

Learning Difficulties in First and Second Language: Preliminary Results from a Cross-linguistic Skills Transfer

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Abstract

Research has repeatedly shown a cross-linguistic skills transfer from the first language (L1) to the second/foreign language (L2) and its impact on L2 learning. In the present article we report preliminary results from a pilot study we conducted in order to examine linguistic skills transfer from L1 (Greek) to L2 (English) among secondary school students with learning difficulties (L.D.). Our results have shown that the difficulties that occur in L1 (decoding reading skills and spelling) also occur in L2. These findings are in line with previous research and enhance further the existence of the link between first and second language learning difficulties.

Keywords: Learning difficulties, First language, Second language, Cross-linguistic skills, Transfer

1. Introduction

1.1 The link between L1 and L2 learning

There is a general assumption that pupils with learning difficulties and difficulties in reading face problems when learning a foreign language (Abu-Rabia & Bluestein-Danon, 2012; Geva, Yaghoub-Zadeh & Schuster, 2000). Previous research has documented that there is a relationship and interdependence between the first and second/foreign language and that the skills developed by a student in L1 play a crucial role in his L2 learning (Sparks, 2012). In particular, students with poor reading skills in L1 will also display poor skills in L2, because the metalinguistic skills (such as phonological awareness, spelling knowledge, syntactic awareness, etc.) are common to all languages (Geva, 1995, as reported in Abu-Rabia & Bluestein-Danon, 2012). Some basic assumptions about the link between L1 and L2 are presented in the international literature, as well as theories that support the linguistic skills transfer in languages with different degrees of transparency and different characteristics.

1.2 Theories on the Linguistic Skills Transfer between L1 and L2

There are specific theories and hypotheses on the transfer of linguistic skills between L1 and L2. The most important ones are following.

1.2.1 Linguistic Interdependence Hypothesis and Threshold Hypothesis

This hypothesis was developed by Cummins, (1979, 1981), who claimed that there is an important relationship between L1 and L2 and if deficits are present in the first one, there will certainly be corresponding deficits while learning the second (Zaretsky & Schwartz, 2016). In addition, he argued that general academic skills and writing and reading skills in L1 can also be transferred to L2 and that learning two languages improves the learning process for both, regardless of their spelling (Cummins, 1979). In particular, he considered that the transfer of conceptual knowledge and language skills was supported by a common basis (interlingual competence) and developed the model of Common Underlying Proficiency, according to which a person's literacy abilities in terms of written speech in L1 and L2 are interdependent (Cummins, 2005). He also stated that when there is appropriate instruction in L1, then there will be a transfer of language proficiency to L2, provided that the student is adequately exposed to it and given adequate motivation. In addition, in the Threshold Hypothesis, Cummins argued that the level of conquest of L2 is related to the level of conquest of the first language and that if one language is inadequate, the deficits will appear in the other, too (Cummins, 1979).

1.2.2 Linguistic Coding Differences Hypothesis – LCDH

This is a hypothesis made by Sparks & Ganschow on the cause of learning problems in L2 and the relationship between learning the mother tongue and a foreign language (Sparks & Ganschow, 1995). Specifically, they assumed that:

- A) Skills in L1 can form the basis for learning a foreign language.
- B) The ability to learn L1 and L2 depends on some basic language learning mechanisms.
- C) Acquiring basic skills in L1 has an impact on learning L2.
- D) When there are problems with a language component, there will be problems in learning both languages
- E) Learning problems in L1 will result in low competence in L2.

1.2.3 The Central Processing Hypothesis

According to this hypothesis, acquiring reading skills does not depend on the spelling of a language, but on cognitive processes such as short-term verbal memory and effective serial naming and linguistic components, such as phonological skills in L1 and L2. Students with deficits in these skills will encounter problems in acquiring basic reading skills in either L1 or L2 no matter the language or script they are involved in (Geva & Siegel, 2000).

1.2.4 Orthographic Depth Hypothesis

The Orthographic Depth hypothesis is related to how deep or shallow the spelling systems are, depending on the coding of the phonological structure of the language and the degree of transparency that exists between the letters and the speech sounds. It also states that readers adapt reading strategies according to the spelling of each language (Katz & Frost, 1992, op. cit. in Abu-Rabia et al., 2013). At this point it should be noted that the spelling systems that have a direct grapheme-to-phoneme correspondence, hence a high degree of transparency (Eviatar & Ibrahim, 2004), are shallow, whereas those spelling systems where the grapheme - phoneme association is not one by one, but one to many (Frost & Katz, 1992) are deep. Languages that have such spelling systems are opaque (Abu-Rabia & Siegel, 2003). In shallow spelling systems the degree of spelling is high and readers rely more on phonological units for word decoding, while in deep spelling systems the degree of spelling is low and readers rely mainly on word recognition morphology (Abu-Rabia et.al. 2013).

1.2.5 The Script Dependent Hypothesis

This hypothesis is based on the view that reading performance in a foreign language is directly related to the spelling of the mother tongue and that spelling differences play an important role in the process of reading in the foreign language. It also argues that the development of reading in a particular language depends on the spelling of that language. In addition, when reading problems are present in a language, these are due to the degree of grapheme-phoneme correspondence and do not affect reading in a second language, even if it has a different spelling system. A particular feature of this hypothesis is that it claims that each language evolves independently of each other. The focus of this hypothesis is to examine the characteristics of the spelling of the mother tongue in the process of conquering reading in a foreign language that has different spelling (Lieberman, Shankweiler, Fischer, & Carter, 1974).

1.2.6 Psycholinguistic Grain Size

This theory was developed by Ziegler and Goswami, (2005) and relates to the differences in the accuracy and speed of reading in different languages. According to this theory, students who begin to read in non-transparent spelling languages face problems due to the inconsistency that exists and cannot rely on smaller graphophone units, since there is no systematic correspondence between graphemes and phonemes. Conversely, students who learn reading in spelling-coherent languages are based on the decoding strategy (Abu-Rabia et al., 2013; Ziegler & Goswami, 2005).

1.3 Research Findings on the Linguistic Skills Transfer between Languages

There are several studies in the literature that confirm the transfer of linguistic skills between different languages, from Arabic to English (Abu-Rabia & Siegel, 2002; Al-Tamimi & Rabab'ah, 2007), from Hebrew to English (Geva & Siegel 2000), from English to French (Deacon, Wade-Woolley, & Kirby, 2009), from Russian to English (Abu-Rabia & Sanitsky, 2010), from Spanish to English (Ramírez, Chen, Geva, & Kiefer, 2010), from Persian to English (Nassaji and Geva, 1999), from Chinese to English (Wang, Koda, & Perfetti, 2003). Those studies documented that skills like vocabulary and syntactic awareness or phonological skills can be transferred from one language to another.

In addition, several researches have studied the extent to which cross-lingual transfer of spelling skills can be achieved. In the Kahn-Horwitz, Shimron & Sparks (2005) research, the findings showed that the knowledge of spelling in L1 helps to recognize the letters and their sounds, as well as to promote reading comprehension in L2. Deacon, Wade-Woolley & Kirby, (2009), Sun-Alperin & Wang, (2011) and Abu-Rabia & Sanitsky (2010), also supported the Cummins Theory of language interdependence, (1979, 1981). However, there are also researches, such as Abu-Rabia, (2001) and Abu-Rabia & Siegel, (2003), which support the script-dependent hypothesis, and state that when the spelling of the two languages differ in depth, the transfer of spelling knowledge cannot be transferred.

In addition, several studies have shown that there may be transfer of the syntactic skills from L1 to L2 (Abu-Rabia & Sanitsky, 2010; Geva & Siegel, 2000). However, there are also studies that showed that the degree of syntactic awareness in L1 was not transferred to L2 (Chiappe, Siegel & Wade-Woolley, 2002). Furthermore, several studies have shown that language components of L1, such as phonological, morphological and syntactic knowledge, spelling knowledge and vocabulary contribute to the understanding of L2 (Abu-Rabia & Bluestein-Danon, 2012; Abu-Rabia & Shakkour, 2014; Abu-Rabia et al., 2013; Kahn-Horwitz et al., 2005; Kieffer & Lesaux, 2008; Zhang & Koda, 2008). However, researches such as that of Akamatsu, (2003) found that there was no transfer of linguistic skills that would contribute to improving L2's reading comprehension.

According to the Linguistic Coding Differences Hypothesis (Sparks & Ganschow, 1995), the existence of difficulties in the first language is also a cause of difficulties in the foreign/second language. As Sparks, Patton, Ganschow, & Humbach (2009) report, when students fail to reach a high level of competency in L2, there will be limited skills in L1 too. These results are consistent with the Cummins hypothesis, (1979), according to which good performance in L2 depends on the skills in L1.

Seymour, Aro and Erskine (2003) studied the development of reading decoding in European spelling systems and found that the difficulty of acquiring literacy increases with the passage from simple to complex syllabic structures and from shallow to deep spelling systems. Also, as reported by Goswami (2002), novice readers of a deeper spelling need to develop multiple strategies to make a successful reading.

While the transfer of linguistic skills from L1 to L2 has been studied, only three studies have studied the opposite. In particular, Abu-Rabia & Bluestein-Danon, (2012) studied whether improvement in L2 (English) would also improve pupils' L1 (Jewish) with poor reading skills, thus developing the new Cognitive-Retroactive Transfer Hypothesis (CRT). The intervention that was conducted in L2 studied factors such as phonological and morphological awareness, word recognition, reading ability and comprehension, syntactic awareness and spelling. After the intervention, there was an improvement in both L2 and L1 confirming the initial hypothesis. Similarly, the study by Abu-Rabia et al., (2013) studied CRT in transferring linguistic skills from L2 (English) to L1 (Arabic) among bilingual students with LD. The intervention of the experimental group was only about L2, but it did not only improve the writing and reading skills of L2 but also of L1 except for the Arabic spelling. Another interesting research is that of Abu-Rabia & Shakkour, (2014), who studied whether improving linguistic skills of bilingual students with poor reading skills in the second foreign language can improve both the first foreign language and the mother tongue. The results of the research showed improvement in all three languages, except for spelling knowledge in the first foreign language and in the mother tongue.

1.4 Importance of the Problem

The contribution of the study to the existing literature is that it will enhance our knowledge on the link between L1 and L2 learning and strengthen the notion of the interdependence between L1 and L2. Although the results reported are preliminary, there is a strong evidence that there is a linguistic skills transfer between a language with deep orthography (English) and a language with shallow orthography (Greek) and they will be further used in order to design an intervention program in L2 (English) based on the CRT Hypothesis that will examine if there is a cross-linguistic skills transfer from L2 to L1 (Greek) and also if there will be an improvement of the linguistic skills in both languages. The contribution of the research is estimated to be important as it could give the educational community an opportunity to review its attitude towards foreign language learning by pupils with learning difficulties (L.D.). In addition, it could contribute to the creation of new educational programs aimed at involving pupils with L.D. in learning foreign languages and possibly through it, improve their first language skills.

1.4.1 Aim of the Study and Research Questions

In view of the above, we conducted a pilot study on linguistic skills transfer, and more specifically on decoding and spelling transfer from L1 (greek-shallow orthography) to L2 (english-deep orthography) among secondary school students with L.D. Our aim was to investigate if poor linguistic skills of L1 will be also found in L2. The results of

this study will be further used to design an intervention program for a second study in which we will examine the CRT Hypothesis (Abu-Rabia & Bluestein-Danon, 2012; Abu-Rabia & Shakkour, 2014; Abu-Rabia, Shakkour, & Siegel, 2013) on a population of secondary students with learning difficulties.

The research questions were:

1. Will students with poor L1 (Greek) decoding skills also display poor decoding skills in their L2 (English)?
2. Will students with poor L1 (Greek) spelling skills also display poor spelling skills in their L2?

2. Method

2.1 Participants

The participants were 20 high school students (11 girls – 9 boys) who were in class 8. The mean age of the participants was 13,6 years. The students were diagnosed with learning difficulties by KEDDY, which is a special public center for diagnoses. Their L1 was Greek and they had been learning English as L2 since grade 3. The students did not take any extra lessons in English except for those at school and therefore they were all the same level. The participants were tested separately first for their skills in L1 and then in L2.

2.2 Procedure

Before the pilot study we came in touch with special education centers and we found students that met our criteria. All students of our sample were in grade 8, were diagnosed with L.D., their L1 was Greek and their L2 English, with no extra lessons except those at school. The duration of the measurements was 1 month (October to November). The students were tested on reading skills (decoding) in L1 with the Test-A tool (Panteliadou & Antoniou, 2008), on reading skills (decoding) in L2 with “The Burt Word Reading Test” (Burt & The Scottish Council for Research in Education, 1976), on spelling skills in L1 with “Lamda Test” (Protopapas & Skaloumpakas, 2007; Skaloumpakas & Protopapas, 2007) and on spelling skills in L2 with “The South Australian Spelling Test (SAST)” (Westwood, 2005).

The reason why we examined these skills is because firstly it has shown that these skills play an important role in L2 learning (Sparks, 2012) and secondly because they have also been studied in previous research on CRT Hypothesis (Abu-Rabia & Bluestein-Danon, 2012; Abu-Rabia & Shakkour, 2014; Abu-Rabia, Shakkour, & Siegel, 2013), the design of which we will follow in order to design our intervention.

More specifically, the L1 decoding (Test-A) contained tasks on reading 24 pseudo words with the use of the phonological strategy, reading of 53 real words with use of orthographic/phonological strategy and discrimination between 36 real and pseudo words. Additionally, the L2 decoding (Burt Reading Test) had tasks on reading 110 real words in isolation printed in differing sizes of type and graded in order of difficulty.

Also, the L1 spelling test (LAMDA) examined the historic orthography based on visual word recognition with 10 words heard the same but only one of them was spelled correctly. The test also examined the recognition of grammatical endings. Measuring this, 10 incomplete sentences were given to students who had to choose the correct ending of words. This task tested grammatical errors. According to the L2 spelling test (SAST), the students had to write down 70 words they heard orally. The list of words started with easy ones and ended up to difficult spelling words.

3. Results

3.1 Data Presentation

The presentation of the results is in the form of graphic representation which shows in detail the performance of each student in three of the four tasks in L1 and L2.

The graphic representations below show that the students who had low performance in linguistic skills, namely decoding and spelling in L1, also showed a low performance in the same skills in L2.

3.1.1 Results for Decoding

Decoding in L1

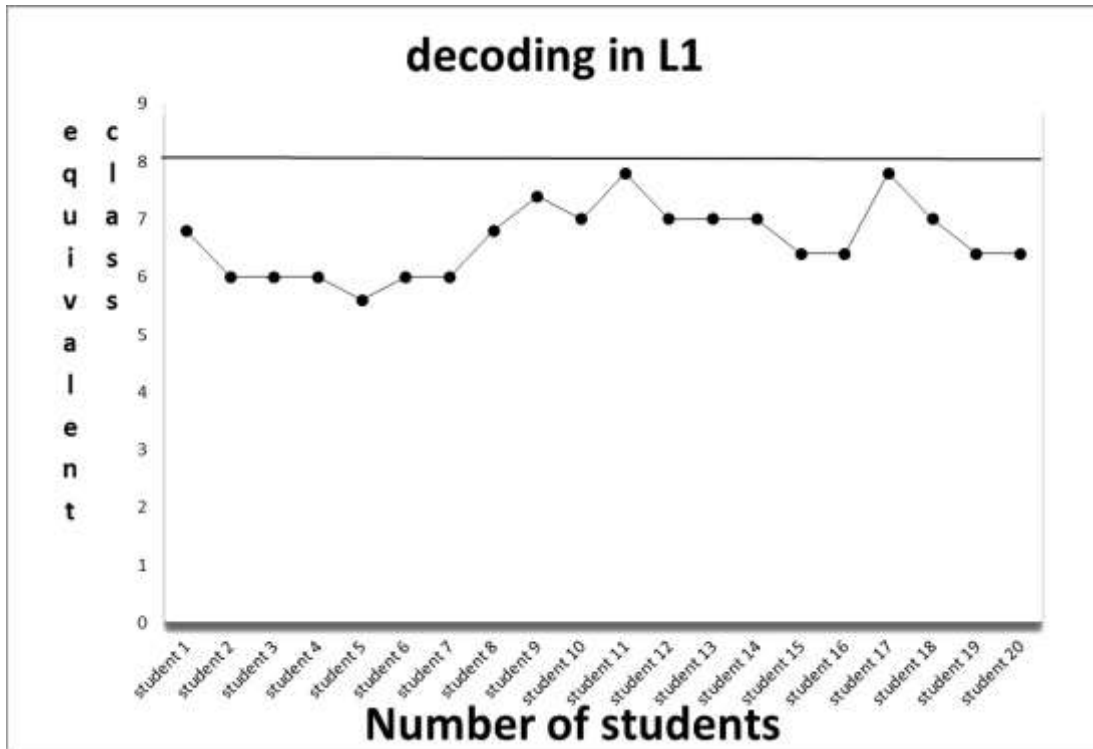


Figure 1. Graphic representation of the decoding skills in L1

Decoding in L2

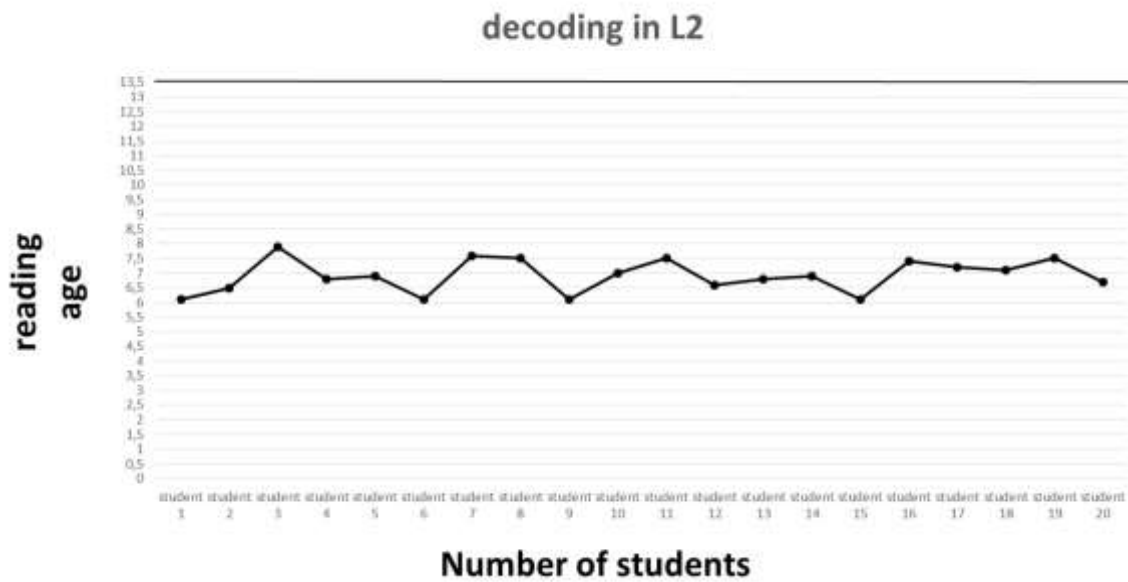


Figure 2. Graphic representation of the decoding skills in L2

3.1.2 Results for Spelling

Spelling in L1

The results for L1 show that, in terms of accuracy, the students showed a performance ranging between the lower 10% and the 50% of their classmates while in terms of speed their performance ranged from the lower 10% to the highest 100% of their classmates.

Spelling in L2

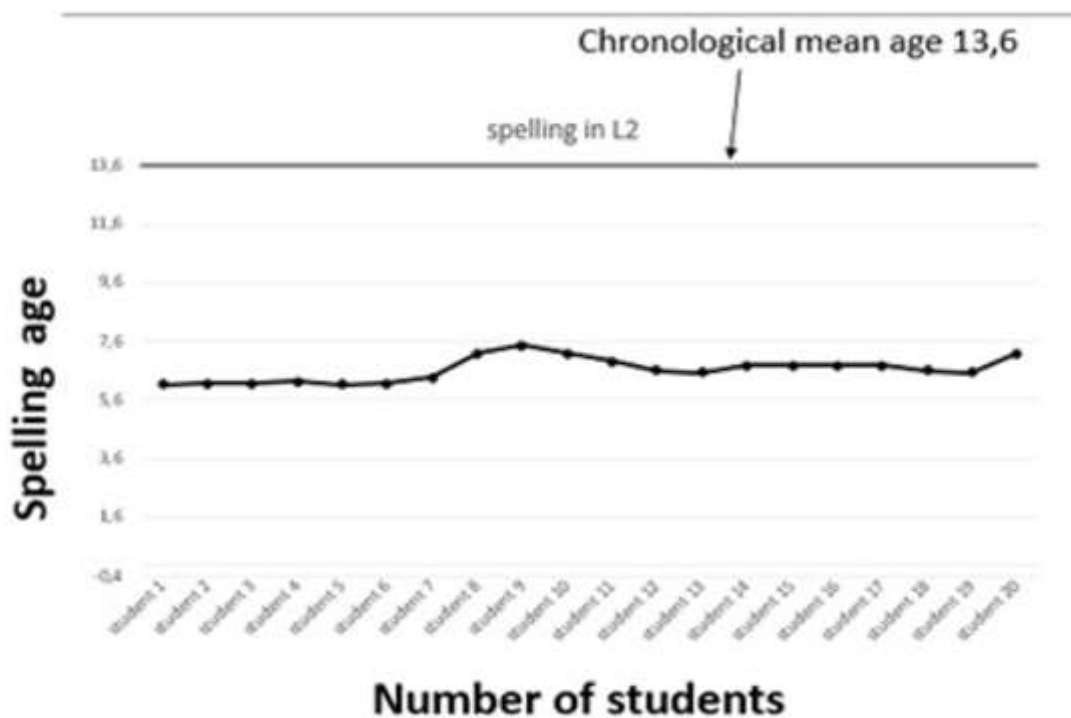


Figure 3. Graphic representation of spelling skills in L2

4. Discussion

The graphic representation (Fig. 1) of the students' decoding skills in L1 shows that all the students with L.D. underperformed in decoding in L1. These results are consistent with previous studies, supporting the fact that students with learning difficulties have poor decoding skills (Gentaz, Sprenger-Charolles, & Theurel, 2015; Ziegler, Perry, Ma-Wyatt, Ladner & Schulte-Körne, 2003).

From the graphic representation (Fig. 2) it is concluded that the reading age in L2 of all the students with L.D. was below their chronological age. This result is supported by the fact that students with poor decoding skills in L1 probably have poor decoding skills in L2 as well (Chiang & Rvachew, 2007; Sun-Alperin & Wang, 2011; Al-Tamimi & Rabab'ah, 2007).

It is generally known by literature that students with poor phonological awareness and decoding skills in L1 are likely to have poor decoding and reading skills in L2 (Al-Tamimi & Rabab'ah, 2007; Durgunoglu, Nagy, & Hancin-Bhatt, 1993). It is also known that when a student starts reading in L1, he or she is already phonologically aware of his or her L1. However, in the Greek educational system, the teaching of English as an L2 is not focused on acquiring decoding skills before reading (Lieberman, Shankweiler, & Lieberman, 1989). Furthermore, when the L1 is orthographically consistent (like Greek), students rely heavily on the type of grapheme-phoneme decoding strategies (Ziegler & Goswami, 2005) and they tend to use the same mechanisms in L2 even if it is orthographically inconsistent (like English).

The results for the students' spelling skills in L1 showed that students with L.D. underperformed comparing to their typically developing classmates especially in terms of accuracy. In terms of speed, there was a diverse performance among the students ranging from the lower 10% to the highest 100% of their classmates, something that shows

spelling profitability and strategic approach of the tasks.

According to the graphic representation for the spelling in L2 (Fig. 3), the students with L.D. underperformed in the L2 spelling and their spelling age was lower than their chronological age. It is widely assumed that students with poor spelling skills in L1 will probably show poor spelling skills in L2 (Abu-Rabia & Siegel, 2002; Alsaawi, 2015; Cummins, 1979, 1981; Kahn-Horwitz, Shimron, and Sparks, 2005). Furthermore, even if there is a difference in the orthographic depth of L1 and L2, there are correlations in the performance of spelling skills for both languages (Deacon et al., 2009) and when there are spelling problems in an L1 with shallow orthography, spelling problems will occur in the L2 with deep orthography (Akamatsu, 1999). Therefore, the students' poor performance in L2 spelling was expected due to the fact that the English language has a deep orthographic system. In addition, Greek students with L.D. are based on the transparent spelling of Greek (a language with relatively simple syllable structure) to learn to read and write a language with opaque spelling and complex syllabic structure (English) as previous research has shown with other languages, notably Spanish as an L1 and English as an L2 (Kremin, Arredondo, Hsu, Satterfield, & Kovelman, 2016).

In conclusion, according to the preliminary results presented, students with L.D. who have problems and struggle in decoding skills in L1 are likely to struggle in the same skills in L2. Furthermore, decoding skills rely heavily on phonological skills and there is sufficient evidence that phonological skills in L1 are highly correlated with phonological skills in L2 (Abu-Rabia & Siegel, 2002, 2003). Of course, we must also bare in mind that both phonological development and processing rely on the cumulative language exposure (Haman et al., 2017). Something else to be pointed out is that students whose L1 is Greek are based solely on matching phonemes to graphemes and therefore this is the strategy they use when they read their L2 (English). Additionally, when the students start learning reading and spelling in their L1 they have already been phonologically aware of this language. On the contrary, this doesn't happen when they start learning the L2. Of course, in terms of learning difficulties, students who face problems in decoding skills in L1, will also face problems in decoding skills in L2.

Moreover, it is also known that students with L.D. who have spelling problems in L1 (shallow orthography), are also likely to underperform in L2 spelling (deep orthography). Studies have shown that the linguistic components which are very useful in predicting spelling performance in a second language are the spelling and phonological awareness in a first language (Sparks, Patton, Ganschow, Humbach, & Javorsky, 2008). Also Abu Rabia & Siegel, (2002) claim that a positive and significant relation exists between spelling skills of children whose first language is Arabic (shallow orthography) and second language English (deep orthography).

In conclusion, according to what is mentioned above, Greek students with L.D. are based on the transparent spelling of Greek (a language with relatively simple syllable structure) to learn to read and write a language with opaque spelling and complex syllabic structure (English). It is also notable that the teaching of L2 in Greece does not seem to take into account that decoding is developed at different rates in different languages depending on the differences of orthographic depth and the complexity of the syllabic structure of each language. Therefore, studies like ours will provide useful information to both researchers and teachers on the relationship of the linguistic skills between languages with transparent orthographies like Greek and languages with deep orthographies, like English. In addition, the results can be further used to design educational interventions in L1 and L2 in Greece so that both typically and non-typically developing students can benefit. Furthermore, we hope that studies on this subject will be able to promote the cooperation between Greek language and English language teachers in Greek schools and also help to the inclusion of students with L.D. in the both L1 and L2 classes.

4.1 Limitations

There are certain limitations to our study which make our results difficult to be generalized. A limitation of the present study is its short duration. However, as it has already been mentioned, this is a pilot study and only preliminary results are reported. Another limitation is that the results are reported in the form of graphic representation and are not the result of a statistical analysis. This is due to the fact that the research is still in progress. However, the graphic representation provides useful information concerning spelling and decoding skills of students with L.D. because it revealed a very low performance on both skills in both languages on the part of all students with L.D.

4.2 Recommendations for Future Research

Future research should be directed towards examining further the linguistic skills transfer between languages in all linguistic domains in order to elucidate the way different languages are connected and how students with and without learning difficulties use their existing knowledge in one language in order to learn another language. The results of

that kind of research should be further used to design intervention programs in L1 and L2 in order to facilitate language learning on the part of students with reading difficulties.

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