwriting, spelling, organisation of ideas, and composition. This term was used as an overarching term to include all disorders of written expression. Organisations such as the International Dyslexia Association have used the term "dysgraphia" to refer to difficulties exclusively involving handwriting (Reynolds, 2007). Sometimes called dyscalculia, a math disability can cause impairments in learning math concepts such as quantity, place value and in understanding the concept of time. It may also characterise difficulties in memorising math facts, organising numbers and in understanding how problems are organised on a page (Flora, 2013). This often manifests as motor clumsiness, poor visual-spatial skills, problematic social relationships, difficulty with math, and poor organisational skills (Fletcher, 2007).

Learning disabilities are often identified by school psychologists, clinical psychologists, and neuropsychologists through a combination of intelligence testing, academic achievement testing, classroom performances, social interaction and aptitude. The most commonly used comprehensive achievement tests are the Woodcock-Johnson III (WJ III), Wechsler Individual Achievement Test III (WIAT III), the WideRange Achievement Test 4 (WRAT 4), and the Stanford Achievement Test–10th edition (Flanagan, 2005). Past investigations of children with learning disabilities (Emerson, 2006) have proven that psychosocial interventions are effective in helping borderline or mild intellectual disabilities, but are certainly less efficacious when used help those with moderate to profound intellectual disabilities as their abilities and communication skills are limited. Although a few available Randomised Controlled trials (RCTs) have provided some evidence for the efficacy of psychological interventions, generally the studies have been of poor quality due to lack of proper design and inadequate number of participants.

In India, about 12%-13% of children have been identified as having learning disabilities (Thacker, 2007). However, during the last decade, awareness of these children's behavioural, social and emotional problems have considerably increased. This awareness was demonstrated by Bender and Smith's (1990) meta-analysis that explored the relation between learning disability and behavioural problems and Kavale and Forness's (1996) investigations of the relation between learning disability and social skills deficits. Both studies provided convincing evidence that children and adolescents with learning issues experience

social problems such as low self-esteem, emotional difficulties such as depression and conduct disorders such as aggression.

The present study

Adolescents with learning disabilities have enduring and unique characteristics that manifest in differing ways as development and setting demands change. Hence, it is important that we seek answers related to salient characteristics of these learners and the use of psychosocial interventions that lead to significant student outcomes.

Research has shown that adolescents with learning disabilities dramatically improve their use of a particular strategy when a certain methodology of teaching and learning is adopted and implemented (Ellis *et al.*, 1991). In the present study, the authors want to answer two questions, (a) Can adolescents with learning disabilities be trained to use simple strategies that facilitate communication skills, socialisation and better behavioural adjustment? (b) Is psychosocial intervention effective in helping children cope with their disabilities?

METHOD

Respondents

Participants consisted of five adolescent boys and five adolescent girls (*N=10*) from Noida, Hoogly, Chhattisgarh, Manali and Calcutta in North India who have been accessing outpatient services in a private hospital in Tamil Nadu, India. Participants were randomly selected from a source list that was available in the clinic. All of them were screened for problems in reading, writing and arithmetic and visited the outpatient services for therapy. Students belonged to the 8^{th}, 9^{th} and 10^{th} grades of municipal schools in their respective towns. Parents of the children and the teachers who taught them also participated in the study. They provided information regarding the child's behaviour, learning and social skills at home and school. All the participants were middle-class and participation in the study was strictly voluntary. All the children (*N=10*) and their parents completed the standardised questionnaires and teachers participated by telephone conversations. The ages of the students ranged between 13 and 15 years *(M=13.8, SD=0.55*).

Procedure

The children have been examined by paediatrician at private hospitals and diagnosed as having learning disability according to the DSM-IV (Diagnostic and Statistical 6 Manual-IV edition) criteria axis I and were referred to a psychologist for further evaluation. Students (N=10) completed the Wechsler's Intelligence Scale for children (WISC-IV), the Vineland Social Maturity Scale (VSMS), Draw-a-family test and a child interview schedule. Parents completed the Connors Parent Rating Scale (CPRS-Short form) and a parent interview schedule. Teachers completed the Connors Teacher Rating Scale (CTRS-short form) which was conducted via telephone and also participated in the teacher interview schedule. The assessment used for children comprised four sessions and each was used for administering the standardised

test. Two sessions were used for parents and two for teachers. All measures used were standardised inventories that took into account cultural considerations and deemed suitable for the Indian population. Three sessions were used post testing for each child to discuss intervention strategies. Informed consent was obtained from all of them prior to the testing. The tests would be repeated on the child, parents and the teachers after six months to evaluate the effectiveness of the intervention.

A psychosocial intervention was planned to develop cognition, behavioural and social skills. Reading skills were enhanced by enabling the child to read short texts of information from story books on a regular basis. This was monitored by both parents and teachers. Researchers used special pens as highlighters to enable the child to read with better visual engagement and clarity. Children were taught to use computers with animated software that helped them receive and respond to feedback while typing words or sentences. Verbal reinforcements such as these helped in improving effort and enhance motivation. Computers also reduced the burden on writing as children could type the answers instead of using the notebook to write. Children were encouraged to learn from videos on science, English and arithmetic subjects to make it interactive and interesting. Both parents and teachers were asked to implement this regularly.

To develop vocabulary, the researchers introduced five new words to the children every day and encouraged them to talk about an incident or an experience that they found pleasurable. Peer learning at school was also done on a regular basis to increase social skills and to instil self-confidence. Experience-based learning was implemented to understand concepts in arithmetic. Children were taught to play games at home that involved buying or selling and parents encouraged them to run small errands such as purchasing goods. Parents gave their children minor responsibilities at home such as watering the garden, feeding pets or cleaning the house. Appropriate reinforcements such as praises, surprise gifts and fun vacations were chosen as reinforcements for the efforts performed. At schools, they were reinforced by the teacher by giving them responsibilities such as being the pupil leader, or were made heads of small committees where they exercised decision making skills and leadership skills. The researchers reduced the tuition hours to between two and three weekly to enable them to have more time in play activities. Children were enrolled in co-curricular activities and the school authorities were urged to be more accommodative in understanding the academic difficulties encountered by these children. Teachers actively engaged the children by providing simple worksheets of the lessons taught in class. This helped in reducing the academic workload and by helping children stay focused to learn only what was necessary. This intervention was to be executed for six months after which the tests would be repeated to assess improvements.

Measures

The Wechsler Intelligence Scale for Children (WISC-IV)

This test was developed by Dr. David Wechsler and is an individually administered intelligence test for children between the ages of 6 and 16 years (Wechsler, 2003). The WISC-IV takes 65-80 minutes to administer and generates an IQ score which represents a child's general cognitive ability. There are four indexes namely the verbal comprehension, perceptual reasoning, working memory and the processing speed index. The full scale IQ ranges from lowest 40 points to the highest 160 points.

The Vineland Social Maturity Scale (VSMS)

An Indian adaptation of the Vineland Social Maturity Scale was used to assess children aged 0-16 years in the areas of self-help general, self-help dressing, self-help eating, self-direction, locomotion, communication, occupation and socialisation (Malin, 1971). The scale yields a social age and a social quotient, which can be considered an approximate intelligence quotient.

The Connors Parent Rating Scale (CPRS-short form)

This instrument is used for routine screenings in schools, mental health clinics, residential treatment centres, paediatric offices, juvenile detention facilities, child protective agencies, and outpatient settings (Connors, 1997). The test contains 27 items and covers a subset of subscales namely the oppositional, cognitive problems or inattention, hyperactivity and the Attention Deficit Hyperactivity Disorder (ADHD) index.

Connors Teacher Rating Scale (CTRS-short form)

The short form for teachers contains 28 items. The scale should be used when time is of the essence and when multiple administrations over time are desired. The scales include the oppositional domain, cognitive problems or inattention, hyperactivity and the Attention Deficit Hyperactivity Disorder index (Connors, 1969).

The Draw-a-family test

This is a projective test that is used to subjectively analyse the child's perception of his relationship with his family (Burns, 1972). From the picture that a child draws, it is possible to make interpretations about his attachment patterns, underlying conflicts in relationships and family cohesiveness.

Scheduled Interviews

These were specially designed short questionnaires that were used to gather information regarding school, home, family and peer environment (Ritchie, 2003). All questions were open-ended and non-confronting and sessions during assessment were confidential. Interviews held with the child focused on his or her perception of the difficulties, what he or she expected from himself or herself and how he or she was going to make a difference.

RESULTS

The cognitive profile of children Pre and Post intervention

On the verbal tests of WISC-IV, researchers observed that verbal quotients scores pre intervention ranged between 72 and 76 for boys and the mean verbal quotient (*M=73, SD=2.23*) denoted that they had a "borderline" intellectual level of functioning. Post intervention, scores on the verbal quotient ranged from a minimum of between 7 and 79 and there was an improvement in the mean scores (*M=78, 0.44*). The difference in pre and post intervention was found to be statistically significant (*p<0.01)* at 99% confidence interval. On the performance tests, the scores ranged between 80 and 84 and the mean scores (*M=82, SD=1.67*) for boys denoted that they had a "low average" intellectual level of functioning. Post intervention, we obtained scores on the performance quotient ranging from a minimum between 86 and 89 and a remarkable improvement was observed in the mean performance quotient scores (*M=88, 1.09*). The difference between the means, pre and post intervention were observed to be statistically significant *(p<0.01*) at 99% confidence interval, thus rejecting the null hypothesis (Table 1).

For girls, the verbal quotient scores ranged between 70 and 76 and the mean verbal quotient score (*M=73, SD=2.23*) denoted that they had a "borderline" intellectual functioning. Post intervention, scores were found to range between 74 and 78 (*M=76, SD=1.67*). The difference between the means were found to be statistically significant *(p<0.05)* at the 95% confidence interval. On the performance tests, scores on WISC-IV pre intervention was found to range from 80-84 and the mean scores (*M=82, SD=1.67*) denoted a "low average" intellectual functioning. Post intervention, scores ranged between 86 and 89 and there was an improvement in the mean (*M=87, SD=1.34*) scores obtained. The difference pre and post intervention was found to be statistically significant *(p<0.01)* at 99% confidence interval.

The effectiveness of the intervention

The obtained mean scores on the verbal quotients for boys and girls *(N=10)* pre intervention (*M=73, SD=2.10*) when compared to post intervention scores (*M=77, SD=1.49*) were found to be statistically significant (*p<0.01*) at the 99% confidence interval. The paired t-test was used in analysing data. On the performance tests, the obtained mean scores (*M=82, SD=1.57*) for boys and girls pre intervention and mean scores (*M=88, SD=1.17*) post intervention (Table.2) were again found to be statistically significant *(p<0.01)*.

The authors tabulated the level of difficulty ranging from 0-4 (Fig.1) on each of the verbal subtests for boys and girls on an average to distinguish clearly the problem areas that required intervention. A score of 0 would denote that the child experienced "no difficulty", 1 indicates "mild difficulty", 2 denotes "moderate difficulty", 3 represents "severe" and 4 indicates the presence of "profound" problems.

Post intervention, the WISC-IV on repetition revealed improvements on the verbal tests for both boys and girls (Fig.2). There was a decline in the ratings of difficulties experienced across subtests and we observed improvements across picture completion, arithmetic and comprehension subscales.

Similarly, the authors determined the level of difficulty experienced in each domain of the performance test for each child with scores between 0 and 4 ranging from "no difficulty" to "profound "difficulty (Fig.3). Findings revealed that timed tasks were more stressful as it involved more fatigue.

Post intervention, on the performance tests, the speed of executing a task had particularly improved. The researchers tabulated the levels of difficulties experienced (Fig.4) and observed improvements across all domains such as coding, geometric design and object assembly subtests.

The social skills profile of children Pre and Post Intervention

On the Vineland Social Maturity Scale (VSMS), boys on an average obtained social age equivalents that were almost age appropriate (Table 3) on domains of self-help eating *(M=13.03,SD=0.22)* and dressing (*M=12.80,SD=0.24)*. However they had difficulties in the domain of self-direction *(M=13.04, SD=0.16)* communication *(M=14, SD=0.14)* and social skills *(M=13.52, SD=0.33)*. The researchers noticed a developmental set back between the social ages *(M=13.20,*

TABLE. 1
Represents the mean and standard deviations for the Verbal and Performance quotients for boys and girls Pre and Post intervention

Gender		Pre intervention M(SD)	Post intervention M(SD)	P value
Boys (N=5)	Verbal Quotient (VQ)	73(2.23)	78(0.44)	0.003**
	Performance Quotient (PQ)	82(1.67)	88(1.09)	0.002**
Girls (N=5)	Verbal Quotient (VQ)	73(2.23)	76(1.67)	0.02*
	Performance Quotient (PQ)	82(1.67)	87(1.34)	0.002**

Note. Superscripts denote significant differences as follows:**$p<0.01$. Statistically significant difference in mean

TABLE 2
Represents the Verbal and Performance Quotients Pre and Post intervention

(N=10)	Pre intervention M(SD)	Post intervention M(SD)	P value
Verbal Quotient	73(2.10)	77(1.49)	0.0002**
Performance Quotient	82(1.57)	88(1.17)	8.49×10^{-6}**

Note. Superscripts denote significant differences as follows: **p<0.01. Statistically significant difference in mean scores is reported in the text.

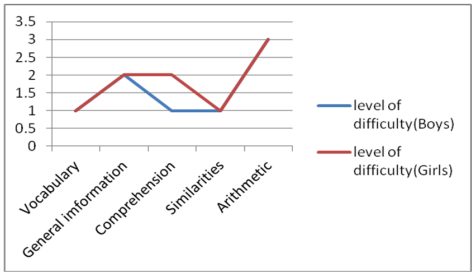

Fig.1: Represents the level of difficulty experienced by boys and girls on an average for each subscale of the verbal tests on WISC-IV Pre intervention.

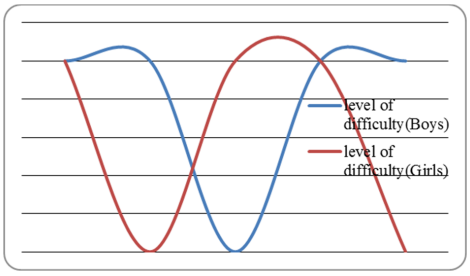

Fig.2: Represents the level of difficulty experienced by boys and girls on an average for each subscale of the verbal tests on WISC-IV Post intervention.

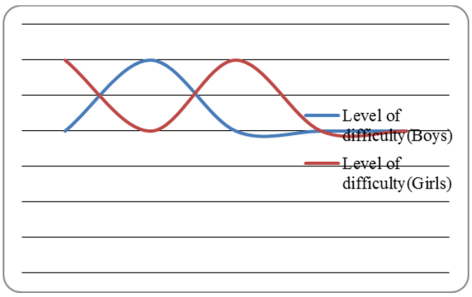

Fig.3: Represents the level of difficulty experienced by boys and girls on an average for each subscale of the performance tests on WISC-IV Pre intervention

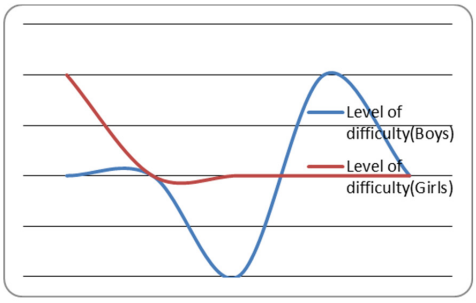

Fig.4: Represents the level of difficulty experienced by boys and girls on an average for each subscale of the performance tests on WISC-IV Post intervention

SD=0.31) and chronological ages (*M=14, SD=0.67)*. Post intervention, we observed that they had significant *(p<0.001)* improvements on almost all domains of the VSMS. They had improved mean scores on domains of occupation *(M=14.27, SD=0.17)*, socialisation *(M=14, SD=0.14)* and on self-help general *(13.40, SD=0.4)*.

The Vineland Social Maturity Scale (VSMS) for girls revealed concerns in communication *(M=13.96, SD=0.16),* social skills *(M=14.24, SD=0.26)* and in self-direction domains *(M=13.16, SD=0.29)*. Post intervention, we observed significant *(p<0.01)* changes across all domains. They had good communication skills *(M=14.64, SD=0.16)*, understood social cues *(M=14.24, SD=0.26)* and were more independent on self-help domains *(M=13.08, SD=0.22)*.

The effectiveness of the intervention on the social profile

The researchers evaluated the social skills of children pre and post intervention and on applying the paired samples t-test, and noted a significant improvement *(p<0.01)* across all domains of social maturity (Table.4) The authors observed that children improved in their ability to communicate *(M=14.6,*

SD=0.24), socialise *(M=14.12, SD=0.23)* and also in their independence in self-help *(M=13.24, SD=0.35).*

Analysis from the draw-a-family projective test

All children (N=10) depicted negative facial expressions in the images drawn. Most children *(N=8)* drew their images closer to the mother figures. The father figures appeared larger and more prominent in the picture *(N=8)* and for two children, the father image was missing. Children narrated little when asked to respond to the pictures depicted *(N=7).* Post intervention, though, most of them *(N=7)* drew the father figure at the centre of the page, appearing more prominent depicting happy facial expressions.

Underlying concerns and issues drawn from parent and child scheduled interviews

We tabulated the observed factors that caused anxiety in parents and gave subjective percentage scores for each factor (Fig.5). To be more precise, the authors inter rated them among other therapists who worked in the outpatient department to be more objective .

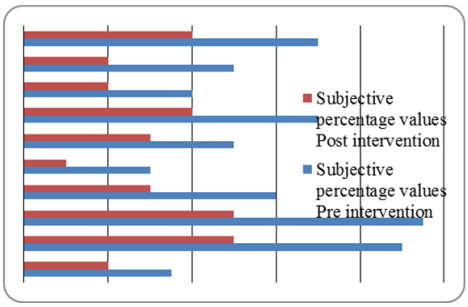

Fig.5: Represents the factors that caused anxieties in parents denoted by subjective percentage scores.

TABLE 3
Mean age equivalents for boys and girls on each domain of the Vineland Social Maturity Scale (VSMS) Pre and Post intervention.

Sl.No	Domains	Age equivalents in Years and Months *M(SD)* Pre intervention		Age equivalents in Years and Months *M(SD)* Post intervention		P values	
		Boys	Girls	Boys	Girls	Boys	Girls
1	Self Help General	12.68(0.22)	12.36(0.16)	13.40(0.4)	$6.23\times10^{-5**}$	0.008**	$6.23\times10^{-5**}$
2	Self Help Dressing	12.80(0.24)	12.44(0.26)	13.44(0.29)	0.001**	0.004**	0.001**
3	Self Help Eating	13.08(0.22)	13.32(0.22)	13.84(0.16)	0.02*	0.002**	0.02*
4	Self Direction	13.04(0.16)	13.16(0.29)	13.60(0.14)	0.001**	0.002**	0.001**
5	Locomotion	13.36(0.35)	13.36(0.35)	14.04(0.16)	0.022*	0.006**	0.022*
6	Communication	14.00(0.14)	13.96(0.16)	14.48(0.30)	0.002**	0.030*	0.002**
7	Occupation	13.84(0.16)	13.60(0.14)	14.27(0.17)	0.003**	0.014**	0.003**
8	Socialisation	13.52(0.33)	13.84(0.16)	14.00(0.14)	0.04*	0.025*	0.04*
9	Social Age	13.20(0.31)	13.48(0.36)	14.32(0.36)	0.017**	$7.5\times10^{-5**}$	0.017**
	Chronological Age	14(0.67)	13.68(0.41)	14.56(0.71)			

Note. Superscripts denote significant differences as follows: ***p<0.01;*p<0.05*. Statistically significant difference in mean scores is reported in the text.

Post intervention, parents have shown improvements in their attitudes towards their children. Similar interview schedule sessions with children revealed that they were anxious (Fig.6). There were anxieties regarding attention in school, lack of family times and also academic workload. Post intervention, the authors noticed that children appeared more at ease and stopped being fussy.

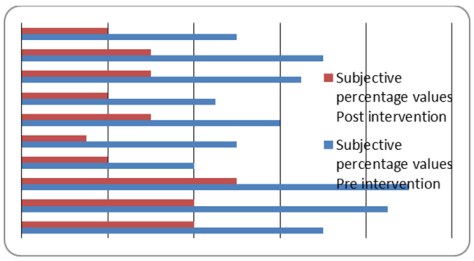

Fig.6: Factors that caused anxieties in children denoted by subjective percentage scores.

Concerns that teachers had at school

Reports from teachers related to classroom behaviour were obtained through telephone conversations. The researchers tabulated the factors (Fig.7) provided by the teachers and gave a score between 0 and 4 depending on the level of difficulty they experienced with children at school. A score of 0 indicated "no difficulty", 1 denoted "mild problems", and 2 represented "moderate" and 3 indicated "severe" problems. A score of 4 indicated "profound" problems experienced. Pre intervention, teachers reported the children were generally inattentive, disturbed other children in class and were also unresponsive. Post intervention, teachers reported that the children felt more confident in class, did not withdraw when challenged and demonstrated improved visual and auditory attention.

TABLE 4
Social profile on the Vineland Social Maturity Scale (VSMS) Pre and Post intervention

Sl.No	Domains	Age equivalents in Years and Months for boys and girls *(N=10)* *M(SD)* Pre intervention	Age equivalents in Years and Months for boys and girls *(N=10)* *M(SD)* Post intervention	P value
1	Self Help General	12.52(0.25)	13.24(0.35)	1.14×10^{-5}**
2	Self Help Dressing	12.62(0.30)	13.50(0.27)	5.15×10^{-5}**
3	Self Help Eating	13.20(0.24)	13.84(0.15)	0.0001**
4	Self Direction	13.10(0.23)	13.80(0.13)	5.52×10^{-6}**
5	Locomotion	13.36(0.33)	14.08(0.21)	0.0004**
6	Communication	13.98(0.14)	14.56(0.24)	0.0002**
7	Occupation	13.72(0.19)	14.30(0.19)	0.0001**
8	Socialisation	13.68(0.30)	14.12(0.23)	0.002**
9	Social Age	13.34(0.35)	14.38(0,34)	3.66×10^{-5}**
	Chronological Age	13.8(0.55)	14.12(0.42)	

Note. Superscripts denote significant differences as follows: $**p<0.01; *p<0.05$. Statistically significant difference in mean scores is reported in the text.

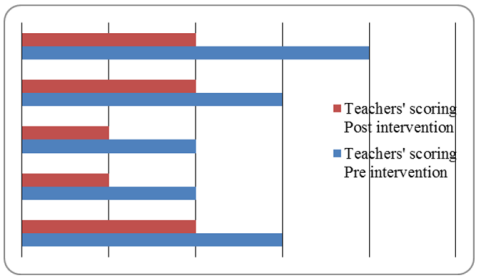

Fig.7: Teacher ratings of the levels of behavioural problems experienced within the classroom

The behavioural profile of children as rated by the parents and teachers

On the Connors Parent Rating Scale (CPRS-short form) scores pre intervention was found to be low on the hyperactivity domains but significantly higher on inattention and cognitive domains scores (Table 5) as they were above the 50th percentile. However, none of the children fulfilled the Attention Deficit Hyperactivity Disorder (ADHD) index. On The Connors Teacher Rating Scale (CTRS) findings pre intervention revealed that scores on the oppositional domain was low, but high scores above the 50th percentile were observed on the hyperactivity and the inattention subscales. These indicate significant behavioural markers that required intervention. Post Intervention, on the Connors Parent Rating Scale (CPRS), lower scores on inattention were observed and scores on the cognitive subscale had improved. The CTRS scores on hyperactivity and inattention had improved since they fell below the 50th percentile.

DISCUSSION

Prior to intervention, the children, both boys and girls, were observed to be slow in answering verbal questions when tested with WISC-IV. Post intervention, they responded well to verbal instructions. Their vocabulary had improved remarkably including their reasoning skills. Marked improvement was noted in use of expressive language and no difficulty was detected in pronunciation. The children were also able to provide better definitions and comparisons between objects. On the performance tests of WISC-IV, boys and girls showed improvements in ease of executing tasks and when arranging the blocks, they were quick to notice and correct it. According to studies, (Lerner,

TABLE 5
Percentile values of each behavioural domain of the Connors Parent Rating Scale (CPRS) and the Connors Teacher Rating Scales (CTRS) Pre and Post intervention.

Behavioural Factors on Connors Parent and Teacher Rating Scale	Scores on CTRS in Percentiles *(N=10)*		Scores on CTRS in Percentiles *(N=10)*	
	Boys	*Girls*	*Boys*	*Girls*
Oppositional	<25th	<25th	<25th	<25th
Hyperactivity	<50th	<25th	>50th	<25th
Inattention	>50th	<50th	>50th	<50th
Cognitive Problems	>50th	<50th	>50th	<50th
ADHD Index	<50th	<50th	<50th	<50th

2000) neurological defects create difficulty in comprehending written language and this could also trigger problems in understanding nonverbal communication. Post intervention, both boys and girls showed improvements in writing neatly and speed of executing the task.

On the Vineland Social Maturity Scale (VSMS) boys were found to have difficulties on the self-help domains, self-direction and in the communication skills. The researchers observed an average age equivalent of one year deficit across all domains. Girls had difficulties in the areas of self-direction, occupation and also on socialisation domains. The authors noticed deficits when comparing the mean social ages with the chronological ages. According to studies, children and adolescents with learning disabilities are less sensitive to the social meanings of gestures and facial expressions and have great difficulty discriminating vocal tones (Holder and Kirkpatrick, 1991). This lack .of sensitivity could seriously undermine social interactions in individuals with learning disabilities (Smith *et al*., 2004).

On the Draw-a-family test, boys and girls represented a lot of negativity in the images depicted. Father figures were prominent and placed at the centre of the page indicating they played more dominant roles in disciplining and in supervising academic work. Mothers were placed closer to the images children drew of themselves, since most of them *(N=7*) indicated that mothers often were supportive and were ready to listen to them. The children indicated that fathers were most often busy and unavailable. In addition, there was constant pressure and demand for them to perform well and failures were not appropriately dealt with *(N=7)*. The children felt they were misunderstood and burdened with expectations and parents compared their performances with siblings or with other children in the neighbourhood. Some children *(N=6)* reported that they were often criticised for their failures and that they were coerced to study harder to please teachers and relatives. Interpersonal problems among those with learning disabilities may be viewed as the consequence of an impaired ability to understand and apply metacognitive rules and strategies (Henry, 2001). Children with learning disabilities tended to produce less varied and more rigid coping strategies as they are unable to adapt appropriate cognitive strategies to different social situations (Worling *et al.*, 1999)

According to a study (Lerner, 2000) neurological defects in children with learning disabilities have resulted in difficulties in organising spontaneous and efficient strategies that are directed to the achievement of social goals. Post intervention, on the Draw-a-family test, the authors noticed that the figures drawn depicted positive facial expressions. Though father figures were still prominent, they expressed more positivity. The children *(N=8)* appeared to feel more at ease and also seemed more appreciative of the efforts parents were taking. Scheduled interviews pre intervention revealed that parents were quite distressed. They had high

expectations of their children and accepted that their children disappointed them. Post intervention, parents reported that consistent use of assistive techniques at home and school had led to improvements both in behaviour and in cognitive skills.

Scheduled interviews with children revealed that they were as distressed as their parents expressing concerns in coping in the classroom as they were unable to copy, write or do arithmetic calculations as well as the others. Children clearly did not pride themselves in any ability they had and were concerned that there was no time for co-curricular activities. They had too few friends in school and in the neighbourhood and families had not provided adequate social experiences. Children with learning disability were found to have higher total anxiety scores (Bender, 2002). One research showed that children with learning disabilities suffered from awareness disabilities as a result of a mild dysfunction in the brain processes which directly affect the child's learning capacity (Liddel & Rasmussen, 2005). The perception of non-verbal social communication tends to be less accurate (Nabuzoka & Smith, 1995). Children with learning disabilities display more psychosocial problems (Ochoa & Palmer, 1995). Some studies have suggested that children with mathematical disabilities or non-verbal learning disabilities (NLD) present higher rates of internalising behavioural problems (Osman, 2000). Post intervention, the authors observed that children appeared to be less anxious and willing to learn. They had begun to take lessons from private tutors at home who understood their needs and who worked with them at their own pace. Extracurricular involvement made them happier. The children appeared to understand that "being different" was alright so long as they were attempting to make a difference.

Parent reports on the Connors Parent Rating Scale (CPRS) indicated that their child finds it difficult to sustain attention while learning and that they allowed themselves to be distracted easily. They also admitted that children did not complete academic work given to them and it was often rather messy outcome. Individuals with learning disabilities often have attention problems (Kotkin, Forness, & Kavale, 2001). During the early school years, there was a significant relationship between behavioural problems and reading disability. Post intervention, parents reported positive and encouraging behaviour at home. The children were deemed to be much calmer, willing to listen and were less distracted. They showed improvements in listening and paying attention and were less impulsive.

Reports from the teachers showed the children were usually quiet and shy in class. They did not converse in a group. Children with learning disability achieve less peer acceptance (Sridhar & Vaughn, 2001) and have fewer opportunities to engage in social interactions (McGrady *et al.*, 2001) and to accumulate social experiences (Hutchinson, Freeman, & Bell, 2002) that form the basis for interpersonal understanding. Students with learning disabilities often exhibit disorganised thinking that leads to problems

related to planning and organising their lives at home (Hallahan & Kauffman, 2003). These children often lack the skills required for understanding text and have poor word-analysis skills (Hunt & Marshall, 2005) and are more vulnerable to emotional problems as well as display conduct problems. Many special education and general education teachers, especially those in middle and high schools, comment that students with learning disabilities are not motivated to learn which is consistent with research finding of this being a common characteristic (Fulk *et al.*, 1998) among the latter. Evidence indicates that children with learning disabilities have the highest scores of behavioural problems especially of the externalising type. Post intervention, teachers were much more positive in their feedback. They reported that the children were far more responsive and less distracted.

It is not simply a matter of teaching validated practices correctly, but it is also important that instruction be highly intensive. This (intensive instruction) involves helping students maintain a high degree of attention and response during instructional sessions that are scheduled as frequently and consistently as possible. A key factor affecting learning is both the amount of time spent in instruction and how effectively each instructional moment is used in engaging students in activities that contribute to their learning. The *implications* of the present study are: (i) there was an in-depth analysis of the cognition, behaviour and social functioning of children with learning disabilities, (ii) an effective intervention that focused on all the key problem areas was designed, (iii) parents and teachers worked diligently in implementing the strategies, (iv) a follow up was done after six months and tests were repeated to analyse effectiveness of the intervention, and (v) the study used all the ethical considerations and did not disseminate any confidential information. The limitations of the study are: the sample size was small, b) parent and child ratings were used to gain a subjective understanding. However, the strengths of the study are: a) all problem areas were assessed, b) the intervention provided proved to be effective.

CONCLUSION

Learning disability is neither a disease nor a disorder but can be overcome with appropriate support and care. Intervention programmes have to be tailored to suit the needs of the child focusing on his or her strengths and not weaknesses. It is also important to have regular and proper liaison with teachers and school authorities without whom efforts are futile. Therefore, helping a child is not just resolving problems but by continually supporting the family and the child in implementing the right solution.

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