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Pre-service EFL teachers' knowledge and beliefs about developmental dyslexia: Implications for EFL teacher training

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 Abstract

This study aims to analyse the misconceptions, knowledge, and knowledge gaps of 176 Turkish pre-service English as a foreign language teachers about dyslexia which is a prevalent developmental disorder. The data were collected at eight different universities in Türkiye and analysed by SPSS 25.0 via descriptive statistics and the Kruskal Wallis Test, considering the participants' scores on the Knowledge and Beliefs about Developmental Dyslexia scale. In addition to studying the knowledge base about dyslexia, the effect of the variables grade and gender was analysed. The results showed that most of the participants had flawed information about dyslexia, and lack of information was common. On the other hand, gender and grade did not have any significant effects. These findings indicate a need for wider awareness and formal education about dyslexia for pre-service English as foreign language teachers to create more inclusive classrooms.

Introduction

Dyslexia is identified as one of the most frequent learning difficulties (Echegaray-Bengoa et al., 2017). It can be defined as a neurodevelopmental disorder (Norton et al., 2015) of biological origin that is associated with not only learning difficulties but also problems in acquiring academic skills (e.g., writing, reading, or maths) which appear significantly below age level when manifested in early years school life. It is suggested that it is not attributable to intellectual disabilities, inadequate schooling, developmental disorders, and overall neurological or motor disorders (Ramus, 2014). The recent literature on reading disabilities indicates that the cognitive processes that are involved in reading rather than general intelligence are the criteria that indeed differentiate dyslexic individuals from poor readers (Bell et al., 2011). Furthermore, the accumulating research suggests that processing skills (e.g., rapid word naming, phonological awareness skills, and pseudoword decoding) are better at predicting success in reading in comparison to general intelligence (Vellutino et al., 2004). Phonological processing skills are seen as a major component of acquiring reading skills and are also considered a predictor of future success in reading (Bradley & Bryant, 1983; Snowling, 2000; Stanovich, 1988). The British Dyslexia Association uses the following definition (Rose, 2009, p.10):

> Dyslexia is a learning difficulty that primarily affects the skills involved in accurate and fluent word reading and spelling. Characteristic features of dyslexia are difficulties in phonological awareness, verbal memory and verbal processing speed. Dyslexia occurs across the range of intellectual abilities. It is best thought of as a continuum, not a distinct category, and there are no clear cut-off points. Co-occurring difficulties may be seen in aspects of language, motor co-ordination, mental calculation, concentration and personal organisation, but these are not, by themselves, markers of dyslexia. A good indication of the severity and persistence of dyslexic difficulties can be gained by examining how the individual responds or has responded to well-founded intervention.

Moreover, the British Dyslexia Association also acknowledges that some individuals might have visual and auditory processing difficulties, and dyslexic readers are prone to displaying a mixture of skills and obstacles, which may have an effect on the learning process. They may have strengths in other areas, including interactive, design, creative, problem-solving, and oral skills. On the other hand, dyslexia can affect the learning of languages. This is affected by problems in phonological processing, poor auditory discrimination, syntax-related problems, faulty auditory sequencing, automaticity, and difficulties with motor skills. Moreover, limited attention span, processing information at a slow rate, and difficulties in object naming with links to dyslexia have been well documented in research (see, e.g., Crombie, 1992; Miles, 1993). To sum up, phonological processing skills are seen as significant challenges for the dyslexic individual, and these are not dependent on general intelligence (Shaywitz et al., 2008).

Dyslexia and teachers' knowledge

Even though dyslexia is the most widespread learning disorder (European Dyslexia Association, 2023), which occurs universally in all cultures or languages and affects nearly 10% of the population (2-4% of the population is seriously affected), there are some gaps in the literature regarding understanding teachers' misconceptions, knowledge, and knowledge gaps about dyslexia. It is essential that language teachers have an accurate understanding of dyslexia (Johnston, 2019) to provide the best learning opportunities to dyslexic students. Findings from studies of teachers' knowledge indicate that teachers tend to lack sufficient knowledge to teach

learners who have difficulties. It is suggested that professional development programs can improve teachers' pedagogic knowledge, which, in turn, may have a positive impact on students' reading achievement. Moreover, a growing body of scholarship has pointed out that teachers do not have an understanding of many fundamental concepts related to teaching those who struggle with reading (e.g., Bos et al., 2001; Moats & Foorman, 2003; Washburn et al., 2011).

Dyslexia is not curable, as it is a lifelong condition; however, studies have shown that early recognition creates a greater chance of success for children with dyslexia (Torgesen, 2002; Torgesen et al., 1999). In addition, explicit instruction on print-sound mapping principles (Moats & Foorman, 2003) and being supported by teachers who play an integral role in the network of instruction and assessment have a positive effect on dyslexic people (Washburn et al., 2014). In this regard, research has also provided strong evidence for the potential of teachers to prevent learning failures via effective teaching practices (Moats, 1994; Snow et al., 2005; Taylor et al., 1999), and teachers' own linguistic awareness somehow improves reading achievement of students who struggle (Al Otaiba & Lake, 2007; Piasta et al., 2009). On the other hand, the term developmental dyslexia underlines that children with dyslexia have problems with language development that continue into school age and beyond. During the last few decades, several studies have focused on teachers' knowledge about developmental dyslexia and other learning difficulties, which have shown inadequate awareness of teachers' knowledge; for example, in the USA and the UK (e.g., Allington, 1982; Bell et al., 2011; Wadlington & Wadlington, 2005; Washburn et al., 2014), in China (Yin et al., 2020), in Spain (Soriano-Ferrer et al., 2016) and in Türkiye (Sümer Dodur & Altındağ Kumaş, 2021; Kaçar & Düzkantar, 2019). Hence, lack of understanding among teachers seems to be a universal problem.

To exemplify some of the studies on teachers' knowledge, a study conducted in the Greek context can be investigated. Chourmouziadou (2016) conducted a study with primary school teachers which indicated that teachers' understanding of dyslexia varies greatly, and there are gaps in their knowledge as well as common misconceptions about this topic. In addition, the results indicated a lack of awareness concerning strategies and a need for intervention programs for students that have dyslexia. In a study carried out by Bell et al. (2011) in England and Ireland, the researchers looked at how teachers and teaching assistants who were teaching primary school pupils with dyslexia described dyslexia and what influenced their conceptualization. The findings showed that, in Ireland, the teachers had a much better understanding of dyslexia than their counterparts in England. However, both in England and Ireland, a large proportion of the respondents appeared to conceptualize dyslexia as a behavioral problem. Research carried out in the Turkish context also confirms that teachers have poor knowledge of dyslexia (Balcı, 2019; Sümer Dodur & Altındağ Kumaş, 2021; Doğan, 2013). Moreover, there has been growing concern about teachers' lack of incorporation of research findings into their teachings. In this regard, Davidson (2013) conducted a crucial study about the extent to which Ontario elementary school teachers use research on reading disabilities. The results showed that students not receiving evidence-based teaching can have increased risks of developing reading disabilities.

Dyslexia and English as a second/foreign language teaching

In order to achieve reading competence in the first language, it is essential to acquire grapheme-phoneme (G-P) conversion rules first. However, this knowledge is not sufficient for reading fluency. Individuals also need orthographic representation (Suárez-Coalla et al., 2020). Cross-linguistic studies have reported that the reading performance of people with dyslexia

varies depending on the orthographic system (Suárez-Coalla et al., 2020). Moreover, it has also been noted that dyslexic reading problems are more prominent in languages with deep orthographies, e.g., English, whose spelling is opaque, compared to languages with shallow orthographies, such as Turkish, German, or Spanish (Suárez-Coalla et al., 2020; Wimmer & Goswami, 1994).

Returning to the focus of this study, English language teachers' knowledge of dyslexia, English is the most common language in the world, and many more primary school students are learning English as compared with students ten years ago (Johnstone, 2019). Dyslexia entails a complex situation for primary school children learning English as a second/foreign language, as it not only influences the development of oral and literacy skills in the children's first language but also has a great impact on the processes of L2 learning (Kormos, 2017; Simon, 2000).

Although this complex area of research cannot be covered here fully, a few studies are pertinent to mention to capture the complex relationship between English language teaching and dyslexia and the need to equip teachers with the necessary information and training. In studies in Norway (Helland & Kaasa, 2005) and Hungary (Kormos & Mikó, 2010), students with dyslexia had lower scores on a vocabulary test on English as a second language word reading in comparison to non-dyslexic participants. Hungarian students with dyslexia also had lower scores on a sentence comprehension test compared to their peers (Kormos & Mikó, 2010). In the Canadian context of English as an additional language, Geva et al.'s (1993) study obtained similar results. Besides challenges in L2 written language development, dyslexic children face challenges in understanding orally presented information as well. In conclusion, the literature suggests that dyslexia affects second or foreign language learning negatively.

Dyslexia and Turkiye

Dyslexia as a phenomenon has only recently been socially acknowledged in Türkiye, but it has already attracted the attention of researchers in the field (Sümer Dodur & Altindağ Kumaş, 2020). However, there is a lack of scientific research about dyslexia in the Turkish context, with only Balcı (2019) and Sümer Dodur & Altindağ Kumaş (2020) conducting systematic studies. In particular, there is a lack of scientific research that focuses on the prevalence of dyslexia among Turkish children. In addition, dyslexia was not given sufficient significance in the curriculum of departments in the faculties of education in Türkiye. To exemplify, according to the analysis of the higher education curriculum in English Language Teaching departments, Atar et al. (2021) found that there were not enough courses dedicated to teaching English to learners with special needs except for a general elective course named inclusive education. This course was by no means exhaustive, and dyslexia could only be a minor topic in the syllabus. Atar et al. (2021, p. 26) further suggested, "Some universities (e.g., Sakarya University) provide a special education course, but again, it mostly focuses on the characteristics of these students, and it provides implications for pedagogy in a general sense rather than specific implications for English language teaching.". Therefore, it may be concluded here that there are not enough courses about dyslexia (except for a few general courses in the curriculum and few other courses that are offered if there is a lecturer specialized in that topic) in English Language Teaching departments in Türkiye even though dyslexia is a common learning problem (Echegaray-Bengoa et al., 2017).

Considering the studies in the literature on Turkish of children/students, it was argued that there was not any individual research that focused on dyslexia considering the Turkish language, which has transparent orthography and is an agglutinative language (Sümer Dodur &

Altindağ Kumaş, 2020). The focus of this study is not on providing a comprehensive procedure of how common dyslexia is within Türkiye but on analyzing the knowledge level of a certain group in line with Sümer Dodur and Altındağ Kumaş (2020) and Seçkin-Yılmaz and Erim (2019). This study also seeks to understand and contribute to awareness about teachers' knowledge of dyslexia in order to help educational policymakers and teacher practitioners to create more inclusive and more effective classrooms for the future.

To illustrate the studies in the Turkish context, Balcı (2019) carried out a pioneering study of preschool teachers serving in Ankara to investigate the teachers' opinions about dyslexia to determine their training needs. The findings showed that the teachers were not knowledgeable about dyslexia, and they did not think their dyslexia training was adequate. While the current study was carried out at the university level, a pioneering study in the Turkish context using the same scale as the current one was carried out by Sümer Dodur and Altındağ Kumaş (2020), who conducted research with 260 primary school teachers and found that their results were consistent with the findings from the other studies (e.g., Wadlington & Wadlington, 2005). While the dyslexia research focusing on the Turkish language is scarce, Durgunoğlu and Öney (1999) carried out another study on the development of phonological awareness of Turkish and American kindergarten and first-grade students (n= 138). The study revealed that both American and Turkish first-grade children performed better than kindergarten children on phonological awareness tasks. The Turkish children; however, even in kindergarten, were able to manipulate syllables more accurately compared to the American children. This is because Turkish is a more agglutinative language, and it is easier for Turkish learners to manipulate the final phoneme as compared to English-speaking children (Durgunoğlu & Öney, 1999). Moreover, since Turkish has a shallow orthography, breaking it into syllables is easier than in English. Furthermore, this has been established in research that phonological awareness is important for alphabetic literacy development. The above-mentioned study was focused on Turkish children learning the Turkish language and American children learning English. This points toward the gap in research on understanding phonological awareness for Turkish children who are learning English as a second or foreign language.

Furthermore, to prepare the Turkish pre-service English as a foreign language (EFL) teachers to be able to identify and support dyslexic children, assessing their knowledge base is useful for pedagogy and lesson planning. Furthermore, the literature review demonstrates that there is a gap in research when it comes to understanding language teachers' knowledge and misconceptions about dyslexia, especially in the Turkish context. Moreover, second/foreign language contexts in relation to teachers' knowledge is an under-investigated area. Accordingly, this study aims to contribute to the gap in the literature by mapping pre-service EFL teachers' knowledge and beliefs about dyslexia and discussing the results with regard to the relationship between dyslexia and its potential effects on teacher training. To understand the above-mentioned aims, this study investigates the research questions presented below:

1. What are the misconceptions, knowledge levels, and knowledge gaps of Turkish pre-service EFL teachers about dyslexia?
2. Do some variables have any effects on the participants' level in KBDDS?
   2.a. Does gender have any effects on the participants' level in KBDDS?
   2.b. Does grade have any effects on the participants' level in KBDDS?

Methodology

Model of the research

This study is a quantitative and descriptive study that utilized a scale (Soriano-Ferrer & Echegaray-Bengoa, 2014). It was designed as a case study, which aimed to investigate pre-service EFL teachers' knowledge and beliefs about dyslexia.

Participants

The scale by Soriano-Ferrer and Echegaray-Bengoa (2014) was distributed to many relevant potential contributors who were EFL pre-service teachers studying at eight different universities in the western and central regions of Türkiye via convenience and snowball sampling. 176 pre-service teachers participated in the study. The details about the participants are presented below in Table 1.

Table 1. The participants.

Variables		F	Valid Percent	Cumulative Percent
Grade	1	14	8	8
	2	30	17	25
	3	64	36,4	61,4
	4	68	38,6	100
Gender	female	128	72,7	72,7
	male	48	27,3	100
Total		176	100	

Data collection instrument

The data collection tool in the current study is The Knowledge and Beliefs about Developmental Dyslexia Scale (KBDDS) which was created, developed, and tested by Soriano-Ferrer and Echegaray-Bengoa (2014) for the target group of teachers and instructors. The instrument consists of thirty-six items and three factors (General Information, Diagnosis, and Treatment), which allow researchers to collect a satisfactory amount of data about knowledge and beliefs about dyslexia. In addition to the thirty-six items, participants were asked to provide their gender and grade. Internal consistency coefficients were calculated as .87, .85, and .78 for the General Information (17 items), Diagnosis (10 items), and Treatment (9 items) factors, respectively. Hence, this is a reliable instrument for collecting data. The data collection tool provides three options for each item: Correct, False, and Do Not Know (see Appendix A for details).

Data collection and analysis procedures

The research data were collected between December 2020 and July 2021 using KBDDS. The scale was transferred to Google Forms, to which participants were invited to complete online on a voluntary basis. The participants of the study were provided with the information about the study. However, this information included only the procedures for the study. It did not provide any information about dyslexia, as the very goal of this study was to learn about the participants' knowledge level about dyslexia. Complete confidentiality and adherence to ethical guidelines were assured.

The pre-service EFL teachers in this study consisted of students from the 1st to 4th grade at the undergraduate level in English Language Teaching departments. The Turkish version of the scale was not created, and the original English version was used as the participants were pre-service EFL teachers with high proficiency in English. The data were analysed using SPSS 25.0. Firstly, skewness and kurtosis of the data were analysed as recommended in social sciences (Field, 2009), and they were found to be lower than $p<.05$. Hence, further analysis was undertaken. The frequency of each item in the KBDDS was calculated regarding the Correct, False, and Do Not Know options via descriptive statistics. Then, the results of the three factors were also checked to see whether there was variation depending on the variables via the Kruskal Wallis Test. Afterwards, in line with the second research question, whether the variables grade and gender had any effects was checked. Providing the three most common options from Correct, False, and Do Not Know was also used as a strategy to highlight the most common instances to elicit further insights, which increased the validity and reliability of the analysis.

Findings

As seen in Table 2 below, the findings suggest that pre-service EFL teachers' level of knowledge about dyslexia is low: they tended to answer the questions with either an incorrect answer or the Do Not Know option (See Appendix A for details). As shown below, for the KBDDS in general, the rate of correct answers is 52,1%. It is 49,5% for General Information, 56,9% for Diagnosis, and 51% for Treatment factors. This demonstrates that the participants chose incorrect answers or declared insufficient knowledge in around half of the items.

Table 2. Descriptive results of the KBDDS.

	Percentage of Correct Answers	Percentage of Wrong Answers	Percentage of Do Not Know
General Information	49,5	17,7	32,8
Diagnosis	56,9	20,2	22,9
Treatment	51	11,4	37,6
Total	52,1	16,8	31,1

The second research question aimed to find out whether the two variables (i.e., gender and grade) had any effect on the participants' level in KBDDS. Neither of the variables was found to have a significant correlation with the participants' level in KBDDS. The analysis in Table 3 showed that gender did not have a significant effect when all the factors were taken into account. The mean scores of males were slightly higher than those of females in each dimension; however, they were not found to be significant.

Table 3. Results according to gender.

	Gender	n	Mean	SD	df	t	p
f1	Male	48	1,9620	,34716	174	1,838	,068
	Female	128	1,8722	,26370			
f2	Male	48	1,7625	,43005	174	1,816	,071
	Female	128	1,6539	,32041			
f3	Male	48	2,0949	,47362	174	1,677	,095

Female	128	1,9922	,31059

(f1: General Information, f2: Diagnosis, and f3: Treatment factors)

The analysis of grade via the Kruskal Wallis Test in Table 4 showed that grade did not have a significant effect, either. Considering the means from the 1ˢᵗ to the 4ᵗʰ grades, no patterns were observed. Hence, this shows that there was not a significant relationship between the participants' grade and their knowledge about dyslexia.

Table 4. Results according to grade.

		N	Mean	Std. Deviation	X²	p	Significance
f1	1ˢᵗ grade	14	2,0084	,28150			
	2ⁿᵈ grade	30	1,9216	,35775	2,702	,440	No
	3ʳᵈ grade	64	1,8732	,28419			
	4ᵗʰ grade	68	1,8849	,26511			
f2	1ˢᵗ grade	14	1,6786	,28603			
	2ⁿᵈ grade	30	1,7867	,45008	7,213	,065	No
	3ʳᵈ grade	64	1,7156	,31128			
	4ᵗʰ grade	68	1,6088	,35270			
f3	1ˢᵗ grade	14	2,0079	,33323			
	2ⁿᵈ grade	30	2,0667	,41327	,822	,844	No
	3ʳᵈ grade	64	2,0365	,38340			
	4ᵗʰ grade	68	1,9869	,33113			

(f1: General Information, f2: Diagnosis, and f3: Treatment factors of the scale)

Discussion

In relation to the first research question, the analysis of pre-service EFL teachers' knowledge and beliefs showed that only around half of the participants could answer the items correctly (Table 1 and Appendix 1). This indicated that the participants had a significant knowledge problem regarding dyslexia, which meant that their readiness for teaching dyslexic students was at stake, and thus it should be further investigated. A closer look at Table 1 also suggested that the declaration of insufficient knowledge (i.e., Do Not Know) was three times higher than incorrect answers. This showed that the participants were aware of their lack of knowledge and had relatively fewer misconceptions about dyslexia. The percentage was especially lower for the treatment factor. Hence, it may be argued that the participants had a significant lack of information regarding how to deal with dyslexia, which is likely to affect their teaching in classrooms in the future.

The analysis regarding the most common Correct, Incorrect, and Do Not Know answers can also offer many insights into the participants' knowledge and beliefs about dyslexia. The most common correct answers all came from the General Information factor. This suggested that although the participants had problems with some particular items, they had fewer issues regarding their general knowledge of dyslexia. The three most common incorrect answers, on the other hand, can provide valuable insights into the participants' misconceptions. From the analysis of the most common three incorrect answers, it can be concluded that the participants mistakenly believed that dyslexia was related to individuals' visual perception abilities (e.g.,

dyslexics read the letters in the wrong direction). The most common misconception was assuming that dyslexics read letters and words in the reverse direction. This is supported by Washburn et al. (2014), who found that teachers thought that dyslexia stemmed from visual processing problems rather than a phonological deficiency. Also, the results showed that the participants did not know that there was a correlation between dyslexia and intelligence tests. Considering the results, it may be argued that two of the biggest misconceptions came from the Diagnosis factor, which indicated that the participants had difficulties in the diagnosis of dyslexia. This can be a very significant problem in classrooms. Teachers are some of the people who spend time with children the most. Having the ability to diagnose dyslexia is critical in detecting it and addressing it as soon as possible. Hence, it may be argued that courses that introduce Dyslexia to pre-service EFL teachers must be provided (Bos et al., 2001; Hornstra et al., 2010).

Finally, the most common Do Not Know answers were Item 27 from General Information (i.e., Problems in establishing laterality (body schema) are the cause of dyslexia), Item 7 (Most studies indicate that about 5% of school-age students have dyslexia), and 19 (Multisensory instruction is not an effective training method at the moment). These findings indicated that the participants suffered from a dire lack of knowledge about even general information. They did know the prevalence of dyslexia, which is around 1 in 20 (5%). This is a very significant finding in that there must be one or two students with dyslexia in each class, assuming class sizes of 20-40. If teachers were knowledgeable of this fact, they would likely be more aware of the prevalence of dyslexic students. This lack of knowledge naturally has significant implications for English language teacher training. Moreover, most participants did not know that multisensory instruction could help dyslexic students. Finally, they lacked information about the underlying reasons for dyslexia, one of which is problems in establishing laterality. This was also supported by the most common incorrect answers, which suggested that participants mistakenly believed that dyslexia was a result of visual perception problems.

The second research question aimed to find out whether the two variables (i.e., gender and grade) had any effects on the participants' level in KBDDS. The analysis of gender and grade showed that gender did not have significance in any of the factors. This is in line with Acharya (2016), who also found that gender did not correlate with any significant difference in participants' awareness regarding dyslexia. The analysis of grade showed that there were not any significant effects either: participants' awareness regarding dyslexia did not change significantly from the 1st to the 4th grade. This demonstrated that the undergraduate English language teaching degree they studied did not help them in this aspect at all. This is, in fact, understandable, as English language teaching programs in Türkiye and in most other countries lack specific courses on special educational needs, let alone specifically for dyslexia. As stated by Atar et al. (2021) regarding an analysis of the higher education curriculum in Türkiye and also in many other countries, there were almost no courses on dyslexia except for electives which were only theoretical and usually focused on the characteristics of students with special needs in a general sense. Consequently, it may be argued that there is a significant lack of instruction in English language teacher training programs regarding special education. Such provision could help improve pre-service EFL teachers' knowledge about dyslexia throughout their undergraduate education, and as a result, they may be prepared more for teaching students with special needs such as dyslexia.

Our study confirmed the findings from former studies in that teachers' knowledge about dyslexia is quite limited (e.g., Aktan, 2020; Balcı, 2019; Bos et al., 1999; Esen & Çiftçi, 2000; Fırat & Koçak, 2018; Mather et al., 2001; Moats, 2009; Washburn et al., 2011; Washburn et al., 2014). Moreover, because of the problems in the diagnosis of dyslexia and misconceptions about it among teachers, as shown in the analysis, it is argued that every teacher education program should include courses on dyslexia (Bos et al., 2001; Hornstra et al., 2010), specifically programs for teachers of second/foreign languages. Prospective language teachers must be able to access courses, given the rate of dyslexia among students cannot be ignored. As for creating inclusive education opportunities for all, not only teachers but also the educational system should be prepared. Moreover, the teachers should be able to cater to students with all types of learning difficulties (e.g., Atar et al., 2021). This includes more awareness about the topic of dyslexia in the community for lifelong support of dyslexic individuals in society, as it is not a curable problem (although the condition may be improved).

It is clear that further research on teachers' knowledge about dyslexia in various contexts would feed into dyslexia research and second language teaching and, in particular, English language teaching. Moreover, since research into dyslexic difficulties was conducted predominantly among those whose first language is English (Miles, 2000, p. 193), further research on different aspects of languages and their apparent effect on dyslexics is crucial to widen our understanding of the nature of dyslexic difficulties (Miles, 2000, p. 200) and testing in multilingual contexts.

Conclusion

This study has suggested that dyslexia is not the same as poor reading, but it encompasses a range of symptoms that include problems with verbal labelling, arithmetic, verbal short-term memory, and subtle speech production which can impact English language learning. The current study has shown that pre-service EFL teachers have misconceptions and a lack of information about dyslexia, especially in diagnosing it. Therefore, it is pertinent to address how pre-service teacher training in non-Anglophone contexts can facilitate more inclusive environments for dyslexic English as second/foreign language learners.

Overall, this study has helped us better understand the base knowledge of pre-service EFL teachers in Türkiye. However, more evidence is required to study the challenges of pre-service EFL teachers and dyslexic children learning EFL in Türkiye, as well as the Turkish language. Hence, there is a dire need for research into support for bilingual dyslexic English language learners to feed into pre-service and in-service teacher training programs. Studies in this area can help researchers design ways to improve English language teaching and learning for learners suffering from dyslexia to ensure fairer and more equal opportunities in education.

References

Acharya, P. K. (2016). A study on the awareness of secondary school teachers towards language learning difficulties of students. *Scholarly research journal for interdisciplinary studies, 4*(26), 2889-2898.

Allington, R. L. (1982). The persistence of teacher beliefs in facets of the visual perceptual deficit hypothesis. *The Elementary School Journal, 82*(4), 351–359. https://doi.org/10.1086/461272

Al Otaiba, S., & Lake, V. E. (2007). Preparing special educators to teach reading and use curriculum-based assessments. *Reading and Writing, 20*(6), 591-617.

Aktan, O. (2020). Determination of educational needs of teachers regarding the education of inclusive students with learning disability. *International Journal of Contemporary Educational Research, 7*(1), 149-164. https://doi.org/10.33200/ijcer.638362

Atar, C., Aslan Bağcı, Ö., & Bağcı, H. (2021). Deaf individuals and English language teaching. *TOJET: The Turkish Online Journal of Educational Technology, 20*(4), 23-28.

Balcı, E. (2019). Teachers' opinions about dyslexia and the challenges they face. *Journal of Ege Education, 20*(1), 162–179. https://doi.org/10.12984/egeefd.453922.

Bell, S., McPhillips, T., & Doveston, M. (2011). How do teachers in Ireland and England conceptualise dyslexia?" *Journal of Research in Reading, 34*(2), 171–192. https://doi.org/10.1111/j.1467-9817.2009.01419.x.

Bos, C., Mather, N., Friedman Narr, R., & Babur, N. (1999). Interactive, collaborative professional development in early literacy instruction: Supporting the balancing act. *Learning Disabilities Research and Practice, 14*(4), 227-238.

Bos, C., Mather, N., Dickson, S., Podhajski, B., & Chard, D. (2001). Perceptions and knowledge of preservice and inservice educators about early reading instruction. *Annals of Dyslexia, 51*(1), 97-120. doi:10.1007/s11881-001-0007-0.

Bradley, L., & Bryant, P. E. (1983). Categorizing sounds and learning to read: A causal connection. *Nature, 301*, 419-421. https://doi.org/10.1038/301419a0

Chourmouziadou, C. M. (2016). *Primary school teachers' knowledge about dyslexia: The Greek case* [Unpublished doctoral dissertation]. University College, London, England.

Crombie, M. (1992). *Specific learning difficulties: Dyslexia—A teachers' guide*. University of Strathclyde.

Davidson, K. (2013). Teachers' reported utilization of reading disabilities research. *Alberta Journal of Educational Research, 59*(3), 487-502.

Doğan, B. (2013). Determining Turkish language and elementary classroom teachers' knowledge on dyslexia and their awareness of diagnosing students with dyslexia. *Research in Reading & Writing Instruction, 1*(1), 20–33.

Durgunoğlu, A. Y., & Öney, B. (1999). A cross-linguistic comparison of phonological awareness and word recognition. *Reading and Writing, 11*(4), 281-299.

Echegaray-Bengoa, J., Soriano-Ferrer, M., & Joshi, R. M. (2017). Knowledge and beliefs about developmental dyslexia: A comparison between pre-service and in-service Peruvian teachers. *Journal of Hispanic Higher Education, 16*(4), 375–389. https://doi.org/10.1177/1538192717697591

Esen, A., & Çiftçi, İ. (2000). Sınıf öğretmenlerinin öğrenme yetersizliği ile ilgili bilgilerinin belirlenmesi [Identifying the elementary school teachers' knowledge about the learning disabilities]. *Pamukkale Üniversitesi Eğitim Fakültesi Dergisi, 8*(8), 85-90.

European Dyslexia Association. (2023, July 3). *No matter which country – No matter which language – Dyslexia is everywhere.* https://eda-info.eu/what-is-dyslexia/#:~:text=Dyslexia%20occurs%20worldwide%20regardless%20of,be%20seriously%20affected%20by%20it.

Field, A. (2009). *Discovering statistics using SPSS*. SAGE Publications.

Fırat, T., & Koçak, D. (2018). Sınıf öğretmenlerinin öğrenme güçlüğünün tanımına ilişkin görüşleri [Investigating the opinions of class teachers' on the concept of learning diffuculty]. *Abant İzzet Baysal Üniversitesi Eğitim Fakültesi Dergisi, 18*(2), 915-931.

Geva, E., Wade-Woolley, L., & Michal, S. (1993). The concurrent development of spelling and decoding in two different orthographies. *Journal of Reading behavior, 25*(4), 383-406.

Helland, T., & Kaasa, R. (2005). Dyslexia in English as a second language. *Dyslexia, 11*(1), 41-60.

Hornstra, L., Denessen, E., Bakker, J., Van Den Bergh, L., & Voeten, M. (2010). Teacher attitudes toward dyslexia: Effects on teacher expectations and the academic achievement of students with dyslexia. *Journal of Learning Disabilities, 43*(6), 515-529.

Johnstone, R. (2009). An early start: What are the key conditions for generalized success? In J. Enever, J. Moon & U. Raman (Eds.), *Young learner English language policy and implementation: International perspectives* (pp. 31-41). Garnet Publishing.

Johnston, V. (2019). Dyslexia: What reading teachers need to know. *The Reading Teacher, 73*(3), 339–346. https://doi.org/10.1002/trtr.1830

Kaçar, E., & Düzkantar, A. (2019). Research on the knowledge levels of teachers about learning difficulties. *The Journal of International Social Research, 12*(65), 804-819.

Kormos, J. (2017). The effects of specific learning difficulties on processes of multilingual language development. *Annual Review of Applied Linguistics, 37,* 30-44.

Kormos, J., & Mikó, A. (2010). Diszlexia és az idegen-nyelvtanulás folyamata [Dyslexia and the process of second language acquisition]. In Kormos, J., Csizér, K. (Eds.), *Idegennyelv-elsajátítás és részképességzavarok.* [Foreign language acquisition and learning disabilities] (pp. 49–76). Eötvös Kiadó.

Mather, N., Bos, C., & Babur, N. (2001). Perceptions and knowledge of preservice and inservice teachers about early literacy instruction. *Journal of Learning Disabilities, 34*(5), 472-482. https://doi.org/10.1177%2F002221940103400508

Miles, T. R. (1993). *Dyslexia—The pattern of difficulties* (Second Edition). Whurr Publishers.

Miles, E. (2000). Dyslexia may show a different face in different languages. *Dyslexia, 6*(3), 193-201.

Moats, L. C. (1994). The missing foundation in teacher education: Knowledge of the structure of spoken and written language. *Annals of Dyslexia, 44*(1), 81-102.

Moats, L. C., & Foorman, B. R. (2003). Measuring teachers' content knowledge of language and reading. *Annals of Dyslexia, 53,* 23- 45. https://doi.org/10.1007/s11881-003-0003-7

Moats, L. (2009). Knowledge foundations for teaching reading and spelling. *Reading and Writing: An Interdisciplinary Journal, 22,* 379-399.

Norton, E. S., Beach, S. D., & Gabrieli, J. D. E. (2015). Neurobiology of dyslexia. *Current opinion in neurobiology, 30,* 73-78. https://doi.org/10.1016/j.conb.2014.09.007

Piasta, S. B., McDonald Connor, C., Fishman, B. J., & Morrison, F. J. (2009). Teachers' knowledge of literacy concepts, classroom practices, and student reading growth. *Scientific Studies of Reading, 13*(3), 224-248.

Ramus, F. (2014). Neuroimaging sheds new light on the phonological deficit in dyslexia. *Trends in Cognitive Sciences, 18*(6), 274–275. https://doi.org/10.1016/j.tics.2014.01.009

Rose, J. (2009, July 3). *Identifying and teaching children and young people with dyslexia and literacy difficulties.* https://dera.ioe.ac.uk/id/eprint/14790/7/00659-2009DOM-EN_Redacted.pdf

Seçkin-Yilmaz, Ş., & A. Erim. (2019). Examination adults' knowledge about dyslexia in Turkey. *Journal of Abant Izzet Baysal University Education Faculty, 19*(3), 1102–1114. https://doi.org/10.17240/aibuefd.2019.19.49440-583895.

Shaywitz, S. E., Morris, R., & Shaywitz, B. A. (2008). The education of dyslexic children from childhood to young adulthood. *Annual Review of Psychology*, *59*, 451–475. https://doi.org/10.1146/annurev.psych.59.103006.093633

Simon, C. S. (2000). Dyslexia and learning a foreign language: A personal experience. *Annals of Dyslexia, 50*, 155–187. https://doi-org.proxybib.miun.se/10.1007/s11881-000-0021-7

Snowling, M. J. (2000). *Dyslexia* (Second Edition). Blackwell.

Soriano-Ferrer, M., & Echegaray-Bengoa, J. A. (2014). A scale of knowledge and beliefs about developmental dyslexia: Scale development and validation. *Procedia - Social and Behavioral Sciences, 132*, 203-208.

Soriano-Ferrer, M., Echegaray-Bengoa, J., & Joshi. R. M. (2016). Knowledge and beliefs about developmental dyslexia in pre-service and in-service Spanish-speaking teachers. *Annals of Dyslexia, 66*(1), 91-110.

Stanovich, K. E. (1988). Explaining the differences between the dyslexic and the garden-variety poor reader: The phonological-core variable-difference model. *Journal of Learning Disabilities, 21*(10), 590–604. https://doi.org/10.1177/002221948802101003

Snow, C. E., Griffin, P., & Burns, M. S. (Eds.). (2005). *Knowledge to support the teaching of reading: Preparing teachers for a changing world*. Jossey-Bass/Wiley.

Suárez-Coalla, P., Martínez-García, C., & Carnota. A. (2020). Reading in English as a foreign language by Spanish children with dyslexia. *Frontiers in Psychology, 11*(19). https://doi.org/10.3389/fpsyg.2020.00019

Sümer Dodur, H. M., & Kumaş, A. Ö. (2021). Knowledge and beliefs of classroom teachers about dyslexia: The case of teachers in Turkey. *European Journal of Special Needs Education, 36*(4), 593-609.

Taylor, B. M., David Pearson, P., Kathleen F. C., & Walpole, S. (1999). Beating the odds in teaching all children to read (Report for Office of Educational Research and Improvement, No: CIERA-R-2-006). https://eric.ed.gov/?id=ED436723

Torgesen, J. K. (2002). The prevention of reading difficulties. *Journal of school psychology, 40*(1), 7-26.

Torgesen, J. K., Wagner, R. K., Rashotte, C. A., Rose, E., Lindamood, P., Lindamood, P., Conway, T., & Garvin, C. (1999). Preventing reading failure in young children with phonological processing disabilities: Group and individual responses to instruction. *Journal of Educational Psychology, 91,* 579–593.

Vellutino, F. R., Fletcher, J. M., Snowling, M. J., & Scanlon, D. M. (2004). Specific reading disability (dyslexia): What have we learned in the past four decades? *Journal of Child Psychology and Psychiatry, 45*, 2-40. https://doi.org/10.1046/j.0021-9630.2003.00305.x

Wadlington, E. M., & Wadlington. P-L. (2005). What educators really believe about dyslexia. *Reading Improvement, 42*(1), 16-33.

Washburn, E. K., Binks-Cantrell, E. S., & Joshi, R. M. (2014). What do preservice teachers from the USA and the UK know about dyslexia? *Dyslexia, 20*(1), 1–18. https://doi.org/10.1002/dys.1459

Washburn, E. K., Joshi, R. M., & Binks-Cantrell, E. S. (2011). Are preservice teachers prepared to teach struggling readers? *Annals of Dyslexia, 61*, 21–43.

Wimmer, H., & Goswami, U. (1994). The influence of orthographic consistency on reading development: word recognition in English and German children. *Cognition, 51*, 91–103. doi: 10.1016/0010-0277(94)90010-8

Yin, L., Joshi, R. M., & Yan, H. (2020). Knowledge about dyslexia among early literacy teachers in China. *Dyslexia, 26*(3), 247–265. https://doi.org/10.1002/dys.1635

Appendix A. Descriptive Results of KBDDS

	Item No	Items	Correct		False		Do Not know		Correct Answer
			N	%	N	%	N	%	
Gen. Info.	1	Dyslexia is the result of a neurologically based disorder.	136	77,3	11	6,3	29	16,5	True
	2	Dyslexia is caused by visual perception deficits, producing the reversal of letters and words.	141	80,1	13	7,4	22	12,5	False
	3	A child can be both dyslexic and gifted.	159	90,3	2	1,1	15	8,5	True
	4	Dyslexic children often have emotional and social disabilities.	81	46	53	30,1	42	23,9	True
	5	The brains of individuals with dyslexia are different from those of people without dyslexia.	78	44,3	24	13,6	74	42	True
	6	Dyslexia is hereditary.	42	23,9	51	29	83	47,2	True
	7	Most studies indicate that about 5% of school-age students have dyslexia.	51	29	1	,6	124	70,5	True
	8	Dyslexia has a greater occurrence in males than in females.	40	22,7	16	9,1	120	68,2	True
	16	All poor readers have dyslexia.	1	,6	168	95,5	7	4	False
	20	Students who have reading disabilities without an apparent cause are called dyslexic.	44	25	87	49,4	45	25,6	True
	21	People with dyslexia are not stupid or lazy. Knowing about the term helps children.	165	93,8	2	1,1	9	5,1	True
	25	I think dyslexia is a myth, a problem that does not exist.	2	1,1	168	95,5	6	3,4	False
	27	Problems in establishing laterality (body schema) are the cause of dyslexia.	22	12,5	27	15,3	127	72,2	True

	29	Dyslexia refers to a relatively chronic condition that is often not completely overcome.	59	33,5	49	27,8	68	38,6	True
	30	Many students with dyslexia continue to have reading problems as adults.	82	46,6	23	13,1	71	40,3	True
	31	Many students with dyslexia have low self-esteem.	93	52,8	31	17,6	52	29,5	True
	35	Dyslexia usually lasts for a long time.	87	49,4	9	5,1	80	45,5	True
Diagnosis	9	Children with dyslexia are more consistently impaired in phonemic awareness (i.e. ability to hear and manipulate sounds in language) than any other ability.	65	36,9	37	21	74	42	True
	11	People with dyslexia have below average intelligence.	8	4,5	148	84,1	20	11,4	False
	12	The reading of students with dyslexia is often characterised by inaccuracy and lack of fluency.	144	81,8	7	4	25	14,2	True
	13	Seeing letters and words backwards is a basic characteristic of dyslexia.	125	71	17	9,7	34	19,3	False
	14	Difficulty with the phonological processing of information is one of the most important deficits in dyslexia.	110	62,5	10	5,7	56	31,8	True
	15	Intelligence tests are useful in identifying dyslexia.	24	13,6	102	58	50	28,4	True
	32	Children with dyslexia have problems with decoding and spelling but not with listening comprehension.	112	63,6	15	8,5	49	27,8	True
	33	Applying an individual reading test is essential to diagnosing dyslexia.	118	67	14	8	44	25	True
	34	Dyslexic individuals tend to spell words wrong.	131	74,4	17	9,7	28	15,9	True
	36	Dyslexia is characterised by difficulty with learning to read fluently.	129	73,3	18	10,2	29	16,5	True
Treatment	10	Modelling fluent reading is often used as a teaching strategy.	80	45,5	22	12,5	74	42	True
	17	Children with dyslexia can be helped by using coloured lenses/coloured overlays.	35	19,9	52	29,5	89	50,6	False

	18	Physicians can prescribe medications to help students with dyslexia.	39	22,2	50	28,4	87	49,4	False
	19	Multisensory instruction is not an effective training method at the moment.	11	6,3	44	25	121	68,8	False
	22	Giving students with dyslexia accommodations, such as extra time on tests, shorter spelling lists, special seating, etc. is unfair to other students.	15	8,5	148	84,1	13	7,4	False
	23	Intervention programs that emphasise the phonological aspects of language with the visual support of letters are effective for students with dyslexia.	119	67,6	4	2,3	53	30,1	True
	24	Most teachers receive intensive training in working with dyslexic children.	33	18,8	78	44,3	65	36,9	False
	26	Repeated reading techniques are useful reading material to improve reading fluency.	116	65,9	10	5,7	50	28,4	True
	28	Students with dyslexia need structured, sequential, direct instruction in basic skills and learning strategies.	119	67,6	10	5,7	47	26,7	True