



## SPELLING TEST FOR LEARNERS WITH DYSLEXIA LEARNING GERMAN AS A SECOND FOREIGN LANGUAGE

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### Abstract:

Spelling is a basic skill as well as means of acquiring knowledge over the school years. Moreover, it is a complex cognitive process, which can be challenging for learners with specific learning difficulties (dyslexia) in their mother language as well as when learning a foreign language. A challenge, that foreign language teachers face in everyday practice, is being able to respond to the needs of all learners within the mainstream classroom in primary education, including learners with dyslexia. Foreign language teachers need to become equipped with further knowledge and skills, so that they are able to identify these difficulties and teach learners with dyslexia more effectively in an inclusive way (Tsakalidou, Koufokotsiou, & Gaganis, in press; Tsakalidou, 2021, 2020, in press). In the present study we examined the spelling difficulties of learners with dyslexia, when learning German as a second foreign language. The aim of the study was twofold: (a) the comparative analysis of the spelling difficulties across two populations (95 learners between 10 and 11 years, twenty of who had dyslexia) and (b) the evaluation of the effectiveness of spelling intervention in respect to learners with dyslexia. In this article we will describe the Spelling Test constructed and adjusted for the doctoral research, which was undertaken in order to record the spelling difficulties that the learners with dyslexia face, when learning German as a second foreign language in primary education. This test was based on a standardized Spelling Test in the Greek language (Mouzaki, Protopapas, Sideridis, & Simos, 2010). As far as the Spelling Test, we constructed is concerned, satisfactory construct validity and internal reliability were demonstrated, as the Cronbach's alpha coefficient was .944 and revealed a high degree of internal consistency of the instrument.

**Keywords:** orthographic skill, specific learning difficulties, dyslexia, German as a foreign language, primary education

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## 1. Introduction

Spelling is a basic skill as well as means of acquiring knowledge over the school years. Furthermore, it is a complex cognitive process, which can be challenging for learners with specific learning difficulties (dyslexia). The foreign language teachers face the everyday challenge of teaching learners with dyslexia within the mainstream classroom in primary education (Tsakalidou, Koufokotsiou, & Gaganis, in press; Tsakalidou, 2021, 2020, in press). It would be of great importance, if teachers had a tool in their hands, in order to be able to identify and record the spelling performance of learners and adjust their teaching to the needs of all learners (Bahr, Silliman, & Berninger, 2009).

## 2. Literature Review

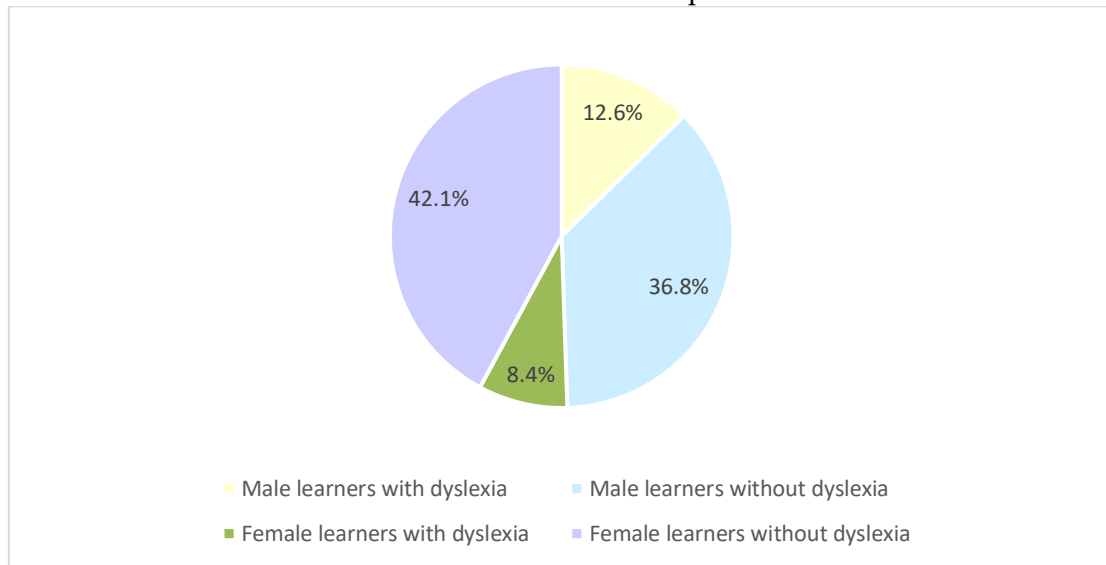
After a detailed literature review, we reached the conclusion, that there are very few publications about dyslexia and foreign language acquisition and teaching in the Greek bibliography (Andreou & Baseki, 2012; Reraki, 2020; Sougari & Mavroudi, 2019; Talli, 2010; Tsakalidou, Koufokotsiou, & Gaganis, in press; Tsakalidou, 2021, in press) and this doctoral thesis (Tsakalidou, 2020) is the first effort to approach this subject in detail, as far as the German language is concerned. Also, the spelling tests constructed for native speakers learning the German language were not considered appropriate in this case, as the age and reference level were not the same for learners of German as a second foreign language (Landerl, Wimmer, & Moser, 1997; Stock & Schneider, 2008).

## 3. Material and Methods

The present research is part of the author's doctoral thesis (Tsakalidou, 2020). In the present study we examined the spelling difficulties of learners with dyslexia, when learning German as a second foreign language. The aim of the study was twofold: (a) the comparative analysis of the spelling difficulties across two populations (95 learners between 10 and 11 years, twenty of who had dyslexia) and (b) the evaluation of spelling intervention effectiveness in respect to learners with dyslexia. The sample consisted of 12 male and 8 female learners with dyslexia, as well as 35 male and 40 female learners without dyslexia (Chart 1).

A basic tool of the research process was the Spelling Test. Our study was conducted in three phases. During Phase 1 we attempted to compare the common spelling errors and characteristics across the two populations (learners with and without dyslexia). During Phase 2 we attempted to plan, organize and assess the intervention in the GFL lesson. Finally, during Phase 3 we recorded the spelling performance pre and post intervention across the two populations. The Spelling Test was used in Phases 1 and 3 (pre- and post-performance) and during Phase 2 various interventions were implemented in order to develop the orthographic skill of learners with and without dyslexia.

**Chart 1: Research sample**



The Spelling Test was a basic tool used to record specific difficulties of learners in respect to orthographic skill in their mother language (Greek) and in the second foreign language (German), in order to plan and organize the intervention and differentiate instruction during Phase 2 of our research. It was administered to all learners with and without dyslexia.

As far as the Spelling Test is concerned, satisfactory construct validity and internal reliability were demonstrated, as the Cronbach's alpha coefficient was very high and revealed a high degree of internal consistency of the instrument, namely .944.

The process followed, in order to create the Spelling Test, is described in detail. We analysed the three books, which had been approved for teaching German as a second foreign language in primary schools (during the years 2015-2017) (Bovermann, Georgiakaki & Zschärlich, 2013; Jenkins-Krumm & Clement, 2014; Kounalaki, Delikeisoglou, Brodowski-Frogaki, Koutentaki, & Papandreou, 2011) and constructed the Spelling Test based on a standardized Spelling Test in the Greek language (mother language of the learners) (Mouzaki, Protopapas, Sideridis, & Simos, 2010).

All the words from the first two chapters of each book were recorded according to two criteria, namely the number of syllables (monosyllabic, disyllabic, trisyllabic and polysyllabic words) (Tables 1-10) and the graphemes contained in the words (ei, eu, ie, au, ä, ö, ü, sch, sp, st, ch, -er, -th-, -g, -d, chs, ng) (Tables 11-13).

**Table 1:** List of monosyllabic words in Paul, Lisa & Co. 1

acht, 7 <sup>ii</sup>	die, 18	hier, 18	noch, 34	vier, 7
auch, 12	doch, 18	ich, 11	schau, 18	von, 21
aus, 23	drei, 7	ihr, 28	schon, 21	wann, 32
Ball, 19	du, 11	ist, 10	Schuh, 6	was, 13
Bild, 11	echt, 18	ja, 6	sechs, 7	wer, 11
bin, 10	ein, 14	Jahr, 22	seid, 10	wie, 11
bist, 10	eins, 7	kommt, 18	sie, 24	wir, 27
blöd, 18	elf, 21	Lust, 28	spät, 34	wo, 34
Buch, 18	er, 23	machst, 14	Spiel, 18	zehn, 7
Bus, 6	erst, 21	macht, 14	spielst, 11	Zeit, 28
dann, 34	Film, 18	mal, 18	stopp, 34	zwei, 7
das, 18	Frau, 10	nein, 6	süß, 23	zwölf, 21
denn, 11	fünf, 7	neu, 11	toll, 12	<b>Sum: 72 words</b>
der, 18	hat, 20	neun, 7	Uhr, 33	
Deutsch, 5	heißt, 11	nicht, 31	um, 32	

**Table 2:** List of disyllabic words in Paul, Lisa & Co. 1

achtzehn, 21	gute, 11	Klavier, 29	neunzehn, 21	skaten, 29
Auto, 6	guten, 11	lesen, 31	Note, 6	Socke, 6
bitte, 12	habe, 28	lustig, 18	Physik, 6	spiele, 11
Brille, 18	hallo, 11	mache, 14	raten, 32	suche, 12
Bruder, 21	heiße, 11	möchte, 30	reiten, 31	super, 6
dreizehn, 21	heute, 28	möchten, 30	sammelst, 18	tanzen, 31
einen, 14	Hobby, 12	möchtest, 30	sammelt, 18	Tennis, 11
fertig, 34	Karte, 5	Morgen, 11	schwimmen, 31	vierzehn, 21
Foto, 14	keine, 28	Musik, 6	sechzehn, 21	woher, 23
fünfzehn, 21	Kino, 18	Müsli, 6	sieben, 7	zwanzig, 21
Fußball, 6	Klasse, 10	Name, 6	siebzehn, 21	<b>Sum: 54 words</b>

**Table 3:** List of trisyllabic and polysyllabic words in Paul, Lisa & Co. 1

Trisyllabic words		Polysyllabic words
Adresse, 6	Nachmittag, 28	Hausaufgaben, 14
Alphabet, 7	Playstation, 18	interessant, 18
Basketball, 11	reinkommen, 18	Marmelade, 6
Computer, 19	Stadion, 6	Mathematik, 6
faulenzten, 31	Volleyball, 9	Modellauto, 18
fernsehen, 29	<b>Sum: 11 words</b>	Schokolade, 6
		<b>Sum: 6 words</b>

<sup>ii</sup> The number next to the word is the page number, on which we first see the specific word in the coursebook.

**Table 4:** List of monosyllabic words in Luftballons

ABC, 14	die, 9	ich, 8	Nacht, 10	was, 18
am, 11	du, 8	ihr, 21	nein, 12	wer, 8
auch, 21	Eis, 12	in, 21	nennt, 23	wie, 8
auf, 10	Fan, 21	ist, 20	nicht, 12	wir, 21
Ball, 16	Frau, 9	ja, 13	nur, 11	Wurm, 17
bei, 11	fünf, 18	Kind, 16	Schatz, 23	Zoo, 13
bin, 8	gern, 21	magst, 21	so, 11	Zug, 17
bist, 8	groß, 13	man, 10	Tag, 10	zwei, 10
Clown, 13	grün, 18	März, 18	Tschüss, 9	zwölf, 18
das, 8	Gruß, 10	Maus, 16	Uhr, 17	<b>Sum: 61 words</b>
dein, 20	grüßt, 11	mein, 20	und, 8	
der, 8	Heft, 16	mich, 23	uns, 11	
Deutsch, 10	heißt, 8	Milch, 12	von, 21	

**Table 5:** List of disyllabic words in Luftballons

Abend, 10	Globus, 16	Klasse, 9	müde, 11	Seite, 10
alle, 13	gute, 10	können, 19	München, 18	sicher, 21
Bärchen, 23	guten, 10	Lampe, 16	Name, 17	Sonne, 17
Beispiel, 10	Hallo, 8	Liebe, 12	Namen, 20	spiele, 21
bilden, 13	heiße, 8	Liebling, 23	nennen, 23	Tafel, 17
Buchstabe, 11	heißen, 13	lila, 13	Nomen, 13	Tennis, 21
Computer, 16	Hobby, 12	Liste, 23	Oma, 17	Umlaut, 14
deutsche, 20	hören, 10	Mama, 23	Party, 13	unten, 23
Deutschland, 16	Hotel, 12	Mäuschen, 23	passen, 12	Vogel, 17
fehlen, 11	Idee, 16	meine, 23	passend, 16	welch-, 10
Fenster, 16	jed-, 16	Menü, 18	Pinsel, 17	Zettel, 13
finden, 10	Juni, 16	mögen, 20	Quelle, 17	<b>Sum: 67 words</b>
Fußball, 21	Kästchen, 16	Morgen, 10	sage, 11	
ganzen, 11	Kinder, 9	morgens, 11	schreiben, 11	

**Table 6:** List of trisyllabic words in Luftballons

Alphabet, 14	Dänemark, 18	fehlend-, 19	sortieren, 23	vorstellen, 9
anderen, 21	einkreisen, 10	griechische, 20	Spitzname, 23	Wiedersehen, 9
anschauen, 10	Elefant, 13	Gute Nacht, 10	Sportlehrer, 21	Xylophon, 17
antworten, 10	Engelchen, 23	Guten Tag, 10	Telefon, 13	Ypsilon, 17
Basketball, 13	ergänzen, 19	häufige, 23	Turnhalle, 21	zuhören, 12
beginnen, 13	erkennen, 19	jeweilig-, 12	verbinden, 18	<b>Sum: 37 words</b>
Buchstabe, 15	Europa, 13	Österreich, 18	verstecken, 22	
Computer, 16	Februar, 13	Prinzessin, 23	Vorname, 23	

**Table 7:** List of polysyllabic words in Luftballons

Anfangsbuchstabe, 13	Marmelade, 13
Bildwörterrätsel, 13	Namensliste, 20
Biologie, 12	nummerieren 8
buchstabieren, 22	Radiergummi, 17
Familienname, 23	unterstreichen 13
Guten Morgen, 10	wiederholen 12
Kosenamen, 23	<b>Sum: 13 words</b>

**Table 8:** List of monosyllabic words in Wir Kids 1

acht, 7	die, 7	gut, 11	nett, 19	Tschüs, 9
alt, 9	doof, 19	hast, 18	neun, 7	und, 6
auf, 9	dran, 8	hat, 18	nicht, 21	vier, 7
aus, 11	drei, 7	heißt, 6	null, 7	von, 14
bin, 6	du, 6	Herr, 7	sag, 22	wer, 6
bist, 6	eins, 7	ich, 6	Schweiz, 17	wie, 6
blöd, 19	elf, 7	ist, 6	sechs, 7	Wien, 17
da, 11	er, 12	ja, 7	sie, 10	Zahl, 8
das, 6	Frau, 7	komm, 8	sind, 10	zehn, 7
dein, 13	Freund, 14	mal, 22	Sohn, 21	zwei, 7
der, 7	fünf, 7	mein, 12	Spiel, 8	zwölf, 7
deutsch, 17	für, 7	Mensch, 8	streng, 19	<b>Sum: 63 words</b>
dich, 6	grüß, 6	nein, 7	Tag, 11	

**Table 9:** List of disyllabic words in Wir Kids 1

achtzehn, 8	Freundin, 14	Junge, 7	Oma, 13	Stuttgart, 11
achtzig, 20	freundlich, 19	Jungen, 7	Onkel, 14	Tage, 11
Alter, 10	fünfzehn, 8	keine, 21	Opa, 13	Tante, 14
bitte, 21	fünfzig, 20	Kinder, 21	Papa, 13	Tochter, 21
Bruder, 12	Grüße, 11	Leute, 11	Schwester, 13	Vater, 12
Brüder, 18	grüßen, 6	lustig, 19	Schwestern, 18	Vati, 13
Danke, 22	guten, 11	Mädchen, 7	sechzehn, 8	viele, 19
deine, 13	habe, 18	meine, 12	sechzig, 20	vierzehn, 8
dreißig, 20	haben, 21	Mutter, 12	sieben, 7	vierzig, 20
dreizehn, 8	Hallo, 6	Mutti, 13	siebzehn, 8	Würfel, 8
einen, 18	heiße, 6	Name, 7	siebzog, 20	Zahlen, 7
Eltern, 14	heißen, 6	Namen, 7	singen, 11	zwanzig, 8
Foto, 7	Herren, 7	neunzehn, 8	Spiele, 8	<b>Sum: 72 words</b>
Fotos, 7	hundert, 20	neunzig, 20	Stammbaum, 13	
Frauen, 7	Ihre, 21	Nummer, 15	Student, 11	

**Table 10:** List of trisyllabic and polysyllabic words in Wir Kids 1

Trisyllabic words		Polysyllabic words
Charakter, 22	Interview, 22	entschuldigen, 21
Düsseldorf, 11	langweilig, 19	extravagant, 24
Einzelkind, 18	Lehrerin, 21	Familie, 12
Geschwister, 15	sympathisch, 19	Telefonnummer, 20
gewonnen, 8	Telefon, 21	verheiratet, 21
Großeltern, 15	<b>Sum: 11 words</b>	Wiedersehen, 9
		<b>Sum: 6 words</b>

**Table 11:** Grapheme categories in Paul, Lisa & Co. 1

Graphemes	Words
<ei>	nein, drei, heiße, heißt, dreizehn, reiten, zwei, ein, eins, einen, reinkommen, keine
<eu>	Deutsch, neu, neun, neunzehn, heute
<ie>	sieben, spiele, vier, siebzehn, Spiel, sie, Klavier, Geografie, wie, die, hier, vierzehn
<au>	Auto, Frau, Hausaufgaben, Modellauto, schau, faulenzen, auch, aus
<ä>	spät
<ö>	blöd, zwölf, möchte
<ü>	Müsli, fünf, fünfzehn
<sch>	Deutsch, Schokolade, Schuh, schau, schon, schwimmen
<sp>	spiele, Spiel, spät
<st>	Stadion
<ch> (ich)	ich, echt, sechzehn, möchte, möchten, möchtest
<ch> (machen)	acht, mache, machst, suche, doch, Buch, achtzehn, Nachmittag
<ck>	Socke
<ph>	Alphabet, Physik
<er>	Bruder, woher, wer, der, hier, Computer, super
<th>	Mathematik
<g>	lustig, zwanzig
<d>	Bild
<chs>	sechs
<b>Sum:</b>	<b>83 words</b>

**Table 12:** Grapheme categories in Luftballons

Graphemes	Words
<ei>	bei, dein, Eis, heißt, mein, nein, zwei, heiße, heißen, meine, Österreich
<eu>	Deutsch, deutsche, Deutschland, Europa
<ie>	die, wie, Liebe, spiele, griechische, Wiedersehen, Biologie, Familienname, Radiergummi
<au>	auch, auf, Frau, Maus, Umlaut
<äu>	Mäuschen, häufige
<ä>	März, Bärchen, Dänemark
<ö>	zwölf, Österreich
<ü>	fünf, grün, grüßt, Menü, müde, München, Tschüss
<sch>	Deutsch, Schatz, Tschüss, deutsche, Deutschland, griechische
<sp>	Sportlehrer, spiele
<st>	Buchstabe
<ch> (ich)	ich, mich, Milch, nicht, Bärchen, München, Engelchen, griechische, Österreich, Mäuschen
<ch> (machen)	Nacht, Buchstabe, auch
<qu>	Quelle
<ph>	Alphabet, Xylophon
<er>	der, Fenster, Kinder, Computer, Sportlehrer, Wiedersehen
<g>	Tag, Zug
<d>	Abend
<b>Sum:</b>	<b>77 words</b>

**Table 13:** Grapheme categories in *Wir Kids 1*

Graphemes	Words
<ei>	Einzelkind, verheiratet, dein, deine, dreißig, dreizehn, einen, langweilig, drei, eins, heiße, heißen, heißt, mein, keine, mein, meine, nein, Schweiz, zwei
<eu>	deutsch, Freundin, freundlich, Freund, Leute, neun, neunzehn, neunzig
<ie>	Familie, Wiedersehen, die, sie, Spiel, sieben, vier, siebzehn, siebzig, Wien, Spiele, wie, viele, vierzehn, vierzig
<au>	auf, aus, Frauen, Frau
<ä>	Mädchen
<ö>	blöd, zwölf
<ü>	Düsseldorf, Brüder, fünfzehn, fünfzig, Grüße, grüßen, fünf, für, grüßt, Tschüs, Würfel
<sch>	entschuldigen, Geschwister, deutsch, Mensch, Schweiz, Tschüs, Schwester, Schwestern
<sp>	Spiel, Spiele
<st>	streng, Stammbaum, Student, Stuttgart
<ch> (ich)	dich, ich, Mädchen, nicht, sechzehn, sechzig
<ch> (machen)	acht, achtzehn, achtzig, Tochter
<er>	Charakter, Alter, Bruder, Brüder, Geschwister, Interview, Telefonnummer, verheiratet, der, hundert, Herr, Kinder, Mutter, Nummer, wer, Tochter, Vater
<th>	sympathisch
<g>	achtzig, dreißig, langweilig, fünfzig, lustig, neunzig, Tag, sechzig, siebzig, vierzig, zwanzig
<d>	sind
<chs>	sechs
<ng>	singen
<b>Sum:</b>	<b>117 words</b>

We also recorded some international words, which were found in the three books (for example *Adresse, Alphabet, Name, Ball, Musik, Foto*) or were commonly used (for example *Delfin, Fan, Geografie, Karte*). Consequently, we compared the words of the three books (Tables 14-17) and classified them into four categories: (a) irregular words common in all books (CIW, common irregular words) (19 words), (b) irregular international words (IIW) (25 words), (c) regular words common in all books (CRW, common regular words) (12 words) and (d) regular international words (RIW) (37 words). The total number of words was 93 and we used 30 of them for the Spelling Test.



**Table 14:** Selected words category CIW (common irregular words),  
 number of syllables and diphthongs/consonant clusters

Word	Category	Number of syllables	Diphthong/consonant cluster	Word	Category	Number of syllables	Diphthong/consonant cluster
spielt	CIW	1	ie	ein	CIW	1	ei
heißt	CIW	1	ei	zwölf	CIW	1	ö
sie	CIW	1	ie	Frau	CIW	1	au
Pferd	CIW	1	pf	fünf	CIW	1	ü
nein	CIW	1	ei	zwei	CIW	1	ei
neun	CIW	1	eu	vier	CIW	1	ie, -er
die	CIW	1	ie	Deutsch	CIW	1	eu, sch
wie	CIW	1	ie	heiße	CIW	2	ei
ich	CIW	1	ch (ich)	spiele	CIW	2	ie, sp
der	CIW	1	-er			<b>Sum:</b>	<b>19 words</b>

**Table 15:** Selected words category IIW (irregular international words),  
 number of syllables and diphthongs/consonant clusters

Word	Category	Number of syllables	Diphthong/consonant cluster	Word	Category	Number of syllables	Diphthong/consonant cluster
Maus	IIW	1	au	Physik	IIW	2	ph
Sport	IIW	1	sp	Müsli	IIW	2	ü
Buch	IIW	1	ch	Interview	IIW	3	-
Schuh	IIW	1	sch	Schokolade	IIW	4	sch
singt	IIW	1	ng	Xylophon	IIW	3	ph
Freund	IIW	1	eu	Alphabet	IIW	3	ph
singen	IIW	2	ng	Computer	IIW	3	-er
Menü	IIW	2	ü	Charakter	IIW	3	ch, -er
Kinder	IIW	2	-er	Mathematik	IIW	4	th
super	IIW	2	-er	Familie	IIW	4	ie
Nummer	IIW	2	-er	Biologie	IIW	4	ie
Stadion	IIW	2	st	Geografie	IIW	4	ie
Student	IIW	2	st			<b>Sum:</b>	<b>25 words</b>

**Table 16:** Selected words category CRW (common regular words),  
 number of syllables and diphthongs/consonant clusters

Word	Category	Number of syllables	Diphthong/consonant cluster	Word	Category	Number of syllables	Diphthong/consonant cluster
bin	CRW	1	-	ist	CRW	1	-
das	CRW	1	-	und	CRW	1	-
du	CRW	1	-	gute	CRW	2	-
ja	CRW	1	-	guten	CRW	2	-
von	CRW	1	-	hallo	CRW	2	-
bist	CRW	1	-	Name	CRW	2	-
						<b>Sum:</b>	<b>12 words</b>

**Table 17:** Selected words category RIW (regular international words),  
 number of syllables and diphthongs/consonant clusters

Word	Category	Number of syllables	Diphthong/consonant cluster	Word	Category	Number of syllables	Diphthong/consonant cluster
Ball	RIW	1	-	Karte	RIW	2	-
Bus	RIW	1	-	Klasse	RIW	2	-
Fan	RIW	1	-	Lampe	RIW	2	-
Film	RIW	1	-	skaten	RIW	2	-
Mai	RIW	1	-	Party	RIW	2	-
im	RIW	1	-	Fußball	RIW	2	-
Clown	RIW	1	-	Maria	RIW	3	-
Foto	RIW	2	-	ABC	RIW	3	-
Fotos	RIW	2	-	beginnen	RIW	3	-
Hobby	RIW	2	-	Telefon	RIW	3	-
Idee	RIW	2	-	Volleyball	RIW	3	-
Kino	RIW	2	-	Elefant	RIW	3	-
lila	RIW	2	-	Alexis	RIW	3	-
Papa	RIW	2	-	Adresse	RIW	3	-
Mama	RIW	2	-	Ypsilon	RIW	3	-
Musik	RIW	2	-	Februar	RIW	3	-
Note	RIW	2	-	Basketball	RIW	3	-
Tennis	RIW	2	-	Marmelade	RIW	4	-
Globus	RIW	2	-	<b>Sum:</b>			<b>37 words</b>

The Spelling Test is a tool used to record specific spelling difficulties of learners, in order to plan and organize the intervention and differentiate instruction. During the research it was administered to all learners with and without dyslexia. It consists of many spelling patterns, as well as exceptions to spelling rules, nouns, verbs, conjunctions and adverbs. The types of spelling errors examined are: Grammatical errors (Gr1), Phonological errors (Ph1-Ph14), and Other errors (O1-O6). The Spelling Test started with very simple words, consisted of 30 words, had a maximum number of points (30 points) and every word, which was spelled correctly equals one point.

The original test (Mouzaki, Protopapas, Sideridis, & Simos, 2010) was designed with an interruption rule. After six misspelled words in a row, the test would stop. This interruption rule was also performed in the Spelling Test for the German language. Although, due to the fact that it was administered inside the classroom to all the learners simultaneously, the interruption rule was taken into consideration, while correcting the test and not while administering it. This decision was made for two reasons. The first reason was so that there were no feelings of failure for the learners, who didn't manage to write many answers correctly. The second reason was, that it was quite time consuming to administer this test individually, due to the fact that there was a variety of tools used in this research and there was not the commodity of time.

#### 4. Results and Discussion

Two levels of analysis were performed after the data was gathered: (a) We counted the sum of points (i.e., words spelled correctly) and compared the two populations (learners with and without dyslexia). (b) We analysed the errors all the learners with dyslexia did in detail, in order to understand their more common difficulties. We used two tools for this analysis, namely a synoptic table of spelling errors (Table 18) and a detailed table of spelling errors (Table 19).

**Table 18:** Synoptic table of spelling errors (example)

Word	Syllables	Phonemes	Phonological errors						Other errors				
			Ph2	Ph4	Ph6	Ph10	Ph12	Ph14	O1	O2	O5		
5	aus	1	3		1		au						
6	sie	1	2	1			ie						
7	zwei	1	4	1			ei	zw					
8	neun	1	4				eu						
9	heißt	1	5	1			ei	ßt					
10	zwölf	1	5					zw, lf		1			
11	Deutsch	1	5				eu		(t)sch				
12	Foto	2	4									1	
13	Musik	2	5									1	
15	komme	2	4					mm					
16	sieben	2	5	1			ie						
17	Jahre	2	4	1				hr					
18	spiele	2	5				ie	sp					
19	fünfzehn	2	7	2		1		nf, hn					
20	nein	1	4				ei						
21	Lampe	2	5					mp				1	
22	Fußball	2	6	3				ßb, ll					
23	dreizehn	2	7	1		1	ei	dr, hn					
24	Telefon	3	7									1	
25	Elefant	3	7	1				nt				1	
26	Basketball	3	9					sk, tb, ll				1	
27	Griechenland	3	10				ie	Gr, ch, nl, nd		1			
28	Marmelade	4	9	1		1						1	
29	Hausaufgaben	4	12				au, au	fg			1		
30	Deutschland	2	9	2		2	eu	nd	(t)sch				
<b>Learner's sum</b>					15	1	5	10	2	1	2	1	7
<b>Total sum</b>			56		157			13	29	2	30		179

In the synoptic table of spelling errors (Table 18) we noted the error type(s) of all words written incorrectly, as well as the sum of every error type. In the detailed table of spelling errors (Table 19) we noted all words written incorrectly for every error type. In this table we, also, gave the word written incorrectly and the correct word in brackets. Furthermore, the numeric data in this table are the number of errors, the chances of each particular error in this Spelling Test and the ratio (%) of every error type.

**Table 19:** Detailed table of spelling errors (example)

Code	Error type	Example	Number of errors	Chances of error	Ratio % (f %)
<b>Gr</b>	<b>Grammatical errors</b>				
Gr1	Inflectional ending (verbs)	heißs (heißt)	1	4	25%
<b>Ph</b>	<b>Phonological errors</b>				
Ph2	Phoneme substitution	wie (sie), heißs (heißt), chvolf (zwölf), come (komme), siedn (sieben), giare (Jahre), Fusßall (Fußball), draitsen (dreizehn), Grexelant (Griechenland), Marmelabe (Marmelade), houseafugaden (Hausaufgaben)	14	157	8,9%
Ph4	Adding a phoneme	giare (Jahre), founf (fünfzehn), Fusßall (Fußball), houseafugaden (Hausaufgaben)	4	157	2,5%
Ph5	Omitting a syllable	founf (fünfzehn)	1	56	1,8%
Ph6	Omitting a phoneme	heißs (heißt), Grexelant (Griechenland)	2	157	1,3%
Ph9	Reversing diphthongs	zwie (zwei), houseafugaden (Hausaufgaben)	2	13	15,4%
Ph10	Diphthong simplification	Doits (Deutsch), draitsen (dreizehn), Grexelant (Griechenland), Doitsland (Deutschland)	4	13	30,8%
Ph12	Simple consonant cluster simplification	come (komme), giare (Jahre), draitsen (dreizehn), Grexelant (Griechenland)	4	29	13,8%
Ph14	Simplification of consonant cluster with 3 or 4 letters	Doits (Deutsch), Doitsland (Deutschland)	2	2	100%
<b>O</b>	<b>Other errors</b>				
O2	Replacing word	out (und), oush (aus)	2	30	6,7%
O5	Substitution of uppercase/lowercase letters	musik (Musik), giare (Jahre), lampe (Lampe), telefon (Telefon), houseafugaden (Hausaufgaben)	5	179	2,8%
O6	Omitting Umlaut	chvolf (zwölf), founf (fünfzehn)	2	2	100%

## 5. Recommendations

The Spelling Test presented in this article in detail is the first effort to construct a test in order to record the specific spelling difficulties learners face, when learning German as a second foreign language. This test is suitable for learners with and without dyslexia and could be used for every student. Through this test and the proposed error type analysis, the teacher can have detailed information as to the most common errors each learner makes. This information can help the teacher organize and plan his intervention and possible teaching method modifications in the classroom (if considered necessary).

In this way, every learner is respectfully considered as a unique person, with his/her own difficulties and learning needs.

## 6. Conclusion

This tool could be used for spelling evaluation in the first stages of learning German as a second foreign language, in order to record the specific difficulties every learner faces and be able to attend to his/her needs. The Spelling Test presented could have an impact and use in the scientific field as well, as it could be used for larger scale research. It could also be used as a fundament, in order to create a Spelling Test for other reference levels as well. Furthermore, it could be used by teachers and researchers of other foreign languages, who would like to construct a Spelling Test as well.

As this specific Spelling Test was used in order to identify spelling difficulties of all learners (in particular learners with dyslexia), the specific error type categorization helped the teacher organize and plan intervention and teaching methodology modifications, which were adapted during Phase 2. Also, the use of the Spelling Test during Phase 3 helped the researcher estimate the post-intervention performance of all learners (with and without dyslexia).

In conclusion, we should notice, that our education system does not help teachers adjust to all individual needs in their classroom. There is a “one size fits all” policy (Bondie, Dahnke & Zusho, 2019), which is far from the truth of every day teaching. Teachers face mixed ability classrooms every day and learners with dyslexia, as well as other specific learning difficulties are always included. If a teacher can have a clear image of the specific difficulties in spelling, for example, he will be able to adapt the lesson to the individual needs of all learners.

### Conflict of Interest Statement

The author declares no conflicts of interests.

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The author certifies that she has no commercial associations (eg, consultancies, stock ownership, equity interest, patent/licensing arrangements, etc) that might pose a conflict of interest in connection with the submitted article.

### About the Author

Sofia P. Tsakalidou completed her PhD in Didactics of German as a Second foreign language at Aristotle University of Thessaloniki. In her PhD research she examines teaching spelling to learners with dyslexia and focuses on developing assessment tools as well as applying teaching modifications and intervention. She is currently conducting her postdoctoral research at the Department of German Language and Literature at Aristotle University of Thessaloniki. Her research focuses on the field of special education and especially students with specific learning disabilities, including studies on the nature and the assessment of learning disabilities of children in German language. Her interests focus on teacher training as to the subject of her doctoral and postdoctoral research, namely learners with dyslexia and diversity in the classroom in general. Furthermore,

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