Indian Association of Clinical Psychologists

Practice Guidelines for the Assessment and Intervention of Specific Learning Disabilities (Revised, 2020)

The present document is a revision of the Practice Guidelines for the Assessment and Intervention of Specific Learning Disabilities, 2011, at the request of the Executive Committee of the Indian Association of Clinical Psychologists.

The authors:

Annie John M.Phil, Ph.D. Clinical Psychologist, Head, Counselling Services. Mallya Aditi International School, Bangalore

Akila Sadasivan, M.Phil, Ph.D. (Cant., New Zealand) Child Neuropsychologist, Director of SAMVIDH (Neuropsychological remediation centre for children)

Bhasi Sukumaran, M.Phil, Ph.D, Professor & Head, Department of Clinical Psychology, SRM Medical College Hospital and Research Centre, Kattankulathur, Chengalpet District, Tamil Nadu.

Neena David, M.Phil., Ph.D., Clinical Psychologist, Counselling Services, Mallya Aditi International School, Bangalore.

Note from the authors

The current revision of the Practice Guidelines for the Assessment and Intervention of Specific Learning Disabilities was initiated by Dr.Kalpana Srivastava, President of the IACP, in response to the changes in diagnostic criteria and developments in research and practice since 2011. The growing awareness of Specific Learning Disabilities in India and the inclusion of SLD as a category of disability in the Rights of Persons with Disabilities in India (2016), stresses the need for such a document.

These guidelines have been prepared to enable the Indian Clinical Psychologist to provide high quality and consistent psychological service in this emerging area of practice. The term Specific Learning Disability shall be referred to as SLD and the Clinical Psychologist as CP. The authors have attempted to use current research and their own experience while compiling this document. The main aim of these guidelines is to aid the CP in the process of assessment and intervention of children or adolescents with SLD. It is, however, understood that it is a lifelong condition that evolves and continues to have an impact on the individual. Hence, the role of the psychologist is not confined to assessment and the intervention process. Dissemination of information about SLD in the community – parents, teachers and to other caregivers, is essential. Teachers and other mainstream educators should be introduced to the prevalence of SLD, the common manifestations of the disability and its impact on the student.

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Introduction

Specific Learning Disabilities has been understood over the years as a heterogeneous group of disorders that impact an individual's learning and the skills required to demonstrate learning. SLD most often manifests while the individual is a student and in the majority of cases, in school. In this context, the CP needs to understand and recognize the defining features of this condition, as early detection of SLD and intervention have been recognized as critical in reducing the cumulative negative effects and improving its prognosis. Various definitions have been used by researchers and practitioners to describe this condition in the context and purpose of their work, research and experience and Venkatesan (2017a), in his analysis of 23 definitions, commented that 'there is minimal or no agreement on nomenclature, inclusion/exclusion criteria, content, characteristics or prognosis about the condition'.

The first edition of The Practice Guidelines for the Assessment and Intervention of Specific Learning Disabilities (2011) used the definition put forward by the National Joint Committee on Learning Disabilities (1998). While revising the Practice Guidelines, the authors have made an attempt to describe the main features of the condition rather than use a single definition. A common understanding of SLD with its main features is listed here.

- It is manifested by significant difficulties in acquiring and using skills related to reading, reading comprehension, written expression, mathematical skills, or mathematical reasoning.
- It is recognized to have a neurodevelopmental basis.
- It is a life-long condition, with the specific impairments exhibiting different manifestations during the lifetime of the individual.
- It does not occur due to insufficient instruction, cultural or language differences or poor motivation, although these factors may influence the severity and impact of the learning disability.
- It cannot be explained by low intellectual ability, a sensory impairment, neurological or motor disorder or serious emotional disturbance.

Problems in self-regulatory behaviours, social perception, and social interaction may exist with learning disabilities but do not, by themselves, constitute a learning disability (NJCLD, 1990, Kavale, 2009, Venkatesan, 2016).

The Diagnostic and Statistical Manual (DSM - 5) recognizes it as a learning disorder of biological origin that impedes the ability to learn or use specific academic skills, that are necessary for acquiring information in school (APA, 2013). The International Classification of Diseases (ICD-10) describes it as a group of disorders that affects a person's ability to learn or process information that is in contrast to their level of intellectual development (WHO, 1994). Both definitions state that the learning

impairment is 'unexpected' or 'in contrast' to the general developmental level of the individual.

The ICD-11 includes that the difficulty in learning is 'characterized by significant and persistent difficulties in learning academic skills, which may include reading, writing, or arithmetic. The individual's performance in the affected academic skill(s) is markedly below what would be expected for chronological age and general level of intellectual functioning, and results in significant impairment in the individual's academic or occupational functioning.'

Both the ICD-11 and the DSM - 5 (2013) definitions specify that the disorder not be 'accounted for by intellectual disabilities' (IQ <70) and this necessitates that the CP include those whose underachievement was previously explained by a 'generalized learning failure' (Kavale et al, 2009), more specifically, those whose IQs fall in the 70 to 90 range. These definitions also require that the academic underachievement is quantifiably below (below the 16th percentile) that expected by the individual's chronological age (not IQ). The definition requires us to ignore the IQ level of the individual (as long as there is no intellectual impairment) when making a diagnosis. Hence one is required to only consider achievement levels, whether they are in the average range, or below the average range, i.e., if achievement levels place the individual in the 16th percentile or below.

The terms Specific Learning Disorder and Specific Learning Disability will be differentiated in this document as they guide intervention strategies and prognostic evaluations. A Specific Learning Disorder will refer to all those whose difficulties satisfy the DSM - 5, and ICD-10 criteria - of significant and persistent academic underachievement that begin during school, including that of having a measured IQ of 70 and above. A Specific Learning Disability will refer to the condition in those with average (IQ above 85) cognitive functioning in at least one area assessed. It follows that an individual with a Specific Learning Disability also has a Specific Learning Disorder.

Although the terms 'disability' and disorder have been interchangeably used in literature, the term 'disability' is used in the educational context and often required for eligibility for accommodations and special arrangements from examination boards. The authors recommend that while making a diagnosis in the educational context, CPs pay attention to the nature and pattern of deficits observed; aligning them to the defining criteria as closely as possible.

It is to be noted here that 2 of the criteria are difficult to fulfill in the Indian context, that of results from standardized tests to determine underachievement, and establishing the age of onset. We do not have national norms for achievement tests - (apart from reading in 4 languages, DALI, 2016); and when a child presents with LD in high school, it is difficult to establish early onset when report cards only have

grades or percentage marks entered in them.

Research in India

The growing awareness of Specific Learning Disabilities in India, and the inclusion of SLD as a category of disability in the Rights of Persons with Disabilities in India (2016) stresses the need for standardized assessment practices and educational remediation methods. Research in the area of SLD has increased by 40.44% since 2011, and much of this work has been in the broad area of 'Learning Disability', with fewer papers mentioning specific areas of disability (Venkatesan, 2017a). A review of the literature on research done in the area of Learning Disabilities in the Indian context reveals that the subject of Dyslexia or Reading Disability appears to have been most widely researched, while there has been a smattering of studies in the other aspects of SLD.

Epidemiological data on the prevalence of Learning Disabilities in India have been sparse due to the many difficulties inherent in the Indian situation. Suresh and Sebastian (2003) have noted that the research on the prevalence of learning disabilities in India is limited and there is certainly no data that can be quoted about the pan Indian situation. There have been no prospective longitudinal studies, and there is little information on the prevalence of SLD with other psychiatric disorders like ADHD, among Indian children and adolescents. They have, however, reported a 'large incidence' of learning difficulties in rural areas in Kerala, and John (1990), found a distinct group of children with features of a specific learning disability among those presenting with scholastic backwardness in the Child Guidance Clinic in NIMHANS. Most studies have difficulty distinguishing between learning disability and learning difficulty. They have noted that the issues specific to the Indian context that need to be integrated when researching the prevalence of SLD in India are various. These include bilingualism and multilingualism, classroom and school contexts in rural areas, parental illiteracy, the medium of instruction and socio-economic factors associated with environmental, cultural, economic disadvantage.

Venkatesan (2012) studied 2100 children from two different schools who were referred for poor academic performance. The study found that 115 children from the total sample were referred for a detailed diagnostic evaluation of learning disability (5.5%) of which 89 were boys (3.9%) and 34 were girls (1.6%). 19 of these children (16.5 5) fulfilled diagnostic criteria for learning disability. 11 (9.6%) were diagnosed as slow learners, 11 (9.6%) had expressive speech delays while 5 of them (4.4%) did not have any problems at all. The author concluded that problems in school should not be mistaken for learning disability with a proper assessment, diagnosis and must be followed by a good intervention programme.

Venkatesan and Swarnalatha (2013) studied 66 child juvenile delinquents in the age range of 9 to 18 for grade level performance and estimated the extent of behavioural difficulties in them. The study consisted of both boys and girls. Findings indicate that more boys had low-grade performance compared to girls and this discrepancy in

grade performance (actual performance compared to expected levels) was higher in older boys. The type of crime and level of parental education were found to be significant contributors. Boys in general, and younger children (in the age range of 10 to 12 years) had greater frequency and severity of behaviour problems compared with girls and older children. The authors, however, report that though poor academic performance might not be interpreted as a causal factor there is a high prevalence of academic difficulties in juvenile delinquents, as found in this study.

Identification, Assessment, and Diagnosis of Learning Disabilities in India

Kapur, John, Rozario, and Oommen (1991) developed the NIMHANS Index for SLD – Level 1 for assessment of pre-academic skills for children between 5 to 7 years – attention, visual and auditory discrimination, visual and auditory memory, speech and language, visuo-motor and language, writing and number skills. The Level II for Classes 1-7 assess the areas of attention, reading, spelling, perceptuo-motor, visuo-motor integration, memory and arithmetic skills. This battery of tests is usually used in conjunction with the Malin's Intelligence Scale for Children. Initial efforts at developing norms (Hirisave & Shanti, 2002) have been made. The GLAD is a curriculum based assessment meant for teachers to use. It gives 3 levels of achievement based on a percentage of correct answers (Narayan J, 2003).

Sankaranarayana (2003) used reading assessment tests (letter identification, word recognition, and reading texts) as well as tests used with children in the Western literature such as Rhyming, Torgeson Elision, Rapid Automatized Name, Rapid Alternating Stimulus, Short-term memory for Digits, Conservation, Handedness, and Vocabulary. They found that the best predictors of reading ability in Indian children were the speed of naming letters, vocabulary and phonological awareness. Rozario (2003) emphasized the need for individualized profiles.

Konanthambigi and Shetty (2008) used the Behaviour Checklist for Screening the Learning Disabled and Swarup and Mehta (1991) – developed a scale at the Special Education Cell of the SNDT Women's University – for teachers to identify learning problems in children.

The Learning Disabilities Scale developed by Yadav and Agarwal (2008) consists of 19 questions in 5 areas – Verbal disability, oral attention disability, writing disability, mathematical computation disability, and written attention disability. They identified 2.25 percent of school children (8-10 years) as learning disabled in rural schools in Allahabad. They found more boys than girls (B= 2.66; G= 1.71) having a Learning Disability.

Venkatesan and Holla (2011) developed a Graded Spelling List for Children with Learning Disabilities. The spelling test was administered to a group of 259 children identified as having Specific Learning Disabilities. The authors concluded that this test could be used for students from kindergarten to grade 4 as a diagnostic tool and for planning spelling remediation activities.

A graded reading test was developed by Venkatesan (2017c). The test covers a grade level range between nursery and grade 4 and as mentioned by the author, is applicable for diagnostic evaluation of students with reading delays and difficulties. Reliability and validity measures were obtained from the test sample consisting of 302 children with identified learning disabilities.

Assessment of Learning Disabilities should also include screening and evaluation of other co-morbid conditions like Attention Deficit Hyperactivity Disorders. Crawford (2007) highlighted the fact that both SLD and ADHD existing co-morbidly are underrecognized in India. Karande, Satam, Kulkarni, Sholapurwala, Chitre and, Shah's study (2007) study reported profiles of 50 children diagnosed with SLD and /or ADHD. The average age at which the children were diagnosed was 11.36 years (with a range from 7 to 17 years), while the average age at which the children's symptoms had first been noticed was only 5.55 years (with a range from 4 to 6 years). The delay between symptoms first being noticed and the child being diagnosed with SLD and ADHD was nearly 6 years on the average.

Venkatesan (2017 b) studied the defining characteristics of children using a historical comparative design to evaluate the similarities and/or differences between attributes from a purposively selected sample of 23 official definitions of learning disability by individual authors, international disease classification systems, and/or governments across nations over time. The analysis highlighted that there was little concurrence among all the studies. Though several of them highlighted aspects such as heterogeneous nature, lifelong prevalence, average and above average intelligence and discrepancy between observed and expected levels of academic performance. However, the most commonly cited aspects include the presence of processing deficits, exclusion factors and the discrepancy between expected and observed levels of academic performance.

Children with a learning disability have difficulty in grasping concepts taught in school according to a study conducted by Venkatesan (2017d). The study indicates that when asked to explain simple concepts in science or maths children with learning disability can answer the "what" and the "why" questions only associated with concepts and fail to answer other questions (where, how, whose and when). Their knowledge of application, analysis-synthesis, and evaluation of concepts were nearly totally absent. Errors in the ability of children with learning disability indicated ambiguities, over/under inclusion, constriction-expansion, confabulation, convergence-divergence, substitution, repetition, perseveration or absence of abstraction. The author suggests that these errors and deficits need to be considered while planning their remedial instructions.

Language and Learning Disabilities in India

As educational facilities in most of rural India are in the regional language there is a need to have assessment tools in the different mother tongues or the medium of

instruction of the students. Prema (1998) developed the Reading Acquisition Profile in Kannada – a language based reading assessment battery.

Sharma (2000) explored the language skills of 23 Hindi speaking children with LD (7-15 years). They were evaluated on the Hindi version of the Linguistic Profile Test (Karanth et al, 1984; Sharma, 1995). Children with LD performed poorer than children without LD and they found that syntax and semantics were affected more than phonemics. The same study was repeated with 21 Malayalam speaking LD children and reported similar findings (George, 2001). An additional finding was that the gap between the chronological age and language age of the children increased with age.

Balasubrahmanyam (2001) speculated that the incidence of dyslexia would be less in India as those literate in Indian scripts received intensive phonics training and that the Indian methods of writing (orthographic) were transparent. Karanth (2002) also suggested that the syllabic nature of most Indian scripts along with the high degree of grapheme-phoneme correspondence meant that a lower level of phonological awareness would be required for learning to read. However, other characteristics of Indian languages could lead to significant difficulties with reading at phrasal and sentence levels. The implications of this research would be that informed choices on the medium of instruction and method of teaching (e.g. phonic method) for learning disabled children could be guided by a detailed language assessment. Gupta (2008) analysed the reading errors of Hindi-speaking dyslexic children and found a greater number of graphemic errors.

Karanth (2008) observed that conversational level of LD children could be adequate, though they may have specific delays or deficits in language acquisition on formal language assessment.

Research with other Indian languages would need to be integrated into research on the prevalence of LD in children with the medium of instruction other than English. However, it is clear that LD is found in Indian children from both English speaking and vernacular backgrounds.

Psychosocial aspects of Learning Disabilities in India

Mukerjee, Hirisave, Kapur, and Subbakrishna (1995) aimed at examining anxiety and self-esteem in children with Specific Developmental Disorders of Scholastic Skills (SDDSS). A purposive sample of 40 children between the ages of 8-13 years, attending English medium schools, with IQs above 80 was taken. Of these, 20 children fulfilling the ICD-10 criteria for SDDSS, were taken from a Child and Adolescent Mental Health Unit and compared to 20 non-SDDSS children drawn from nearby schools. Both groups were assessed on: (1) A semi-structured interview schedule (2) Malin's Intelligence Scale for Indian Children (MISIC) (3) NIMHANS Index for Specific Learning Disabilities (4) State-Trait Anxiety Inventory for Children and (5) Culture-Free Self-Esteem Inventory for Children. The obtained data was analyzed using descriptive statistics, parametric and nonparametric tests. Findings revealed a significant difference in the self-esteem of children with and without SDDSS. Particularly, low parental, academic, and general self-esteem were seen in children with SDDSS (p < 0.01). The children with SDDSS also had significantly higher state anxiety (p < 0.01) but did not differ significantly on trait anxiety scores. Moreover, parental self-esteem was found to be significantly related to state and trait anxiety in children with SDDSS. The findings were discussed in terms of their importance in planning an intervention for children with SDDSS, both in the clinic and school settings.

Lall, Hirisave, Kapur, and Subbakrishna (1997) examined perceived peer relations and social competence in children with Specific Developmental Disorders of Scholastic skills. A sample of twenty children with disorders of scholastic skills aged, seven to twelve years and twenty controls matched on age, class, and IQ were taken. The two groups were assessed on (i) A semi-structured interview schedule (ii) Malin's Intelligence Scale for Indian Children (MISIC) (iii) NIMHANS Index for specific learning disabilities (iv) Perceived peer relations questionnaire (v) Interpersonal competence scale -Teacher version. Results revealed that children with scholastic skill disorder perceived their relationship with peers as cordial. However, teachers found these children as poorer in social competence and in dimensions of academics, popularity, affiliation and sportsmanship qualities.

Bhola, Hirisave, Kapur, and Subbukrishna (2000) studied self-esteem and selfperceptions in children with learning disability in a purposive sample of 40 children, 8-13 years, with IQs over 80. The sample had 20 children with specific developmental disorders of scholastic skills and 20 age and sex matched normal achievers. Two groups were assessed on the Culture-specific Self Esteem Inventory for Children. Self-Perception of Learning Disability Scale was administered to the children with SDDSS. Results indicated that children with a learning disability had significantly lower academic, social, parental and general self- esteem. The child's perception of learning disability had significant positive associations with academic, social, general and total self-esteem levels but not significantly associated with parental self-esteem.

Hirisave & Shanti (2002) studied behavioural problems in children with scholastic skill difficulties. A sample of children (n=20) aged 5 to 8 years with scholastic difficulties was compared with those who did not have difficulties. Results indicated that revealed the greater number of externalizing, internalizing and learning problems in children with scholastic difficulties. The need for management of behavioural problems along with remediation of scholastic difficulties was highlighted.

Kohli, Malhotra, Khehra, and Mohanty (2007) studied 46 children using the NIMHANS Index of Specific Learning Disabilities, in the age range of 7-14 years with

SLD. They were primarily boys who attended the outpatient service of the Child and Adolescent Psychiatric Clinic at PGIMER, Chandigarh. The prenatal and perinatal history indicated that mothers of 21.7% of the children had problems during pregnancy. These children reported various clinical problems such as behavioural problems (60.9%), neurotic traits (54.3%), history of developmental problems (39.1%) and family history of learning disabilities (17.4%). The specific errors in their reading and writing skills were difficulty in comprehension, the omission of words, difficulty using phonetic cues, difficulties with spellings, tenses, guessing at words, mispronunciation, substitution of letters, illegible handwriting and visuo-spatial difficulties.

Neuropsychological aspects of Learning Disabilities in India

Bhasi, Rao, and Oomen (2003) studied the effect of neuropsychological intervention on children with Specific Learning disorder for Arithmetic The study was carried out in two phases. In Phase I norms were developed for the Test of Arithmetic Ability (Shalev et al, 1993), administering it to a sample of 284 children studying in Standards III to VI. Standard wise cut-off scores were developed to identify Specific Learning Disorder for Arithmetic. In Phase II, a remedial program consisting of neuropsychological remediation targeting the functions of attention, visual and verbal memory as well as content-based arithmetic skills training was developed for the treatment of Specific Learning Disorder for Arithmetic. A sample of 17 children with Specific Learning Disorder for Arithmetic was identified using the NIMHANS Index for SLD, of which the treatment group comprising of 10 children received neuropsychological remediation while the control group comprising of 7 children received remedial sessions for the improvement of handwriting skills. Both the groups received content based remediation of arithmetic skills after they were regrouped based on the nature of arithmetic deficits as seen on the Test of Arithmetic Ability. Results indicated a significant improvement in arithmetic skills in the treatment group suggesting that neuropsychological remediation contributes to the improvement of arithmetic skills.

Kohli, Malhotra, Mohanty, Khehra, and Kaur (2005) aimed to assess the deficits and neuropsychological functioning in children with specific learning disability drawn from the clinic population of the Child and Adolescent Psychiatric Clinic at PGIMER, Chandigarh. 35 children in the age range of 7-14 years were assessed using the NIMHANS Index of Specific Learning Disabilities and neuropsychological tests consisting of the PGIMER memory scale for children, the Wisconsin card sorting test, the Bender visuo-motor gestalt test and Malin's intelligence scale for Indian children. The results indicated impairments in specific areas of memory, executive functions, and perceptuo-motor tasks. The authors concluded that identification of specific deficits would aid in the planning of individualized intervention plans. Kohli, Kaur, Mohanty, and Malhotra (2006) compared the pattern of deficits, intelligence and neuropsychological profiles of 45 LD children (16 with reading disorders, 11 with writing disorders and 19 with both reading and writing disorders - mixed group) in the age range of 7–14 years. The NIMHANS Index of Specific Learning Disabilities, MISIC, and the PGI Memory Scale were administered. The results indicated that the mixed group had greater dysfunction than the writing group in the incorrect use of capital letters, division and graded subtraction. Also, the mixed disorder and reading disorder groups had greater dysfunction than the writing group in speech and language. Intellectual function and mental balance on the PGI memory scale were more affected in the mixed group in comparison to the writing group. The study indicated that subtypes of learning disorders differ in the neuropsychological profile of deficits with the mixed group having greater dysfunction.

Vinod Kumar and Bhasi.S. (2009) compared matched groups of adults with a history of LD (n=22) and normals (n= 25) using the Wechsler Adult Intelligence Scale III (WAIS-III).Results showed a significant difference in Full Scale, Verbal and Performance IQs, with normals obtaining higher scores. The adults with a history of LD also had lower scores on Verbal IQ compared to Performance IQ. Analysis of index scores indicates a significant difference in the indices of Verbal Comprehension, Perceptual Organization and Working Memory between the two groups with no significant difference in the index of Processing Speed. In addition, a positive correlation was found between the three indices of Verbal Comprehension, Perceptual Organization and Working Memory with the Full Scale IQ, Verbal IQ and Performance IQ in the adults with history of LD group while in the normals, positive correlation was found between the Full Scale IQ and all the four index scores, between Verbal IQ and the indices of Verbal Comprehension and Working Memory as well as between Performance IQ and the indices of perceptual organization, working memory and perceptual speed. These results suggest that the neuropsychological profile of adults with a history of LD vary from that of normal controls.

Krishna, Oomen, and Rao (2008) aimed to examine the association between academic skill deficits, brain dysfunction in the form of neuropsychological deficits and psychological comorbidity in the form of behavioral/emotional problems. The study was done on a sample of 130 school going children with learning disability, studying in the 3rd to the 7thstd in English medium schools. The tools used were the Sociodemographic data sheet, NIMHANS Index for Specific Learning Disabilities-Level II- Short scale, NIMHANS Neuropsychological Battery for Children, Missouri Assessment for Genetics Interview for Children-Parent version and the Malin's Intelligence Scale for Indian Children. There was a higher frequency of mixed disabilities than single disabilities. The neuropsychological deficits showed predominantly diffuse cortical deficit pattern and the behavioral/emotional problems were predominantly externalizing symptoms with ADHD having the highest

frequency. Associations between academic skill deficits and neuropsychological deficits were evident as an increased number of impaired academic domains were associated with academic skill deficit severity and greater neuropsychological deficits. The behavioral/emotional problems were found to be nonspecific to the type of academic skill deficits. The association between all three dimensions was seen by the formation of 3 clusters with distinct profiles of academic skill deficits, neuropsychological deficits, and behavioral/emotional problems. The authors attributed this association to brain dysfunction.

Interventions in Learning Disabilities in India

Rozario, Kapur, and Rao (1994) evaluated the effectiveness of a 25 session remedial package for 25 children (9-11 years) with LD and reported significant improvement.

Srikanth and Karanth (2003) developed a remedial programme based on the Aston teaching Programme focusing on auditory-visual channel deficits, specific spelling rules, and cues, training in comprehension skills, oral expression, written expression and visuo-motor perceptual skills. The remedial programme included both reading and spoken language proficiency.

Pagedar and Sarnath (2008) developed the PASS Reading Enhancement Programme (PREP), a theory-driven remediation program for primary school children with difficulty in reading, spelling, and comprehension. This programme aims at improving information processing strategies and avoids direct teaching of word skills like phoneme segmentation/blending. A pilot study on the effectiveness of PREP with 6 students aged 7-11 years referred to Maharashtra Dyslexia Association's Resource Centres.

Sadasivan, Rucklidge, Gillon and Kapur (2009) compared the effect of phonological awareness intervention (PA) and neuropsychological intervention (NP) in two groups of 10 reading disabled children each (10-13 years) The children with reading disability were also compared in performance on reading, phonological and neuropsychological tests with twenty age- and education-matched controls without reading disorder. Both the reading disabled groups received intervention in 20 biweekly sessions of 40 minute duration. The PA group received inputs to enhance phonological awareness skills such as segmentation, isolation, deletion, and tracking of speech sounds using games and visual material. The NP group, on the other hand, received inputs to enhance their attention, concentration, working memory, verbal learning strategies, planning and organization and memory skills. The results indicated that reading disabled children differed significantly from the control group on reading abilities, attention, executive functions and phonological awareness measures at phoneme and syllable levels before the intervention was carried out. After intervention, both treatment groups showed significant improvements in their reading score which was maintained three months after the intervention. Cognitive

changes and phonological processing skills showed different outcomes in response to intervention. While the PA group had improved attention, verbal and visual memory and visual perception, the NP group had enhanced verbal fluency, inhibition control, verbal learning and immediate visual memory. Phonological awareness at phoneme level improved significantly after PA intervention while the improvement for the NP group was at the syllable level. The improvements were maintained at threemonth follow-up for both groups with the PA group being significantly higher than the NP group on verbal working memory while the NP group was significantly higher on verbal fluency three months after intervention. The two interventions were found to be effective in enhancing reading accuracy in a group of children with specific reading disorder. In addition, the two interventions also improved specific cognitions which were maintained over time.

Venkatesan and Gupta (2014) studied the effects of improving executive functions on children with learning disability. They used a matched 2-group pre-post crossover intervention design on four children (11 - 14 years) diagnosed as having Learning Disability. An array of standard tests to assess executive functions and intervention activities to improve executive functions were used through 20 individualized training sessions. Results showed statistically significant gains, maintenance and generalization in executive functions in both classroom/academic performance and school settings.

Assessment of Specific Learning Disabilities

The main purpose of determining if a child has a SLD is to be able to provide appropriate, supportive and remedial programmes to enable the child to effectively function in his or her environment. As SLD affects all spheres of functioning – academic, emotional and social – it is necessary to provide a complete analysis and profile in these areas. This will, in turn, suggest the treatment and accommodations that the child will require. With a profile of skill deficits and strengths, the professional administering the remediation programme will be in a better position to plan an effective programme. In addition, a diagnosis of SLD allows the individual to access support and services in public board examinations to which she/he is entitled to. The assessment of SLD by a Clinical Psychologist allows the clinician to:

- Make a diagnosis of SLD
- Understand the severity of the disability
- Construct a learning profile of the individual
- Make recommendations for specialized instructions and accommodations for the individual

When assessing young adults for SLD, one needs to take into consideration the impact the disability has on the individual beyond school. Young adults with SLD are required to be supported with accommodations in college and in the workplace.

Both the ICD 10 and the DSM - 5 definitions of SLD indicate that the current achievement in academic related functioning should be 'unexpected' or 'in contrast' to the general developmental level of the person. However, as clinicians have come away from statistically generated discrepancy measures being a condition for the diagnosis of SLD, for reasons that include psychometric properties of tests used, statistical phenomena, 'cultural bias' 'second generation learners' and 'delay in implementing remedial intervention' (LDAO, 2001), the use of standard scores from tests to determine if the academic underachievement stems from a SLD, is recommended. An achievement standard score under 85 (Percentile Score below 16%) is widely recognized as the cut-off score for the presence of SLD. For similar reasons, the use of age-equivalents and grade-equivalents are seen as imprecise methods of assessing the difference between ability and achievement.

In India, in the absence of nationally standardized tests, with the exception of DALI (2015) for reading disabilities, we either depend on tests that have been standardized in populations outside India, or tests that are largely curriculum based (GLAD, NIMHANS BATTERY). In these circumstances, the qualitative analysis of responses gathered becomes a vital tool in the diagnosis of SLD. As having an SLD impacts different aspects/domains/facets of an individual's functioning in school, at home, at work, and with peers, the CPs assessment needs to detail information that will guide intervention in the form of development of compensatory strategies (LDAO, 2001) in these areas.

The Rights of Persons with Disabilities Act 2016, was later clarified in a gazette notification in January, 2018, that Step 1 of the assessment would be done by a paediatrician who would determine if the individual's hearing and visual acuity are in the normal range. Step 2 would determine an IQ that is above 85, before going on to Step 3, which constitute the achievement tests. They also recommend that the NIMHANS Battery of Learning Disabilities be used to diagnose for SLD (Dept of Empowerment of Persons with Disabilities, 2018).

Step 1: Gather a history of the individual (usually from parents). This should include

- Presenting Complaints. SLD may present as low academic achievement resulting from an inability to focus, lack of interest, anxiety, mood disturbance, or a physical illness.
- Sensory difficulties. The CP should probe for the presence of visual or auditory difficulties.
- Developmental history. The CP should take note of any delay in motor or language development, either specific or pervasive delays.
- Educational history. Age when difficulties were first noticed and description of the difficulty should be mentioned. If an intervention has been put in place, get details of the same special methods used to teach reading, math, and conceptual understanding. Study habits of the child. Parental expectations of the child with regard to amount of time spent on school work, range of marks or grades the child receives, and long term expectation in terms of career choice.
- Emotional, and behavioural difficulties. The CP should probe for existing anxiety conditions, mood disturbances, behaviour patterns and attention-related difficulties.
- Social interaction with peers (and adults). The CP should gather information on the individual's behaviour with peers (and adults) - during playtime and during organized activities. Any reports of being teased or bullied should be noted.
- Classroom observation of learning behaviours (in the case of a child)– if this is not possible, a descriptive report by the teacher is recommended with the following information:

-Can the child attend to classroom instruction, and follow classroom instruction. The teacher should comment on the child's behaviour during classroom discussions, his or her ability to attend to what is being read aloud, and difficulties, if any, while copying from the board.

-The teacher should comment on whether homework comes in regularly.

-The teacher report should include comments on the ability of the child to organize their own behaviour and to learn routines set in class– is the child ready for the class with books, stationery, etc.

-The child's behaviour during a test or examination.

Step 2: Standardized assessments

• <u>Cognitive Ability</u> – The assessment of general cognitive abilities is not necessary to the process of making a diagnosis of SLD if the CP feels, on clinical examination, that the child is of average intelligence. However, many of the tests currently used give detailed information about cognitive functioning that impact on or facilitates academic learning. Knowledge of verbal and visuo-spatial analytic reasoning, visuo-motor coordination, and working memory are areas of functioning that impact learning.

Assessment of cognitive ability should be made using a test that is both valid and culturally appropriate. The test should be administered in the language the child is most comfortable in. Acceptable measures include, but are not limited to, Malins Intelligence Scale for Indian Children (1971), Wechsler Intelligence Scales for Children (Weschler, 2015), and the Binet-Kamat (1960).

- <u>Psychological processing</u> Research in psychological processing indicate the role they play in SLD. Different aspects of information processing should be assessed on a general basis, and in-depth, based on the difficulty reported in the referral. Auditory and visual processing, processing speed, executive functioning, memory sequential, short term and long term and auditory, and phonological processing must be assessed. The assessment of gross and fine motor skills balance, eye-hand coordination, pencil grip and sense of rhythm. The assessment should be done in the language the child is most comfortable in. Some of the measures of cognitive ability do measure some aspects of information processing, the assessment of skills like phonological awareness, are included in tools that measure reading.
- Achievement

Assessment of skills necessary for learning in the classroom must be made. These can be categorized into 3 main areas - reading, writing (including spelling) and mathematics. Assessment tools that are commonly used include, but are not restricted to, are the NIMHANS Battery (2019), Grade Level Assessment Device (GLAD, 2003), Dyslexia Assessment for Languages of India (DALI, 2016), Wechsler Objective Reading Dimension (1993), Gray Oral Reading Test, Test of Word Efficiency, Wechsler Objective Numerical Dimension (1996), Test Of Written Language (2014), Woodcock Johnson Tests of Achievement (2001).

The following section includes a list of signs that may indicate difficulties with Reading, Writing, and Math. When standardized achievement tests are not available for use, curriculum-based assessments should be used. Here it is important to be

aware that the assessment should be comparable to the child's present educational curriculum.

Assessment of Reading

The CP should be clear about the purpose of carrying out a reading assessmentdepending on whether the purpose is for planning an individual remedial programme or to inform whole class instruction or for diagnostic requirements, a suitable reading assessment that is culturally appropriate should be chosen. Reading assessments should address phonological processing and comprehension skills. As detailed by the Learning Disabilities Association of Ontario (2001), the term "phonological processing refers to the use of speech-sound information in processing both written and oral language.

This may include:

(a) phonological awareness, which is an explicit knowledge of the individual sounds (phonemes or allophones) that makeup spoken language, measured by the ability to identify or manipulate the constituent sounds in words;

(b) phonological coding of information in short-term involves the retention and manipulation of information in verbal form, measured by the recall of numbers, words, and sentences and based on the representation of information about the sound structure of verbal stimuli in memory;

(c) phonological recoding, which is the ability to retrieve from long-term memory phonological codes or sounds (pronunciations), associated with letters, word segments and temporary storage in working memory for processes such as decoding unfamiliar words in fluent reading or during the beginning reading processes of blending and segmenting."

S. B. Smith, D.C. Simmons & E.J. Kameenui, *Synthesis of research on phonological awareness: principles and implications for reading acquisition*. National Center to Improve the Tools of Educators

Signs that would indicate difficulties in reading:

- Difficulties in accurately identifying letters and their sounds
- Difficulties with segmenting and blending of phonetic units
- Slow reading decoding inefficiency, appears effortful, hesitates while reading, reads words aloud slowly
- Frequently makes errors of substitution, omission or addition of consonants or vowels, phonetic inaccuracies, reversal or inversion of letters or parts of words,
- Demonstrates poor knowledge of patterns of sound made by a group of letters (eg., 'ough' in 'rough') and familiarity with of homophones
- Difficulties with rhyming- identifying rhyming patterns and creating them
- Difficulty learning and retaining sight words
- Limited vocabulary knowledge

- Misses lines or loses place while reading, but continues to read without correcting self.
- Reading without expression
- Ignoring punctuation while reading, this affects the meaning of the text
- Could demonstrate poor spoken/written grammar
- May have appropriate phonological processing skills, read fluently but may not understand sequence, relationships and inference in the text
- Difficulties with understanding figurative language
- Guesses meaning of text using visual cues
- May have difficulty in connecting ideas within a passage
- Difficulties in distinguishing significant info from minor details
- Difficulties with summarizing or remembering what is read
- Tends not to demonstrate an enjoyment of reading- such as independently choosing a book to read as a leisure activity
- May appear to look uncomfortable or feel distressed when asked to read aloud

While the presence of these signs appearing fairly consistently over a period of time may not necessarily indicate the presence of a disability with reading, they would indicate the need for a detailed assessment of reading skills.

There is a range of standardized reading assessments that are available and it would be useful for the CP to recognize that comprehensive reading assessments appear to tap into 5 core skills required for the acquisition and development of reading skills, these include:

- 1. Letter Knowledge Skills
- 2. Phonemic awareness
- 3. Reading Fluency
- 4. Vocabulary development
- 5. Comprehension

A sound diagnostic reading assessment should include information about the child's reading behaviours as observed by the parent, teacher, and CP, the nature of reading difficulties and errors, scores from curriculum-based measures and standardized tests of reading.

Assessment of Writing

The assessment of writing can be separated into handwriting and the visuo-spatial aspects of the written work; and the ability to express oneself, using grammatically correct language in a coherent manner, using the written format.

Signs that would indicate difficulties in writing:

- A pencil grip that is too tight, or using a hooked wrist
- Difficulty in the formation and legibility of letters or numbers
- Slow and laboured speed of writing
- If the writing is a mixture of print and cursive, the appearance of upper case in the middle of a word should also be noted.
- Difficulty to retrieve alphabets representing sounds
- Spelling words in isolation –errors that show substitution, omission or addition of consonants or vowels, phonetic inaccuracies, sequencing or letter order difficulties, reversal or inversion of letters, knowledge of spelling rules, of commonly used sight words and of homophones
- The same errors in spelling as part of comprehension or essay writing,
- Not knowing the usage of punctuation
- Use of vocabulary and synonyms in a piece of free writing,
- Difficulty to present ideas in an understandable sequence,
- Difficulty in planning and organizing a written text for a particular audience or purpose
- Difficulty in the organization of writing and in the mechanics of writing a paragraph or essay.

Assessment of Mathematics skill should include -

- The ability to recall basic math facts, procedures, rules, or formulas
- Ability to maintain precision during mathematical work
- Ability to sequence and carry out successfully multiple steps
- Understanding of the final goal of the math problem
- Ability to identify salient aspects of a mathematical situation, particularly in word problems or other problem-solving situations where some information is not relevant
- Ability to remember and understand the vocabulary and language of math
- Ability to know when irrelevant information is included or when information is given out of sequence
- Ability to explain and communicate about math, including asking and answering questions
- Ability to read texts to direct own learning
- Ability to remember assigned values or definitions in specific problems
- Mental fatigue or being overly tired when doing math or feel overloaded when faced with a worksheet full of math exercises
- Confusion with learning multi-step procedures
- Ability to order the steps used to solve a problem
- Ability to copy problems correctly
- Ability to read the hands on an analog clock

- Ability to interpret and manipulate geometric configurations
- Ability to appreciate changes in objects as they are moved in space
- Ability to switch between multiple demands in a complex math problem
- Ability to tell when tasks can be grouped or merged and when they must be separated in a multi-step math problem
 - Ability to manage all the demands of a complex problem, such as a word problem, even though he or she may know component facts and procedures

Step 3: Behavioural Observation during the assessment. Observation done in the testing situation should report on factors that could impact the learning of the child. This should include

- Level of anxiety
- Fatigue
- Handwriting pencil grip, pressure while writing, posture
- Ability to sustain attention during the assessment
- Ability to sustain a conversation with the examiner using age-appropriate vocabulary

It is to be noted that the assessment should not be done with the parent, or any observer, in the same room. For this reason, rapport building between the child and the CP is a crucial first step.

The assessment should provide evidence for the fact that the child's learning and performance in the areas assessed are significantly low, in contrast to other areas of functioning. That performance in school is significantly limited due to the disability, and that the child is unable to access the school's curriculum due to the specific disability.

The CP should be aware of the fact that the severity and manifestation of SLD can vary across and within the pertinent areas. The degree and extent to which the specific disability impacts on the child's learning should be described as this will enable the educator to make an Individual Educational Plan.

The CP should be cognizant of the fact that age and stage of development of the child can influence the manifestation of the disability.

The manifestation can also be influenced by the context that the disability is seen in – in an academic or non-academic setting. (NJCLD,1998)

The National Academy of Neuropsychology (NAN) Policy and Planning Committee recommends that when a learning disability is suspected, an evaluation of neuropsychological abilities is necessary to determine the source of the difficulty as well as the areas of neurocognitive strength that can serve as a foundation for compensatory strategies and treatment options. The purposes of a neuropsychological evaluation are to determine the pattern of brain-related strengths and weaknesses, to develop an understanding of the nature and origin of the difficulties, to make a diagnosis, and to provide specific recommendations for appropriate intervention and treatment

When possible it is recommended to use standardized measures. Standardized tests allow clinicians and other professionals working with the child to understand the nature of difficulties present.

As many children who come for assessment are from schools and backgrounds where English is not the first language of instruction, it is important to be able to assess them in the language they are most comfortable in.

Diagnosis of Specific Learning Disabilities

A diagnosis can be made based on the results of the assessments, observations, history, and interview carried out. When standardised test are used the child's scores should be quantifiably low (below the 16th percentile) to be diagnosed with SLD. In the absence of standardised assessments, curriculum based tests can be used and a clinical judgement of the extent of difficulty is made. The child could have a Specific Learning Disability with impairment in Reading, Spelling, Writing, or Math Disability or a combination of any of the above. The term Dyslexia usually refers to a specific disability in reading, but spelling difficulties are also often included. Dysgraphia refers to a specific disability in writing and in expressing oneself in writing and Dyscalculia refers to a specific disability with mathematics.

The assessment carried out by the CP should be specific and detailed enough to provide an idea of the severity and type of SLD. For instance, if the student has a specific reading disability, it is essential to be able to say whether the reading disability is due to a phonological deficit or a visual perceptual deficit. This allows a specific intervention plan that is based on research evidence to be followed.

While making a diagnosis it is essential to rule out factors like lack of sufficient or appropriate instruction. Response to Intervention methods tried out in the early years (Kindergarten onwards) should be noted (Fuchs & Fuchs, 2006). Here, the child should have had some specialized or intensive remedial instruction in the specific area of difficulty, (before a diagnosis) of SLD is done. The assessment by the Clinical Psychologist in such cases should give a profile of the skills of the child with specific recommendations for the intervention of these difficulties. This intervention could have been carried out by a special education teacher or in the form of a one to one instruction by a tutor. If the child continues to have difficulties, either in the skill assessed or in other areas of learning, despite having had at least 6 months of remedial instruction, and has not made sufficient progress at the time assessment is carried out, then a diagnosis of SLD can be considered. It is necessary to rule out

the fact that the academic difficulties seen are not a result of poor or inadequate educational methods.

The assessment should also allow the educator to construct a learning profile of the client that would indicate areas of strength as well as needs.

The guidelines for evaluation and procedures for gaining a disability certificate in the RPWD Act (2018) clarifies that a diagnosis and certification can be made first at 8 years of age, and repeated at 14 years of age. It is then repeated again at 18 years, which will be considered valid for the individual's life time. The Act also describes the Medical Team that is to be part of the certification process. They include The Chief Medical Officer, or Medical Superintendent or Civil Surgeon; a Paediatrician, or Paediatric Neurologist or (recently) Psychiatrist; a Clinical or Rehabilitation Psychologist; and a Special Educator or Teacher trained in assessment of SLD or Occupational Therapist.

Differential Diagnosis of Specific Learning Disability

What is differential diagnosis?

Differential diagnosis refers to the process by which a disorder or a presenting set of symptoms is evaluated and differentiated from other conditions that may be associated with similar clinical features. It requires the formulation of hypotheses regarding the etiology and nature of the presenting problem (NJCLD,1994).

The clinician must be aware that Learning Disabilities often occur in conjunction with other disorders or conditions. The assessment process should establish that while LD can co-exist with other conditions such as AD/HD, depression, anxiety, social skill deficits, language disorders etc, it is not primarily a result of the co-morbid disorder.

Prerequisites for differential diagnosis

A comprehensive assessment is a prerequisite for differential diagnosis. NJCLD recommendations suggest that assessment for LD must include procedures to establish levels of performance in the areas of motor, sensory, cognitive, communication and behaviour functioning.

The tests used must demonstrate that significant difficulties persist in one or more processes involved in the acquisition, retention, organization, and use of listening, speaking, reading, writing, reasoning and numerical skills. Tests should also indicate the extent to which these processing deficits impair the individual's ability to learn.

In addition to test scores, there has to be an adequate consideration of individual behavioural and social characteristics and sufficient integration of other assessment information.

When one of several factors may be the cause of learning problems, low achievement, underachievement or maladaptive behaviour, all possible etiological alternatives must be considered.

Intellectual limitations, sensory impairments and adverse emotional, social and environmental conditions may be the primary cause of low achievement and should not be confused with learning disabilities.

Documentation of underachievement in one or more areas is a necessary but insufficient criterion for the diagnoses of learning disabilities.

Discrepancy formulas must not be used as the only criterion for the diagnosis of learning disabilities.

Manifestations of learning disabilities such as language impairment can affect performance on intelligence tests. Selection of tests and interpretation of results must acknowledge the influence of specific disabilities on intelligence measures.

What SLD does not include

The Individuals with Disabilities Education Act (IDEA, 2004) specifies that - Specific Learning Disability does not include learning problems that are primarily the result of visual, hearing or motor disabilities, of mental retardation, of emotional disturbance, or of environmental, cultural or economic disadvantage.

In making a diagnosis of a Specific Learning Disability, the clinician would need to rule out:

- 1. Intellectual disability- all domains of development are delayed
- 2. Pervasive development disorder- delays seen in 2 or more domains of development
- 3. Autism Spectrum Disorder- impaired language and communication, impairments in social and emotional functioning, with or without mental retardation
- 4. Primary language disorder- language development outside the normal range and significantly underdeveloped compared to nonverbal reasoning in normal range
- 5. Slow Learner- developmental profile consistently at lower end of normal range, IQ scores are below average range. This is also seen as a Specific Learning Disorder.
- 6. Primary sensory deficits- visual, motor, hearing and speech impairments
- 7. Environmental factors such as deprivation, abuse, inadequate or inappropriate instruction, socioeconomic status or lack of motivation

The clinician must be aware that SLD often occurs in conjunction with other disorders or conditions. The assessment process should establish that while SLD can and often does co-exist with other conditions such as AD/HD, depression, anxiety, social skill deficits, language disorders etc, it is not primarily a result of the co-morbid disorder.

Importance of Differential Diagnosis

A comprehensive and thorough assessment is critical for a differential diagnosis. Diagnostic accuracy has implications for prognosis and planning appropriate intervention programmes. In addition, it may also indicate the need for referrals to other professional services that may be of use to the intervention programme.

Referrals required

These are a possible list of referrals that the clinician would need to make either in the course of establishing a diagnosis or when planning an intervention programme for a Specific Learning Disability.

Special Educator- to provide focused remedial inputs in the areas of planning and executing an individualized programme for the child that address specific areas of difficulty identified

Audiologist - if there are difficulties observed in hearing.

Speech Therapist – If there are speech difficulties such as stammering, lisping, stuttering etc.

Ophthalmologist- if there are difficulties in reading from a text - holding text too close or too far, errors in copying from the blackboard, squinting, blurring of vision, frequent headaches etc.

Neurologist- if there are difficulties in gait, movement, unusual pencil grip, presence of soft neurological signs, presence of seizure history, physical discomfort and fatigue while writing

Pediatrician- to monitor for general health, age-appropriate milestones, and physical development. To rule out hormonal imbalances and abnormalities in thyroid, iron and hemoglobin levels and functioning.

Occupational therapist- to aid in intervention for difficulties observed in gait, movement, visual motor coordination, handwriting.

Child Psychiatrist- possible pharmacological intervention for co-morbid AD/HD, other emotional and behavioural disorders should be considered.

Communicating a diagnosis of SLD

The assessment report

Most often the report is read by individuals who are not psychologists, i.e., parents and special educators – for this reason, it is important to keep the language simple and clear. If possible, give a brief description of the assessment tool used. Be aware that the special educator will be making an IEP based on the assessment report.

A typical report can be detailed under the following sections. Examples of reports are provided in the Appendix.

Reason for referral: Although this may seem obvious, it is important to note why the child is being assessed. In addition, to know if the child was referred for assessment by the teacher or the parent will give an indication of the awareness of the caregiver concerned.

Educational History: Has the child been through different school systems. What was the method used to teach reading or mathematics? Has the child had any sort of intervention and for what period of time.

Personal History: Any significant events in the personal history of the child that might have contributed to the present situation, including psychosocial factors.

Previous Assessments: What previous assessments have been done and the results in brief.

Behaviour Observation: Include observation of behavior during the testing situation and observation done in the classroom.

Assessment tools used: List out the name of the tools. You can describe them briefly while giving the results.

Results: Give values if the tests are standardized, give positive and negative findings – all help to formulate the educational plan

Discussion of findings: Give a clear idea of how you arrived at your findings and the implications for intervention.

Recommendations (and accommodations): Based on the assessment, the CP should give recommendations to the special educator and recommend accommodations in the classroom and for examinations. The educator and the caregiver must be given clear and detailed instructions on how to proceed with the interventions suggested. For instance, if the child has an auditory processing difficulty, the CP can recommend that the child is seated (in the classroom) away from distracting sounds (away from the door or window). Specific suggestions, like techniques or tools to support the child with the particular deficit, must be made. The

details in the recommendations also help the board decide if the child must be given an accommodation at the time of examinations.

Information Conveyed to Parents

Being informed that their child's assessment indicates the presence of SLD can be a challenging process of acceptance for parents. Apart from informing them of the diagnosis, the clinician has to handle the session and information given with great sensitivity and empathy. Some parents are relieved in knowing that their concerns about their child's academic performance are rooted in a genuine disability, and for others it is an ongoing process of coming to terms with the diagnosis and being engaged in the intervention (Venkatesan, 2015) These are a few points that the clinician would need to be aware of while discussing the diagnosis of SLD and its implications.

- 1. Avoid the use of jargon and convey assessment information with clarity.
- 2. Give the parent time to go through the assessment report and be able to raise queries.
- 3. Be factual and accurate in discussing the assessment results.
- 4. Emphasise that while SLD is a lifelong condition, the consistent use of strategies has been proven to enhance coping and maximize abilities and experiences of success.
- 5. Recognize and acknowledge feelings of guilt, anger, blame, denial, anxiety, and loss in coming to terms with the diagnosis.
- 6. Emphasise that the child is more than a diagnosis, identify their areas of strength and nurture them.
- 7. Encourage them to talk to their child and family members in an open manner about SLD. This conveys to the child that it is not 'shameful' to have SLD and that it is an eminently manageable issue.
- 8. Provide parents with information that would extend their understanding of SLD. This could be relevant literature and research, online resources, books, parent support groups, and courses.
- 9. Encourage building good communication links with the school and the child's teachers.
- 10. Help the parent be aware of their own psychological needs and mental health as coping with their child's learning and emotional needs can be a stressful process.
- 11. Emphasise that early intervention, teaching skills of organization and time management at home, does provide a critical scaffold for the child.
- 12. The acceptance of LD is an ongoing process and each developmental stage presents its own challenges.
- 13. The presence of SLD does not limit what the child will achieve in their adult and professional lives given the appropriate support and intervention.
- 14. Counsel against using coercion, corporal, or physical punishment techniques or strategies.

- 15. Counsel against the exclusive use of memorization or rote learning. The student should understand the concept before it is memorized.
- 16. Advocate that the child be permitted to participate in extra-curricular activities of their choice.

Talking to the Child

Often the child referred for assessment is forced to assume a passive role and is taken for various tests without necessarily being told about what is happening or what the test results indicate. The child may experience a sense of low personal control and could become apprehensive about what the process is going to reveal. Engaging with the child at all levels in the assessment and intervention process is essential.

Parents may sometimes have concerns about whether the child needs to be 'burdened' with the knowledge of his/her SLD. They need to be informed by the CP that talking to their child about SLD encourages them to be more positive in their approach to academics.

Prior to the assessment the CP should establish a rapport with the child and be able to explain the rationale for testing.

Sentences like, 'this testing will help us find out your areas of strength and what areas you need help with' or 'you did tell me that you found reading very difficult. The tests that we will be doing will help us find out why and what we can do to help', conveys a sense of reassurance for the child.

The CP must provide information that is age appropriate and encourage the child to raise questions/ concerns about the testing process and the results.

The child may feel relieved to know that struggling in school is not their fault, that there is a reason why they find school hard and most importantly that they can do something about it.

The CP should provide age-appropriate information in sharing assessment results with the child.

The child should be encouraged to see that different children learn differently and that the presence of a difficulty does not indicate personal failure.

The need to use strategies consistently should be stressed upon. They should also be made aware that the proper use of strategies while being effective and transforming the way they learn, will mean that they may spend more time on learning.

The child and parents should be encouraged to expand their understanding of SLD through reading up relevant literature/websites and mutually discussing information.

Intervention

Remedial training is the main form of intervention for the child and is planned based on the profile established through assessment. Supportive psychosocial counseling and social skills training should also be considered for a child with SLD. Several different remedial training methods are available but only a few of them are tested scientifically. The following are some guidelines on the qualities of an effective training method.

The first step in evaluating the efficacy of a remedial training programme is to identify who the training is meant for. The next important thing is to assess who will provide the training- is it a special educator, teacher, speech-language therapist or educational/clinical psychologist? Finally, it is important to assess the time frame involved and the support the remedial program offers even after the completion of the programme.

Qualities of Effective Intervention Programs

Effective programs must be driven by evidence-based research, not ideology.

Effective programs emphasize direct, systematic, intensive, and sustained changes in the target behaviour/cognition.

Effective programs need to be supported by initial professional development and extended follow-up training throughout the school year.

Effective programs should make effective use of instructional time, provide multiple learning opportunities, and employ a variety of assessments.

A Model Intervention Programme

An effective remedial reading programme must address the student's specific strengths and weakness, instructional sequences, provide ample practice opportunities and must include targeted scientifically based instructional strategies.

Most educators working with children with SLD chalk out what are known as Individual Educational Plans (IEP's) for each child based on the deficit profile and the current functioning capabilities of the child. The aim of these IEPs is to provide one with a working framework to operate in for each child. In addition, periodic evaluation of the child's current level of functioning occurs within this framework to help reevaluate need/efficacy of tasks for the child based on response to intervention.

The programme should also include assessment strategies for diagnosing student needs and measuring progress, as well as a professional development plan that ensures teachers have the skill and support necessary to implement the program effectively and to meet the needs of individual students.

Some Questions to Ask About the Remedial Program

Here are some questions you need to ask about the child's remedial program:

- 1. What is the name of the remedial program
- 2. Is it researched-based? Does the program include the essential elements?
- 3. How many children will be in the group?
- 4. How have the children in the group been selected?
- 5. Has the trainer been trained in direct, systematic, multisensory instruction?
- 6. Is the trainer certified in this particular program?
- 7. How many hours of instruction per week will each child receive?
- 8. How will the pace of the instruction be determined?
- 9. What criteria will be used to determine mastery?
- 10. How will the parents be informed about the child's progress?

Directions for Remedial Instruction

- 1. Introduce the child gradually to the programme
- 2. Start at a level that is comfortable for the child e.g. when blending sounds, start by introducing sounds of consonants and short vowel sounds. Then proceed to introduce consonant blends and finally vowel blends.
- 3. Stress on accuracy and not speed
- 4. Do into skip any stage in the intervention programme
- 5. Provide adequate practice drills at each level
- 6. Use concrete associative aids

Components of an Effective Response to Intervention Model

- 1. Baseline Data using curriculum-based measurement as primary data gathering.
- 2 Measurable Terms define problem areas numerically.
- 3. Accountability Plan monitor fidelity of selected intervention.
- 4. Progress Monitoring how, where, and when intervention results will be measured and recorded.
- 5. Data-Based Decision Making ongoing analysis of data to drive future intervention decisions.

It is recommended that children are identified early in their school life (KG to Grade 1) as a response to intervention at an early stage has been shown to be more effective.

Older children will require other needs like social skills, behavioural and emotional difficulties to be addressed as well.

4 Keys to Remediation

(1) *Eclectic Approach* - An eclectic approach capitalizes on the particular strengths of the child. The program will depend upon the age, skill level, and neurodevelopmental profile of the child.

(2) **Top Down Strategies**– Intervention for learning disorders need to consider topdown strategies. For example, development in various regions along the left temporal-parietal cortices is responsible for modulating the phonological aspect of reading; from this ability develops the ability to modulate sounds to the visual word form association areas.

(3) More Reading Opportunities - According to Noble and McCandliss (2005), socioeconomic status (SES) is a very strong predictor of reading skills due primarily to the home literacy environment. Therefore, schools catering to children from lower SES need to provide more reading opportunities.

(4) Motivation and Confidence –Good remedial training programmes tend to give immediate feedback to students that they are improving, and can be used as a confidence builder as well.

For any programme to be considered effective, it must bring about changes in dayday behaviours. These include generalization as seen in better academic performance and the ability of the child to gradually become an independent learner.

A detailed programme for the intervention of SLD with Arithmetic Disability is provided in the Appendix.

Accommodations for Students with SLD

Psychologists are required to be aware of the specific accommodations provided by the National Examination Boards that are available to students with a diagnosed SLD and the procedures to obtain the same. These accommodations allow students with SLD to demonstrate their knowledge of a subject in an examination. It levels the playing field for these students by providing extra time, a reader, an amanuensis, or the choice of dropping a second or third language, among other accommodations. A study done at the Learning Disability Clinic at the Sion Hospital in Mumbai, (Kulkarni, Karande, Thadani, Maru & Sholapurwala, 2006) shows that students with SLD who have used these accommodations have performed significantly better than those with SLD who have not availed of them.

Classroom accommodations, examination accommodations and other recommendations vary with age, stage, severity and class levels of students with SLD. The following is a list of recommendations that may be suitable according to the profile of needs of the student.

Possible accommodations

Decisions regarding which accommodations are usually made on an individual basis for each student using information regarding the student's needs. For instance, a student with a severe reading disability may require a reader, while another student whose reading disability while not severe, but is still significantly below expected levels, would benefit from reading aloud (in a separate room).

In addition, the use of accommodations is optimized when the student with the disability has practiced using the accommodation prior to the Board Exam. This has a twofold advantage for the student with a disability; in that, he or she would have used the accommodation in class to fully access the curriculum and be able to respond effectively in a testing situation. Secondly, the student would be comfortable using the accommodation during an examination. A list of possible accommodations that could be applied for is given here.

Examination accommodations can be categorized into Accommodations of Presentation, Response, Setting, and Timing or Schedule (Cortiella, 2005) and Curriculum Related Accommodations.

1. **Accommodations of Presentation** refer to how directions or content/question are presented to students who have disabilities. The performance of students with visual, auditory or specific learning disabilities is affected by the way a question paper is presented. When questions and testing material are presented in a way that they can understand, they would be better able to make connections, retrieve information and frame their answers appropriately.

The following are examples of accommodations of presentation that may be considered, as long as they do not impact on any competence being tested by the examination:

- a) <u>A reader</u> Some of the Indian examination boards allow for a reader for students with Specific Reading Disability, and specifies that the reader should be <u>a student from a class lower</u> than that of the student being examined.
- b) <u>Large Print</u> Some students with Specific Reading Disability can read more fluently and accurately when the print of the question paper is of size 12 or 14.
- d) <u>Coloured paper or permission to use an overlay</u> Coloured paper or the use of a coloured overlay makes it easier for students with Meares-Irlen Syndrome, who are sensitive to the glare of white paper or a computer screen. This condition is present in some children with Specific Reading Disabilities. Here the assessment material is printed or photocopied on a pastel coloured paper; or a coloured overlay is used by the student.

2. **Accommodations of Response** refer to the different ways a student with a disability can respond to, and answer the question in an examination, in addition to ways in which an examiner can respond to a student's answer script.

- a) <u>Scribe</u> A scribe is a responsible adult who (in coursework and/or in an examination but not in orals) writes down or word processes a student's dictated answers to the questions. A scribe is not a practical assistant, a prompter or a reader.
- b) Word processor It is recommended that students be allowed to use a word processor with the spelling and grammar check facility/predictive text disabled (switched off); where it is their normal way of working within the centre and is appropriate to their needs. The use of a word processor should not be given as an accommodation only because the student prefers to type rather than handwrite, or is faster at typing than writing, but only when it is appropriate to the student's needs. For example, if the student experiences pain in the wrist or hand when writing, when the student's handwriting is illegible, or when the student's condition makes organizing and planning and writing extended answers difficult. Students should also be given the option of using a word processor when typing longer answers and handwrite shorter answers.
- c) **<u>Read aloud facility</u>** This accommodation allows the student to read the question paper aloud to themselves. It enables those who have significant difficulty understanding what they have read, but do not qualify for a reader to work more effectively if they can hear themselves read. It can also be made use of by students who prefer not to use a reader, and prefer reading aloud to maintain independence. This accommodation would require that the student sit in a separate room while answering the exam.
- d) **<u>Practical assistant</u>** A practical assistant carries out practical tasks on the instruction of the student. For instance, a student with significant gross and fine motor difficulties will require assistance in holding a ruler in place, or

handle laboratory equipment. Students with visual impairments will require a practical assistant to guide his or her hand to the appropriate section in the question paper.

A practical assistant is not a reader or a scribe, but may perform these functions if these accommodations have been approved by the board for the student. A practical assistant may not perform any activity or skill that is being assessed by the board.

 f) <u>Condoning of spelling errors</u>- This accommodation ensures that students who have lowered spelling accuracy scores are not penalized for errors in spellings.

g) **<u>Objective type or MCQ</u>** Use of objective type or use of MCQ in class tests and examinations

- h) <u>Calculators -</u> Students with SLD in Math can use calculators when they make errors in writing the numerals
- i) <u>Voice-to-text conversion software -</u> Software that allows a student to dictate and have the same converted to text will motivate those with SLD in written expression.

3. **Accommodations in Setting** refer to where the examination is being held and the environment that it is held in. In this section, accommodations that pertain to scheduling will also be included. These accommodations are used for children who require extra time to process and respond to information or cannot sustain attention for the length of the examination time.

- a) **Testing in a separate room** This accommodation is useful for students who get easily distracted and cannot sustain attention.
- b) <u>Providing noise buffers</u> This accommodation is useful for students who get easily distracted and cannot sustain attention. Noise buffers include headphones and earplugs
- c) **Extended time** students who require additional time to complete their examination due to difficulties in fluency of reading, writing or mathematics
- d) <u>Multiple Supervised Breaks</u> This accommodation allows a student who has difficulties staying on task to take short breaks during an examination.
- e) <u>A prompter</u> A prompter reminds a student to continue with the examination. A prompter does not point out to any section in the examination or point out mistakes, but merely reminds the student to carry on with the task.
- f) <u>A shadow teacher</u> for students who find the pace of the whole class lessons too fast or needs individual attention to access the curriculum.

4. **Curriculum related accommodations** relate to modifications within the curriculum which permit the student to maximise opportunities for remediation, while concurrently mitigating the strain experienced.

a) Second and third language exemption- Learning a second or third language poses a significant problem for persons with language-based disabilities; the exemption from which would allow the student to have additional time to receive remedial support during the day. While the importance of learning a second language is recognized, the student with a disability will benefit from differential instruction and testing, through the elementary and middle school years. This will also allow the student to maximise efforts towards subjects that are affected by the disability.

b) <u>Study of limited study portions for examinations</u> - especially in class tests and school examinations

c) **Provision for choice of alternate subjects** in place of heavy or non-preferred subjects

In each case, it is essential to route requests for accommodation through the student's school. For board examinations, a copy of the assessment is sent to the head of the school who forwards this to the board with previous academic reports and a letter of recommendation.

The national boards – Central Board for Secondary Education and the Indian School Certificate, do provide accommodations for students diagnosed with SLD.

Some state boards – including Maharashtra, Kerala, and Karnataka provide accommodations as well.

Test reports submitted should be detailed and also include previous academic reports of the student.

Universities in India have just begun to recognize the existence and implications of SLD and to the authors' knowledge, a few state boards or universities do provide accommodation. Karnataka University has been known to consider SLD for special accommodations. They require that the student acquire a statement from NIMHANS every year for the accommodations to be provided. Delhi University, though recognizing SLD in its admission process, does not have set procedures that can be used to apply for special accommodations. Individual cases have been known to receive second language exemptions.

Applying for Accommodations in India

Individuals who are diagnosed with SLD at an early age are within their rights to ask for classroom, as well as examination accommodations (RPWD Act, 2016). These accommodations allow them to access the curriculum and compete at a more equal basis than without these accommodations.

School examination boards are familiar with the process of identification and granting of special arrangements, for instance, in the form of extra time or a scribe or a reader, depending on the nature of the disability. The CP will recommend accommodations on the basis of the assessment done, and the report with suggestions, is forwarded by the school Principal to the appropriate board of examinations.

However, institutes of higher education continue to be unaware of the nature of SLD and its inclusion in the RPWD Act, 2016. Students with SLD are perceived as having intellectual difficulties and hence not having the required skills for a higher education.

This is further compounded by the requirement of a Disability Certificate that states 40% disability as a criteria if one is to avail of any special arrangement in these educational institutions. The current method of assessment of SLD does not provide an objective and standardised method of declaring 40% disability. Instead, it is recognized that a diagnosis of SLD can be made if a person falls below the 16th percentile in an area related to academic achievement, i.e., reading fluency, reading comprehension, writing fuency, mathematics reasoning on a standardized assessment. A diagnosis of SLD based on the NIMHANS Battery requires a child to have SLD if their performance is 2 years below expected criteria.

The Department of Empowerment of Persons with Disabilities, under the aegis of the Ministry of Social Justice and Empowerment, has in their meeting in May 2020, agreed that the NIMHANS Battery can be used to certify a child having a Specific Learning Disability (Dept of Empowerment of Persons with Disabilities, 2020). In the released minutes of the meeting held on 20.02.20,

"After detailed deliberations, the following decisions were taken:-

b. medical authorities for certification of SLD shall also include psychiatrists in addition to pediatrician or pediatric neurologists."

it mentions that if a person is diagnosed with an SLD on the NIMHANS Battery, then it is assumed that the person has 40% disability. The decision was made based on the fact that currently there was no Indian standardised assessment tool for SLD available, and the NIMHANS Battery is widely used and would hold as a national tool

i) The Department may consider developing a universal applicability in the existing Guidelines by clarifying that: a. any person having tested positive on NIMHANS Battery shall be considered as a person with benchmark disability i.e. disability of more than 40%.

for the assessment of SLD. The unwarranted requirement to include psychiatrists in the decision process will not be discussed in this document.

It is of interest to note that several public interest litigations are underway in different states contesting the need for 40% disability for SLD. However, most of these are fighting with the aim of being placed in a category that receives a special quota in terms of admissions, employment and other amenities.

The need of the hour (Sandhu, 2015) is to create a uniform system for the identification, diagnosis.and certification of SLD, for which standardized assessment tools for the Indian population need to be constructed.

Appendix A

Given below are 2 examples of reports from assessments.

Sample 1

CONFIDENTIAL PSYCHO-EDUCATIONAL REPORT

Name: Xxxxx xxxxx Date of Assessment:

Date of birth: Age: Grade:

SUMMARY OF FINDINGS

Xxxxx's general cognitive ability, as assessed by the WISC IV, falls in the low average range. There is however, a significant variation among the 4 areas of ability assessed. Xxx Verbal Ability (VCI) and Working Memory (WMI) are in the average range and xxx visual Perceptual Reasoning (PRI) and Processing Speed (PSI) are in the low range.

The overall Reading Index is low, xxx Writing skills are below average, xxx Writing Speed is very low, and xxx Mathematical Reasoning skills are below average. Xxx numerical skills are average.

Xxxxx has a Specific Learning Disability in Reading and Writing.

Both teacher and parent ratings of attention indicate a high probability that xx has **ADHD Inattentive**.

Recommendations

Taking into account Xxxxx's <u>Specific Learning Disability in Reading and Writing</u>, <u>low</u> <u>Processing Speed</u> and the presence of **ADHD Inattentive**, the following test and examination accommodations are suggested:

- 1. Extra time of 25%
- 2. A Reader.
- 3. Facility to read aloud in a separate room to aid Reading Comprehension.
- 4. Use of a laptop for all writing.
- 5. Exemption from doing a Second Language Examination

Assessor's name

Discussion of Test Results

Background

Xxxxx was referred for assessment by xxx parents as they felt that writing was difficult for xxx and xxx written work did not reflect xxx learning. Xxx motivation for school work was also reported to be very low. Xx joined XXX in the 7th standard, and has been in school for a year now.

Xxxxx excels in sport, especially cricket and has won many accolades in this area. He spends hours after school, and sometimes during school days at practice and competition, that take away from regular scholastic effort.

Educational History

Xxxxx has been studying in XXXX since the grade 1. Xx is reported to have been good at cooperative work and got on well with xxx peers. Teacher reports in elementary school indicate that staying on task has been difficult for xxx over the years. Motivation to work has also been an area of difficulty. Reports also comment on xxx lack of organisation, neatness in writing and poor presentation of written work.

Current Teacher report

Xxx teachers indicate that there are both academic and behavioural concerns. While working in class xx is easily distracted by sounds and is unable to concentrate, is impulsive, xx tends to give up easily, needs help with organization, appears unmotivated and is not open to feedback. Xx does not appear to listen to instructions. Other areas of behavioural concern include poor participation in class, not attending to others during discussions and not following the lesson or instructions. Xx has no difficulty sharing or working with others.

Xx works best when with an adult. Xx has difficulty copying from the board, books or handouts; gaining information from text; gaining information from charts, graphs or pictures; with oral expression; class discussions and hands on tasks.

Xxx reading skill is about the same as others; xxx sight vocabulary is somewhat lower than others in class; when encouraged xx attempts unknown words; xxx reading comprehension and xxx interest in reading activities is a little below class average.

Teachers report that xxx writing is compromised due to xxx limited and simple vocabulary. Xx tends to be brief and xx finds it difficult to express subtleties. Xx does not pay attention to the mechanics of writing – capitalization, punctuation, grammar and spelling are poor.

In Math, xx has difficulties with number facts, working with mixed computation, word problems and in geometry.

Socially, Xxxxx is well accepted among xxx peers.

Behaviour during testing

Xxxxx approached the testing situation with apprehension but was able to relax. Xx tended to give up, especially with challenging tasks involving visual cues (matrix reasoning).

Intellectual Ability:

The WISC IV assesses intellectual ability through the 4 domains of Verbal Comprehension Index (VCI), the Perceptual Reasoning Index (PRI), the Working Memory Index (WMI), and the Processing Speed Index (PSI). Xxxxx's Full Scale IQ (FSIQ) falls in the low average general ability range, above 12% of xxx age group. Xxx verbal reasoning (VCI 93, 32nd percentile) and xxx Working Memory (WMI 97, 42nd percentile) fall in the average range. While Visual Perceptual problem solving skills (PRI 79, 8th percentile) and Visual Processing skills (PSI 75, 5th percentile) fall in the low range. Xxx VCI, and WMI scores are significantly higher than PRI and PSI at the 0.05 level of significance.

Xxxxx's ability to learn from the environment and use it to reason and problem solve; xxx ability to express xxx verbally and xx verbal understanding is xxx strength (VCI). Xxx auditory comprehension, xxx ability to make a distinction between essential and non-essential details and xxx vocabulary is in the average range.

The WMI provides a measure of a child's working memory abilities. These tasks required Xxxxx to temporarily retain information in memory, work with that information to problem solve and produce a result. Xxx working memory is in the average range.

Xxxxx's ability to analyse and synthesis abstract visual stimuli (PRI) is in the low range. Xx finds tasks requiring visual information processing and reasoning difficult. Concentrating and attending to detail is difficult for xxx.

As seen on the PSI, xxx short term visual memory, cognitive flexibility, visual discrimination, visual motor coordination, and visual scanning ability are in the low range. These skills require attention and concentration. Xxx processing skills are significantly lower (0.05 level) than xxx verbal and working memory functions.

Achievement

On the Gray Oral Reading Test 5, Xxxxx receives average scores in the area of Reading Accuracy; below average in Fluency; and poor in Reading Rate and

Reading Comprehension. The overall <u>Oral Reading Index is low (Standard Score</u> <u>73)</u>.

Xxxxx has a **Specific Learning Disability in Reading (Dyslexia)**.

On the test of Mathematical Reasoning and Numerical Operations (WOND), Xxxxx's combined score is average. Xxx numerical ability is in the average range, but xxx <u>Mathematical Reasoning is below average (Standard Score 84</u>, at Age Equivalent 10.6 years). Xx had difficulty with identifying specific solid shape, solving a problem knowing the value of money, determining the perimeter of a rectangle, solving a one-step division problem for which the correct response is expressed as a common fraction, solving a one-step subtraction problem involving per cent, writing a mixed decimal and interpreting a pictograph. The difference in scores between the two areas of Math could be due to xxx Dyslexia, and low Reading Comprehension, which affects xxx understanding of word problems.

Xxx overall writing score falls in the **below average range (Standard Score 84**). This is seen on both the types of writing activities - directed (Standard Score 88) and spontaneous (Standard Score 81) writing. Xx is not aware of the standard rules of capitalization and punctuation. Xx uses fragmentary sentences. When faced with a writing assignment of a spontaneous nature, xxx written expression does not include tools like development of a character, or the use of interesting and engaging prose. Xx scores below average in the areas of writing mentioned above.

Xxx writing speed is more than 40% slower than that of xxx peers. Xx has a <u>Specific</u> <u>Learning Disability in Writing (Dysgraphia).</u>

The **Conners 3 Rating Scales** are used for the assessment of ADHD and related problem behaviour in children and adolescents. The teacher scale provides a normative framework for judging typical classroom behaviour, while the parent scale complements the teacher scale and the ratings reveal behaviour at home and in other environments where the parent has the opportunity to observe the child.

(*T*-scores are standard scores – with a mean of 50 and an SD of 10, that allow for Xxxxx's scores to be compared to others of xxx age. The percentile expresses the percentage of individuals in the normative group who score lower than Xxxxx.)

The teacher rating form was completed by xxx class teachers, and there was no indication of inconsistency or bias in the responses. Very Elevated scores are seen in the areas of Inattention, Learning Problems, Executive Functioning, Defiance Aggression (indicating many more concerns than are typically reported). Xxxxx received a high score in the last category as xxx teachers feel that xx defies requests from adults. The results indicate that Xxxxx has difficulty keeping xxx mind on work, makes careless mistakes, is easily distracted, gives up easily or is easily bored, and has difficulty starting or finishing tasks. Xx needs extra help with understanding concepts, with spelling, reading, reading comprehension and cannot retain

information for long. Xx tends to begin work without having a plan, or know how to prioritize.

A Very Elevated score on the DSM 5 diagnostic category Inattention, with 9 core symptoms of ADHD Inattentive, and a high Probability Score on the ADHD Index, suggests a very likely diagnosis of ADHD-Inattention.

There is no indication of inconsistency or bias in the parents' responses. The parent rating shows Very Elevated scores in the areas of Inattention and Learning Problems, indicating that Xxxxx might have difficulty keeping xxx mind on work, makes careless mistakes, is easily distracted, gives up easily or is easily bored, and has difficulty starting or finishing tasks. Xx needs extra help with understanding concepts, with spelling, reading, reading comprehension and cannot retain information for long.

A Very Elevated score on the DSM 5 diagnostic category Inattention, and a high Probability Score on the ADHD Index, <u>suggests a very likely diagnosis of ADHD</u>. Parent rating does not fulfil the symptom criteria for ADHD.

Responses of both raters also suggested that further investigation needs to be done with regard to feelings of anxiety and sadness.

On the Beck Youth Inventories, Xxxxx's scores on the scales Anxiety, Depression, Anger and Disruptive do not indicate any need for concern. Xxx Self-concept is slightly on the lower side despite xxx excellent accomplishments on the cricket field.

Conclusions

Xxxxx's has a **Specific Learning Disability in Reading and Writing**. This is also reflected in xxx Math Reasoning and Reading Comprehension. Xxx writing speed is very slow.

Xxxxx has a high probability of being diagnosed with **<u>ADHD Inattentive</u>**.

Recommendations

Xxxxx should be coached in organizing xxx, xxx materials, xxx work and xxx time. Xx will, in addition, need to learn methods to self monitor xxx on-task behaviour. Xx will need to be supervised till xxx has internalized these skills and they have become automatic for xxx.

In school:

Xxxxx's teachers support:

- Use a checklist (that is pasted on xxx desk) to pack his school bag before leaving for home
- Show xxx how to sort xxx locker in school and then supervise that xx does it twice a week

- When instructions have more than 2 elements and details get Xxxxx (amongst other children) to repeat them
- Remind xxx with a pre-arranged signal that xx should focus on the task at hand
- Get xxx to recognize (gently) when xx is off task
- Teach xxx to put tally marks for each time xx goes off task, xx will become more aware of it and eventually bring xxxself back
- Emphasis should be placed on planning before starting a writing task

At home:

- have a routine for the morning and for the evening
- xx should have a set place for xxx things
- be encouraged to have a routine where xx puts xxx things away
- when doing homework use a timer

The amount of copying tasks should be reduced for Xxxxx, and xxx should train to become proficient in using the word processor to write. The use of a word processor is a vital tool used to motivate children who experience difficulties while writing as they feel encouraged to write without getting tired, are not afraid of making errors and hence do not shy away from writing tasks. Xxxxx should learn the skill of typing as it will help xxx to write better. Xx will not be hampered with making xxx handwriting legible, or feel unmotivated when xx has to make more than one draft for xxx assignments.

Xxxxx will also need to learn strategies that help xxx with reading comprehension. While dealing with complex passages, Xxxxx should learn to use strategies like highlighting key words, identifying the main sentence, visualizing what is being read, anticipating and predicting what will come next in the text and also summarizing what has been read.

Recommendations for Testing Accommodations:

Taking into account Xxxxx's <u>Specific Learning Disability in Reading and Writing</u>, <u>low</u> <u>Processing Speed</u> and the presence of **ADHD Inattentive**, the following test and examination accommodations are suggested:

- 1. Extra time of 25%
- 2. A Reader.
- 3. Facility to read aloud in a separate room to aid reading comprehension.
- 4. Use of a laptop for all writing.
- 5. Exemption from doing a Second Language Examination

Assessed by:

Sample 2

Neuropsychological Assessment Report

Name: XXXX	Gender:	Age:
Date of Birth:	Date(s) of testing:	
Name of School:		Class:
Reason for Referral: 1) Difficulties in reading, writing and spelling.		

- 2) Poor concentration
- 3) Discrepancy between oral and written responses.
- 4) Makes spelling mistakes and tends to get low marks for answers.

History: XXXX is a 13-year-old girl studying in class 8. The mother reported that XXXX was a very friendly girl with many friends and an ability to get along well with people. She liked being with people and was known to be good with children. The primary problem for which the mother sought help was her academic performance. Since XXXX joined school (LKG in Madurai), the teachers and the mother noticed problem behaviours. She was found to be restless in class and would frequently ask the teacher to let her go out and play. As she went from one class to another the mother noticed that she struggled to keep up with the class. She had problems in her vision, which were noticed and an Optometrician was consulted. She currently wears spectacles to aid in clear vision. Reading, spelling and writing difficulties became more prominent. She has also changed two schools.

Currently, there appears to be a marked discrepancy between her verbal abilities and her ability to translate this into the written format. She also tends to forget what she reads quite fast. She does not have problems with maths. The problem appears to be more prominent for languages and history/social studies. The mother reported (and this was later confirmed by XXXX) that she did not attempt long answers as she would forget part of the answer. If that happened then she would lose the trend of her thought and could not continue further. The mother also reported that sometimes she is not aware of the mistakes she makes. Short answers, though correct, tend to have plenty of spelling mistakes and as a consequence, she tends to get fewer marks.

Forgetting, however, appears to be related only to schoolwork. Her ability to socialize and make friends remains unaffected. She also shows a keen interest in other activities as told by the mother. No attention or behaviour problems were mentioned by the mother.

On observation, XXXX appeared to be a quiet and patient girl who was willing to work with the tasks given to her. She did not ask many questions that would interrupt the session and showed a keen interest in attending to the tasks on hand. Preliminary observations did not reveal any signs of restlessness or behaviour problems. She had adequate attention and was able to sustain it over the entire testing period. However, she was not able to verbalize her difficulties in the initial session. XXXX was assessed over two sessions of 90 minutes each.

Tools Used:

- 1. Standard Progressive Matrices (SPM)
- 2. Digit Span (subtest of WISC III)
- 3. Letter-number Sequencing (subtest of WAIS-III R)
- 4. Stroop Colour Word test
- 5. Bender Gestalt test
- 6. Rey Ostrietth Complex Figure Test (RCFT)
- 7. Phonological Awareness test (Gillion and Dodds, 1999 version)
- 8. Reading subtests (NIMHANS SLD Battery)
- 9. Corsi Block Taping test
- 10. Block Design (subtest of WISC)
- 11. FAS (phonemic fluency)
- 12. Category fluency test (subtest of NIMHANS Neuropsychological battery)
- 13. AVLT (subtest of NIMHANS Neuropsychological battery for children)

The rationale for choosing the tests:

The above-mentioned tests were chosen for the following reasons:

- 1. Intelligence to estimate current levels of functioning (SPM)
- 2. SLD subtests and Phonological awareness to explore for current levels of reading, writing, spelling and phonological awareness.
- 3. Neuropsychological tests to explore for possible neuropsychological deficits not evident in routine testing.

The aim was to obtain a complete profile of the child on the various parameters, which would help in providing a complete understanding of her strengths and weaknesses. In addition, the profile would aid in providing a solid framework for rehabilitation to be planned after the assessment. SPM was the test of choice for intellectual assessment as it was a non-verbal test of. Reading, writing (obtained from a free writing passage) and spelling was assessed to explore for specific deficits in these areas. In addition, the phonological awareness tests would throw light on her phonological abilities. The neuropsychological assessment included attention, executive functions, verbal learning and memory, visual integration and organization, visual construction abilities and visual learning and memory.

Findings on the tests:

The entire assessment was carried out across two sessions. The findings of the tests are discussed under separate headings for SLD, Intelligence, and Neuropsychological profiles.

Intellectual Functioning:

XXXX was assessed on the SPM a non-verbal test of intelligence. SPM is a non-verbal test where a piece of a picture is missing. Below the picture are 6-8 choices of which only one completes the picture. Drawing from logic and her ability to reason, she has to choose the correct option. There are 60 such problems to be solved. It starts with simple problems and gets progressively difficult. Her performance revealed that she has average intelligence.

Some intra-test scatter is seen suggesting that emotional aspects might have influenced her performance. Since it is a non-verbal test it would be a true reflection of her abilities despite her reported academic difficulties.

Specific Learning Difficulties:

<u>Reading:</u> The NIMHANS SLD battery was used to explore for deficits in reading. The subtest consists of standardized reading passages, which she would be required to read aloud. After which she would be asked a few questions to assess her ability to comprehend what she has just read. XXXX read the passages with adequate speed and showed good intonations while reading. Punctuations were attended to while reading. However, she had difficulties reading unfamiliar words. Errors such as guessing at words (e.g. read the word as monkey instead of money), omission (e.g. 'the' and word endings were omitted while reading) and additions (e.g. fruits for fruit) were evident. She also displayed poor word attack skills i.e. she could not draw upon cues or strategies to read new/unfamiliar words. She was reading 3 years below her current expected level. Comprehension was intact suggesting the XXXX was able to understand what she was reading despite having difficulties while reading.

<u>Spelling</u>: Was assessed using the spelling words from the Phonological awareness list. Spelling errors were present. Some words were spelled phonetically (e.g. "cacher" for catcher, "jat" for jet). Most errors were found with irregular words. This is suggestive of difficulties in spelling.

<u>Writing</u>: was assessed on the basis of a writing sample. She was asked to write about anything she likes and she chose to write about her pet. She wrote only 3 lines and refused to write anything more than this. The sentence structure was simple and short. Words were factual rather than descriptive. The writing sample is suggestive of difficulties in spelling and organizing thought and converting thoughts into words.

Phonological Awareness (Sthal and Murray, 1994): This consists of lists of words divided into sections. Each section consists of 5-15 words and the instructions given before each section primes the child on what needs to be done. Phoneme blending requires one to identify the word that is made by putting a few sounds together. E.g. /m/ /a/ /p/ spells 'map". Phoneme isolation requires one to say the first/last sound of each word read out. Segmentation refers to the ability to break down a word into its sounds (e.g. sheep would be broken into /sh/ /ee/ /p/) and finally phoneme deletion refers to the ability to say a word without a particular sound e.g. "say flat without the /l/ sound". XXXX was assessed on phonemic blending, phoneme isolation, phoneme segmentation and phoneme discrimination. Accuracy in performance was low across all the tasks, the most difficult being Phoneme segmentation.

<u>Summary</u>: The SLD assessment is suggestive of difficulties in reading, writing spelling and phonological awareness.

Neuropsychological Assessment:

This consisted of a number of individual tests. The results will be reported on the basis of the functions that the tests represent.

<u>Attention</u>: was assessed on digit span (forward) subtest of WISC III R. Digit span forward requires the child to listen to a list of numbers read in increasing order (i.e. 2 digit numbers to 8 digit numbers) and repeat it. On digit forward her span was 5 digits (with a score of 8) suggesting adequate attention span.

<u>Executive functions</u>: consists of working memory, set shifting, planning, fluency, and inhibition/interference control.

Working memory (WM, refers to the ability manipulate information while holding onto other information) was assessed on digit backward (verbal WM) and Corsi block tapping forward and backward tests (visuo-spatial WM). Digit span backwards refers to a list of 2 digit-8 digit numbers read one after another in increasing order and the child has to repeat the numbers in reverse. On the Corsi test, she is required to tap a set of blocks (arranged in a predetermined order) just as it is shown by the examiner (forward) or to reverse it (backward). Assessment reveals that XXXX had adequate visuo-spatial working memory (on Corsi she scored above the cut off scores on both forward and backward trials). However, she had difficulty on the digit backward test with a span of 3 suggesting difficulties in verbal working memory. This was also evident on other tests in the form of perseverations. On the letter number sequence test a list of letters and numbers are read and each time the child has to arrange the letters in alphabetical order and the numbers in ascending order. Her performance (score of 6) on this test is also suggestive of difficulties in working memory, especially in the verbal domain.

Phonemic fluency and category fluency: XXXX was asked to generate as many words as she could in one minute, starting from a particular letter. Three such trials were given (phonemic fluency). In category ,fluency, she was asked to name as many objects made of wood (and round objects), as she could, in one minute. She had difficulty generating words under the phonemic fluency (6 words on average) subtests while for category fluency (10 words on average) she did not show much difficulty. This is suggestive of difficulties in searching for words using phonemic cues.

Interference control was assessed on the Stroop colour word test. The test consists of a list of names of colours written in coloured ink (e.g. the word "blue" is written in red ink). The child is asked to name the colour of ink in which the word is written (in the above example she would have to say red). The child is asked to read as many words as possible in 45 seconds. It tests her ability to handle interference. In the presence of a well-learnt response (e.g. reading the word) she is asked to give a new response (i.e. name the colour of ink). Scores are suggestive of her ability to inhibit a well-learned response in the presence of more appropriate responses. XXXX's responses on this test are suggestive of difficulties in the ability to inhibit a well-learnt (but irrelevant in the current context) response indicative of difficulties in executive functions.

<u>Verbal Memory</u> was assessed using the auditory verbal learning test. This test consists of two lists of 15 words each. One list is presented five times and she is asked to recall the words, assessing the ability to acquire information across trials. The second list is presented once and is used to assess the role of interference in learning. In addition, subsequent recall trails of list one assess delayed recall i.e. the child's ability to retain information over a period of time. Her performance shows that the amount she is able to learn in the initial trials is low.

After the 5th trail she was able to learn 10 out of the 15 words. However, in the subsequent trials she could remember all the 10 words learnt, suggesting that the effect of interference is minimal and forgetting is not present. The low number of words recalled in the first 3 trials suggests that she has difficulty in acquisition/uptake of information. However, she has no difficulty recalling whatever is acquired across trials.

<u>Visual-spatial learning and memory</u> was assessed using RCFT. A complex figure is placed before her and she is asked to copy the figure. This assesses her visual perceptual ability. Immediately copying she was asked to draw the figure from memory. This assessed her immediate memory for visual objects. After 5 minutes and after 20 minutes she was asked to draw the same figure from memory. These trials assessed her visual-spatial memory. Results suggest she has adequate visual-spatial abilities. This was also observed on the BGT (where she was able to copy 8 geometric figures) without any difficulty. However, she had difficulties in planning the drawings and had to frequently erase and redraw them. While attempting to recall the CFT, however, she was unable to recall some facts across all the memory trials. This is suggestive of mild forgetting of visual information not amounting to a deficit.

Visual integration and visual construction abilities were assessed on the block design test. In this test, she was given 4 blocks and asked to form a design with the blocks by looking at a picture placed in front of her. The pictures required 4 blocks initially to construct the picture and later required 9 blocks to complete the task. On the block design test performance revealed that she had adequate visual integration and had adequate planning and ability to learn from experience.

<u>Neuropsychological Impression</u>: The neuropsychological assessment is suggestive of deficits in executive functions in the form of verbal working memory, phonemic fluency, poor planning, and poor interference control.

Summary of complete assessment:

XXXX is a 13-year-old girl referred for assessment for difficulties in reading, writing, and spelling. A complete assessment was conducted to explore her current level of functioning and to explore possible difficulties in a number of areas. Assessment reveals that XXXX had difficulties in specific areas, which can help explain the difficulties she is experiencing in her academics. The deficits include- difficulties in reading, writing and spelling (suggestive of specific learning difficulties in all three areas) poor phonological awareness and deficits in verbal working memory, fluency, interference control and visual integration. Visual learning and memory is intact category fluency and visual-spatial working memory does not show any deficits. Intelligence is in the average range.

Recommendations:

Based on the profile of deficits the following recommendations are made:

1. XXXX would benefit from regular inputs to improve her academic skills.

- 2. Cognitive rehabilitation to improve working memory and other executive functions.
- Specific inputs to improve phonological awareness and enhance her spelling.
 Regular remedial training with some training on study skills may be required at a later stage.

Assessed by:

Appendix B

Intervention Strategies

Although remediation in terms of teaching skills to the child with SLD is mostly carried out by the special educator, it is important for the CP to be aware of research-based techniques.

Reading and Spelling

Intervention at an early phase would emphasize phonemic awareness and phonic knowledge. Most special educators are familiar with programmes and techniques that stem out of the Orton –Gillingham approach. The child is taught the phonemic sounds of the letters and their combinations and then to blend these sounds to form a word using a multisensory approach. Reading Comprehension should also be taught specifically to students with SLD. Structured lessons that allow students to learn how to summarize, infer, compare and contrast, draw conclusions, question, problem solve and relate background knowledge to the text will improve their comprehension skills.

The following websites carry more information and references on the different programmes.

http://www.ldonline.org/article/Components of Effective Reading Instruction

Writing

Remedial teaching in writing comprises strategies to be taught during the 3 stages of writing: planning before writing, the actual writing process, and proofreading after writing. The use of scaffolding with graphic organizers, planning and the use of spelling and grammar guides that will help them remember rules are some essentials in supporting students with writing difficulties.

Arithmetic Skills

The arithmetic skills intervention process generally proceeds in a bottom-up manner, starting with basic facts of number comprehension and production viz. larger than, smaller than comparison, odd-even segregation of numbers, sequence completion, reading of larger numbers, writing of larger number, use of place values, arranging in ascending/descending orders, etc. On ensuring the child's proficiency in these modules, the next level of number processing is initiated. Remediation targets the level of difficulty that the child is experiencing.

A general format to follow in introducing arithmetic skills would be to introduce the concept and proceeding from concrete to symbolic and then to abstract. The abstract stage is when the child is asked to use only the numbers written and work out the problem without resorting to concrete objects or symbols.

Learning Strategies

Listed below are some learning strategies that can be used with the older students.

1. The SQ3R method

SQ3R stands for Survey, Question, Read, Recite and Review.

Survey - Get the best overall picture of what one is going to study BEFORE studying it any detail. It's like looking at a road map before going on a trip.

Question - Ask questions for that will aid learning. The important things to learn are usually answers to questions. Questions should lead to an emphasis on the what, why, how, when, who and where of study content.

Read - Reading is NOT running one's eyes over a textbook. Active reading should be emphasized. Reading to answer questions, being alert to words in italics and bold print are useful tips as these are present in the text to indicate a certain degree of importance. Also, ensure that the child reads everything - including tables, graphs, and illustrations. Often tables, graphs, and illustrations can convey an idea more powerfully than written text.

Recite – The child has to be encouraged to periodically stop reading and recall what is being read. Recall of main headings, important ideas of concepts presented in bold or italicized type, and what graphs charts or illustrations indicate should be done periodically. Developing an overall concept and attempting to connect things already known to things just read are useful strategies that aid in better recall.

Review - A review is a survey of what is covered. It is a review of what one is supposed to accomplish, not what is to be done. Rereading is an important part of the review process. Rereading with the idea that one is measuring what has been gained from the process is essential. During review, it is good to go over notes taken to help clarify points missed. The best time to review is when you have just finished studying something.

Effective note-taking, use of flash cards, using the peg-word system and mnemonics and visualization are additional strategies that are useful in enhancing memory.

2. <u>Mnemonics</u>

The most common mnemonic, the FIRST strategy, involves using the first letter of each word in a list to spell out one cue word. This method is easiest to use when the items in the list can be scrambled around in order to form simple cue words or sentences. Associating cue words with a visual image also aids in recall.

- Form a cue word.
 - \circ $\;$ Use the beginning letters of words in the list to make a word that is easy to remember.
 - Use capital letters for all letters of the cue word that are found in the list.
- Insert a letter.
 - Insert a new letter if the existing letters alone don't make a word.
 - Use a lower case letter for the insertion so it will be clear that it doesn't mean anything
- Shape a cue sentence or phrase.

• If no cue word can be made, use the beginning letters of the words to make a sentence or phrase.

3. Cornell method of note taking

This note taking format provides the perfect opportunity for following through with the 5 R's of note-taking.

Record

While the teaching is going on, the student should record as many meaningful facts and ideas as possible in the main column.

Reduce

As soon as possible, these facts and ideas should be summarized concisely in a Cue Column. Summarizing clarifies meanings and relationships, reinforces continuity, and strengthens memory.

Recite

Next, the student should cover the Note Taking Area, and using only jottings in the Cue Column, repeat the facts and ideas of what was taught in as detailed a manner as possible. Then, verify what has been said.

Reflect

Draw out opinions from the notes and use them as a starting point for reflections on the teaching and how it relates to the subject. Reflection will help prevent ideas from being inert and soon forgotten.

Review

The student should review the notes before the next lesson.

4. Strategies for multiple choice questions

Multiple- choice answers usually include a correct answer, an answer that is obviously wrong, and two answers that are close to the correct one.

- **Read** the question while covering up the answer choices. **Answer** the question first in your head (or work it out in the paper), then **find** the given answer that best matches your original response.
- You can cross out the choice that is wrong and use a process of elimination to help limit the number of answer choices.

5. Organizational skills

The process of helping a child and a parent through exam times is often the biggest challenge for professionals working with older children with SLD. Apart from learning strategies – some of which have been outlined above, it is important to make sure that the child follows some general practices that will allow learning to take place.

Getting organized to study allows the child to focus attention on the task at hand. An inability to sustain attention, and easy distractibility, are common complaints of children when they study. Effective methods of enhancing concentration are:

- Identify and maintain a special place and time to study
- Ensure people around the family are aware that the child is studying.
- Advice the child that If they find their mind wandering to unnecessary things they should set aside a different time of the day to think about those aspects.
- Adequate breaks should be taken
- The child should alternate between easy and difficult topics to ensure adequate attention.

Research shows that so-called declarative memories--such as a sequence of facts--also benefit from sleep, especially when students are challenged with subsequent, competing for information (Ellenbogen, Hulber, Stickgold, Dinges, and Thompson-Schill,2006). Students with SLD usually spend many hours learning and tend to deprive themselves of sleep.

These are simple yet handy tips for the parent as well as children to help them organize their time better.

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