

Dyslexia a Myth or Reality: Identification of Dyslexia in School Children of Grade Fourth and Fifth

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The concept of dyslexia has been with us for nearly 200 years, yet the controversy about its existence has been a debatable issue among Researchers, Educationalists and Psychologist. The scope of dyslexia expanded from Word Blindness to spectrum of Specific Learning Difficulties affecting school children. Dyslexia manifests itself in the area mainly in reading and for some children writing and arithmetic difficulties co-occur, creating discrepancy between ability and achievement. Recently the debate about the diagnosis of dyslexia has been raised particularly its relevance in third world countries. The purpose of current study was investigate Spectrum of specific learning difficulties in young school children of grade 4th and 5th. The assessment was carried in group and individual setting. 900 school children boys 433(48.3%) and girls 467(51.7 %), age ranges from 9-12 years; were assessed. series of tests used specifically assessing symptoms of specific learning difficulties. The results showed much wider range of cognitive deficits across three level of achievement, yet it is not consistent with the diagnosis of dyslexia. The results were discussed in the light of observation drawn from the third world countries, where difficulties in academics mimic dyslexia.

Key words: dyslexia, school children, under achievement, gender, assessment

For many years the concept of dyslexia has baffled the researchers and is subject to modification. According to Western literature two schools of thought exists one treating dyslexia as a diagnostic entity and other view it as spectrum of difficulties effecting school children. Since its origin, various terms have been used by Ophthalmologist to describe dyslexia. In 1878, Kussmal introduced the term word blindness to describe children with reading difficulties. In 1887, Rudolf Berlin describes the case of a boy with severe impairment in reading. In 1895, James Hinshelwood defines the difficulty in learning to read as congenital defect (Hinshelwood, 1917). In 1925, Orton, gave the first theory of strephosymbolia meaning twisted sign to describe the individual with dyslexia.

But the first ray of doubt arises about the symptomatology and diagnostic criteria of dyslexia when researches in different field progress and various disciplines like Neurology, Clinical and Educational Psychology began to view dyslexia according to their professional perspective. Later instead of diagnostic entity, dyslexia includes a whole range of difficulties related to academic achievement. These difficulties manifest in a pattern in the area of reading, writing, spelling, arithmetic, spatial awareness, orientation, memory, attention and concentration, sequencing and deficit in motor skills development. Children with Specific Learning Difficulties (SpLDs) have strengths and weaknesses. They are good in one domain and show difficulties in other area (Bhise & Desetty, 2004).

Different Criteria's have been used to diagnose specific learning difficulties across the globe (Anita, 2004). IQ-Achievement discrepancy criteria based diagnosis on discrepancy between achievement and ability. In Operational definition criteria assessment is based on individual performance in specified domain below a certain percentile. This criterion is being used in educational settings (Marcia, Jack, & Lynn, 2007). Diagnostic and Statistical Manual (DSM-IV, 2004) used the discrepancy criteria to diagnose children with dyslexia. The picture of dyslexia / Specific Learning Difficulties changed after publishing of DSM V (2013) which proposes to drop the discrepancy criteria (Nag & Snowling, 2012). DSM V (2013) revised the diagnostic criteria into a single category and suggested that reading, writing and arithmetic disorder overlap each other and are interrelated. It is difficulty in the academic domain. The criteria suggest that difficulty persist in the specific area for at least six month despite of intervention given in the targeted area. It results in impaired functioning in school. The difficulty is not the result of intellectual disability visual or hearing impairment and lack of access to adequate instruction. There is general consensus of researcher to define Learning Disability as disorder of academic achievement.

Before the publication of DSM V (2013) Dyslexia is defined as combination of abilities and difficulties that can affect learning process in the area of reading, writing and arithmetic. Weaknesses could be identified in the area of information processing, sequencing, organization, memory, attention and visuo-spatial skills. It occurs despite of average intellectual functioning and independent of socio-economic back ground. In A=an epidemiological study carried on 8-10years school children the prevalence of specific reading difficulties is 3.9%, specific arithmetic difficulties is 1.3% and specific arithmetic and reading difficulties is 2.3%.the

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prevalence of boys was 8% and girls was 6% (Fuchs, Fuchs, & Prentice, 2004).

According to Ott (1997) Symptoms of dyslexia includes: Loses place in reading, misread the simple, familiar words, omit ending from words, confuse words of similar appearance, omit syllable from words, add letter to words, tend to look at initial letter and guess the rest of the word, read the word correctly one time and misread that word next time. Reverse the whole word, invert letter example pig for dig, reverse letter, omit letters from words, lack understanding of what he has read, difficulty in punctuation, substitute the words. Lack understanding of what he has read. Hand writing is clumsy, poor, illegible and slow. poor fine motor skills, inadequate space between words, letters are not placed correctly on line, letters are not of uniform height, letters are not of uniform size, letters are too small/large, heavy pencil pressure, letters are inverted, inability to reproduce close curves and angle, unable to begin, continue and complete letter, small writing to disguise their weakness, messy crossing out, one letter super imposed on others, uneven size of lower case letters, erratic slant, malformed letters, alteration (cutting and writing again the same word), inability to keep on line, misrepresentation of sound, single word written with space between parts, words written together without space, inconsistent spelling, wrong letter doubled letters in words presented in wrong order, omission of one or more sounding letter, duplication for one or more sounding letters, phonetic attempt misfired, substitution of words, use of upper case in middle of word or sentence, spellings are bizarre. spellings are purely phonic and b-d confusion. Language of mathematics is difficult, confuse mathematical symbols -, +, ÷, difficulty in understanding word problem, difficulty in learning tables, they gets confuse, loses place while doing tables, some children skip facts, reverse letters or symbols, difficulty in doing mental arithmetic, difficulty in using calculators, difficulty in understanding the concept of decimal and fraction, they lack spatial awareness. Problems in concentrating on tasks and lack of visuo-spatial awareness, memory problems, right left confusion and sequencing difficulties.

DSM V(2013) changed the view of researchers and the current emphasis is laid on cultural sensitivity and providing intervention to the school children rather solely focusing on test results and diagnostic criteria to identify school children with dyslexia. In order to diagnose specific learning difficulties the diagnosis should be sensitive to cultural factors, particularly in learning of basic literacy skills. In such situation underachievement will mimic the cognitive profile of dyslexia. In such situation children are not subjected to the diagnosis of dyslexia. The assessment should give a clear picture of specific learning difficulties, otherwise it will cause over identification of the problem. (Nag & Snowling, 2012). In many countries there are no locally developed standardized assessment measures as result test finding could mislead the clinicians to identify learning difficulties attributable to poverty, faulty teaching strategy from Specific Learning

Difficulties caused from biologically based cognitive deficits (Wydell, 2003).

In Pakistani schools picture is very different, high rates of illiteracy makes it difficult to identify which children have Specific Learning Difficulties or academic problems because of lack of opportunities and exposure. These factors mask dyslexia and makes it difficult to understand dyslexia either it is a myth or it actually exists in reality. Education is on declining trend because of several reasons; less government budget is allocated to education sector, less than 2 percent expenditure is spent on education. Gender discrimination more boys had access to education than girls. Quality of syllabus is declining and the content of the syllabus has not been revised for decades. Medium of instruction also causes difficulty for school children as they are taught in English and learning in English where most of the children in government schools are more fluent in Urdu, causing difficulty in learning. Low salaries of teachers cause less dedication on their part to give quality education. Lack of qualified teachers results in decline of education, conceptual clarity cramming and acquisition of basic reading writing and arithmetic skills. Instability in government and their policies also the significant factor in decline of education. Poverty affects children in attaining education low level school work. Parental illiteracy provides the children with environment (UNESCO, 2006).

Few studies have also been carried out in Pakistan to assess dyslexia. Irshad (2005) examined the prevalence of specific learning difficulties among school girls of grade 3rd, 4th and 5th grade. An indigenous scale was developed for screening of children. Diagnostic criteria of DSM IV was used for scale development and diagnosing the participant. Out of 200 girls, 75 were diagnosed as having specific learning disability. Emotional problems like anxiety, poor self image, aggression and depression were found among the girls. Ashraf and Majeed (2011) identified dyslexia in 6, 7 and 8 grades school children of Lahore city in Pakistan. The sample of 500 students (250 girls and 250 boys) was taken from government schools with age between 11-17 years. Bangor dyslexia test, Slosson Intelligence Test and the academic record of the students were used to screen out dyslexia. Out of the total sample 5.37% students were screened out with dyslexia. In 6 and 7 grades dyslexia was more prevalent in the male students than female students while in 8 grade, the percentage did not vary much in both the genders

The most commonly used and available instrument for screening of dyslexia are Bangor dyslexia screening test, Dyslexia screening test (DST), WISC, Slosson Intelligence Scale, which are reflective of western based skills taught in school. For this purpose it is important to carry out assessment to identify pattern of specific learning difficulties in our cultural context. It will help in differentiating Specific Learning Difficulties/dyslexia experienced due to cultural factors from specific learning difficulties and gives a clear picture of manifestation of specific learning difficulties in

Pakistani culture. Early identification of specific learning difficulties will help in providing early intervention to school children.

Hypothesis

1. It is hypothesized that there will be no symptoms of dyslexia in underachieving group of school children.
2. It is hypothesized that there will be no gender difference in the acquisition of reading, writing and arithmetic among school children of grade 4th and 5th.

Method

Phase 1: consisted of assessment of academic and cognitive skills of school children in group setting

Participant

The sample for group and individual testing consist of 900 school children, their age ranges from 9-12 years, selected from class 4th and 5th. Total boys in the sample were 433(48.3%) and girls were 467(51.7 %). There were 448 (39.8%) school children of class 4th and 452 (40.1 %) school children of class 5th were included in the sample. There were 246 girls of class 4th and their mean age was 9 and *SD* is 1.06. There were 302 boys of class 4th their mean age was 9 and *SD* was 1.14. There were 202 girls of class 5th, their mean age was 10 and *SD* was 1.06. There were 220 boys of class 5th, their mean age was 10 and *SD* was 1.48.

Measures

Following tests were used in group testing.

Vocabulary Test Urdu

Vocabulary test Urdu, consist of 31 words with four options and the children will have to choose the correct answer. It was developed by Mehmood and Sheikh in,1989.

Vocabulary Test English

To develop English vocabulary words were selected from the school children's text books of grade 4th and 5th grade. After selecting the word they were listed together and each word was given four answers, one correct and three wrong answers. Correct answer of the words was also selected from the vocabulary and its meaning given in the text book. These words were arranged in the multiple choice test format. It consist of 50 words with four options and the children have to choose the correct answer. After arranging the items, Pilot study 1 was carried out on 50 girls and boys of class 4th and 5th. Children responses were analyzed to see if there were any difficulties in completing the test. It was found that school children had difficulty in answering the words, necessary amendments were made and pilot study 2 was carried out, on 50 girls and boys. After the administration school children responses were analyzed to see if there were any difficulties and no difficulties were further reported.

Scoring of Vocabulary Urdu and English

Vocabulary test Urdu and English assesses reading skill, reading comprehension, and concept of word meaning. The scoring of vocabulary Urdu and English subtest is dichotomous either correct or incorrect. 1 mark was given to every correct answer. 0 marks was given for incorrect answer.

Dictation Urdu

To assess writing skills one passage in Urdu was selected from the text books of school children of class 4th and children have to write them down. Urdu passage consists of 5 lines.

Dictation English

To assess writing skills one passage in English was selected from the text books of school children of class 4th and children have to write them down. English passage consists of 5 lines.

Scoring of Dictation Urdu and English

Dictation test Urdu and English helps in assessing various skills that includes speed, formation of letters, eligibility of handwriting, spelling, sentence structure, information processing, attention, working memory, and recall. the scoring of dictation Urdu and English subtest is not dichotomous correct or incorrect, partially incorrect was added keeping in mind the cultural factors and lack of practice of writing skills in our school system, these findings were based on observation made during the series of pilot studies conducted. 2 marks were given for each correct word written in a chunk. 1 mark will be given if the word is "partial correct". Partial correct scoring will be done if: The child has "omitted" 1 syllable from the word. The child has "added" 1 syllable in the word. Only 1 syllable is written incorrectly in the word. 0 marks were given if the word is spelled incorrectly. Or if two or more than two syllable in the words were spelled incorrectly in the word. The Total score was 216.

Arithmetic

This subtest assess concept of basic mathematical operation, mental calculations, ability to hold attention on the task, and working memory. To assess arithmetic skills arithmetic test was selected for administration. It was developed by Mehmood & Sheikh, in 1989, consists of 10 word problems and children were asked to write answers of the questions. **Scoring:** the scoring of Arithmetic subtest is dichotomous either correct or incorrect. 1 mark was given to every correct answer and 0 for incorrect answer.

Coding

This subtest helps in assessing attention/concentration, and memory. It is a subtest of Wechsler Intelligence Scale (WISC-R), developed by Wechsler in, 1955. This test consists of digits / numbers and children had to assign each digit to its respective symbol. This subtest helps in assessing

attention/concentration, and memory. **Scoring:** The scoring of coding test is dichotomous either correct or incorrect. 1 mark was given to every correct answer and 0 for incorrect answer.

Establishing psychometric properties

The tests were administered on 400 school children from class 4th and 5th and mean and standard deviation was calculated to compare the performance of school children and identify below the school children performing below mean i-e under achiever. Test retest reliability was established by administering the same assessment battery after one week on same individual. 120 school children (60 school children 30 girls and 30 boys of class 4 and 60 school children 30 girls and 30 boys of class 5) were selected for assessing test retest reliability. Test retest reliability of writing passage Urdu is .899, Test retest reliability of Coding is .527, Test retest reliability of Vocabulary test Urdu is .712, Test retest reliability of Vocabulary test English is .778, test-retest reliability of Arithmetic test is .742.

School Grades

To see the relationship between 3R'S (Reading, Writing and Arithmetic school grades were obtained of the children who participated in the research study. The school grades were obtained from those schools that were willing to provide the information. The grades were obtained from five schools (2 boys and 3 girls). Total number of children whose marks obtained were 556.

Main study

School authorities were approached to get permission for conducting research. Informed consent from school authorities were taken after informing them about the purpose of the study. The school authorities were informed that information will be kept confidential and use for research purposes only. All agreed boys and girls were also informed about the purpose of the research. The testing was done in group and individual setting. School children were assured about the confidentiality of the research. They were encouraged to ask question and discuss any difficulty experienced during administration. The assessment was carried out in group setting 900 school children were assessed. After the administration children were debriefed about the purpose of the research. It took one month to complete assessment for group setting and two months to complete administration of individual testing.

Phase2: consisted of assessment of academic and cognitive skills of school children in individual setting

Participant

All those students who were tested in group testing were again assessed in individual setting.

Measures

Reading Test Urdu

Reading test Urdu is consists of 100 words, children have to read them aloud, and each correct and incorrect word is marked (**√**) and (**×**). It was developed by Mehmood & Sheikh, in 1989.

Reading Test English

Reading test English consist of 95 words, children have to read them aloud, and each correct and incorrect word is marked (**√**) and (**×**). These words were selected from the text books of grade 4th and 5th. To develop reading test English words were selected from the school children's text books of grade 4th and 5th grade. After selecting the word they were listed together. After arranging the items, Pilot study 1 was carried out on 50 girls and boys of class 4th and 5th. Children responses were analyzed to see if there were any difficulties in completing the test. It was found that school children had difficulty in answering the words amendments were made and pilot study 2 was carried out, on 50 girls and boys. After the administration school children responses were analyzed to see if there were any difficulties and no difficulties were further reported. **Scoring:** Reading test Urdu and English assesses child's reading ability. The scoring of reading test Urdu and English is dichotomous either correct or incorrect. 1 mark was given to every correct answer.

Left Right Confusion

This subtest measures laterality and the concept of direction. It consists of 10 questions. This subtest measures laterality and the concept of direction. It was developed by T.R. Miles in, 1983. It is not limited to any age group. **Scoring:** the scoring of left right confusion subtest is dichotomous correct or incorrect. 1 mark was given for every word pronounced correctly. And 0 marks were given for every incorrect answer.

Logical Memory

Logical memory test assesses recall and short term memory. It consists of passage, in Urdu written in the form of story, 5 lines divided into chunks. A story is told to the child and once the tester finishes it the child has to repeat the story. It is subtest test of Wechsler Memory Scale adapted by Mehmood & Sheikh, in 1989. **Scoring:** the scoring of logical memory subtest is not dichotomous correct or incorrect, partially correct was also added. If the child repeats the chunk correctly 1 mark was given. If the child substituted words in the chunk no mark was deducted. Partial score: If all the words produced correctly in a chunk except for one word, half mark was given. If a chunk was not told correctly or skipped it was scored as 0. Each chunk was scored as 1. The total score was calculated by adding the scores of all the chunks.

Digit Span

Digit span subtest assesses attention span (Wechsler, 1955). It consists of two subtests digit forward and digit

backward. **Scoring:** Manualized scoring procedures were followed.

Paired Associate Learning Test

Paired associate learning test assesses learning ability. It consist three lists, each list having of pair of words, told to the child in three trials. These list consist of easy and difficulty words, which child has to be remembered and repeated to the examiner, once the examiner finish the first trial, same procedure is repeated for 2nd and 3rd trial It is subtest test of Wechsler Memory Scale adapted by Mehmood & Sheikh, in 1989.. **Scoring:** the scoring of Paired Associate Learning Test (PALT) is dichotomous correct or incorrect. 1 mark was given for every word pronounced correctly. And 0 marks were given for every word pronounced incorrectly.

Establishing psychometric properties

The tests were administered on 100 school children from class 4th and 5th and mean and standard deviation was calculated to compare the performance of school children and identify below the mean. Test retest reliability was established by administering the same assessment battery after one week on same individual. 80 school children (40 school children 20 girls and 20 boys of class 4 and 20 school children 20 girls and 20 boys of class 5) were selected for assessing test retest reliability. Test retest reliability of Reading test Urdu is .825, Test retest reliability of Reading test English is .779, Test retest reliability of Left right confusion is .526, Test retest reliability of Logical memory is .512, Test retest reliability of Paired Associate Learning Test .526 and Test retest reliability of Digit Span is .566

Procedure

School authorities were approached to get permission for conducting research. Informed consent from school authorities were taken after informing them about the purpose of the study. The school authorities were informed that information will be kept confidential and use for research purposes only. All agreed boys and girls were also informed about the purpose of the research. The testing was done in group and individual setting. School children were assured about the confidentiality of the research. They were encouraged to ask question and discuss any difficulty experienced during administration. In second phase 900 school children were assessed individually. After the administration children were debriefed about the purpose of the research. It took one month to complete assessment for group setting and two months to complete administration of individual testing.

Phase 3: Dividing school children in three groups

In this phase dictation Urdu was made as basis to divide school children into three groups -1 Standard deviation termed as under achiever, + 1 Standard deviation termed as high achiever and in between them were average achiever. The reason Dictation Urdu made a bases was to identify school children into three group, DSM V (2013)

states dyslexia/ SpLD's as academic disorder, secondly writing is the most practiced skill in our cultural context as compared to reading and thirdly in depth analysis could be done on dictation tasks. After the identification further analysis was carried out which includes quantitative analysis and qualitative analysis was done to give it deeper look and to compare it with the symptoms of dyslexia identified by western culture.

Results

Table 1

Frequency and Percentages of Gender of School Children of Class 4th and 5th (N=900)

Gender	F	%
Boys	433	48.20
Girls	467	52.40
Total	900	100

Table 1 indicates the frequency and percentage boys and girls of primary school. The table indicates there were 52.4% girls and 48.2% boys were included in the sample. There wereslightly more girls than boys in a sample.

Table 2

Means, Standard Deviations, t and p Values of Boys and Girls of Grade 4th and 5th on Different Sub-Tests

Variables	Boys		Girls		t	P<
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)		
Dictation Urdu	114.82(63.01)	140.33(60.91)	7.159	.001**		
Dictation English	61.20(35.08)	74.82 (31.07)	7.689	.000**		
Coding	33.22(13.74)	41.29(15.81)	7.545	.001**		
Vocabulary Test Urdu	11.11(4.59)	12.53(4.82)	4.455	.001**		
Vocabulary Test English	19.74(7.67)	22.15(7.29)	5.805	.001**		
Arithmetic	6.70(3.11)	6.24(2.83)	1.695	.091(ns)		
Reading Test Urdu	63.82(35.39)	73.89(31.36)	5.831	.001**		
Reading Test English	45.06(33.49)	56.39(33.34)	7.328	.001**		
Right Left Confusion	8.45(2.10)	8.80(1.68)	1.884	.060(ns)		
Logical Memory	10.64(3.75)	11.76(3.76)	4.812	.001**		
Paired Associate Learning Test	26.15(7.89)	27.11 (8.05)	1.486	.138(ns)		
Digit Span	7.86(1.79)	8.47(1.90)	5.394	.001**		

**p<0.01, *p<0.05

The table 3 showed that girls differ significantly from boys on the learning of reading and orthography (writing) skills. Girls are much better in acquiring these skills. No difference was found in numeracy skill, among boys and girls. Similarly on the attention and memory tasks girls performed better than boys, they pay more attention to the tasks than boys. No difference was found on right left confusion and learning ability subtest, it showed both boys and girls had the ability to acquire new skills.

Table 3
Summary of Correlation Between 3R'S (Reading, Writing, Arithmetic) and School Grades (Total Marks) of School Children (N= 556) of Grade 4th and 5th

Variables	Dictation Urdu	Dictation English	Vocabulary Urdu	Vocabulary English	Arithmetic	Reading test Urdu	Reading test English	Total marks
Dictation Urdu	---	.784**	.549**	.569**	.507**	.738**	.710**	.543**
Dictation English	---	---	.477**	.588**	.473**	.650**	.717**	.560**
Vocabulary Urdu	---	---	---	.605**	.474**	.426**	.463**	.363**
Vocabulary English	---	---	---	---	.486**	.473**	.558**	.518**
Arithmetic	---	---	---	---	---	.443**	.473**	.410**
Reading Test Urdu	---	---	---	---	---	---	.846**	.458**
Reading Test English	---	---	---	---	---	---	---	.532**
M(SD)	130.12(62.76)	70.01(33.64)	11.83(4.72)	21.27(7.62)	6.52(2.95)	68.85(33.79)	50.73(33.88)	54.02(17.78)

df =888, **p<0.01, *p<0.

The table suggests that reading writing and numeracy skills are positively related with each other. One skill helps in the acquisition of other skill. These three skills are the significant contributor of academic achievement. Those children who attain good grades have better acquisition of these skills rather who do poorly in academics.

Table 4
Frequency of Three Groups Underachiever (N= 169), Average Achiever (N=511) and High Achiever (N= 220) School Children

Variables	Under Achiever		Average Achiever		High Achiever	
	-1S.D	+ 1S.D	-1S.D	+ 1S.D	-1S.D	+ 1S.D
Dictation Urdu	20.70	22.90	20.00	12.70	7.300	9.60
Dictation English	21.39	19.30	17.40	13.30	11.00	1.00
Coding	17.80	13.00	11.90	11.00	15.60	11.50
Vocabulary Urdu	22.50	11.3	15.50	11.80	20.60	12.50
Vocabulary English	14.20	13.00	17.60	13.50	14.70	20.50
Arithmetic	28.40	16.00	27.40	11.10	17.90	11.00
Reading Test Urdu	25.40	14.60	21.70	0.00	7.80	0.00
Reading Test English	40.20	12.20	21.90	25.90	12.40	0.00
Left-Right Confusion	19.50	0.00	20.90	0.00	15.10	0.00
Logical Memory	22.50	85.20	22.30	10.60	17.40	17.40
Paired Associate Learning Test	18.90	16.40	17.80	16.50	19.70	14.70
Digit Span	34.30	7.70	16.60	10.00	20.60	11.50

The above table indicates that three groups of school children performing 1 Standard Deviation below the mean experience similar frequency of problems on academic, attention memory and laterality tasks

Table 5
Qualitative Error of Three Group Underachiever (N= 169), Average Achiever (N=511) and High Achiever (N= 220) School Children

	Qualitative error	
	Dictation Urdu	and English
Under Achiever	Average Achiever	High Achiever
Bizarreness	Phonetic attempt	Phonetic attempt
Incomplete	Omission	Omission
	Addition	Addition

The above table indicates that underachiever group make error of bizarreness and incompleting the tasks, average and high achiever group make errors of phonetic attempt, omission and addition

Table 6
Hierarchical Regression Analysis Predicting Dictation Error Bizarreness, Incomplete, Phonetic Attempt, Omission and Addition from Coding, Right Left Confusion, Logical Memory and Digit Span

Predictor	Dictation Urdu									
	Bizarreness		Incomplete		Phonetic Attempt		Omission		Addition	
	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β
Model 1	.014**		.048**		.003(ns)		.001(ns)		-.001(ns)	
coding		-.122**		.221**		.063(ns)		.045(ns)		.006**
Model 2	.005**		.009**		.000(ns)		.000(ns)		-.001(ns)	
Left right confusion		-.075**		.102**		.024(ns)		.013(ns)		-.006(ns)
Model 3	.015**	-.127**	.074**	.274**	.003**	.068**	-.001(ns)	.003(ns)	.000(ns)	-.031(ns)
Logical memory										
Model 4	.036**		.083**		.014**		.003(ns)		.000(ns)	
Digit span		-.494**		-.190**		.405**		.380(ns)		-.326(ns)
N		900		900		900		900		900

** $p < 0.01$, * $p < 0.05$

The results showed that dictation error bizarreness model 1 $F=13.613$, $p < .01$. The model explains 1% of variance in the predicted variable (Adjusted $R^2 = .014$). In model 2 $F=5.412$, $p < .024$. The model explains 0.5 % of variance in the predicted variable (Adjusted $R^2 = .005$). In model 3 $F=14.697$, $p < .001$. The model explains 1.5 % of variance in the predicted variable (Adjusted $R^2 = .015$). In model 4 $F=12.198$, $p < .001$. The model explains 3 % of variance in the predicted variable (Adjusted $R^2 = .036$). Dictation error incomplete model 1 $F= 46.063$, $p < .001$. The model explains 4.8% of variance in the predicted variable (Adjusted $R^2 = .048$). In model 2 $F=9.436$, $p < .002$. The model explains 0.9 % of variance in the predicted variable (Adjusted $R^2 = .009$). In model 3 $F=72.958$, $p < .001$. The model explains 1.5 % of variance in the predicted variable (Adjusted $R^2 = .075$). In model 4 $F=2.857$, $p < .014$. The model explains 1.4 % of variance in the predicted variable (Adjusted $R^2 = .036$).

Dictation error phonetic attempt model 1 $F=3.526$, $p < .001$. The model explains 0.3 % of variance in the predicted variable (Adjusted $R^2 = .003$). In model 2 $F=.514$, $p > .474$. The variance caused in the predicted variable is not significant (Adjusted $R^2 = .000$). In model 3 $F=4.112$, $p < .043$. The model explains 0.3 % of variance in the predicted variable (Adjusted $R^2 = .003$). In model 4 $F=5.125$, $p < .002$. The model explains 1.4 % of variance in the predicted variable (Adjusted $R^2 = .014$). Dictation error omission model 1 $F=1.842$, $p > .175$. The variance caused in the predicted variable is not significant (Adjusted $R^2 = .001$). In model 2 $F=.143$, $p > .705$. The variance caused in the predicted variable is not significant (Adjusted $R^2 = .000$). In model 3 $F=4.112$, $p > .936$. The variance caused in the predicted variable is not significant (Adjusted $R^2 =$

.001). In model 4 $F=1.919$, $p > .125$. The variance caused in the predicted variable is not significant (Adjusted $R^2 = .003$). Dictation error Addition model 1 $F=8.346$, $p < .004$. The variance caused in the predicted variable is 0.8% (Adjusted $R^2 = .008$). In model 2 $F=1.549$, $p > .214$. The variance caused in the predicted variable is not significant (Adjusted $R^2 = .001$). In model 3 $F= 3.485$, $p > .063$. The variance caused in the predicted variable is not significant (Adjusted $R^2 = .003$). In model 4 $F= 3.056$, $p < .028$. The variance caused in the predicted variable is 0.7% (Adjusted $R^2 = .007$).

Discussion

The aim of the present research was to identify symptoms of Specific Learning Difficulties/ dyslexia, in Pakistani cultural context. Since the identification of the term, more than hundred years, it remains a debatable issue for researcher in different disciplines, till present day. DSMV (2013) has changed the entire conceptualization of the term dyslexia and now it is being viewed as academic disorder and it will manifest itself in 3R'S (Reading, Writing and Arithmetic). For this purpose its identification is of vital importance for school children otherwise it will have a devastating effect on the children's life and creates a discrepancy between their ability and achievement. If we look Specific Learning Difficulties / dyslexia according in Pakistani cultural context, there are several other factors that includes decline in education, unqualified teachers, reading, writing skills are not taught in class rooms, outdated and lack of universal curriculum, dual medium of instruction, over-crowded class rooms, methods of teaching reinforcing rote learning, Poverty and uneducated parents, causing underachievement (Vaughn, Thompson, & Hickman, 2003). Phonological awareness, morphological skill, grammatical skills, spelling, vocabulary are the indicators of dyslexia, but in Pakistani schools these skills are not being taught to school children. These factors mimic dyslexia and make it difficult to distinguish between two conditions (Nag& Snowling, 2012).

Similarly qualitative analysis reveals that writing errors are found in all three groups' underachiever, average achiever and high achiever. Bizarreness and incompleteness of the writing task is found in underachiever group and phonetic attempt, omission and addition errors are found in average and high achiever group, where in western literature all these errors are manifested in underachieving student suffering from dyslexia. To support the finding that above mentioned errors are caused mainly in our school children were due lack of teaching and training, not due dyslexia, cognitive skills attention, memory and laterality was also assessed. Regression analysis revealed that memory and attention tasks predicts acquisition of 3R'S, they are significant but not very strong contributor in acquiring these skills. The other above mentioned factors above mentioned factors plays major role in causing these problems. The frequency of underachiever, average achiever and high achiever school children performing 1 SD below and above mean also reveal that difficulties in academic skills, memory

and attention skills and laterality is faced by children in all three groups, simultaneously irrespective of dyslexia, where as in western countries these difficulties are faced by dyslexic/ underachieving children. Similarly the frequency of low achiever in academic tasks ranges from 20% -25%, which is over-identification of dyslexia in Pakistani cultural context, according to western literature where prevalence of dyslexia is 3% to 5% (Fuchs, Fuchs, & Prentice, 2004).

Reading, writing and arithmetic are considered as the hall mark for success and failure in school and forming strong for other subject's mathematics, science, history, and geography, taught in school (Tomporowski, Phillip, Davis, Patricia, & Naglieri, 2008). The results suggest that reading writing and numeracy skills are positively related with each other. One skill helps in the acquisition of other skill. These three skills are the significant contributor of academic achievement and are interrelated. Those children who attain good grades have better acquisition of these skills rather who do poorly in academics. Gender difference also exists in learning of 3R'S reading, writing and arithmetic among boys and girls. The results indicate that girls differ significantly from boys on the learning of reading and orthography (writing) skills. Girls are much better in acquiring these skills. No difference was found in numeracy skill, among boys and girls. Similarly on the attention tasks girls performed better than boys, they pay more attention to the tasks than boys.

The finding of the current research supports the argument that in Pakistan dyslexia remains a myth, in our country the reality of underachievement is that it is caused due to decline in education system and faulty learning strategies.

Limitation and suggestion

The current research has laid the foundation for screening of school children with specific learning difficulties/ dyslexia. For future researches it is important to develop intervention plans for school children and should be provided at the right time before the problem gets worsen.

Conclusion

The assessment of school children regarding academic achievement, cognitive skills and screening of dyslexia is very important, but the researchers have to be very cautious in diagnosing children with dyslexia keeping in mind the cultural factors. It would be unjustifiable for diagnosing children on the basis of those skills that are not being taught in Pakistani school system or western based assessment measures that assess skills according to their cultural perspective. It is important for the current researchers to stick to the new diagnostic criteria assessing school children strengths and weakness and providing intervention to screen out dyslexia

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