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CEPS Journal 12 (2022) 4, S. 101-127



Quellenangabe/ Reference:

Zero, Alma; Pizorn, Karmen: Undergraduate and graduate students' beliefs about dyslexia:
implications for initial foreign language teacher education - In: CEPS Journal 12 (2022) 4, S. 101-127 -
URN: urn:nbn:de:0111-pedocs-261250 - DOI: 10.25656/01:26125

<https://nbn-resolving.org/urn:nbn:de:0111-pedocs-261250>

<https://doi.org/10.25656/01:26125>

in Kooperation mit / in cooperation with:



University of Ljubljana
Faculty of Education

<http://www.pef.uni-lj.si>

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DOI: <https://doi.org/10.26529/cepsj.1432>

Undergraduate and Graduate Students' Beliefs about Dyslexia: Implications for Initial Foreign Language Teacher Education

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~ The purpose of this study was to explore undergraduate and graduate students' beliefs about dyslexia at the Department of English Language and Literature of the University of Sarajevo in Bosnia and Herzegovina and subsequent implications for initial foreign language teacher education. The study follows a convergent parallel mixed methods design. A questionnaire was used to gather quantitative data on students' beliefs about dyslexia and to consider potential variances at different levels of study. A group interview was used to gather qualitative findings for further consideration in initial teacher education on dyslexia and other specific learning difficulties. The findings have shown that both undergraduate and graduate students have an almost equal number of misconceptions about dyslexia, with the majority (96.03%) affirming that they need more training in teaching students with dyslexia or other specific learning difficulties. Furthermore, the study follows an emergent framework with reference to three main themes: (1) *teacher beliefs and attitudes*, (2) *teaching practices*, and (3) *teacher preparation*, which also reflect the main areas of undergraduate and graduate students' concerns in teaching students with dyslexia and other specific learning difficulties.

Keywords: dyslexia, foreign language learning and teaching, inclusive education, initial teacher education, specific learning difficulties

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Prepričanja dodiplomskih in magistrskih študentov glede disleksije: posledice za začetno izobraževanje učiteljev tujih jezikov

ALMA ŽERO IN KARMEN PIŽORN

~ Namen te študije je bil raziskati prepričanja dodiplomskih in magistrskih študentov o disleksiji na *Oddelku za angleški jezik in književnost* Univerze v Sarajevu (Bosna in Hercegovina) ter poznejše posledice za začetno izobraževanje učiteljev tujih jezikov. Študija sledi zasnovi paralelnega modela kombiniranega raziskovalnega pristopa. Z vprašalnikom smo zbrali kvantitativne podatke o prepričanjih študentov o disleksiji in upoštevali morebitne razlike na različnih stopnjah študija. Skupinski intervju pa je bil uporabljen za zbiranje kvalitativnih ugotovitev za nadaljnjo obravnavo o disleksiji in drugih specifičnih učnih težavah znotraj začetnega izobraževanja učiteljev. Izsledki so pokazali, da imajo dodiplomski in magistrski študentje skoraj enako število napačnih predstav o disleksiji, pri čemer večina (96,03 %) trdi, da potrebujejo več usposabljanja za poučevanje študentov z disleksijo ali drugimi specifičnimi učnimi težavami. Poleg tega študija sledi nastajajočemu okviru s sklicevanjem na tri glavne teme: 1) *prepričanja in stališča učiteljev*; 2) *prakse poučevanja*; 3) *priprava učiteljev*, kar sočasno odraža tudi glavna področja skrbi dodiplomskih in magistrskih študentov glede poučevanja učencev z disleksijo in drugimi specifičnimi učnimi težavami.

Ključne besede: disleksija, učenje in poučevanje tujih jezikov, inkluzivna pedagogika, začetno izobraževanje učiteljev, specifične učne težave

Introduction

Underpinned by the principles of inclusive pedagogy, inclusion values diversity and challenges all exclusionary policies and practices (Florian & Black-Hawkins, 2011). With UNESCO's *World Declaration on Education for All* (1990) and the *Salamanca Statement* (1994), the international commitment to inclusive education is grounded in the human rights perspective and the notion that education is central to individual and collective well-being (UNICEF, 2012). While the general consensus emphasises support for legislation and policy in widening access and promoting opportunities for all, research (see Avramadis & Norwich, 2002; Kormos & Kontra, 2008; Sharma et al., 2008; Woodcock & Vialle, 2016) has provided ample evidence that teacher preparation is a crucial concern in ensuring inclusive education. Teacher knowledge, skills, beliefs, and attitudes have been particularly emphasised, with an increasing focus on pre-service teachers (see Jordan et al., 2009; Kagan, 1992; Ng et al., 2010; Pajares, 1992; Pintrich, 1990; Reinke & Moseley, 2002; Symeonidou & Phtiaka, 2009).

Consequently, the current study looks at Bosnian Herzegovinian pre-service teachers' beliefs about dyslexia as a specific learning difficulty and subsequent implications for initial teacher education for inclusion. Specific learning difficulties (SpLDs) are among the most common disorders in school-age children, with approximately 5–15% prevalence rates (APA, 2013). Based on the DSM-5, learning difficulty is considered 'a neurodevelopmental disorder with a biological origin that includes an interaction of genetic, epigenetic, and environmental factors, which affect the brain's ability to perceive or process verbal or nonverbal information' (APA, 2013, p. 68). For several decades, research on SpLDs in education has been based on two perspectives and subsequent models. While the medical/deficit model locates disabilities and barriers within an individual to be met by specialised educational institutions, the social model focuses on SpLDs as socially constructed barriers that can be deconstructed by a change in the environment to meet the needs of all (Kavkler et al., 2015; Kormos, 2017; UNICEF, 2012). Due to its complexity, dyslexia has been described on multiple levels, with the underlying brain mechanisms identified at the biological level, mind and mental processes at the cognitive level, and manifestations such as poor reading and spelling, motion sensitivity, and poor rapid auditory processing specified at the behavioural level (Nijakowska, 2020). Lack of social, emotional, and academic support for children with dyslexia may result in anxiety, depression, reduced self-confidence, and lower academic achievement, followed by higher rates of unemployment (Diakakis et al., 2008; DSM-5, APA, 2013). Nonetheless, despite the difficulties that children with dyslexia

experience, some describe it as a gift often accompanied by creativity, intuition, and problem-solving skills (Martinelli et al., 2018). The International Dyslexia Association (IDA, 2017) acknowledges that the definition of dyslexia is evolving with ongoing research; however, as a language-based SpLD, dyslexia clearly impacts foreign language learning, specifically word-reading skills and reading comprehension skills (see Crombie, 1997; Helland & Kaasa, 2005; Kormos, 2017; Košak Babuder et al., 2019). Teachers need knowledge and skills to address such learner differences in an inclusive way. Therefore, initial teacher education for inclusion has become a critical concern (see Forlin et al., 2011; Ilić et al., 2006; Nijakowska, 2014, 2020; Spratt & Florian, 2013) and pre-service teacher beliefs about dyslexia an intriguing research focus (see Košak Babuder & Jazbec, 2019; Martan et al., 2017; Nijakowska et al., 2018; Wadlington & Wadlington, 2005; Washburn et al., 2013; Woodcock, 2013). In fact, increasing diversity in the classroom requires extensive research into the beliefs of pre-service teachers (PSTs) in order to help them develop as self-regulated, critically reflective professionals (Ng et al., 2010).

Decades ago, Kagan (1992) suggested that 'the more one reads studies of teacher belief, the more strongly one suspects that this piebald of personal knowledge lies at the very heart of teaching' (p. 85) and thus affirmed the need to investigate teacher beliefs critically. As a deeply personal concept, measuring and developing teacher beliefs is challenging: they are not always objectively reasonable; they can be tenacious; and they are bound up with emotional experiences (Rosenfeld & Rosenfeld, 2008). PSTs' beliefs play a pivotal role in their subsequent teaching behaviour when unexplored entering beliefs may perpetuate ineffective teaching practices (Pajares, 1992; Pintrich, 1990), which is of particular interest to this study in relation to teaching students with dyslexia. Common misconceptions among PSTs include the belief that dyslexia is a visual perception difficulty (Washburn et al., 2013), that word reversal is the major criterion in the identification of dyslexia, and that individuals with dyslexia exhibit the same characteristics with similar degrees of severity (Wadlington & Wadlington, 2005). PSTs' beliefs such as these can lead to a deficit model in approaching students with dyslexia in the classroom, ranging from low student expectations and perceptions about student laziness to low levels of teacher commitment (Gwernan-Jones & Burden, 2009). In addition, teacher efficacy beliefs are reported to impact students' own sense of self-efficacy (Tschannen-Moran & Wolfok-Hoy, 2001) and PSTs' preparedness to include students with dyslexia in the classroom. Indeed, in exploring initial and continuing foreign language teacher education, Nijakowska (2020) suggests that:

Foreign language teacher preparedness to successfully include dyslexic learners in mainstream classrooms is composed of two underlying factors, namely 1) teachers' *beliefs* about their possessed knowledge of dyslexia and their self-efficacy concerning inclusive instruction-related teacher classroom behavior towards dyslexic learners (knowledge and skills) and 2) *beliefs* about inclusion of dyslexic learners in mainstream classrooms in general (attitude/stance). (p. 263)

In addition, Nijakowska et al. (2018) confirm the relevance of contextual variables in exploring teacher beliefs and their preparedness to teach students with dyslexia, such as the country, level, and aims of teacher training, specific requirements by the national education systems, prevailing social attitudes, and the pre-service and in-service teachers' motivation to personally seek out professional development. Košak Babuder and Jazbec (2019) found that perceptions about dyslexia further impact views on adapted instruction and meaningful assistance to students with dyslexia, encouraging more practical initial and continuing teacher training. In fact, the importance of educational practice, hands-on experience or 'fieldwork' is a fairly frequent recommendation in improving initial teacher education to challenge pre-service teachers' beliefs, attitudes, and perceptions (see Forlin et al., 2011; Nijakowska, 2020; Wadlington & Wadlington, 2005). Given the complexity and scope of pre-service language teacher beliefs, extensive research may inform teacher educators in determining programme direction and help reveal how pre-service teachers define the goals of teacher education (Pajares, 1992), and in this particular context, initial foreign language teacher education for inclusion.

Research problem and research questions

The purpose of this study is to determine Bosnian Herzegovinian undergraduate and graduate students' beliefs about dyslexia and their preparedness in teaching students with dyslexia, with implications for initial foreign language teacher education. Bosnia and Herzegovina (BiH) started the process of inclusive education in 2004 (FOD, 2013), but considerable challenges have delayed it since then, such as a decentralised education sector with multiple administrative levels, architectural and attitudinal barriers, insufficiently prepared teachers, lack of inter-sectoral cooperation, and low levels of family-school support (Kafedžić, 2015; Žero, 2022). In 2006, DUGA reported that university courses on teaching students with SpLDs were almost non-existent. More recent reports and studies (Abadžija, 2015; Demirović et al., 2015; Kafedžić et al., 2014) suggest that the situation is not much different today and particularly

in subject-specific courses, including initial English language teacher education in which pedagogical-psychological content is isolated from the general course material, resulting in a lack of cross-curricular harmonisation (Žero, 2022). Two additional questions have been raised in recent years with regard to initial teacher education in BiH. First, teacher qualifications and requirements are not harmonised on the national level and students who complete the bachelor's general programme are eligible to teach in primary schools across different regions (Abadžija, 2015), which is why both undergraduate and graduate students are viewed as pre-service English teachers in this study. Second, there is no diagnostic protocol for SpLDs and data collection is fragmented. Data on the prevalence rates of dyslexia in BiH and the Sarajevo Canton is non-existent or inconclusive at the time of writing this paper. Without early systemic identification of SpLDs, the education system results in a large number of unidentified students with dyslexia, although unofficial projections by experts say that almost every tenth child in BiH shows signs of dyslexia (Duranović, 2016). At the moment, it is not known how that impacts pre-service teacher training and in-service teacher practices. Nevertheless, a law recognising students with developmental dyslexia has been passed in three of BiH's ten cantons but without operational guidelines (Duranović et al., 2018). The Framework Law on Primary Education of the Sarajevo Canton has recently included students with dyslexia in Article 66 in relation to the right to support for students with disabilities (Ministry of Education, 2021); however, it is not clear how support is provided without diagnostic protocols or subject-specific teacher training on teaching students with SpLDs in inclusive settings. Research on pre-service and in-service teacher beliefs about dyslexia in the Sarajevo Canton is non-existent or inconclusive at the time of conducting the current study.

Consequently, the research questions of the study are as follows

1. What are undergraduate and graduate students' beliefs about dyslexia?
2. What factors impact undergraduate and graduate students' beliefs and preparedness in teaching students with dyslexia?
3. What are the implications of the study for initial foreign language teacher education?

With additional hypotheses to guide the quantitative analysis:

1. Both undergraduate and graduate students have a significant number of misconceptions about dyslexia.
2. Undergraduate students in different years of study have significantly different levels of understanding regarding dyslexia.

Method

Since the purpose of this study is to determine undergraduate and graduate students' beliefs about dyslexia, a mixed-methods approach was used in order to gather rounded, reliable data and a fuller understanding of the research problem, as suggested by Cohen et al. (2007). The research follows a convergent parallel design with both data collected at roughly the same time, after which it was integrated into the discussion of the overall results (Creswell & Creswell, 2018). A questionnaire was used to investigate beliefs about dyslexia, while a more fine-grained analysis was achieved through a focus group discussion.

Participants

All 157 students from the Department of English Language and Literature of the University of Sarajevo were invited to participate in the study. Undergraduate students (N=143) are enrolled in Years 1 to 3 of the bachelor's general programme. Graduate students (N=14) are enrolled in Years 4 to 5 of the university programme (i.e., Years 1 to 2 of the master's programme in teaching).

The response rate to the questionnaire was satisfactory at N=126 (80.2% of the total N=157), and the respondents' profiles are assumed to be indicative of the actual population. As expected, there was a substantially higher proportion of female respondents, N=106 (84.1%) than males, N=20 (15.9%), which also reflects the current teaching population. Table 1 gives a more detailed demographic overview of the questionnaire respondents.

The focus group included a sample of 14 students from the larger sample that participated in the quantitative data collection. The distribution between undergraduate and graduate students who participated in the focus group was equal (7 vs 7), and all of them were considering becoming English teachers. Except for one male graduate participant, all participants were female. Most of the participants were aged 20–25 (N =12), while two were aged 18–19.

Table 1
Questionnaire respondents' demographics

	Undergraduate students (N=113)		Graduate students (N=13)		Total (N=126)	
	Frequency	%	Frequency	%	Frequency	%
Gender						
Male	19	17	1	8	20	15.9
Female	94	83	12	92	106	84.1
Age						
18–19	17	15			17	13.5
20–25	92	81	9	69	101	80.2
> 25	4	4	4	31	8	6.3
Year of study						
1	34	30			34	27
2	27	24			27	21.4
3	52	46			52	41.3
4			6	46	6	4.8
5			7	54	7	5.5

Instruments

The students' beliefs about dyslexia were measured by a questionnaire (Appendix 1), which consisted of two parts: 1) personal background, and 2) scale on beliefs about dyslexia. The scale was based on the Dyslexia Belief Index (DBI) by Wadlington and Wadlington (2005) and the dyslexia scale from the DysTEFL2 training materials (Nijakowska et al., 2016) and adapted to the aims and hypotheses of this research. A Likert scale was used for 12 statement items with responses ranging from *true*, *probably true*, *probably false*, and *false*. One question required a yes-no answer, and it was about the students' general belief in their preparedness to teach students with dyslexia. The instrument was piloted on a small sample of students, and their comments were taken into consideration in designing the final questionnaire.

The students' reflections on dyslexia, their preparedness in teaching students with dyslexia, and recommendations on how to improve the initial teacher education programme were collected with a semi-structured focus group (Appendix 2). Focus group questions were designed in line with the research aims and loosely based on the *DysTEFL2* needs open-ended analysis questions (Nijakowska et al., 2016). The focus group is a valuable instrument in gathering data about the more intangible aspects of research on values, assumptions, beliefs, and problems (Cohen et al., 2007), such as the current study.

Procedure and data analysis

The study followed a two-phase procedure. In the first phase, the questionnaire was distributed via a Microsoft Forms link to all undergraduate and graduate students. Participation was on a voluntary basis. The link was shared in January 2021 and remained open for three weeks. The statistical analysis of the questionnaire mostly runs in parallel to the analysis from the paper by Wadlington and Wadlington (2005). The difference is in the types and the number of items (12 vs 30), and in the approach to testing the first hypothesis. Data analysis was performed using the STATISTICA v.12 software. Internal reliability was ensured through Cronbach's alpha and McDonald's omega. In order to ensure validity, an exploratory factor analysis was performed on the 12 questionnaire items. The factor analysis results will be reported as part of the results section.

In the second phase, an invitation to participate in the focus group was sent to all undergraduate and graduate students with the aim of selecting a small sample. After consulting the institution about restrictions due to the Covid-19 pandemic, a joint session for both undergraduate and graduate students was conducted in a space that allowed for all epidemiological measures to be followed. The focus group lasted 70 minutes, in line with the health guidelines limit. The number of students who applied to participate in the focus group was 14, also in line with the health guidelines limit of 15 participants. Participation was entirely voluntary and based on the students' availability. The qualitative data analysis process was based on the work of Creswell and Creswell (2018). The discussion was audio-recorded and transcribed verbatim. The coding process followed a deductive coding strategy at first. An inductive coding procedure then led to a more exploratory approach when new topics emerged, which were coded under the heading of emerging themes and dimensions. The ATLAS.ti qualitative software was used to sort and organise codes, themes, and dimensions. After the quantitative and qualitative data analyses were completed, a side-by-side comparison was used for the mixed methods data analysis with the results merged in the discussion section.

Ethical considerations

All study participants were asked to participate on a voluntary basis and to give informed consent. Questionnaire respondents were asked to submit their consent with the questionnaire (see Appendix 1), while focus group participants were asked to sign consent forms before the beginning of the session (see Appendix 3). All participants were assured that their responses would remain anonymous and confidential. Focus group participants were additionally

informed of the rules of discussion. Summary notes of the transcribed data were shared with each participant. No participant asked for any transcribed text to be removed from the official data findings. In addition, data collection was conducted in accordance with set epidemiological measures due to the Covid-19 pandemic.

Results and findings

In the following section, the quantitative and then the qualitative analysis results will be presented, as per the study procedure.

Quantitative analysis results

The descriptive analysis will be followed by factor analysis results; means, standard deviations and t-test results of items; and in the end, the ANOVA results.

First, the participants were asked to rate their current level of knowledge of dyslexia on a scale of 1 ('Not knowledgeable at all') to 4 ('Very knowledgeable'). The mean result was 2.28 ($SD=0.61$). Only eight participants (6.4%) reported not being knowledgeable at all, most participants reported being slightly ($N=78$, 61.9%) or moderately knowledgeable ($N=37$, 29.4%), while only three (2.4%) reported being very knowledgeable. Then, the participants were asked to share if they felt prepared to teach students with dyslexia. A 2×2 chi-square test with Yates correction was performed, and no significant difference was found between undergraduate and graduate students ($\chi^2=0.01$, $df=2$, $p=0.98$), with 121 (96.3%) of the total 126 respondents feeling insufficiently prepared to teach students with dyslexia.

After that, the mean, median, and standard deviations were calculated for each of the twelve items in the questionnaire. Furthermore, the relative frequencies of each answer were reported (See Table 2). Consistent with the aims and hypotheses of the study, the items were treated as a measurement of personal beliefs about dyslexia. This means that false statements were not reverse-coded except when testing hypotheses.

Table 2

Parameters and the relative frequency of responses to the questionnaire measuring personal beliefs about dyslexia

Items	Level of agreement (1-4)			Relative frequency of responses			
	<i>M</i>	<i>C</i>	<i>SD</i>	False (1)	Probably false (2)	Probably true (3)	True (4)
1 Children can outgrow dyslexia.	2.06	2	0.80	25.4%*	46.0% ^a	25.4%	3.2%
2 Dyslexia is caused by visual perception problems.	2.48	3	0.88	16.7%*	27.8%	46.0% ^a	9.5%
3 Dyslexia can be caused by a literacy-poor home environment (for example, parents not reading to their children).	2.17	2	0.86	25.4%*	36.5% ^a	34.1%	4.0%
4 Children with dyslexia need more systematic and explicit reading instruction than their peers with typical development.	3.36	3	0.57	4.8%	54.7% ^a	40.4%	4.8%*
5 People with dyslexia have difficulty with decoding/word recognition.	3.45	4	0.70	2.4%	4.8%	38.1%	54.8% ^a
6 Dyslexia is a learning disability that affects language processing.	3.10	3	0.88	5.6%	17.5%	38.1%	38.9% ^a
7 Children with dyslexia also have problems with spelling.	3.26	3	0.79	3.2%	11.9%	40.4%	44.4% ^a
8 Dyslexia can be inherited.	2.41	2	0.82	12.7%	42.1% ^a	36.5%	8.7%*
9 Children who have dyslexia tend to have lower IQ scores than children who do not have dyslexia.	1.58	1	0.70	52.4% ^a	38.9%	7.1%	1.6%
10 Certain medications have been found to be effective in treating dyslexia.	2.44	2	0.68	7.9%*	42.9%	46.8% ^a	2.4%
11 Dyslexia is more frequent among boys than girls.	2.21	2	0.79	15.9%*	53.2% ^a	24.6%	6.3%
12 Seeing letters and words backwards is a characteristic of dyslexia.	2.89	3	0.84	4.8%*	27.0%	42.9% ^a	25.4%

Note. Mean = *M*, median = *C*, standard deviation = *SD*, * – correct answer, ^a – the most frequent answer, grey shade – items 1 and 10 were excluded from the questionnaire after factor analysis.

After that, an exploratory factor analysis was performed on the twelve questionnaire items using an oblique (oblimin) rotation, and the estimation method of principal axis factoring (as is the case in Wadlington & Wadlington, 2005). A one-factor solution was found for the twelve items. However, due to low loading levels (<0.1) of Items 1 and 10, the decision was made to exclude them and to perform another exploratory factor analysis on the remaining ten items. Two had very high loadings: Items 7 (0.717) and 6 (0.621), indicating they are the most representative of the extracted factor (beliefs about dyslexia). The score of each participant was represented as the mean of the 10 items. The

10-item scale has an internal reliability of 0.6 (Cronbach's alpha) and 0.62 (McDonald's omega), indicating a low-to-moderate reliability.

For the purpose of the hypotheses testing, items with false statements were reverse-coded. Thus, the questionnaire was treated as a de-facto test for the purpose of this study, in particular, because of the empirical evidence for the truth claims of the statements.

In order to test the first hypothesis (*Both undergraduate and graduate students have a significant number of misconceptions about dyslexia*), 11 single-sample t-tests needed to be performed. As in the Wadlington and Wadlington (2005) study, 90% as a cut-off for expert knowledge was used (a mean score of 3.6/4). One departure from the Wadlington and Wadlington (2005) study is that in the present study every single item was tested independently, as well as the mean score. In all cases, a significant departure from the 90% score was found. In some cases (Items 8 and 12), the mean score was under 2.5. These results emphatically affirm the first hypothesis (i.e., that both undergraduate and graduate students have a significant number of misconceptions about dyslexia). Table 3 presents the results of 11 t-tests.

Table 3

Means, standard deviations and t-test results of items (and the average score) of the personal beliefs about dyslexia scale

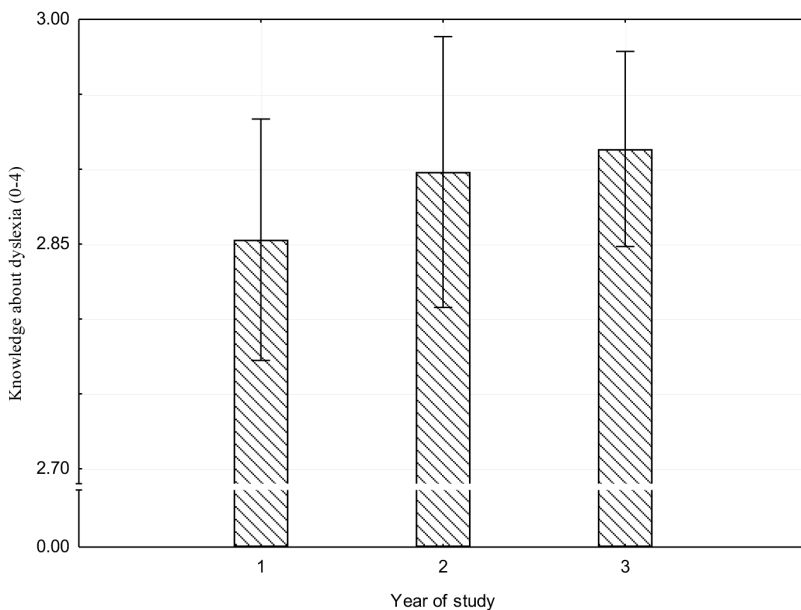
Items	<i>M</i>	<i>SD</i>	<i>t</i>	<i>df</i>	<i>p</i>
2 Dyslexia is caused by visual perception problems.	2.52	0.88	13.78**	125	0.00
3 Dyslexia can be caused by a literacy-poor home environment (for example, parents not reading to their children).	2.83	0.86	10.06**	125	0.00
4 Children with dyslexia need more systematic and explicit reading instruction than their peers with typical development.	3.36	0.57	4.76**	125	0.00
5 People with dyslexia have difficulty with decoding/ word recognition.	3.45	0.70	2.37*	125	0.02
6 Dyslexia is a learning disability that affects language processing.	3.10	0.88	6.31**	125	0.00
7 Children with dyslexia also have problems with spelling.	3.26	0.79	4.79**	125	0.00
8 Dyslexia can be inherited.	2.41	0.82	16.21**	125	0.00
9 Children who have dyslexia tend to have lower IQ scores than children who do not have dyslexia.	3.42	0.70	2.89**	125	0.00
11 Dyslexia is more frequent among boys than girls.	2.79	0.79	11.63**	125	0.00
12 Seeing letters and words backwards is a major characteristic of dyslexia.	2.11	0.84	19.87**	125	0.00
TOTAL SCORE	2.90	0.25	32.14**	125	0.00

Note. * - $p < 0.05$, ** - $p < 0.01$

In order to test the second hypothesis (*Undergraduate students at different years of study have significantly different levels of understanding dyslexia*), an ANOVA was performed between the average scores of the three years of study. No significant group main effect was found between the three years of undergraduate students in their level of misconceptions about dyslexia ($F=0.68$, $df=2/110$, $p=0.51$), indicating that they have similar levels of knowledge about the topic of dyslexia. However, the levels do seem to increase somewhat between the years of study, although the differences are statistically insignificant (see Figure 1). This indicates a possibility that there is, in fact, a real-life difference in their beliefs about dyslexia, which corroborates the need for a further in-depth investigation through the focus group.

Figure 1

Results of ANOVA on beliefs about dyslexia among undergraduate students



Qualitative analysis findings

Qualitative data analysis followed a deductive coding procedure at first, based on the research questions and directed by two initially extracted themes from the DysTEFL framework (Nijakowska et al., 2016): 1) Understanding dyslexia and 2) Understanding the effect of dyslexia on foreign language learning.

After numerous uncategorised codes emerged, a more exploratory approach was used with an inductive coding procedure. The findings show a very interesting correlation with the literature review. Specifically, the focus group participants exhibited strong inclinations in discussing their beliefs as represented by either one of the two most prominent perspectives on dyslexia. As a result, a thematic framework (Creswell & Creswell, 2018) was designed with two broad dimensions: 1) *Dyslexia through the deficit model* and 2) *Dyslexia through the social model*, both of which were reflected in three themes: 1) *Teacher beliefs and attitudes*, 2) *Teaching practices*, and 3) *Teacher preparation*. For an easier presentation of the findings, undergraduate students are coded under US (1–7) and graduate students under GS (1–7).

The discussion confirmed that most participants were exposed to the deficit perspective in beliefs and attitudes toward dyslexia and students with dyslexia, which then shaped their own *beliefs and attitudes*. Most of the participants' understanding of dyslexia and its effect on language learning is viewed through the prism of 'problems' or 'issues' within the individual that they have to overcome with the help from others (US 6: 'we were just told to help them when they're having difficulties, which put pressure on us too'). Students with dyslexia or other SpLDs were either neglected and referred to as 'those students' by teachers or teased and avoided by their peers. In addition, participants agreed that SpLDs are not a priority in ensuring quality education for all in BiH. The most frequent response was that 'specific learning difficulties... are not a prominent topic in conversations at college or in everyday life'. Findings show that undergraduate and graduate students are impacted by the general negligence of students with SpLDs, leading to a lack of interest in exploring their own knowledge, beliefs, and attitudes.

Nevertheless, a number of participants exhibited a social perspective in their reflections; in fact, findings confirm that a higher number of graduate students recollect experiences and subsequent beliefs and attitudes through the social model. They demonstrated an understanding of the importance of inclusive language, continuous professional development, and individual responsibility in ensuring inclusion. GS 3 shared that they would 'definitely choose an elective in inclusive education... in primary school I've noticed that teachers handled inclusion very poorly with terrible attitudes. It didn't seem like they put effort in their own learning to support all students.'

Since the group consisted of students who planned on becoming English teachers, they seemed much more engaged whenever they would highlight an aspect of *teaching practices*. Particular focus was on socio-affective factors, in particular when discussing how dyslexia impacts foreign language learning

and subsequent teaching strategies. Responses were almost equally reflective of both the deficit and the social model, with two distinctive views (i.e., sub-themes) on teaching practices. The first view was in relation to the participants' observations of their former teachers' practices in class which impacted the classroom atmosphere (US 4: 'there was no talk about dyslexia... teachers didn't really know what strategies to use'); the students' sense of belonging (GS 2: 'students with dyslexia... developed anxiety in speaking in front of others or reading out loud... The students then became shy and introverted or even isolated from other students'); and frustration with self in students (GS 7: '[students with dyslexia] felt discouraged from learning further because they'd be stuck on one thing while their peers move on in the class. Teachers would usually lack the patience when that happens'). The second view on teaching practices was related to the participants' personal concerns about what practices they would employ as teachers in similar situations. Although all participants have shown an important sense of self-reflection and consideration, they still mostly contemplated how practices can be adapted to particular students with dyslexia or other SpLDs. When GS 1 shared, 'my fear is that I will not know how to divide attention [and] time between the student with dyslexia... and other students', most participants nodded in agreement. In addition, two graduate students raised the question of assistants in inclusive classrooms, where the deficit perspective was further emphasised by implying that an assistant's role consists of two purposes: to 'help' the student with a disability with the tasks or to support the teacher in managing tasks. The participants did not explore the view on the assistant's role in supporting the whole class and acting as a partner to the teacher. However, a considerable number of participants took into account the asset of diversity or the benefit of an approach inclusive of all students in language learning and teaching. Most of the participants pointed out that language learning is inherently inclusive, highlighting values, the need for self-confidence in reading, different attention span levels, and adaptations in the speed of teacher talk.

The third theme that emerged from the qualitative analysis is *teacher preparation*. Both undergraduate and graduate students felt deeply about their initial teacher education and its impact on their beliefs about dyslexia. The general consensus among participants was that vast inconsistencies exist in the realisation of teacher preparation, with the bachelor's and master's programmes acting as separate units. Two sub-themes were extracted from the findings reflective of 1) the participants' belief about their preparedness to teach students with dyslexia and 2) the participants' recommendations on how to improve foreign language teacher preparation in meeting the needs of all students.

Participants have shown a consistent response in feeling insufficiently prepared to teach students with dyslexia, with all undergraduate students mentioning the lack of courses, modules, or topics that address inclusion and teaching students with SpLDs. Graduate students, in contrast, exhibited a lack of confidence in their efficacy as teachers. However, a couple of undergraduate students shared that they did feel somewhat prepared to teach students with dyslexia because they learnt how to experiment with various methods and because the study programme focuses extensively on how to treat students with respect in an understanding way, which they feel is important in inclusive education.

Considering recommendations on how to improve initial language teacher education to meet the needs of all children, undergraduate and graduate students' perspectives overlapped in the need for both theoretical knowledge and practical experience. However, undergraduate students put greater emphasis on theoretical knowledge (US 5: 'I find it not enough to only practice because there has to be some theoretical knowledge about the topic'), with almost all undergraduate students agreeing with the following statement:

It is probably a necessity to have... subjects throughout our Bachelor studies that introduce us to the most important theories [in inclusive education]. Even if we cannot work in high schools with a bachelor degree, we can work in primary schools in different parts of Bosnia. I think that this component of teaching English is neglected in our Bachelor studies. (US 1)

Graduate students pointed out that practical experience in teaching students with dyslexia and other SpLDs was crucial in initial teacher education for inclusion. They highlighted humanistic and constructivist perspectives in pre-service teacher training (GS 5: 'teachers are human beings. We are not just robots that receive information and then reproduce it... We need to see how it works') and differentiated approaches to instruction (GS 3: 'not every approach works with every student. And in that case, theory will come with practice'). Nevertheless, more than half of the participants view teacher preparation as a prescriptive mechanism in equipping teachers with the most effective strategies and techniques to be used with students with dyslexia and other SpLDs, or the 'correct approach/ manner/ method'. While the participants do seem to be moving towards social-constructivist perspectives, a considerable number still expect that teacher preparation addresses education for all as education for particular students. In that sense, initial teacher education is once again viewed through a deficit model.

In the end, an important sub-theme made its way into the students' discussion quite naturally: individual and collaborative reflection. Both undergraduate and graduate students never mentioned the word 'reflection', but their comments indicate that personal inquiry and collaboration with in-service (practising) teachers and professionals with the purpose of exchanging experiences and discussing challenges is an essential component of both initial and continuing language teacher education for inclusion (GS 4: 'we need the support of other teachers who have already experienced what's it like to teach in inclusive classrooms and know some of the challenges that we could encounter'; US 3: 'It's so important to think about these things together, to talk about them, and to share with each other').

Discussion

In addressing RQ1: *What are undergraduate and graduate students' beliefs about dyslexia?*, quantitative data confirmed that most students have a significant number of misconceptions. The most frequent misconceptions are 1) Dyslexia is caused by visual perception problems (55.5%), 2) Children with dyslexia do not need more systematic and explicit reading instruction than their peers with typical development (59.5%) (reverse scored), and 3) Seeing letters and words backwards is a major characteristic of dyslexia (68.3%). In contrast, the most frequently believed correct items were 1) People with dyslexia have difficulty with decoding/word recognition (92.9%), 2) Children with dyslexia also have problems with spelling (84.8%), and 3) Children with dyslexia do not have lower IQ scores (91.3%) (reverse scored). Although almost 90% of the students responded that they are slightly or moderately knowledgeable about dyslexia, qualitative data confirms that participants understand dyslexia as simply a word-based difficulty. Based on this understanding, a considerable number of participants confirmed that they considered questionnaire items as true solely on the basis of their relation to words and reading such as 'word recognition' or 'spelling'. A further indication is that most students do not believe that systematic reading instruction is recommended in teaching students with dyslexia, which additionally confirms that the majority of participants did not take into consideration language learning processes in students with dyslexia.

RQ2: *What factors impact undergraduate and graduate students' beliefs and preparedness in teaching students with dyslexia?* resulted in multi-layered findings. Both undergraduate and graduate students believe that they need more training in teaching students with dyslexia and other SpLDs. Qualitative data corroborated quantitative findings and correlated much of what students

believe about dyslexia and teaching students with dyslexia to the lack of systemic teacher education, among others. However, both quantitative results and qualitative findings do imply that, first, the levels of understanding dyslexia somewhat increase with each higher level of study (see Figure 1) and, second, that graduate students and undergraduate students in the last year of study are more familiar with the potential effect of dyslexia on foreign language learning. That does not necessarily mean that students at higher levels of the study programme are more knowledgeable about dyslexia, but it does suggest that their understanding and beliefs change the more insight they gain into the language learning and teaching processes through general pedagogical-psychological and didactic-methodological (PPDM) courses. Eventually, the participants' reflections about dyslexia were clustered around three main themes: (1) *teacher beliefs and attitudes*, (2) *teaching practices*, and (3) *teacher preparation*. The themes also demonstrate the main areas of undergraduate and graduate students' concerns and factors that impact their overall sense of preparedness in teaching students with dyslexia and other SpLDs. Nevertheless, two extracted dimensions suggest that in the context of BiH, pre-service teachers view each theme through either the social and/or the deficit model. While the deficit perspective was predominant in the students' reflections on teacher beliefs and preparation, both the social and deficit perspectives were prevalent in the students' discussions on practices in teaching students with dyslexia.

In addressing *RQ3: What are the implications of the study for initial foreign language teacher education?*, this section will explore several aspects that were highlighted by the participants or inferred from the data collection, while general implications will be summarised in the conclusion. Both undergraduate and graduate students emphasise practical in-service experience as a fundamental factor in understanding students with dyslexia. Jordan et al. (2009) affirm that it is challenging to transform teachers' beliefs since the development of pedagogical skills in the interactive aspects of teaching depends on field experiences. The findings also confirm Nijakowska's (2020) conclusion on teacher beliefs about self-efficacy and the inclusion of students with dyslexia; however, in the current study graduate students are more concerned about their efficacy and skills while undergraduate students predominantly reflect on the general perceptions and attitudes towards students with dyslexia. This is an interesting result to consider for further investigation. In addition, the findings imply that practical experience is more relevant to graduate students, while learning about theory and principles was predominantly suggested by undergraduate students. Finally, both undergraduate and graduate students show an emergent understanding of reflective practice that extends to multiple settings and subsequent

perspectives, from pre-service teacher preparation to teacher collaboration and school support. Reflection offers a chance to challenge pre-service teachers' beliefs, and teacher educators are urged to ensure the time and space to reflect on assumptions that inform those beliefs.

Limitations of the research study

The current study is not without limitations. It was conducted on an unequal sample of undergraduate (N=113) and graduate students (N=13) at one university programme in the capital city of Bosnia and Hercegovina. Conducting broader research with fairly equal samples of participants is recommended, with students from other universities, or a cross-country investigation, which is probably the next step in exploring the current research. Since only one focus group with both undergraduate and graduate students was conducted due to the participants' availability and epidemiological concerns, it is beyond the aims of this study to anticipate the level of impact that both groups may have had on each other's perceptions and consequently their responses in the discussion. Another limitation includes the focus on one factor in the quantitative data collection (beliefs about dyslexia). Pre-service teacher beliefs were at the core of the current study, but the need remains for future research to investigate how beliefs are enacted in the classroom and how they may impact teaching goals and learning outcomes. In addition, future studies may consider the exploratory sequential research design.

Conclusion

As future decision-makers who draw on personalised and context-sensitive networks of knowledge, thoughts, and beliefs (Borg, 2009), pre-service teachers are at a constant crossroads between what is already expected and what is emergent and changing; consequently, their belief system becomes part of a wider educational ecosystem (more on educational ecosystems in Andriushchenko et al., 2020). As discussed, exploring pre-service teachers' beliefs about SpLDs offers multiple benefits, which is why the current study suggests it be integrated into initial language teacher education for inclusion. The short questionnaire on dyslexia (Appendix 1) is practical for classroom use. However, teacher educators are cautioned to combine the questionnaire as a lead-in with follow-up reflections on teacher beliefs and attitudes, teaching practices, and teacher preparation, meaning the more tacit aspects of our understanding. In synthesising the wider implications of beliefs for initial language teacher education, the study proposes three interrelated principles. First, a *values-based approach* (Forlin, 2010)

in programme planning since it encompasses pre-service teachers' underlying beliefs and attitudes that inform their actions. A values-based approach goes hand in hand with the UN-advanced human rights-based approach but allows for broader investigations in context-embedded situations. In addition, reflective practice as an emergent theme throughout the study suggests that pre-service teachers feel naturally inclined to perceive *teaching as inquiry*, individual and collaborative inquiry within and across learning and teaching contexts. In order for pre-service teachers to develop their own commitment to inclusion, it is implied that teacher educators must strive to provide opportunities for inquiry-based learning that leads to informed changes in classroom choices. Finally, the study recommends a *transformative framework* in policy planning with a values-based approach and teaching as inquiry as supporting foundation blocks, considering that pre-service teachers still mainly understand inclusive education through the deficit model. Indeed, teacher preparation for inclusion has to become an integral part of initial foreign language teacher education programmes. With the focus on the development of a core identity as an inclusive practitioner (Hollenweger et al., 2015), inclusive education must not be considered a marginal issue on how to integrate some students, such as students with dyslexia, but how to transform education systems and learning environments in order to respond to all diversities, and certainly initial teacher education itself.

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Appendix 1

Questionnaire on Dyslexia for Undergraduate and Graduate Students

You are invited to participate in the Questionnaire on Dyslexia designed by [REDACTED] as part of the study "Undergraduate and Graduate Students' Beliefs about Dyslexia: Implications for Initial Foreign Language Teacher Education". The questionnaire is anonymous and participation is entirely voluntary. You will be asked about factors related to your beliefs and perceptions about dyslexia. It will take you approximately 5 minutes to complete. You can stop completing the questionnaire at any time or choose not to answer any of the questions. We believe that there are no known risks associated with this research and your answers will remain entirely confidential and anonymous. No personally identifiable information will be collected and responses cannot be traced back to the respondent. The obtained data and reporting of results will only be used for research purposes. If you have any questions, please contact the researcher at [REDACTED]

By submitting this questionnaire, you agree to the above and give your consent that the obtained information may be used in the research study.

Personal background

- (1) Please indicate your gender:
☐ Male ☐ Female ☐ Other
- (2) Please indicate your age:
☐ 18-19 ☐ 20-25 ☐ Above 25
- (3) Please indicate your current year of study:
☐ 1 (B.A.) ☐ 2 (B.A.) ☐ 3 (B.A.) ☐ 4 (M.A.) ☐ 5 (M.A.)
- (4) How would you characterize your knowledge of dyslexia?
☐ Very knowledgeable
☐ Moderately knowledgeable
☐ Slightly knowledgeable
☐ Not knowledgeable at all
- (5) Do you feel that your training has prepared you to teach students with dyslexia?
☐ Yes ☐ No

Scale on dyslexia

Please indicate whether you think the following statements are true or false.

Item	False	Probably false	Probably true	True
1. Children can outgrow dyslexia.				
2. Dyslexia is caused by visual perception problems.				
3. Dyslexia can be caused by a literacy-poor home environment (for example, parents not reading to their children).				
4. Children with dyslexia need more systematic and explicit reading instruction than their peers with typical development.				
5. People with dyslexia have difficulty with decoding/word recognition.				
6. Dyslexia is a learning disability that affects language processing.				
7. Children with dyslexia also have problems with spelling.				
8. Dyslexia can be inherited.				
9. Children who have dyslexia tend to have lower IQ scores than children who do not have dyslexia.				
10. Certain medications have been found to be effective in treating dyslexia.				
11. Dyslexia is more frequent among boys than girls.				
12. Seeing letters and words backwards is a characteristic of dyslexia.				

Appendix 2

Focus group protocol

Introduction: You are about to participate in a focus group as part of the study "Undergraduate and Graduate Students' Beliefs about Dyslexia: Implications for Initial Foreign Language Teacher Education". I am [REDACTED]

[REDACTED] and I will be facilitating our discussion today. The purpose of this study is to explore your beliefs about dyslexia and your experiences with students with dyslexia. We will also talk about your level of training and preparedness in teaching students with dyslexia. I am particularly interested in your recommendations for initial teacher education in teaching students with dyslexia and specific learning difficulties. We want to secure a safe space so I kindly ask you to actively listen to other participants, to respect their opinions and to speak one at a time. Please stay focused on the topic. If you do not understand a question, feel free to ask for clarification. We also want to assure you that your answers will remain entirely confidential and anonymous. No personally identifiable information will be collected unless you offer it voluntarily. You may also decline to answer questions you are not comfortable with and you may withdraw from the focus group at any time. If there are no further questions, we will begin with introductions.

Background questions:

- Age
- Study program / Year of study

Warm-up:

- 1) How prepared would you say are you in teaching students with dyslexia?
- 2) How many other specific learning difficulties can you name? What impacts your level of familiarity with specific learning difficulties?

Specific questions:

- 3) How do you think does dyslexia impact a student's language learning process? (Think back to experiences with students with dyslexia)
- 4) In what ways do you think would the language learning process of a student with dyslexia impact your teaching practice?
- 5) What type of content would you like a course on dyslexia (and other specific learning difficulties) to offer? (e.g. theoretical background, practical advice...)
- 6) How could a course on dyslexia and teaching students with dyslexia impact your teaching skills in general?
- 7) What are your recommendations on how initial teacher education can improve for future English language teachers to meet the needs of students with dyslexia?
- 8) What are your recommendations on how initial teacher education can improve for future English language teachers to meet the needs of all students?

Wrap-up:

- 9) Take a minute to reflect on what we discussed today about dyslexia and teaching students with dyslexia. Of all the things shared and mentioned, what made you think / was the most important to you / stood out to you?
- 10) Once again take a minute to reflect on what we discussed today. Have we missed anything?

Thank you very much for your participation. We will now stop recording.

Appendix 3

Focus group consent form

Please, read this document and ask questions you have before beginning the focus group.

Purpose: You are invited to participate in a focus group as part of the study “Undergraduate and Graduate Students’ Beliefs about Dyslexia: Implications for Initial Foreign Language Teacher Education”. The study is conducted by [REDACTED]

[REDACTED] Prior to the focus group, you were asked to complete a questionnaire on dyslexia. The purpose of the study is to explore undergraduate and graduate students’ beliefs about dyslexia and implications for initial teacher education.

Procedure: The focus group will last approximately 60-90 minutes. With your permission, the conversation will be audio recorded. During the focus group, you will be asked about your knowledge of dyslexia and specific learning difficulties, your previous experiences with students with dyslexia, your level of training and preparedness in teaching students with dyslexia, and your perceptions on and recommendations for initial teacher education in teaching students with dyslexia and specific learning difficulties. You are kindly asked to follow the rules of focus group discussions:

- Actively listen to other participants
- Speak one at a time
- Treat other participants and their opinions with respect
- Minimize side conversations
- Keep focused on the topic and/or question
- If you do not understand a question, please feel free to ask for clarification

Risks: We believe that there are no known risks associated with this research and your answers will remain entirely confidential and anonymous. Your responses will be strictly coded and no personally identifiable information will be collected. The obtained data and reporting of results will only be used for research purposes.

Withdrawal: You may withdraw from the focus group at any time or choose not to answer questions you are not comfortable with.

I have read the information provided on this form and I consent to participate in the focus group. I give my consent that my responses may be used in the research study.

Name in print

Signature
