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Use of remedial teaching approaches for dyslexic students: Experiences of remedial teachers working in urban Pakistan

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Abstract: The purpose of this study was to examine the experiences of remedial teachers while teaching dyslexic students in the urban hub of Pakistan—Karachi. The study explored assessment related experiences, the effectiveness of these approaches, and the challenges incurred by the teachers. Semi-structured interviews were conducted with nine remedial teachers: Interpretive Phenomenological method was used for analysis of their experiences. Results yielded six major themes: Assessment process (Pre- and follow-up assessments), Effective Teaching Techniques (the Orton-Gillingham approach, Sequential approach, Technology-assisted learning, Integrative approach, and Play Therapy), Common challenges (stigma and denial, late diagnosis, behavioral problems, slow progress, and incongruence in teaching), and Role of family (role of parents, and role of other family members). Based on the interview responses, the most effective and popular approach used was the Orton-Gillingham approach, which incorporated multiple senses in the learning process, and was altered to meet the specific needs of a student. Results, implications, and directions for future research are also discussed.

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PUBLIC INTEREST STATEMENT
In Pakistan, the prevalence rate of dyslexia among children is 15–20% meaning that about 12 million children need help from remedial teachers. Due to the stigma attached with dyslexia, lack of awareness, absence of early assessment, and very few qualified remedial teachers, many children are left at the risk of dropping out of school, and subsequently facing social exclusion. The use of effective remedial teaching approaches can assure that about 90% of the children with dyslexia can achieve success with timely interventions. However, in Pakistan, there is a clear lack of institutional support and resources to gain access to inclusive education for dyslexic students. Therefore, this study is vital in bringing forward the experiences of remedial teachers, and the effectiveness of their teaching approaches. It also highlights the challenges they face and how they resolve them. The findings of this article can help teachers in altering their mode of instruction and teaching approaches to aid students with dyslexia.
1. Introduction

Special education caters to individuals with special needs, which include learning disability, psychological disorders, physical or developmental abilities, with teaching approaches that aim to meet individual students' needs. In most countries, public schools follow a policy of inclusion, where children with special needs study alongside other students. However, since most people in Pakistan prefer to send their children to private schools, with stringent academic requirements, children with special needs fail to meet these requirements which is why the need for schools for special education is rising as an alternative for these children.

Learning disabilities are neurologically based processing challenges. These processing problems can interfere with learning basic skills such as reading, writing and/or math. They can also interfere with higher level skills such as organization, time planning, abstract reasoning, long or short-term memory, and attention. Dyslexia is one such specific learning disability (SpLD), involving challenges with reading, and is the most common and widely researched learning disability.

According to International Dyslexia Association (2002), dyslexia as a specific learning disability is a neurobiological disorder and it comprises of difficulties in learning, such as accurate or fluent recognition of words, poor spelling, and problems in decoding information. These difficulties are based on the phonological deficits within language and other consequences of this disorder include difficulty in comprehension while reading, and general difficulties in reading which can slowdown growth of one's vocabulary and general background information one possesses.

Global estimates indicate that occurrence of dyslexia is about 10% meaning that there are more than 700 million children and adults who struggle with this learning disability. In Pakistan, the prevalence rate of dyslexia among children is 15–20% which means that about 12 million children are in need of help. According to a study based in Lahore Pakistan, students in public schools have never been diagnosed with dyslexia before due to a lack of awareness and assessment tools for diagnosis in schools (Ashraf & Majeed, 2011). Apart from the lack of diagnosis and assessment of dyslexia in Pakistani schools, there is also no specific psychological assessment tool available for diagnosis as well, and the standard assessment tools are in English and not available in indigenous languages. Due to the lack of awareness regarding learning disabilities, teachers are not properly trained to deal with dyslexic students, and the students feel demotivated because they are often perceived as academically weak (Ashraf & Majeed, 2011). There is a need to train teachers in public and private schools in the approaches that can be adopted when dealing with students with learning disabilities, that would be most successful in the socio-cultural context of Pakistan. Schools can then also educate parents regarding their child’s learning differences, so the child receives proper care at school and at home.

The focus of this research is on exploring teaching approaches used by Pakistani remedial teachers and their experiences with the use of these learning approaches. There are many factors influencing dyslexia, including biological, cognitive, and environmental, which does not only help one to understand the disorder better but also to decide the teaching approaches that would best help students at the institutes in Karachi. Biological factors include brain malfunctions and how the structure of the brain could cause difficulties in learning. Cognitive factors include the way that individual brain processes the information received and such differences can be caused by challenges in information-processing. Environmental influences include the culture, social institutions, such as the family, particularly parental attachment which influences the behavior of students as well.
This research explores the teaching methods for students with dyslexia and how effective they are for children with special needs. There were two major questions addressed in this study. First, what are the teaching approaches used? Secondly, how effective are the teaching approaches that are used and what are some of the problems that Pakistani remedial teachers face?

1.1. Theoretical frameworks of dyslexia
According to biological theories, individuals with dyslexia have differences in the functions of parts of the brain and overall structure of the brain, which is different from non-dyslexic individuals. The three main theories that have been discussed by Germano, Gagliano, and Curatolo (2010), are cerebellar deficit hypothesis, automatization theory, phonological deficit theory, and the magnocellular deficit theory. Under the Cerebellum deficit hypothesis proposed by Fawcett and Nicolson (2001), dyslexic individuals have a difference in structure or dysfunction in the cerebellum (which is thought to be responsible for automaticity and dexterity). The automatization theory, as explained by the cognitive model, associates dyslexia as challenges in the cognition or the manner of information processing (Germano et al., 2010). Some tasks that are “automatic” for non-dyslexic individuals such as literacy or numeracy may require more concentration and attention for dyslexic individuals (Fawcett & Nicolson, 2001). As Germano et al. (2010) explain the phonological deficit hypothesis regards dyslexia as problems in phonological processing and in single-word decoding (Orton Society, 1995), which prevents learning of letter and phoneme associations. There is a difficulty faced by dyslexic students in establishing a link between phonemes and graphemes due to difficulties in perceiving and segmenting phonemes (Germano et al., 2010).

However, the magnocellular deficit theory explains the visual-processing difficulties that a purely phonological theory does not account for. According to this theory, people with dyslexia have an impaired perception of visual, rapid moving stimuli and stimuli that have low spatial frequency and low contrast (Germano et al., 2010). The visual magnocellular system is responsible for the timing of visual events and constantly signals of any visual motion, which allows for the eyes to focus on what is being read (Stein, 2001). Since reading requires orthographic skills (for recognizing visual form of words), it is dependent on the function of visual magnocellular system (Stein, 2001). This function is impaired in dyslexics and they struggle to focus while reading because of reduced sensitivity to motion and unstable binocular fixation (Stein, 2001). This explains why dyslexic individuals complain about letters moving around, and their inability to focus on words.

According to the working memory theory, proposed by Mortimore (2003), the deficits in working memory causes challenges in encoding of new information and to holding on to information in the short-term memory so it can be transferred into the long-term memory. As National Institute of Adult Continuing Education (NIACE) (2004) explains the working memory deficit theory, working memory is “…the information-processing system fundamental to learning and performance in conventional educational and work settings. It has a particular impact on verbal and written communication as well as on organization, planning and adaptation to change” (McLoughlin et al., 2002, 19).

According to research in genetics research, chromosomes 1, 2, 3, 6 and 11, 15, 18 show a link to dyslexia with main site being on chromosome 6 where genes have been linked to possible phonological deficits (Schumacher, Hoffman, Schmal, Schulte-Korne, & Nothen, 2007). The genetic link of dyslexia can be seen as a way to interpret susceptibility or risk of dyslexia in children. However, environmental factors have also been acknowledged by research that could affect the fetus and potentially lead to dyslexia in the child (Kelly & Phillips, 2016).

1.2. Contemporary learning approaches
In order to understand the teaching approaches to use for students with dyslexia, the above theories must be taken into consideration to allow for a more focused learning approach. Also, it is not just the cognitive and biological aspects that influence dyslexic students, but environment plays a huge role in terms of development and learning as well. According to Frith (2001) and his three-level framework,
cognition (information processing), biology (genes and structure of the brain), behavior (involving reading and writing) are all inter-dependent. The degree of impairment at a cognitive and biological level may be overcome or intensified according to the influence of external factors, which is the individual’s environment. A dyslexic child, due to a different functioning of the brain than non-dyslexic individuals may think and learn differently. For example, using unusual mnemonics to remember words or requiring focused attention during reading and also inability to multi-task, which is attributed to problems in automatization in dyslexic individuals (Frith, 2001).

The most popular approach used for dyslexic students is a multi-sensory approach called the Orton-Gillingham Approach (Kamala, 2014; Reid, 2009; Singleton, 2009). A multi-sensory approach requires the use of all senses. This is a structured, sequential and cumulative method which requires the teacher to introduce the elements of the language in a systematic fashion (NIACE, 2004). In the beginning, students are expected to read and write sounds in isolation and then they blend the sounds into syllables and words (NIACE, 2004). Vocabulary, sentence structure, composition and reading comprehension are then tackled in a similar fashion (NIACE, 2004). The grammatical rules are practiced constantly until the application of it becomes automatic for the student and he/she becomes fluent in both reading and spelling (NIACE, 2004). All multi-sensory approaches originated from the Orton-Gillingham approach.

According to Kamala (2014), who studied Indian students with dyslexia who were learning English as a second language, the multi-sensory approach proved to be quite beneficial for these students. Multi-sensory teaching involved making clear connection between the visual, auditory, kinesthetic senses (VAKT) (Kamala, 2014). The dyslexic student can overcome the frequent confusion they face in letters (like b and d), by using all their learning modalities through the multi-sensory approach (Kamala, 2014).

An effective teaching program uses all these approaches and factors promoting attention and listening, development of the spoken language, fine motor skills, handwriting, short-term and long-term memory, sequencing and directionality and memory skill (Reid, 2009). Assisted learning approaches involve paired reading where children are encouraged to read in pairs and peer tutoring where other children who have learned a skill can help the children to learn that particular skill (Reid, 2009).

Endorsing previous research, Singleton (2009) proposed that teaching programs should incorporate multi-sensory approach including phonetic approach (linking graphemes to phonemes), structured (an ordered presentation of graphemes, orthographic patterns and concepts), cumulative (building up in small, explicit steps), sequential approach (simple concepts preceding the complex concepts and tasks) (Thomson, 2001; Townend, 2000; Walker, 2000). However, recent studies have shown the lack of empirical evidence regarding the success of learning styles approach in education (An & Carr, 2017; Pashler, McDaniel, Rohrer, & Bjork, 2008). Pashler et al. (2008) have critiqued the learning styles approach drawing evidences from other studies and also pointed out the methodological challenges in studies that have supported this hypothesis. There has been no relationship found between a preferred learning style and the aptitude of the student in subject that matches that style (Massa & Mayer, 2006). Preference for visual over verbal information did not have any relationship with the specific-aptitude profiles of students (Massa & Mayer, 2006). Also, even if a study of a particular learning style and its supporting instructional methods did show sufficient evidence to support its hypothesis, it will only be supporting that particular learning style classification and cannot be generalized to other learning styles (Pashler et al., 2008).

Technology-based remedial teaching approaches are also becoming popular. Now they are commonly used for students with learning disabilities and learners with dyslexia are encouraged to use software for learning because it does not only include multi-sensory approach, but it is also structured and sequential and it can also allow the learners to learn from their mistakes and
practice. Computer-assisted learning (CAL) also enhances motivation in students, provides an active learning environment and the opportunity of immediate informative feedback, along with individualized instruction (Horne, 2002; Singleton, 2009).

In a study conducted by Singleton and Simmons (2001), a computer program named Wordshark was analyzed, which used a multi-sensory approach to improve children’s spelling and word recognition skills. Based on the responses gathered from 403 primary and secondary schools in UK, the effectiveness of the program was analyzed. Wordshark has proven to be helpful in reinforcing and consolidating the phonic principles that are acquired from the instructions delivered by the teachers. By engaging in activities through this program, 68% of the children showed significantly increased motivation, 91% of children showed improvements in reading skills, 93% showed improvement in spelling, with 36% showing substantial improvement (Singleton & Simmons, 2001). This shows how computer-assisted learning can be more beneficial alongside the conventional method of teaching, especially for those children with learning difficulties.

Similarly, a study by Germano et al. (2010), examined two computer-assisted instructional programs: Read, Write and Type (RWT) program and The Lindamood Phoneme Sequencing (LIPS) Program for Reading, Spelling, and Speech. The sample consisted of 112 first graders. This study also showed promising results for the combined-intervention students (with exposure to computer reading programs alongside conventional mode of teaching) who had improved performances than the control group (with exposure to only the conventional reading program of the school) (Torgesen, Wagner, & Rashotte et al., 2010). Exposure to computer-based programs resulted in significant differences for phonemic decoding, phonemic awareness, accuracy in reading, reading comprehension and rapid automatic naming (Torgesen et al., 2010).

A more recent study investigating the effectiveness of computer-based reading interventions for students with reading difficulties showed promising results (Horne, 2017). A sample of 38 primary school students in UK (26 boys and 12 girls) were divided into two groups. The control group continued with the conventional teaching while the intervention group undertook a computer-based Comprehension Buster reading program for 6 weeks. The results showed that intervention group showed considerable improvement in reading with increases in reading accuracy. This is yet another evidence of the effectiveness of computer-based intervention.

In another study, Ylinen et al. (2019) investigated brain responses of second-language words and its link to native-language literacy skills in dyslexic students. The sample consisted of 9–11-year-old children with or without dyslexia, whose native language was Finnish and they were studying English as a second language. Brain representations of the participants showed that dyslexia is associated with weak activation of the right temporal cortex which has previously been shown to represent word-form learning. Crucially, the result showed increased activation of the temporal cortex in early processing stages for familiar second language words as compared to second language speech sounds or native language words in children with dyslexia. Hence, this suggestion that dyslexia is associated with deficits in language learning strengthens the efficacy of the Orton Gillingham approach in classrooms. The evolution of the Orton Gillingham approach into different curricula which incorporates flexible learning opportunities and emphasis on reading comprehension and fluency can also be used with bilingual individuals when they are first learning a language.

The negative experiences of children with dyslexia play an important role in their academic growth. Another study was conducted by Leitao et al. (2017) to explore the lived experiences of children with dyslexia and their parents using a phenomenological approach. Children, in the interviews, reported internalizing behaviors like feelings of sadness, frustration, disappointment, stress, and annoyance. In some cases, participants reported externalizing behaviors like anger as a result of a build-up of frustration over time. Children with improved academic performance regarded their tutors as caring and encouraging, making learning fun and understanding their
reading problems. However, parents also identified barriers to their child’s academic growth, when
teachers are unwilling to work with the child or reject the diagnosis. Parents felt that there is a lack
of training of teachers to deal with children with dyslexia and that is also because of inadequate
financial support from the government (Leitao et al., 2017).

Finally, Livingston, Siegel, and Ribary (2018) investigated the emotional consequences that
children with developmental dyslexia go through. The researchers reviewed over 100 journal
articles for this purpose. According to the analysis of their review, developmental dyslexia has
primary and secondary consequences. Primary consequences include poor academic/work perform-
ance and differences noticed by teachers, family, and peers and perceived or real stigma as
a result of those differences. Secondary consequences include motivation, self-esteem, emotional
well-being, etc. Early identification and remediation can minimize these consequences by helping
the individuals to overcome their reading and writing difficulties. However, individuals at schools
may still find themselves to be different than their peers and that could result in a negative self-
evaluation.

The literature reviewed hereby indicates that teaching strategies for children with dyslexia are
progressing more and more towards integrative and multisensory approaches. However, in
Pakistan, we have not found research on effectiveness of approaches being used by remedial
teachers, nor we have found research on their experiences, challenges, and support they need
from the families of the children. Therefore, this study delves into these issues using experiences
based phenomenological analyses. As Frith (2001) claims that where an individual is based has an
influence at biological, cognitive and behavioral outcomes on a child so effectiveness of what
works better would also depend on the local environment and practices. Hence, it is important to
explore the experiences and of remedial teachers of children with dyslexia in a traditional society
like Pakistan.

2. Method

2.1. Sample

Criterion-based purposeful sampling was done for collecting data for this study (see Anjum, Kamal
& Bilwani, 2018; Holder, Jackson, & Ponterotto, 2015). The sample for this study consists of nine
teachers from various institutes: Institute of Behavioral Psychology (IBP) (one teacher),
READyslexics (two teachers), Centre of Inclusive Care (three teachers) and three independent
remedial teachers. All participants were females with age range 26–45 years who taught children
between ages 6–12 years. The inclusion criteria for recruiting these participants was that the
teachers were working in the capacity of remedial teachers for at least two years after their
degrees and certification. Participants were recruited through convenient sampling, from these
institutes in Karachi. These institutes were selected for their prominent contribution to the dyslexic
segment of Karachi and based on the recommendations made by a local clinical psychologist.

2.2. Instrument

This method comprised of semi-structured interviews for which a rather flexible semi-structured
interview guideline was used as an instrument for exploration. The issues investigated in in this
instrument included experience based phenomenology of: types of assessments, approaches being
used and found effective, and the role or families in remedial teaching. For details see appendix.

2.3. Procedure

The study was conducted according to the ethical guidelines provided by American Psychological
Association. A written informed consent was taken from the Headmistress of IBP, teachers, and
the students’ parents. Participants’ identity remained anonymous and their individual responses
were confidential. They were also given a right to withdraw from the study at any point. The
interviews were conducted in person and were audio-taped and semi-structured. Each interview
took between 40 and 60 minutes for completion. Audiotapes were later transcribed and any personal information of the participants was omitted.

An Interpretive Phenomenological Approach (IPA) will be used for data analysis, to gain a deeper insight and meaning of the transcripts of the interviews, and to understand the individual experience of each teacher during the teaching process. Since this was an exploratory study of experiences of teachers of children with dyslexia, the authors used a bottom-up emic approach. In such an approach the interviewer explored the themes that emerged at the end of data collection. Questions were added or dropped according to the flow of the conversation in each in-depth interview.

2.4. Data analysis
At the end of all interviews, the data was transcribed, and general themes were identified. Data analyses and sorting of convergent themes was an ongoing process during the interviews. An interpretive phenomenological analysis (IPA; see Creswell, 2007) of the data was done by a psychology graduate and an undergraduate student, both were trained for phenomenological analyses. The transcripts were reviewed twice, once after each interview and then after completion of all interviews. The protocol for generating deeper insight and clearer meaning were employed (see, Moustakas, 1994). Meaningful and invariant experience were identified as non-overlapping discrete and elaborated experiences of the teachers. These discrete experiences were clustered into agreed-upon thematic structures which illustrated participants’ reflections on the setting and context for their interactions with their students and their families.

First round of analyses was done independently, which were followed by a second round of analyses for reaching a complete consensus in meaning of the themes. After the themes and the contents were finalized, we shared the transcripts and the write up with two independent local psychologists (an educational psychologist and a clinical psychologist). Based on this independent audit, accommodations were made in the thematic organization and quote presentation for our results (see Creswell, 2007). Lastly, results based on composite description were prepared to capture the essence of lived experiences and strategies of teachers. Verbatim quotes were chosen and presented as the voice of the teachers (also see Ponterotto, 2006, Anjum, Kamal & Bilwani, 2018).

3. Results
Based on the Interpretive Phenomenological Analyses (IPA), a total of 205 non-repetitive and non-overlapping statements were identified from interviews. Arranging these statements into clusters resulted in six major themes: Assessment Process Related Experiences, Effective Teaching Techniques, Common challenges in Remedial Teaching, and Role of Family. The assessment process included the evaluation of the student, which comprised of two sub-themes of Pre- and Post-assessment. The theme of effective teaching techniques included five sub-themes: the Orton-Gillingham approach, Sequential approach, Technology-assisted learning, Integrative approach, and Play Therapy. The theme of common problems dealt with the challenges teachers faced during teaching, including sub-themes of stigma and denial, slow progress, incongruence in instructions, behavioral challenges (and dealing with them), late prognosis. Finally, the theme of Role of Family included parental role and other family members. In the following paragraphs we present these themes and the verbatim from remedial teachers’ lived experiences of teaching children with dyslexia.

3.1. Assessment process related experiences
3.1.1. Pre-assessments
All institutes and independent remedial teachers that were interviewed conducted a pre-assessment of the student to gauge the intensity of learning difficulty that the student experiences and to evaluate his/her areas of strengths and weaknesses. The assessment for Center of Inclusive Care (CIC) and Institute of Behavioral Psychology (IBP) included a diagnostic test, an IQ test and behavioral assessment of the student before enrollment. READyslexics’ and the independent teachers’ assessment process did not include the behavioral assessment of the student. All
the teachers that were interviewed designed their teaching planners according to the individual’s needs, taking into consideration the students’ areas of strengths and weaknesses. The strengths of the students were then used to work on the areas of weaknesses in the learning process.

When we take a child, we do an assessment at the time we are taking the child in and then there are follow up assessments every so often, so we have a clear track record of how much progress the child is making. (IBP)

We first do an assessment, sometimes informal assessments and some screening or formal assessments like RAD and achievement tests and it varies as per age and the capacity of the child. We have an assessment and we have a baseline. Through that baseline we are able to determine our starting point then we start employing interventions and teaching methods. (CIC 2)

There is a READs screening and then there is a proper screening by a psychologist, so we can know which areas to focus on. After that, we make our lesson plans. It is all about finding out what are their areas of concern, strengths, and weaknesses, figuring out a lesson plan for that and working on their strengths towards their weaknesses. (READ 1).

3.1.2. Post-assessment
Once the student has spent a certain period of time with the remedial teacher, the teacher has to conduct a post-assessment to mark the progress of the student. Some remedial teachers assessed the behavioral changes in the student, apart from academic progress. Others focused solely on academic progress of the child. The student goes through another assessment process after completion of a particular lesson or goal to evaluate the effectiveness of a particular teaching technique. It also enables the teachers to alter their teaching techniques, if an approach is not working for a student. The lesson plans are then re-altered according to the post-assessment results of the student.

We have an estimated timeline of minimum of let’s say, 6 months. For 4–6 months we are going to employ our techniques and then we see its effectiveness by conducting post-analysis. So whatever assessment we conducted before teaching, we will conduct the same assessment after to see whether that baseline number changed or not. If it has changed that means it is working and if it has not, then we re-evaluate whatever technique we are using and then we need to customize it. (CIC 2)

Only after 6–8 months when we do think that we have given them enough of education and planning that we can test them to know how far they have understood it and how far they are and what do we now need to focus on in our remediation. If he/she has progressed/regressed or it is just a stalemate. We do have different ways of testing, pretty simple and catered to the child. (READ 1)

3.2. Effective teaching approaches
As seeing effectiveness of techniques used by remedial teachers was a key objective of this study, we asked our informants about which techniques were most effective in their teaching experience with children with dyslexia. Most teachers found Orton-Gillingham, Incremental, Technology-assisted Learning, and Integrative Approaches most useful and effective.

3.2.1. Orton-Gillingham approach
Most remedial teachers used the multi-sensory Orton-Gillingham approach. They claimed to alter the approach according to the needs of the student. All teachers felt that this approach was the most effective for teaching students with dyslexia and it worked better than other approaches.

We combine multiple skills together. Let us say if we are working on writing letters with the correct formation, there will be different ways in which the same letter will be reinforced. For example, when they are tracing the letter, there is a tactile feel to it. Along with the tactile, there will be verbal cues. If they are tracing the letter R or B, I would say: “Start at the top go down, up and around.” So that they know the correct formation, they are seeing it, they are feeling it, they are getting the verbal
cues for it and then there will be different activities they will do for it, like making it in sand, making it in the air. Hence, there is physical memory of the letter too. Every kind of sense there is, we involve all the senses for the child’s learning so that it becomes a part of the memory of the child. That is one way of doing it effectively. (IBP)

3.2.2. Sequential/incremental approach

In addition to multi-sensory approach, all teachers utilized the sequential approach for teaching. They shared their experiences about how they keep moving from simple concepts to more complex concepts and tasks. At READ, the term the teachers used for this was the Incremental approach, that is breaking down difficult concepts into simpler steps.

We teach using incremental procedures. Incremental means that you basically go from easy to difficult concepts and tasks, you can not begin with difficult concepts in the beginning but you can get there. You start at a pace that is convenient for the child. You take small steps based on what the child is comfortable with. Over time they will learn more complex concepts and tasks. (READ 1)

3.2.3. Technology-assisted learning

Seven out of the nine teachers used some form of technology to assist them in teaching efficiently. However, none of the teachers claimed that they solely use computers as a mode of instructions. In their experience, use of games and activities on the computers facilitates the conventional style of teaching. Activities on the computer also enable students to engage more than one senses, audio and visual, which can aid in the learning process.

A child may have lots of ideas, especially when it comes to creative writing. But because of dyslexia, they have trouble putting these ideas into words. In many cases, we get them to record their answers so that they can listen to them and write it down on paper at their pace, this helps as the flow of ideas does not stop. There are many computer games that our students play on the computer to engage them… The visual and audio cues in the computer games and other technical devices help in reinforcing their learning. (IBP)

3.2.4. Integrative approach

At CIC, the teachers used the integrative approach for students with dyslexia. This meant that there was a combination of different teaching techniques used, catered to the child’s needs, which included the multi-sensory approach, the Glenn Doman program (learning new words through flashcards), approaches from the books Alpha to Omega and the Hickey multi-sensory approach, Play Therapy and Applied Behavioral Analysis (ABA), which dealt with the behavioral problems of the student.

Sometimes we use play therapy and sometimes a combination of play therapy and ABA (Applied Behavioral Analysis). We use both techniques and create an eclectic integrative approach so that it yields better result and helps with impulse control and regulation of those impulses so that they are able to focus better. We have a remedial therapist on board and another therapist who is able to articulate play therapy and ABA. Hence, both the therapists together are going to be able to achieve that result. (CIC 2)

3.2.5. Play therapy

Within integrative approach, play therapy was most popular a supplement to the conventional teaching methods. The teachers shared that play therapy makes the lessons interesting and fun for the students and they learn concepts faster than in the conventional teaching methods. All teachers that were interviewed try to make the lessons fun for their students by incorporating play therapy.

Play therapy is very powerful and effective. I try to make my lessons as multi-sensory as possible. I try to make my lessons seem less academic to the students by engaging them in play therapy. For instance, making board games out of word lists and making it a play session. (Independent 1)
3.3. Common challenges

Most remedial teachers also shared extensively about the hurdles and problems they experience while teaching children with dyslexia. Our informants found stigma and denial, slow progress, behavioral problems, incongruence in instructions as the most difficult aspects in their teaching.

3.3.1. Stigma and denial

One of the key problems highlighted by the teachers was that there is stigma attached to dyslexia that leads to denial among primary caregivers.

*In Pakistan, there are more than 12 million children who have dyslexia, but if you go and ask the family and parents of these children they will deny. They deny because dyslexia is still considered a taboo in Pakistan. Due to their denial, the disability goes undiagnosed and untreated. For children, it results in low self-esteem and distress.* (Independent 3)

3.3.2. Slow progress

The most common problem that the teachers claimed they faced, according to the interview responses, was the slow academic progress. The teachers often did not see improvements in the student even after a couple of months of teaching. Often, the parents of students demand more progress from the child and complain to the remedial teachers when they do not see an improvement in their child’s scores in the school. Since most students with dyslexia also have a weak working memory, forgetting what was taught in the last class, is often a problem that the teachers face. In this case, they have to keep repeating the old lessons for the student to remember them before moving on to new lessons. The most frustrating thing is not seeing any results. The biggest problem is that most of the students have retention issues. It is a little challenging because most of the time you do not see any progress and it takes 6 months to a year before you see any marginal improvement. (READ 1)

They face difficulty with the challenge of a new spelling or a new word to read, hence they do not want to do it. It is tough to keep them motivated with games. Forgetting is also a problem, if you skip a day or they do, you have got to go back and revise everything all over again. (Independent 2)

3.3.3. Behavioral problems

The students’ environment comprises of the school, family and his/her friends. As noted in the interview responses, children with dyslexia usually have behavioral problems, like low self-esteem, stubbornness, feeling of worthlessness and dejection, because of their negative experiences in school, at home or with their friends.

*Children with dyslexia because of the experiences they have had in school, they are very shy they have a lot of emotional baggage with them and a very low self-image. And because these children have faced so many problems and so many failures in the most important part of their life, in schools, they have a lot of behavioral issues: low self-image, extreme shyness, they do not want to share their ideas with others because they think they are not worthy.* (IBP)

*Most children show behavioral problems due to being frustrated or tired. They struggle in a lot! They throw tantrums and behavioral issues when they are tired. Frustration is also driven by low self-esteem.* (Independent 3)

3.3.4. Dealing with behavioral issues

According to the responses from the remedial teachers, alongside the teaching process, they also have to work on the students’ self-confidence and self-esteem issues. If a child throws tantrum, the teacher has to remain calm and patient with him/her, and refrain from being harsh. The teachers at CIC also collaborate with the school and the parents, and guide them on how to deal with the child’s behavioral problems. All teachers agreed that for them to build a good rapport with the child, they have to treat him/her with respect, kindness and care.
Sometimes when the child throws things so I tell him/her, “Is this how I give it to you? Can you please give it to me the way I give it to you?” If I hand the child flashcards, he has to place them himself and after we are done, I tell him, “Can you please collect them and give it to me?” So you have to be polite with them. And treat them like any other regular child. If a regular child misbehaves you tell them that this is wrong. Similarly, you have to point it out to them. If they are shouting, you need to tell them to calm down. (READ 1)

3.3.5. Incongruence in instructions
Often the instructions of the parents at home and of the teachers at school are in contradiction to those of the remedial teacher, which can confuse the student. Hence, the remedial teacher also has to guide the parents to teach their child through a particular method. Teachers at CIC also collaborate with the teachers at the students’ schools to overcome this problem. CIC has a remedial therapist and a clinical psychologist working with the student. The common problem that teachers at CIC claimed they face occurs when the remedial therapist, and clinical psychologist are not in sync, which can create confusion amongst them and affect the child’s performance.

3.3.6. Late identification and prognosis
For students who had earlier intervention, improve at a much faster pace than students that did not. According to the interviews, children who get enrolled at the age of four to five years for remedial help showed much better results than students who came in their teens. Most of these students who successfully complete the teaching programs in these institutes are able to successfully overcome their learning difficulties and perform well at schools.

A key problem is in the timely identification of dyslexia later rather than early on. The earlier the intervention, the easier it is for us to bridge the gap in learning. Most of the kids who come to us at an early age do a lot better in schools later in their lives, and go on to have successful careers. But generally people bring their children later and that creates hurdles in teaching them and their prognosis. (READ 1)

3.4. Role of family

3.4.1. Parental role
Based on the responses from the interview, all teachers agreed on the vital role parents play in the child’s progress and development. The teachers felt that parents need to have realistic expectations from their children, so the child does not feel discouraged or demotivated. Teachers at CIC reported that parents who paid more attention to their child’s learning difficulties and took interest in his/her progress, saw more improvement in their children than those who did not. Parents also need to be aware of the methods used by remedial teachers, so they can practice them with their child at home. Psychoeducation of the parents regarding their child’s learning difficulties is an important part of the CIC’s teaching program, to help them understand the needs of their child better, and their role in their child’s development.

We direct parents on how they can be more supportive of the child, so that really helps. Sometimes parents are sending mixed messages, so we also cut that down. We teach them how to build healthy boundaries, making them understand how they might be confusing the child. There is psychoeducation of the parents as well because they are in denial as well. When the child is performing poorly, the society is shaming the parents too. You go to the parent-teacher meeting and the teachers are shaming the child and the parents for their inadequacy. So, it is really important to make them understand the problems the child is facing. So, Psychoeducation really helps because we are not only dealing with academics here there is a lot more emotional shaming. (CIC 1)

Parents who are up to date with whatever is happening at school and at therapy and with experience, those kids have had the most progress. Parents who come for regular monthly feedback,
When both parents come together, that is so helpful for the child. When both parents on the same page, it helps. Otherwise, it hampers the kid's growth. They should know the kid's progress. (CIC 3)

3.4.2. Other family members' role
If the child with dyslexia has siblings in the family, he/she might be compared to their non-dyslexic siblings and criticized for performing poorly at school. It is very important to have a supportive family environment for children with dyslexia, in order for them to not feel discouraged.

If the child has parents that are too harsh on him/her, then having a sibling provides the child with emotional support so that he/she does not feel isolated. Having supportive brothers/sisters really help in motivating the child as well. (CIC 1)

Students in joint-family system face more pressure as they are compared to other children in the house, which also raises their parents' expectations, resulting in low self-esteem. (READ 2)

4. Discussion
This study gauged the modes of assessment and most effective teaching approaches that are used by remedial teachers for teaching children with dyslexia. In addition to this key objective, the research explored the challenges faced by remedial teachers and the importance of family support. To this end, nine teachers from institutes like Center of Inclusive Care (CIC), READyslexics (READ) and Institute of Behavioral Psychology (IBP) in Karachi, were interviewed, along with three independent remedial teachers who did not have a permanent affiliation with an institute. All remedial teachers conducted a pre-assessment of the student to prescribe most suitable remedial technique, and they used and a post-assessment to evaluate the effectiveness of their approach and whether changes were necessary, depending on the need of the child. They found this assessment vital for identifying which teaching techniques would be most useful for the students.

After assessment, most teachers found Orton-Gillingham approach most effective remedial teaching technique which is supported by previous research (Kamala, 2014; Reid, 2009; Singleton, 2009). Almost all remedial teachers had adopted Orton-Gillingham approach for students with dyslexia. Teachers at CIC and the two independent teachers emphasized the use of play therapy was also very effective to make the lessons more fun and the concepts easier to learn, and to deal with the behavioral issues. Some teachers, especially the ones interviewed from CIC used an Integrative approach for their students, combining therapy with remedial teaching. An eclectic approach was adopted in the institute, to cater to the individual needs of the children and also to work on the behavioral problems of the child that also impeded the learning process.

In congruence with findings of Singleton (2009), multisensory approach was used to overcome phonological deficits. All teachers acknowledged the importance of sequential (simpler concepts preceding the complex ones) and cumulative approach (teaching in small, explicit steps), within multi-sensory approach, which was consistent with findings of research done by Singleton (2009). All teachers also modified their teaching approaches based on the individual need of the student as they felt it benefited the student more. This is consistent with the findings of Pashler et al. (2008) that teaching styles should be matched with the individual learning styles of the children. The findings of this study are also supported by the magnocellular deficit theory as it theorizes and recommends use of multiple senses (Germano et al., 2010).

Remedial teachers from READ emphasized the effectiveness of Remediation, which required the teacher to repeat the previous lessons over and over as over-learning lead to automatization. Dyslexic students have a problem in automatization of newly learned concepts, because of cerebellum impairment (Fawcett & Nicolson, 2001). This is consistent with the approach suggested by Reid (2009), as he also emphasized on over-learning and remediation by multi-sensory approach, that would reinforce concepts, and through various games and activities. All teachers
who were interviewed used multi-sensory for reinforcing learned concepts. Furthermore, this study also supported working memory theory of Dyslexia (Mortimore, 2003). As the teachers used approaches like remediation to mitigate deficits in working memory-related problems in encoding of new information.

All teachers that were interviewed used technology as a supplement for teaching students with dyslexia particularly because it engaged more than one senses of the students and aided learning. However, the main approach to teaching was the conventional instruction-based learning. All teachers felt technology aided in the learning process as long as it was combined with the conventional teaching approach, which is consistent with the findings of Fälth, Gustafson, Tjus, Heimann, and Svensson (2013), Horne (2017), Singleton and Simmons (2001) and Torgesen et al. (2010).

Regarding the challenges faced by the teachers, the issue of stigma and taboo was a shared reality. Due to the stigmas attached in Pakistan, revolving around mental disorders, or learning difficulties, students with dyslexia are often shamed for their poor performance at school by teachers and the parents. This could have a lasting impact on their personality and also cause a lot of behavioral problems. Since people from diverse socio-economic backgrounds come to CIC, parents must be provided proper guidance and literature about their child’s learning disability. CIC also emphasized a lot on regular monthly feedback between the parents and teachers to help in the child’s growth. READ, however, solely concentrated on learning within the institute and did not interfere with parental involvement in child’s learning. This could be problematic as a child’s performance cannot be assessed in isolation and the role of family and teachers at school have a significant part to play.

Many of the behavioral issues that were pointed out by teachers included low self-esteem, extreme shyness, stubbornness, and feelings of worthlessness or incompetency. As reported by the teachers, these issues were mostly due to the negative experiences the child had faced due to their learning difficulties. Being scolded by teachers and/or parents for not meeting their expectations often lowers the child’s morale. This often causes the students to feel resigned and not make an effort in academics or become very stubborn or aggressive, and resist when told to read or write. As was pointed out by teachers, this is mostly due to the societal expectations, imposed by teachers and family members on the children, to perform well academically and get good grades. Otherwise, the child is labeled as dumb and shamed by family and relatives, which also, in turn, becomes a cause of embarrassment for the parents. The parents then lash out at their child, which frustrated him/her even more, creating a vicious cycle of emotional shaming and frustration.

The teachers said that in order to counter the negative experiences of their students at home or school, they have to build a good, healthy relationship with them and treat them with kindness, care, respect, and love. At CIC, they emphasized on the integrative approach helping students overcome their behavioral issues. Alongside remedial teaching, there is a clinical psychologist at CIC, working with the student, to help them express their feelings and deal with their inner turmoil. This also helps them to do better academically and improves their performance, along with mental health. This is consistent with Leitao et al. (2017)’s findings that a supportive environment can lead to better academic outcomes for children with dyslexia.

All teachers emphasized the role of parents and other family members in learning was crucial as much of the progress also depends on the corporation from the family. Remedial teachers at CIC and IBP, instructed parents on methods of teaching their children and CIC also appoints a guidance counselor for parents. CIC also emphasized the need for psycho-education of parents, to make them aware of the learning difficulties their child faces and ways to overcome it. Also, to make them realize that their child is not inadequate, but has a different way of learning.
4.1. Implications of the study

In Pakistan, there are more than 12 million children with dyslexia (Daily Times, 2017) so the significance of this issue is grave. These learning disabilities are often stigmatized which has a huge impact on lives of children with dyslexia in Pakistan. Due to the stigma, parents are usually not willing to acknowledge that their children might be facing difficulties in learning. This delays the process of seeking help and hence negatively impacts prognosis.

Parents and teachers often confuse the child’s poor performance with a lack of interest or a form of misconduct, without realizing that the child is unable to understand what is being taught because of a learning disability. Therefore, remedial teachers who use integrative approach fits best in the socio-cultural context of Pakistan because it integrates counseling with teaching, where a clinical psychologist works alongside the remedial teacher, to help the child. This approach also includes psycho-education of the parents with a separate counselor assigned for them, which helps in creating awareness in parents about their child’s learning difficulties.

This study has implications for the need for awareness of prognosis. For instance, the students who have had earlier interventions eventually overcome their learning difficulties, perform well at school and go on to have successful careers. More research is needed to focus on the impact of intervention in the long-run, and to see where the student stands academically or career-wise, a couple of years after intervention.

This research shows the importance of remedial teaching in Pakistan, especially when private and public schools have failed to adopt an inclusive approach to education that caters to varying needs of the individuals. It also highlights the need for psycho-education of family members, as they play a huge role in the child’s development. More institutes catering to the special needs of individuals with learning disabilities are needed to help students with dyslexia, and teachers should also be properly trained to use techniques that would help dyslexic students in their learning process.

4.3. Limitations

As the study was an exploratory study with hard sample, the sample size was small and less representative. Another limitation of this study was that the sample consisted of only nine teachers. The findings were limited to three institutes in Karachi, CIC, IBP, and READ, along with two independent remedial teachers also in Karachi. Hence, the findings cannot be generalized to represent all remedial teachers in Pakistan and their experiences in dealing with students of dyslexia. The interview was semi-structured and allowed the teachers to fully express their experiences of teaching. However, that also gives room to some personal biases and the need for every teacher to promote their method of teaching, without acknowledging its weaknesses.

Another limitation of this work lies in the individual therapy model of the original Orton Gillingham approach which has been met with certain limitations as the demand for specialized teachers exceeds the availability of teaching training programs for this approach. To counter this, the Orton Gillingham approach has been restructured and amalgamated into different curriculums in the classroom. One such curriculum is Take Flight: A Comprehensive Intervention for Students with Dyslexia, which offers systematic instruction on the structure of written English with an added emphasis on phonological awareness, reading comprehension and fluency which had been previously missing from the original Orton Gillingham approach (Ring, Avrit, & Black, 2017). Future research could look into the effectiveness use and effeteness of this approach in Pakistan.

Lastly, future research should also focus on a larger sample and interviews from teachers, parents and students to counter biases and gain insight of different perspectives. The sample should also be more diverse, interviewing students from various socio-economic backgrounds, which would make the sample more representative. Future research could also focus on the long-term effects of intervention and future prospects for children with dyslexia in Pakistan. More
research is needed on teaching approaches for dyslexia and other learning disabilities that fit the
country's socio-cultural context as well.

4.3. Conclusion
Dyslexia is a common learning disability, but if often goes undiagnosed in students in Pakistan. This
is due to lack of awareness about learning disabilities and lack of assessment tools in public and
private schools in Pakistan. As a result, most students with dyslexia are often labeled as incompete-
tent or lacking intelligence because of poor grades, even though they can overcome their learning
difficulties through remedial education.

This research has shown that assessment is the key beginning of remedial teaching and it
determines which approached should be followed. The key objective of this research was served
by answering effective teaching methods and challenges that teachers faced on regular basis.
Research has shown that the most effective approach for dyslexic students in remedial teaching in
Pakistan is the Orton-Gillingham approach. Within Orton-Gillingham approach, the teaching tech-
nique is modified according to the requirements of the students. Technology-assisted learning is
also used as a supplement for learning, alongside the conventional teaching method. Play therapy
is also incorporated into teaching in some cases to make lessons fun an engaging for the students.

Overall, this research gave an in-depth understanding of the problems faced by remedial teachers
that directly impact the child’s academic performance and well-being. Due to the stigma attached
with learning disabilities, students with dyslexia exhibit behavioral issues due to their negative experiences
at school and at home with their family members. This also impacts their learning, as students with low
self-confidence are often not willing to make any efforts, due to the failures they have faced in their life in
meeting people’s expectations, whether it is academically or socially. Therefore, alongside remedial
teaching, there is also a dire need for counseling of both parents and children using integrative approach
as means of overcoming both behavioral and learning challenges of the child.

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