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Relationship between Dyslexia and the Academic Performance: Mediating Role of Teacher's Awareness

إعادة النظر في العلاقة بين عسر القراءة والأداء الأكاديمي: الدور الوسيط وعي المعلم

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Abstract

The academic performance of dyslexic students' needs a lot of attention both from teachers as well as parents. Teachers must be well trained and have the expertise to carefully manage the class of dyslexic students. For this purpose, identifying dyslexic students, classroom management teacher-parent participation and awareness could play an important role in enhancing the academic performance of dyslexic students. The current study aims to investigate the indirect effects of awareness on the relationship between identifying dyslexic students, classroom management teacher-parent participation, and academic performance of students. Nonprobability convenience sampling was used. 372 participants participated in the survey. AMOS-SEM was used for data analysis. Measurement and structural models were developed. It was found that all the scales were found reliable and valid. Moreover, all the direct and indirect relationships were also found positive and significant. Awareness and teacher-parent participation were found most dominant factors on basis of beta values.

Keywords: Identifying dyslexic Students, Classroom management, teacher-parent participation, Teacher's awareness, Academic performance.

نبذة مختصرة:

يحتاج الطلاب الذين يعانون من عسر القراءة إلى الكثير من الاهتمام من قبل المعلمين وكذلك أولياء الأمور لتحسين الاداء الأكاديمي. يجب أن يكون المعلمون مدربين تدريباً جيداً ولديهم الخبرة اللازمة لإدارة فصل الطلاب الذين يعانون من عسر القراءة. لهذا الغرض ، تحديد الطلاب الذين يعانون من عسر القراءة، ووعي ومشاركة المدرسين وأولياء الأمور يمكن أن تلعب دورًا مهمًا في تعزيز الأداء الأكاديمي للطلاب الذين يعانون من عسر القراءة. تهدف الدراسة الحالية إلى استكشاف الآثار غير المباشرة للوعي على العلاقة بين تحديد الطلاب المعسرين قرائيا ، وإدارة الصف ومشاركة المعلمين وأولياء الأمور ، والأداء الأكاديمي للطلاب. تم استخدام أخذ العينات الملائمة غير الاحتمالية. شارك 372 شخص" في هذه الاستبيان. تم استخدام AMOS-SEM لتحليل البيانات. تم تطوير نماذج القياس والهيكلية. وقد وجد أن جميع المقاييس موثوقة وصالحة. علاوة على ذلك ، وُجدت جميع العلاقات المباشرة وغير المباشرة إيجابية وذات مغزى. وجدت الدراسة أن الوعي ومشاركة المعلمين والآباء أكثر العوامل المهيمنة على أساس قيم بيتا.

الكلمات الرئيسية: تحديد الطلاب الذين يعانون من عسر القراءة ، إدارة الفصل الدراسي ، مشاركة المعلمين وأولياء الأمور، وعي المعلم، الأداء الأكاديمي.

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Introduction

Learning disability among students is the most debated issue that impedes their learning and causes lower academics and grades (Hamalainen et al., 2013). The students in Khyber Pakhtunkhwa come to schools with English language deficiency, especially female students with less exposure due to socially restricted environments i.e. social, cultural, and religious bars. Therefore, the learning ability of these students to follow the instructions in other than their mother tongue i.e. Pashto to English is very limited. Dyslexia is a learning disability. Students with learning disabilities face difficulties in spelling, writing, and pronouncing words in a language other than the mother tongue. It affects individual life (Plakas, van Zuijen, van Leeuwen, Thomson, & van der Leij, 2013). Though exact causes of learning disability are not clear until now, however studies on anatomy and brains link it to neurotically/ sensory deficiencies. Dr. Reid Lyon (1995) chief of the Child Development and Behavior Branch of the National Institute of Child Health and Human Development at the National Institutes of Health defined learning disability as an "explicit language-based disorder result into difficulties of a single word decoding, typically reflecting lack of phonological processing". He further reported that "these issues in single word decoding are generally related to the age, cognition and academic abilities. Thus, dyslexia is demonstrated by in constant strain with diverse forms of language as well as problems with reading, writing, and spelling" (Soriano-Ferrer, & Echegaray-Bengoa, 2014). The impact of dyslexia varies from person to person dependent on the intensity of circumstances and time factors inter alia efficacy of the teaching or remediation (Carreker, Joshi & Boulware-Gooden, 2010). The main difficulty includes word recognition and reading fluency, spelling, and writing. These problems are often difficult to be identified and recognized and may result in numerous problems for students hence results in lower grades/ performance of students however, the effects of dyslexia reach well beyond the institution and classroom (Fletcher & Reschly, 2005).

The students who enjoy reading or those who are involved in a project that lies in the area of their interest prefer the printed words, as these are friendly and easy to comprehend, however, on other hand, there are several students, who consider the text as a threat and try to avoid interacting the printed books (Boets *et al*., 2011). It is very hard for them to read and extract meaning and information from such books. Moreover, has identified that teachers are usually unaware or do not acquaint with required skills during their training to get command on how to teach to students with Dyslexia (Pennington *et al*., 2012). Though, despite efforts by the teacher, it is impossible to give a response to each need of the individual student, while he or she is teaching a whole class with more than 30 to 50 students. There are several factors responsible for the issue under study, some of them could be easily pinpointed while, some are impossible because of the complexity that does not associate with a learning disability (Plakas *et al*., 2013). Hale *et al*., (2004) believe that teachers could adopt several strategies to brush aside the issue to lend support to the struggling readers within a big class or group. These could improve learners' reading comprehension, on one hand, simultaneously, these also drive them towards a more inclusive classroom on the other (Fletcher, Reid Lyon, Fuchs & Barnes, 2007). The study aimed to achieve the goals of effective learning and fruitful academic results from the students and to enhance their performance inter alia quality of education and teaching among the female students of Khyber Pakhtunkhwa. This study focused on the issues of awareness and identification of dyslexia among the female students to find the answer to problem understudy i.e. how to solve/ help the female students with dyslexia in secondary schools.

Literature Review

Dyslexia?

According to the chronology of the word 'dyslexia', it is derived from the Greek 'dys-', which means difficulty with, while '-lexia', implies words or language. Experts have found several causes that is why it is difficult to learn, read, write, or spell (Lu, Dapretto O'Hare, Kan, & McCourt, 2009). Yet these difficulties may not be explained easily. On other hand, researchers believe that dyslexia has strong effects on the processing of information (receive, hold, retrieve, and structure) inter alia the processing speed (Bradley *et al*., 2002). However, dyslexia is considered as an umbrella term, therefore, it becomes more critical to understand the term in its true meaning when it comes to the learning disability of the students. It has been reported by several researchers that dyslexia is not linked to the intellect and it can arise in three different ways i.e. the severe, moderate, or mild, thus no two persons with dyslexia may have the same issue as its impact

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on each individual could be different (Donovan & Cross, 2002; Fletcher & Reschly, 2005). Generally, Dyslexia is a particular disorder in the development of language which is associated with a reading disability. Researchers in the field of Etiology have arrived to propose multiple hypotheses that are helpful to diagnose different methods and techniques and to identify symptoms of dyslexia (Kavale *et al*., 2005). This learning disability emerged from dyslexia include the "difficulty in phonological awareness, phonological decoding, processing speed, auditory short-term memory, language skills, and verbal comprehension or rapid naming". However, more recently, it is considered as a cognitive disorder, related to reading and speech. Dyslexia is defined by the National Institute of Neurological Disorders and Stroke as "difficulty with spelling, phonological processing (the manipulation of sounds), or rapid visual-verbal responding" (Shaw, Malik & Anderson, 2017). Thus, students with Dyslexia have been identified to be confused with letters and numbers. There are three categories of Dyslexia i.e., Development dyslexia, which is developed during the early stages of the development of the fetus, and it is hormonal, however, it decreases with the growth of a child grows (Saygin, Norton, Osher, Beach & Cyr, 2013). This type is generally found more in boys rather than girls. The second type is that of Trauma dyslexia, it happens if some part of the brain is injured that is responsible for reading and writing, and the third kind is Primary Dyslexia, it continues and does not change with age, and happens because of the disorder in the left side of the brain (Scruggs & Mastropieri, 2002).

Theoretical Context of Dyslexia

Researchers assert that theories of dyslexia have helped to develop the teaching and learning-related learning methods, tools, techniques, and approaches, yet, this is not always due to change in the contextual factors. It is evident from the review of the related literature that teaching and learning approaches have been emerged and established from the observation and experimentation by the practitioners, this is why one cannot find a straightforward connection between theory and practice, thereby identify a different set of approaches and theories. It has been largely contended that the problems and complications associated with dyslexia are the outcomes of abnormalities (Galaburda, 1999). However, there is no agreement among the researchers on a universally agreed-upon definition of dyslexia neither there is consensus on its exact causes. Below is the theoretical perspective on dyslexia.

Neurological Theory

Vision deficit

The first observation of the dyslexic patients was recorded by a group of physicians and ophthalmologists (Bosse *et al.*, 2007) who used the term blindness to describe and explain this disorder thus first theory of dyslexia has a basis in the visual field as it was assumed that this disorder is exactly deficit of visual perception. This approach was welcomed and widely recognized by researchers during the 1960s, and 1970s. Fischer, Liberman, & Shankweiler (1978) and Arter & Jenkins (1979) shared the same story. Likewise, the theory of Inter-sensory deficit of Herbert Birch and Belmont Lillian (1963) proposed a hypothesis "dyslexics have the difficulty to integrate the information from two or more sensory systems" which received great criticism from Zigmond (1966), he claimed that only experimental data is not helpful to point these differences among the normal readers and person with a disability to read. Stein & Fowler (1982, 1985) in their convergence deficit Visual Theory, asserts that dyslexics' issues also include eye convergence and binocular control and according to them, it is linked with the neurological deficit that damages effective information processing. Again, these findings were opposed by Newman, Wadsworth, Archer & Hockly (1985) and Bishop (1989). However, the contemporary study that comprehensively addresses the problems associated with dyslexia is that of Spinelli *et al.* (2002), who studied the crowding effects on word identification in developmental dyslexia. Gerhardstein & Rovee-Collier (2002) contends that visual perception plays a significant role however, in the case of visual deficit, dyslexia emerged that affects the learning process of an individual.

Auditory deficit

Alfred Tomatis, a French researcher in 1960 presented an Auditory Deficits Auditory Transcription deficit theory. He was of the view that dyslexics have difficulty in transcribing the written words into phonological representations, however, he emphasizes mainly the auditory system and ignored the language deficits. Further, Alfred presented his known remediation method that is used in teaching related to ear and motivation of the person with a disability to communicate. Ahissar et al. (2000) studied the auditory processing parallels reading abilities in

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adults. Amitay *et al*. (2002) worked on disabled readers who suffer from visual and auditory impairments but not from a specific magnocellular deficit. McArthur & Bishop (2001) studied the auditory perceptual processing in people with reading and oral language impairments. McArthur & Hogben (2001) emphasized the auditory backward recognition masking in children with specific language impairment and children with a specific reading disability. Likewise, McArthur, Ellis, Atkinson, & Coltheart (2008) conducted a study on disruption of the neural response to rapid acoustic stimuli in dyslexia and evidence from functional MRI. Steve & Christensen (2002) examined how to enhance the response of the left frontal cortex that slowed down speech in dyslexia. Whereas, Serniclaes et al. (2001) worked on the perceptual discrimination of speech sounds in developmental dyslexia. All of them led to the conclusion that an auditory perception deficit /uncorrected auditory deficit, damages the normal process of development of language and speech, thus it causes language and reading deficits. Though it could be one of the causes of dyslexia, yet it is usually omitted to define dyslexia as it lacks specificity (Diehl, Frost, Mencl & Pugh, 2011). Thus, the approaches that claim at it is not an auditory perception deficit, rather it is a deficit in the phonological representation of language that has been widely supported and accepted by these researchers.

Brain deficit

On other hand, the neurobiology and brain structures cerebral dominance by Orton (1937) had found the existence of volatility in the cerebral dominance of linguistic functions including hand and an eye function. According to this approach, the comparative dominance of cerebral hemispheres left being is considered more dominant in the case of language that varies between the normal and that of dyslexic readers (Hari, Renvall & Tanskanen, 2001). However, they believe, if the brain areas responsible for language are balanced amongst both the hemispheres, in such case the dyslexics will depend more on interhemispheric communication (Hari & Renvall, 2001), thus, it slows down the language processing. One more theory namely Cerebellum emerged recently. Nicolson, Fawcett, Brooks & Needle, 2010) study on procedural learning and dyslexia and Brown *et al*. (2001) the preliminary evidence of widespread morphological variations of the brain in dyslexia states that difference in the structure of the brain or malfunction in the cerebellum (hindbrain) is responsible for dexterity and automaticity. This is very helpful to understand and explain all the indicators of dyslexia. Similarly, Levinson (1994) and Rumsey *et al*. (1997) in their theory on vestibular system advocates that dyslexic's symptoms occur because the deficit in the inner ear since cerebellar-vestibular system tune the outgoing motor signals and incoming sensory signals, whereas its deficit damage the tuning of these signals, thus leads to various kinds of dyslexia. The recent neurobiological research focuses on three distinct areas i.e. molecular to analyze the post-mortem brains, structural by applying the MRI for comparison of morphometry of normal and dyslexic brains, and thirdly, the functional, where working brain is observed through MRI (f-MRI) and positron emission tomography (PET) (Rumsey *et al*., 1997).

Cognitive Theory

Frith (1986) presented a theory to understand the complexities of dyslexia and termed it "causal modeling framework", which is widely accepted and used, it offers three layers description and is suitable to understand dyslexia, these layers are biological (genetics and neurology), cognitive (information processing), and behavioral (primary characteristics such as reading and spelling). He found that at the behavioral level, the biological and cognitive forces could appear in the form of difficulties in learning to read, phonology, naming, speech development, equilibrium or balance, estimation of time estimation, spelling, phonic skills, memory, and direction of motion. This framework explored and focused that how these disabilities change into learning behavior. Cestnick (2001) recommends proper rejoinders to them by the teachers. Biological theorists on other hand have mainly focused on the genetic factors to identify the genetic basis for dyslexia. They resolute on the heritability of the reading sub-skills and on tracing gene indicators for dyslexia regarding exact chromosomes. The language areas of the brain according to them are based on post-mortem examinations that unveiled variation in the brain structure in individuals with dyslexia (Stoodley, Talcott, Carter, Witton & Stein, 2000). More specifically in the areas of language as compared to the non-dyslexic (Stein, Talcott, &Witton, 2001) identified differences in brain structure i.e. the living brain and active process in it, positron emission tomography (PET), and magnetic resonance imaging (MRI) is used by experts which enables the researchers to identify differences in the structure of the living brain and the active processes within it. Cognitive theorists

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believe that though dyslexia could manifest in numerous ways, however, they contend that it could be the result of a phonological deficit, therefore, they emphasize the difficulties during phonological processing and consider it as the basic and ultimate factor responsible for dyslexia in all individuals. Despite these logical arguments, some researchers accept the phonological deficit theory yet they view the phonological problems as only an indication of dyslexia, according to them, the cause of dyslexia is associated with the structure of the brain (Paszkiel & Szpulak, 2018). Tallal, Miller & Fitch (1995) have identified that speed of information processing among the dyslexics is one of the causes of making more mistakes as compared to the normal readers because of their auditory perception tasks that need quick discrimination of the stimulus. It implies that dyslexics have the difficulty in perception concerning the processing speed of information, which might result in phonological deficiency, and it is displayed by dyslexics when reading (Cassandro et al, 2019).

Naidoo (1972) mainly emphasized the memory deficits of dyslexics and identified that they have relatively a smaller storage capacity and it might be due to coding deficiency. Their findings were supported by Cohen & Netley (1981), whereas, Shankweiler and Liberman (1979) thought out that dyslexics' memory deficiency is mainly the reason for disturbing the language information processing, their results were further confirmed by Mann & Liberman (1985). The theories on language and phonological deficiency claim two kinds of deficiencies i.e. language or phonological that spoil the learning to read hence a person with such deficit become dyslexic (Orton, 1937; Liberman, 1971) which results in mistakes and slowness. This theory has great acceptance among the scientific community, yet one has to keep in mind that due to variation of language, the phonologies may also vary for example, among the irregular phonology languages, such as English, dyslexics have been observed to be slower and make more mistakes in comparison to normal readers, while in case of regular languages, like Urdu, Pashto, French, English, or German, dyslexics may be slower readers, however, in such case they are expected to make only certain mistakes and that is too lesser in degree, as the phonological rules are easy for them to learn. The scientific field is replete with studies that mainly focused on the phonological aspect of the learning difficulties, for example, Castles & Coltheart (2004) tried to answer developmental dyslexia and disconnection syndrome. Likewise, Paulesu *et al*. (2001) investigated the cultural diversity and biological unity of dyslexia. McCrory, Frith, Brunswick & Price (2000) studied the abnormal functional activation during a simple word repetition task among adults. Pugh et al. (2000) worked on the angular gyrus in developmental dyslexia and task-specific differences in functional connectivity within the posterior cortex. also investigated the same and supported the previous results. Gullick & Booth's (2014) study emphasized the individual differences in cross-modal brain activity in developing readers. Thieboutet *et al.* (2014) have found that learning to read improves the structure of the arcuate fasciculus. Sayginet *et al.* (2013) have tracked the roots of reading ability, according to them the white matter volume and integrity correlates with phonological awareness in pre-reading and early kindergarten children. Furthermore, a tractography study of pre-readers at risk for dyslexia was investigated by Vandermosten *et al*. (2015).

Gullickand Booth (2015) specifically focused in his study on the direct segment of arcuate fasciculus is that predictive of longitudinal reading change (Perera, Shiratuddin, Wong & Fullarton, 2017*).* Gullick & Booth's (2014) paid attention to the hybrid model of attentional control by looking into the new insights in hemispheric asymmetries inferred from TMS research. Likewise, Lu, Dapretto, O'Hare, Kan, and McCourtet *et al.* (2009) investigated the relationships between brain activation and brain structure in normally developing children. Dahaene, Cohen, Morais & Kolinsky (2015) studied the behavioral and cerebral changes induced by reading acquisition among the illiterate to literate. It has been widely researched that automaticity of some assignments is another problematic area that compels dyslexics to pay more attention and concentration as compared to non-dyslexic individuals. According to Nicolson, Fawcett, Brooks, & Needle (2010), lack of automaticity of the primary skills like literacy and numeracy implies that a person with learning difficulty feels hard to process the information and is unable to carry novel and intricate assignments due to processing overload. Therefore, they might need additional practice about any skills if they must attain automaticity which is linked directly to the structure of the cerebellum. Likewise, claim that working memory is used to grasp newfangled information in the individual's mind for a very limited duration before its rejection or transfer to long-term/ permanent memory. The researcher considered this difficulty as one of the significant causes of dyslexia among school children, this

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argument was supported by Powell, Stainthorp, Stuart, Garwood & Quinlan (2007). A lot of research is going on in the developed world on the deficits associated with dyslexia, therefore, it is better to understand the cognitive differences.

Social Interactive Theory

It is the additional level to describe dyslexia, researchers try to find an answer to the question that how society reacts toward dyslexia. Sociologists believe that every society has some unique social values that have a grave impact on dyslexia. These could involve considering some of the learning differences that reflect a deficiency in the learner specifically the literacy difficulty (Puolakanaho *et al.,* 2007). Moreover, it has been reported by Pennington (2006) that there are certain values that prefer some kinds of literacy as compared to other forms thus those have and those who have no access to these forms use some literacy skills as a proxy for intellect and educability, hence people who lack these skills are thought to be foolish and ignorant. Researchers have also found an interesting result while studying the relationship and impact of social values on dyslexia, they recorded that in many developed societies the lack of speedy processing of information is attributed to unintelligence (Shapiro Carroll & Solity, 2013). Though this view accepts the role of biological and cognitive differences and their significance for an individual experience, yet, they contend that perception and values of the society play a more effective role (Le Jan *et al*., 2011). With this background, now it could be concluded that there is an agreement among theorists on dyslexia? The cognitive theorists assert that dyslexia is the outcome of brain differences that lead toward cognitive differences in information processing which is received by the brain through senses. Thus an individual with dyslexia may find it difficult to a greater or lesser extent to process the information, for example, it could happen during reading and writing, thus it is labeled as a disability. Furthermore, scientists with magnocellular system backgrounds also show consensus and argue that this cognitive deficiency of speed /timing may trigger dyslexia, which could affect the modalities of the brain i.e. visual, phonological, or motor. Similarly, there is also consensus on the physiological basis as manifestations of dyslexia have a physiological basis too (White *et al*., 2006). They contend that in this regard, brain studies in the future will be fruitful. Other researchers associated with phonological processing difficulties claim that difficulties arising out of the phonological processing are key to dyslexia that exist to a greater or lesser extent among all the dyslexic individuals.

Dyslexia: The Pakistani Experience

The word dyslexia is used to understand the incapacity of an individual to learn, read or write (de Santana *et al*., 2012) where a student faces problems in learning and reading during class lectures particularly poor recognition of words and their use (Bishop & League, 2006), deficiency to recall auditory order of words along with problem to speak, trouble in spellings, visual memory and pitiable perception. For a long, this issue was perceived as a reading disability among the children whose understanding and learning was slow as compared to those in chronological age and intelligence quotient (Shaywitz & Shaywitz, 2004). In Pakistani society in general and the province of Khyber Pakhtunkhwa in particular, it is the pathetic aspect that largely the management of the schools and teachers do not have awareness of their students with a learning disability. Further, they are also deficient in terms of resources for training their teachers to deal with dyslexic students. This can be a great loss to students and society because untreated and undiagnosed students become a great problem for society and affect all educational systems.

Pakistan is a developing country with meager resources to cater to the bread and butter needs of its rapidly growing population. Though Millennium Development Goals (MDG) 2001 states that education is the fundamental right of every person, yet it has been reported by several agencies that the education sector has been failed to show any promising sign of progress since its literacy graph is far behind than its neighboring countries where it's teaching staff is nonprofessional and nonproductive (Zingoni et al, 2021). Elementary and Secondary Education is one of the biggest departments of all in Khyber Pakhtunkhwa. It has more than 168000 employees that constitute 55% of the total employees in the province. In this department 3.9 % of students are enrolled in 28000 schools and more than 1, 19,000 teachers are working in government schools. Though one could find studies to analyze and measure the issue of dyslexia in Pakistan, yet no study could be found for Khyber Pakhtunkhwa province specifically. This signifies the proposed study in hand.

A study conducted by Naeem *et al.* (2014) has tried to observe the existence of particular learning difficulties among the girls' students in

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school raging from grade 3rd to 5th class. They developed a local instrument to screen out the children. According to results, a total of 75 students out of 200 were found with learning difficulty inter alia emotional problems i.e. anxiety, poor self-image, aggression, and depression, etc. In another study, Ashraf & Majeed (2011) have conducted their research from grade 6 to 8 class in Lahore with a sample of 500 equally divided into two groups i.e. 250 boys and 250 girls in the schools. The ages of the students were ranging from 11 to 17 years. The results highlighted that 5.37% of students out of the total sample were found with dyslexia. However, it was more dominant in the class 6th and 7th especially in the grade 8 female students and the sad aspect of the findings was that neither teacher nor the parents were aware of how to find and treat the students with learning disabilities. These studies highlight the need to identify dyslexia and address it before its conversion into a problem. However, unluckily most of the teachers have no knowledge, skills, and training to identify it well in time. Though it will not be necessary to have a direct solution, however, in long run it will be essential for teachers that at least they must have command of the areas of learning development and knowledge of the English language especially for those who are working in special education (Soriano-Ferrer & Echegaray-Bengoa, 2014) that could be helpful to recognize a specific aspect of disability and to devise strategies for remedy since recognition, the diagnostic assessment, positive educational experiences, and emotional support are indispensable to help the students with dyslexia.

Relationship between Dyslexia, Teachers Awarenesss, and the Academic Performance

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necessary to have a direct solution, however, in long run it will be essential for teachers that at least they must have command of the areas of learning development and knowledge of the English language especially for those who are working in special education (Soriano-Ferrer & Echegaray-Bengoa, 2014) that could be helpful to recognize a specific aspect of disability and to devise strategies for remedy since recognition, the diagnostic assessment, positive educational experiences, and emotional support are indispensable to help the students with dyslexia.

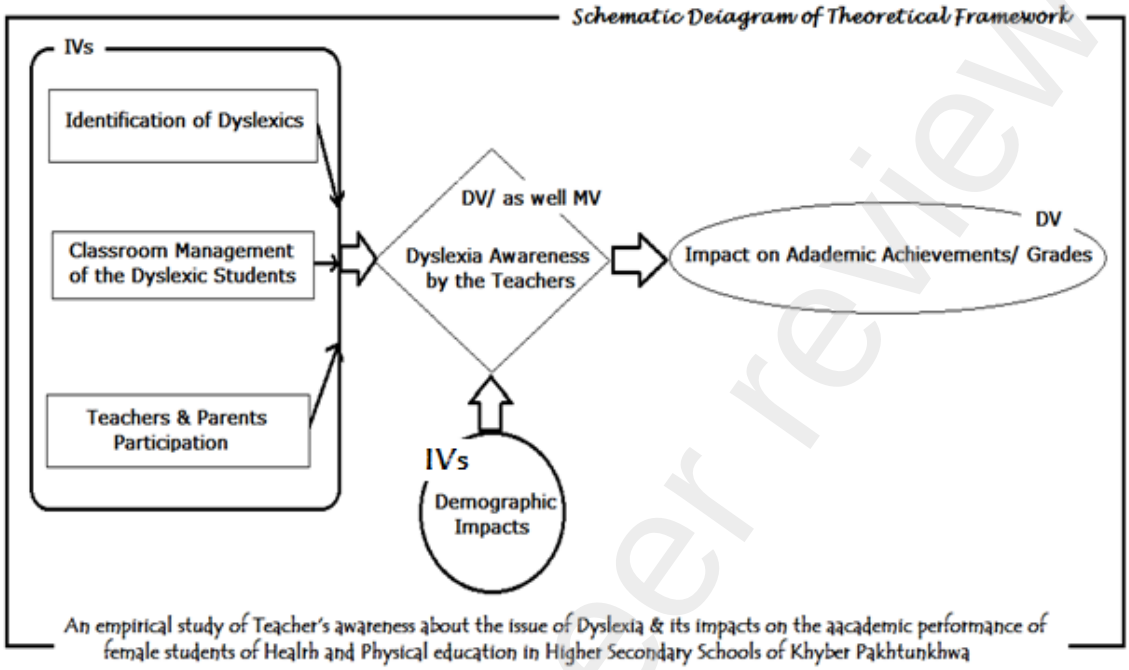


Figure 1: *Schematic Diagram of Theoretical Framework*
Source: Developed by rsearcher from the review of the literature

$H_{1:}$ The predictors and criterion variables and positively significantly associated.
$H_{2a:}$ Predictors significantly predict the criterion variable.
$H_{2b:}$ Awareness mediates between predictors and criterion variables.

Method

Since the survey is the most preferred tool for studies like in hand, therefore, this study collected data through structured questionnaires suggested by Cohen et al. (2005) and Sekaran et al. (2016. The main benefit of this technique is that it enables the researcher to collect and compare several variables in the study at the same time. Moreover, the collection of data is less expensive in terms of time and cost, likewise, the researcher can secure the cooperation of respondents since data is collected at one point in time; and finally, the analysis of the data could be done more quickly using statistical software.

Population and Sampling

The population of this study includes the principals, headmistresses, and teachers from three districts i.e. Mardan, Charsadah, and Nowshehra of the Girls Higher Secondary Schools in the Elementary and Secondary Education Department Khyber Pakhtunkhwa, Pakistan. Krejcie & Morgan's (1971) table was used to determine the sample size. Since more than one group was studied, therefore, systematic and stratified random sampling techniques were used. A 5-point Likert-scale questionnaire (ranging from Strongly Disagree to Disagree, Don't Know, Agree, and Strongly Agree) was distributed through the 'drop and pick' method recommended by Babbie (2004). The reliability of the items was examined using Cronbach alpha (Cronbach, 1951, 1970), the minimum threshold value suggested by Nunnaly (1978) is .7, and however, .8 is generally considered better.

Empirical Results and Findings

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Table 1.
Measurement Model

Variables	Items	Loadings	CR	AVE	α
Identification of Dyslexics	Item 1	0.69			
	Item 2	0.77	0.819	0.603	
	Item 3	0.86			
Classroom Management	Item 4	0.73			
	Item 5	0.85	0.818	0.601	
	Item 6	0.74			
Teacher	Item 7	0.65			0.885
Parent Participation	Item 8	0.79	0.806	0.584	
	Item 9	0.84			
Teacher Awareness	Item 10	0.72	0.70	0.526	
	Item 12	0.73			
Academic Achievement	Item 13	0.65			
	Item 14	0.81	0.782	0.547	
	Item 15	0.75			

CR> composite reliability; AVE> average variance extracted; α> Cronbach Alpha
Source: Measurement Model based on Primary Data.

A measurement model was developed to check the convergent validity (AVE & CR) and reliability through Cronbach alpha. The criteria given by Sarstedt, Marko & Ringle, Christian & Hair (2017) for convergent validity states that AVE >0.5 and CR >0.70, furthermore the threshold value for Cronbach alpha is 0.70. Moreover, factor loadings must be> 0.50. From Table 1, it is evident that all the factor loadings are higher than 0.5, in addition, AVE and CR values of all variables identify dyslexic students, class management, teacher-parent participation, awareness, and academic performance also met the threshold values. One item of awareness was excluded due to low factor loading i.e. item 11. Cronbach alpha of overall questionnaires is also high than 0.7 i.e. 0.885. It is assumed that scales used in the current study are found reliable and valid.

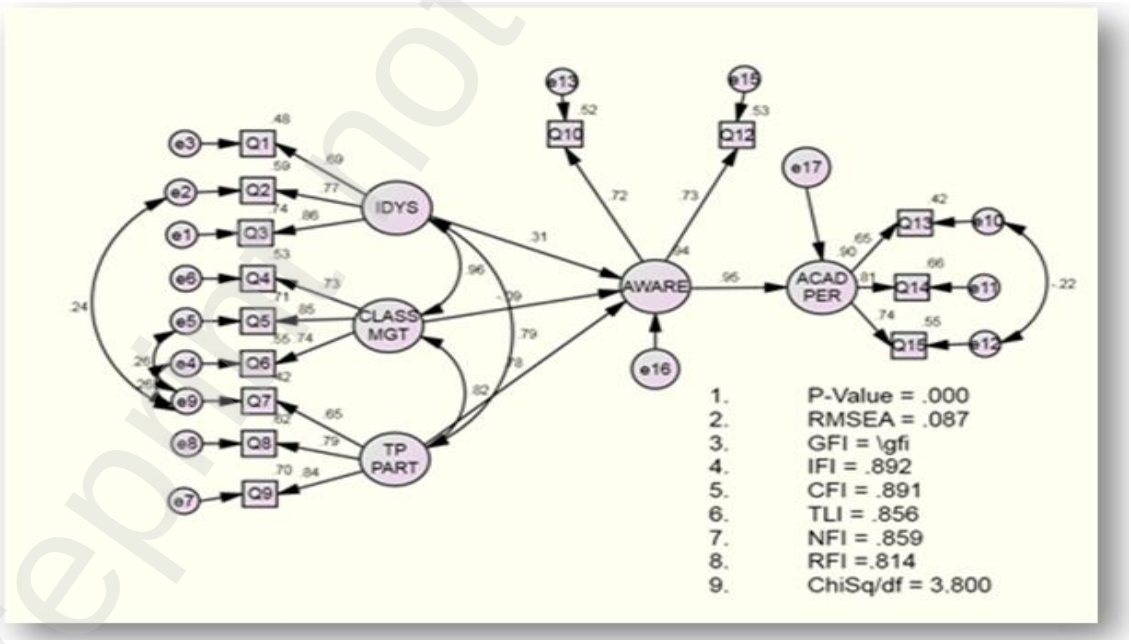


Figure 2. Measurement and Structural Model.
Source: AMOS-SEM Measurement Model based on Primary Data.

$H_{2a:}$ Predictors significantly predict the criterion variable.

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Table 2.
Direct Effects.

Direct Relationship	β	S.E	t	p	Support
Identify Dyslexic →Awareness	0.191	0.047	4.067	0.000	Yes
Class Mgt →Awareness	0.149	0.057	2.629	0.009	Yes
Teacher Parent Participation → Awareness	0.466	0.048	9.713	0.000	Yes
Awareness → Academic Performance	0.664	0.033	20.045	0.000	Yes
Identify Dyslexic →Academic Performance	0.127	0.032	3.908	0.000	Yes
Class Mgt -> Academic Performance	0.099	0.038	2.636	0.009	Yes
Teacher Parent Participation →Academic P	0.309	0.039	7.894	0.000	Yes

Source: AMOS-SEM Structural Model based on Primary Data.

Hypotheses were tested using bootstrapping. Table 2 presents the results of the direct impact of predictors on criterion variables. It is revealed from the above table 2 that identification of dyslexic has a significant effect upon awareness β=0.191, t=4.067, p<0.05, and one percent change in predictor could bring a 19.1% change in the criterion. In addition, class management also has a significant influence on the teacher's awareness β=0.149, t=2.629, p<0.05, furthermore, teacher-parent participation also has a significant impact on awareness β=0.466, t=9.713, p<0.05 moreover, awareness also has a positive and significant impact on academic achievement and performance β=0.664, t=20.045, p<0.05. There is a significant role of dyslexics identification in determining the academic performance of students, β=0.127, t=3.908, p<0.05, class management role upon academic performance β=0.099, t=2.636, p<0.05 while teacher-parent participation also has a significant impact on student academic performance β=0.309, t=7.894, p<0.05 respectively. The most dominant factor is found awareness on basis of the highest beta value followed by teacher-parent participation. In the existing study, all predictor variables are held responsible for bringing positive change in the academic performance of dyslexic students. Moreover, awareness and teacher-parent participation can play the most important role in enhancing the academic performance of dyslexic students. Based on results in table 2 and discussion, thus H2 is substantiated.

H2b: Awareness mediates between predictors and criterion variables

Table 3.
Indirect Effects

Indirect Relationship	β	S.E	t	p	Support
Identify Dyslexic → Awareness → Academic P	0.127	0.032	3.908	0.000	Yes
Class Mgt → Awareness → Academic P	0.099	0.038	2.636	0.009	Yes
Teacher Parent Participation →Awareness → Academic Achievement/ Performance	0.309	0.039	7.894	0.000	Yes

Source: AMOS-SEM Structural Model based on Primary Data.

Bootstrapping was run to test the indirect effects of awareness on the relationship between identifying the dyslexic students, class management, and teacher-parent participation and the academic performance of dyslexic students. Awareness significantly mediates between identify dyslexic student and academic performance β=0.127, t=3.908, p<0.01, 12.7% change is possible between identifying dyslexic students and academic performance due to awareness, also awareness mediates between class management and academic performance β=0.099, t=2.636, p<0.05, likewise awareness mediates between teacher-parent participation and academic performance. 9.9% change is possible in the academic performance of dyslexic students due to awareness and awareness is also found responsible for bringing 30.9% change in teacher-parent participation and academic performance of dyslexic students. Therefore H2b is also accepted.

Discussion

With this context i.e., origin, meaning, definition, and theories of dyslexia, its impact and role

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concerning academic achievement and performance. The awareness and identification of the dyslexic by teacher/ school and management of the classroom with dyslexic students, and parent teacher's participation and meetings through parents and teachers' councils and responsiveness to intervention emerged as the main variables of the study.

Dyslexia's Awareness & Identification

Lyytinen *et al*. (2006) suggested the establishment of precursors of dyslexia in the preschool years. Identification and intervention at an early stage are significant to help students with dyslexia. Yet, is difficult at the individual level to predict the nature, the impact of dyslexia among school-going children (Muter *et al*. 2004; Puolakanaho *et al*. 2007). The identification of a particular disability of the students in reading and learning is a critical factor. It has been observed that it is the foremost and significant step to address the problems of dyslexic students at the early stage (Thompson, 2013; Ajoku-Christopher, 2012). Since, majority of the teachers have either no professional training or the knowledge of the nature, types, and impact of dyslexia on the academic performance of the students, this ignorance of the teacher intensifies the issue. It has been recommended by researchers to focus on the students with learning disabilities teachers must be trained both for general education systems as well for special or inclusive education to identify and report the students with disabilities to the school management so that a special teaching strategy and environment could be designed to satisfy the learning need of the dyslexic. In addition to assessment and screening, response to intervention was proposed by Fletcher, Reid Lyon, Fuchs & Barnes (2007). It is based on continuous monitoring of the progress through well-developed program intervention instead of static assessment of the skills methods. Researchers have found several techniques to help the teachers how to respond to the problems of students with learning disabilities, however, recently, RTI (Responsiveness to Intervention) has been identified as one of the most helpful devices also named as problem-solving approach (Speece & Shekitka, 2002). It has captured the greater attention of academic researchers and is considered as one of the processes of remedial interventions. It has been found very helpful in generating information to guide the teacher to focus on the students with learning disabilities (LD). The main idea of this strategy is systematic that includes, use of scientific and research-based intervention in the teaching-learning process inter alia measuring the comprehension of learning response of the students and, then use of the response data to introduce variation in the volume and intensity of the subsequent interventions.

The universally agreed upon model of RTI is based on three tires to resolve the issue of students with learning disabilities. The tire one is related to providing high-quality instructions as well as behavioral support during teaching and learning activities. The second tire is concerned with the provision of specialized instructions for those students whose performance falls low as compared to their classmates, and the third tire focuses on the evaluation mechanism by engaging a multidisciplinary team (Marston, 2001). Although there is no universally agreed-upon RTI model, generally it is considered that it might include multiple tiers that provide a sequence of programs and services for students showing academic difficulties. According to RTI provides high-quality instruction and behavioral supports in general education, and it provides more specialized instruction for students whose performance is less than their classmates, and finally, it provides comprehensive evaluation by engaging a multidisciplinary team to know and determine the student with a disability and to need for special education and related services. The benefits associated with RTI include timely identification of a student with LD by employing a problem-solving approach instead of using an ability–achievement discrepancy formula i.e. "wait to fail." Secondly, it helps in reducing several students that could be considered for special education. The third benefit of RTI is that it also reduces over-identification of minority students, Likewise, it is handy, its generated data is highly relevant to instruction, logical and focused outcome (4) data that are maximally relevant to instruction, (5) focus on student outcomes with improved accountability inter alia it helps to promote the concept of collaboration and shared responsibility (Grimes, 2002). Yet, experts believe that it is not so simple rather problems are faced at the time of implementation of RTI, therefore, researchers assert that before execution of any one of the RTI models at the school, district, or provincial level, there is a need to plan effectively and several decisions could be made ahead particularly about the selection of structure and components, and the decision on how the students will go through the process Thompson, 2013. Thus, three main issues need to be evaluated and addressed for successful implementation, which include selecting the structure and components, balancing rigidity and

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flexibility, movement with and between tires, and intervention fidelity and instructional issues.

Management of the Class-room with yslexics

Classroom management for students with dyslexia is one of the critical factors that depend on school leadership and the managerial understanding of the teacher. The administration of the school is required to execute academic accommodation and alteration mechanisms to effectively help the students with disabilities, extra time and attention could be given to the student to complete their assignments, assistance in taking notes, and modification of the assignments properly (Kaluyu & Ooko, 2016). Teachers can change teaching strategies for dyslexic students by giving them taped tests. Likewise, the dyslexic could get benefit by just listening to the text on or through video besides word processing software on the computer (Griffiths, 2012). Since teaching to students with disabilities is not easy therefore teachers both in general education and special education must accommodate techniques to nurture the learning and classroom management for learning of the heterogeneous students i.e. dyslexic and non-dyslexic (Connor *et al*., 2005). Thus, teachers must be equipped with the necessary knowledge and skills, keep them organized, and allow the accommodation through the use of materials, interactive instruction, and student performance. The strategies to be employed by schools and teachers to manage the classroom for dyslexic include clarification or simplification of written directions, giving them a small number of assignments, block out the external stimuli, highlighting the essential facts and figures, use of a placeholder for consumable supplies, provision of extra practice activities and glossary in contents areas along with developing reading guidelines and finally use of AV aids for recording purpose through assistive technologies. In Khyber Pakhtunkhwa due to the increasing enrolment of female students and limited infrastructural capacity, the size of the classroom is also increases and mostly every classroom has 50 students. Due to the large size of the classroom, it is difficult for a teacher to manage the classroom and maintain decorum and discipline. Likewise, the teacher fails to pay individual attention to the students, and thus identify and focus on the student with a learning disability becomes more difficult, further due to a lack of awareness about dyslexia and poor management potentials a dyslexic suffers more.

Parents- Teachers Participation

Researchers assert that the involvement of all the stakeholders particularly parents and other academic and ministerial staff plays a significant role to address the issue of dyslexia in schools (Thompson, 2013). The parent's and teachers' council could be one of the recommended instruments to share the views regarding problems faced by students with disabilities (Norwich, Griffiths, & Burden , 2007; Croll, 2001). This will help the school to assess the level, volume, and frequency of intervention and the level of improvement achieved (Griffiths, Norwich & Burden, 2004). It has been suggested by numerous studies that there should be frequent interaction among the teachers and parents inter alia the supporting staff of the school so that a built-in mechanism could be put in place that could rightfully identify the changing nature of the problem faced by the students and to suggest the kind of intervention needed (Griffiths, 2012).There is an agreement among the scientific community that both parents and teachers essentially lend their support, encouragement, and consistent offer to dyslexic students, however, it has been found that this happens very rarely. The researcher believes that the encouragement should involve patient listening to the feeling of the children since, anger and anxiety are found among the dyslexic all the time (Ryan, 2004), yet due to language issues it becomes harder for them to express their thoughts, emotions, and feelings openly, therefore, it is the responsibility of the parents and teachers to help them in learning. It has been suggested by Michael Ryan (2004) that parents and teachers must reward the effort as for students with disabilities to learn that grades do not matter as compared to progress, so whenever the adult confronts an unacceptable attitude or behavior, they should abstain to unintentionally discourage the children with learning disability, for example, they should avoid words like lazy or incorrigible that could extremely fatal to the self-image of the children.

Conclusion

Dyslexia is widely studies in western perspective however, very lmited studies could be found in the developing countries. The current study aims to investigate the indirect effects of awareness on the relationship between identifying dyslexic students, classroom management teacher-parent participation, and academic performance of students. The study finds that dyslexis needs special attention of the teachers as well as the parents. Since they are special, therefore,

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teachers must be well aware of the problem and psyche of the dyslexics in order to find the dyslexis students in the class. Further separate strategies for classroom management, teacher-parent participation and awareness is instrumental to enhance the academic performance of dyslexic students. The study reported that all the direct and indirect relationships were also found positive and significant, yet, awareness and teacher-parent participation were found as the most dominant factors.

Contributions

The elementary and secondary education department in Khyber Pakhtunkhwa Pakistan is progressing well, however, with expansion and growth the complexity of the system is also increasing, the new philosophy of teaching, methods, and techniques has brought dramatic changes in the organizational policies and its teacher's attitude, behavior, and the way today's smart institutions deliver and facilitate the students with learning disabilities to overcome their deficiency in learning through inclusive classroom systems throughout the developed world. The philosophical shift from classical to neoclassical and now technology-driven modern teaching also affected the way teachers were teaching in the early decades. Teachers work with people and through people therefore, besides technical, conceptual, and design skills, human skills emerged as a powerful skill to be present in successful teachers for effective and efficient teaching to the students with dyslexia issues. The findings of this study are expected to enhance the knowledge of government officials who are responsible for the formulation of educational policies and programs, curriculum development, and teachers training to focus on the inclusive education systems for students with learning disabilities especially female students. Simultaneously, understanding the relationships among different variables i.e. dyslexia, causes of dyslexia, teachers awareness, identification and demographics, their impacts on the academic learning and performance of females and findings of this study will help the administrative machinery to follow such human policies, programs, curriculum and practices that could improve the quality of learning and teaching for students with learning disabilities.

Delcaration of Interest: The authors decalre that there are no competing interests/ conflict of interests.

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