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Writing High-Frequency Words at Early Stages of L2 Acquisition: Gender and School Differences

Escritura de palabras de alta frecuencia en L2 a edades tempranas: diferencias en función del género y el centro educativo

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Abstract

Within the field of education, there is controversy as to whether the gender of students and the type of school they attend have an impact on the processes of teaching and learning a second language. The aim of this study is to determine whether these elements might be related to the writing of certain high-frequency words in English, which appear in both the Dolch and Fry lists, in 623 Spanish students aged 8 and 9 years. Based on the SPSS analysis of the errors made by these students, a subsequent and more in-depth study was carried out. For this purpose, the following instruments were used: the Kolmogorov-Smirnov test to identify the significant differences; the Kruskal-Wallis test to compare errors according to schooling (single-sex and co-ed schools); and the Mann-Whitney U-test to compare the errors according to students' gender. The results show that the type of school that students attended influenced the spelling of certain high-frequency words more than their gender. To have a stronger basis for conclusions, further collaboration among EFL teachers in all types of school and a systematic follow-up on the writing of high-frequency words over the course of the following school years would be necessary.

Keywords: School type; gender; high-frequency words; errors.

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Resumen

Dentro del ámbito de educativo, hay dos aspectos que generan importante controversia con respecto a su influencia o no en los procesos de enseñanza-aprendizaje de segundas lenguas: género del alumnado y tipo de colegio. El objetivo de este estudio consiste en ver si dichos elementos pueden estar relacionados con la escritura de determinadas palabras de alta frecuencia en inglés, las cuales aparecen en las listas Dolch y Fry, respectivamente, en un total de 623 estudiantes españoles con edades comprendidas entre los 8-9 años. Partiendo del análisis con SPSS de los errores cometidos por dichos estudiantes, se llevó a cabo un posterior estudio más en profundidad en el que se hizo uso de los siguientes instrumentos: la prueba de Kolmogorov-Smirnov para identifican las diferencias significativas existentes; la prueba de Kruskal-Wallis para comparar los errores encontrados atendiendo al tipo de colegio (mixto o segregado); y la prueba U de Mann-Whitney para comparar los errores cometidos atendiendo al género de los estudiantes. Los resultados evidencian que lo que más influyó en la escritura de determinadas palabras de alta frecuencia no era el género de los alumnos sino el tipo de colegio donde recibían formación. A fin de tener una base más sólida en lo que respecta a las conclusiones, sería necesaria una mayor colaboración entre los profesores EFL de los tipos de colegios y un seguimiento sistemático de la escritura de palabras de alta frecuencia a largo de cursos posteriores.

Palabras clave: Tipo de colegio; género; palabras de alta frecuencia; errores.

Introduction and objectives

There is an ongoing debate about whether gender can be a predictor for writing success. The growing body of research demonstrates that girls normally outperform boys in reading and writing in L1 (Below et al., 2010; Cordeiro et al, 2018; Scholes, 2019)gender differences in spelling achievement were investigated for students in Grades 1 through 6. Performances of boys and girls on standardized and written spelling tests were compared. Students from high-, medium-, and low-achieving schools in six geographic areas of the United States took both a proofreading-type standardized test and a written spelling test that contained the same words (N = 3, 024. Moreover, female advantage in spelling and handwriting fluency has been demonstrated to be an indicator for further writing productivity and quality (Kim et al., 2015). However, the results are still non-conclusive. In their recent investigation which aimed to tackle gender differences in cognitive skills of spelling and phonological processing in early writing performance in L1, Adams and Simmons (2019) concluded that although girls exceeded boys in composition skills, there were no significant differences in other componential skills of writing.

In addition to that, other studies demonstrated that although there were significant gender differences in pre-reading skills in kindergarten, they tended to disappear by grade 4 (Below et al., 2010). The conclusion they arrived at was that gender as such was not influential in reading/writing acquisition and placed the focus on differential response to schooling and teachers' behaviours (Below et al., 2010; Brozo et al., 2014). Thus, schooling can be a potential factor to consider in the development of early literacy as there was vast research that demonstrated that single-sex schools had a positive

impact on academic performance for both sexes (Dwarte, 2014; Hussain, 2020; Riordan, 2015; Sheymardanov, 2019)

When it comes to gender differences and the impact of schooling in the development of L2/English writing skills by Spanish learners in early stages of literacy, there is scarce empirical evidence. Learning to write in the English language is a challenging and time-consuming process, especially for the children whose mother tongue has a shallow orthography. To write a word involves not only phonological processing skills, but also the knowledge of the word *per se.* The latter is considered of an extreme importance to spelling, since the recognition of a word triggers phonological memory as well as phonological and orthographic processing (Bialystok et al., 2009). Vocabulary acquisition proved to be an indicator for success in writing (Bialystok et al., 2009), however, not all the words in the English language are of equal value. There is 10% of the words which are repeated more frequently in the running texts (Schmitt et al., 2011). The correct spelling of these words, hereinafter high frequency words, are crucial not only for further comprehension of longer text and utterances, but also for the development of fluency in both oral and written skills (Spencer, 2007)including word frequency, phonemic length and measures of orthographic depth and complexity. In this study, spelling difficulty of high frequency words was investigated across five year groups (ages 7 to 11 years.

In the light of the foregoing the present work aims to fill in the gap in this empirical research and to underpin the gender differences in high frequency words writing at early stages of L2 acquisition (8–9-year-olds) in relation to schooling. First and foremost, this study aims to determine if high frequency words present a special difficulty in writing for both groups and which high frequency words can present a challenge for spelling. The second objective is to analyse the gender gap in the spelling of these words. And, finally, this work is intended to determine if the type of school (single-sex and co-ed) can have an impact on gender difference in the writing of the aforementioned words. To this effect, a contrastive analysis of ten high frequency words writing through dictation was carried out.

The impact of gender differences and schooling on writing at early ages

Since the present work focuses on spelling, which is considered a low-level skill in writing, the gender differences in phonological awareness, phonological memory and orthographic processing as well as the reasons that can influence this possible gender gap are discussed. There is vast research that proves the importance of phonological awareness to dictated spelling (Adams & Simmons, 2019; Reilly et al, 2019; Wilsenach & Makaure, 2018). The process of encoding phonemes into graphemes to represent a word in print requires a series of subskills, such as segmentation and blending, as well as the alphabetic knowledge and knowledge of the word. Although some empirical studies in this field favoured female performance in early stages of literacy (Babayiğit, 2015; Below et al., 2010; Lundberg et al., 2012; Reilly et al., 2019; Sigmundsson et al., 2018), the findings were rather inconsistent since no consensus was reached on whether girls exceeded boys in all the above mentioned skills. Below et al. (2010) concluded that girls were better at phoneme segmentation. Lundberg et al. (2012), who did their research with a representative sample of pre-school children, stated the female

advantage in all phonological awareness skills. In the same vein, Kaushanskaya et al. (2013) who conducted their investigation in writing of novel words with 5–7-year-old children demonstrated females' better spelling performance but only in words which were phonologically familiar to the children's L1. Thus, arriving at the conclusion that girls were more likely to apply long-term memory phonological representations.

Furthermore, in the longitudinal study carried out in Norway (McTigue et al., 2021), growth curve analysis demonstrated that although the girls showed small initial advantage in literacy, this advantage persisted only into Grade 2. The authors concluded that gender differences in early literacy stages were secondary to other sources of heterogeneity and that they did not directly produce boys' underachievement in literacy.

As for alphabetic knowledge, recent studies pointed to the presence of gender differences in letter-recognition and spelling (Babayiğit, 2015; Manu et al., 2021; Sigmundsson et al., 2018). Babayiğit (2015) in her analysis on written expression of L2 learners concluded that girls outperformed boys in spelling accuracy. Nevertheless, other empirical studies demonstrated that there were no significant gender differences in alphabetic knowledge and phonological skills (Adams & Simmons, 2019), and point to other factors, such as motivation, attitude and environment which can explain gender differences in early stages of literacy. Therefore, the presence of gender difference in early literacy skills is not a uniform finding.

Among the multiple reasons which attribute to male deficit in reading/writing acquisition physiological-maturational and socio-cultural factors are stated. From physiological perspective, the underdevelopment of left-brain hemisphere in boys can explain why males are worse on tasks involving auditory processing (Naglieri & Rojahn, 2001; Rinaldi et al, 2021; Wilsenach & Makaure, 2018). Due to this deficit in sequential processing they tend to have problems with phonological encoding (Pearson, 2017). Girls, in turn, develop auditory processing skills earlier (Chuy & Nitulescu, 2014) and, therefore, are better at integration of auditory and visual processing (Ziegler & Goswami, 2005). Some researchers encountered differences in working memory, while girls were better on verbal memory tasks, boys had better abstract visual memory and performed spatial memory tasks better (Wei et al., 2012; Pearson, 2017).

Besides, from neurological perspective, girls have more effective long-term memory for words (Kramer et al., 1997), hence they are better retaining phonological information. However, it was demonstrated that girls relied more on stored phonological information, which might lead to over-regularization (forming analogies with the previously acquired phonological patterns). In the study performed by Hartshorne and Ullman (2006) with regular and irregular verbs formation, females over-generalized more than males (means of 5.7% vs 1.8%).

As for socio-cultural reasons, various researchers concluded that girls are more motivated in reading/writing than boys (Chiu, M, 2018), likewise, in second language learning they also demonstrated higher level of motivation in general (Oga-Baldwin & Fryer, 2020; Hu & McGeown, 2020).

Another reason which can explain female advantage in spelling performance is school environment and teachers' behaviour. Since girls have more positive attitude in class, the teachers' hold higher expectations for girls (Ahslund & Boström, 2018; Muntoni & Retelsdorf, 2018). Thus, in co-ed schools, teachers may favour girls and

provide more support. The effect of group composition on performance in Mathematics in co-ed environment was examined by Inzlicht and Ben-Zeev (2000)such as gender composition, sufficient for creating a threatening intellectual environment for females—an environment that elicits performance-impinging stereotypes? Two studies explored these questions. Participants completed a difficult math or verbal test in 3-person groups, each of which included 2 additional people of the same sex as the participant (same-sex condition who pointed to the existence of a stereotype threat, as the result of which the academic performance is influenced by parental and teachers' expectations who favour boys in Mathematics and girls in literacy. However, the question whether single-sex or mixed environment can influence boys' and girls' literacy attainment remains open.

Some studies demonstrated positive effect of single-sex schooling on academic performance, including reading and writing (Dwarte, 2014; Farisiyah et al., 2021; Riordan, 2015; Rugutt & Chemosit, 2020; Sheymardanov, 2019)career, and life opportunities. Consequently, many urban school districts have implemented single-sex instructional programs in an effort to better address the schooling needs of African Americans. This study’s purpose was to evaluate to what extent the restructuring of a coeducation school to a single-sex school impacted reading achievement for African American students. Data were analyzed using Analysis of Variance (ANOVA. Among multiple reasons which contribute to better academic performance, these authors stated individualised learning strategies, considerations of bio-psychological learning, gender-oriented methodologies, motivation level, and greater quality of opportunities. Nonetheless, other research reported no significant gender differences in academic achievement between co-ed and single-school (Hayes et al., 2011; Yasin, 2020) or non-conclusive findings (Stotsky & Denny, 2012; Warrington and Younger, 2003). The focus was placed on methodologies, students' individual characteristics (confidence, self-esteem), teacher-students bonding and strong commitment from staff. In their recent qualitative study on advantages and disadvantages of co-ed and single-sex schools in Spain, Camps and Vierheller (2018) reported both advantages and disadvantages in two types of schools. Nevertheless, as far as academic achievement the participants agreed upon the fact that single-sex schools reduced failure at school and created a more beneficial academic environment for both sexes.

High frequency words and their importance in English language acquisition

Not all the words in the English language are of equal value when it comes to reading/writing, as there are some words which are much useful than others due to their frequent occurring in the texts (Nation & Hunston, 2013; Schmitt et al., 2011)000–9,000 word families is needed for reading and 6,000–7,000 for listening. But is this the definitive picture? A recent study by van Zeeland & Schmitt (2012. 10 words of the English language make up about 20 percent, the top 50 words 35 percent, and the top 100 words 41 percent of all words in a typical written text (Schmitt & Schmitt, 2020). Therefore, the knowledge of these frequently occurring words would assist the learners in both reading and writing skills in the English language.

The concept of high frequency words (hereinafter HFW) can be traced back to Oral Approach founded by Palmer and Hornby (Richards & Rodgers, 1986). The latter in collaboration with West elaborated *The Interim Report on Vocabulary Selection* (1936). It was West (1953) who later compiled *A General Service List of English Words* (hereinafter GSL)[2], which contains around 2000 words/headwords with their corresponding word families, which became a standard referent in teaching materials. Several other lists were elaborated afterwards, among them the most popular are Carroll, Davies, and Richman's *The American Heritage Word Frequency Book* (1971) and Dee Gardner's *Common Core List* (2013).

The efficiency of using HFW lists were proved by several researchers (Dang et al., 2020; Frost et al, 2019)teachers and students need to know which list provides the best return for learning? Four well-established lists were compared and it was found that BNC/COCA2000 (British National Corpus / Corpus of Contemporary American English 2000. Nevertheless, when it comes to teaching literacy at early stages, these lists are too overwhelming for the teachers of the EFL, thus shorter lists, which are more age and topic appropriate, are used in teaching reading/writing in kindergarten and elementary school: the Dolch

List (1948) and the Fry list (1957). Both Dolch and Fry lists include words with irregular and uncommon grapheme-phoneme correspondences. Although the top 10 words in both lists belong to the category of function words, topic-oriented content words are also included in their lists. Unfortunately, there are no HFW lists tailored for the Spanish learners, therefore, a teacher of the English language in Spanish schools either uses the Dolch or Fry lists or elaborates their own based on the most frequent corpus of vocabulary in the textbooks.

The process of teaching HFW is different from that of the words with regular spelling. As HFW normally defy decoding strategies, children must commit their spelling to memory and instantly recognize them in texts. Word recognition is of paramount importance in the mastery of reading/writing skills, and there is considerable evidence that developing rapid automatic recognition skills is the path to success in the emergent literacy skills (Jiménez-García & Verde-Romera, 2021; Wharton-McDonald, 2018).

The benefits of HFW knowledge are various, ranging from gaining confidence in reading/writing (Schmitt & Schmitt, 2020), to providing clues for meaning making, and building foundation for reading/writing proficiency (Cunningham, 2017; Frost et al., 2019). The recent research conducted by Frost et al. (2019) proved that HFW served as distributional clues which helped the learner to segment and categorize the segmented item as well as to inform of the formation of grammatical categories. Moreover, other empirical studies demonstrated that solid knowledge of HFW had an impact on low-frequency words reading and writing (Aspiranti & Hilton-Prillhart, 2021; Dang et al., 2020)teachers and students need to know which list provides the best return for learning? Four well-established lists were compared and it was found that BNC/COCA2000 (British National Corpus / Corpus of Contemporary American English 2000. Consequently, HFW teaching is recommended as a starting point in

2 GSL was modified and expanded. NGSL was published by Browne, Culligan and Phillips in 2013.

vocabulary learning (Nation & Hunston, 2013; Schmitt et al., 2011)000–9,000 word families is needed for reading and 6,000–7,000 for listening. But is this the definitive picture? A recent study by van Zeeland & Schmitt (2012.

HFW recognition and automaticity have an important cognitive advantage, as they enhance fluency in reading/writing comprehension (Cunningham, 2017). Since the short-term memory span can normally hold up to seven familiar items, the knowledge of HFW frees the short-term memory space for reading/writing more challenging words. Therefore, the knowledge of HFW builds the foundations for comprehension and writing of longer texts. In their cross-linguistic study Kuperman et al. (2021)English, Finnish, Greek, and Hebrew demonstrated the influence of spelling mistakes in HFW on lowering the level of reading comprehension.

Since HFW knowledge fosters comprehension and fluency in language acquisition, the learners can gradually improve academic achievement and build up self-confidence, therefore, enhancing motivation in writing/reading. This benefit is crucial to the present discussion since it can bridge the gender gap in motivation.

Considering the foregoing, HFW teaching is a must at early stages of literacy.

Method

Sample

The study's sample consisted of n=623 students aged 8-9 (Grade 3). The children were chosen based on 4 criteria: (1) their L1 is Spanish; (2) they have been learning English as a second language since preschool 1; (3) they attended bilingual schools; (4) they already received reading/writing instruction in English. The choice of age was determined by the curricular L2 progression: Grade 1 - development of oral skills (listening/speaking); Grade 2 – introduction of reading and writing in L2; Grade 3 – consolidating writing (words and sentences). The sample was composed by 334 girls and 289 boys enrolled at the following types of schools: single-sex schools (boys' – 126; girls' – 176) and co-ed schools (321 students: boys -163, girls - 158).

Instrument

Dictation was used as a tool to measure spelling proficiency on a word level. Dictation format was proved efficient to assess early literacy (Westwood, 2005; Wong & Leeming, 2014), since it allows students to concentrate only on encoding processes of one word at a time. The choice of the words used in the dictation was based on a previous study on paragraph writing at a boys' school, whose results showed that the most committed type of errors were related to spelling (Antropova et al., 2019), a list with the 15 most misspelt words was elaborated. 10 out of these 15 words were HFW according to both Dolch and Fry lists, and the General Service List (hereinafter GSL). All these words frequently occur in print in all English language textbooks used in Grades 1, 2 and 3 in Spain. That is why a dictation comprising these 10 HFW words was the object of the present study.

Table 1

The list of HFW tested in dictation

HFW	Dolch List	Fry List	GSL
Are	Kindergarten	1st 100 list	N2, frequency 39175
Because	Grade 2	2nd 100 list	N 101, frequency 883
Father	Noun Dolch list	3rd 100 list	N 463, frequency 244
Friend		4th 100 list	N 386, frequency 294
Home	Noun Dolch List	2nd 100 list	N 160, frequency 611
School	Noun Dolch list	3rd 100 list	N 137, frequency 697
Sometimes		3rd 100 list	N 502, frequency 221
Usually		4th 100 list	N 289, frequency 376
Very	Grade 2	2nd 100 list	N 113, frequency 797
Watch	Noun Dolch List	3rd 100 list	N 457, frequency 247

The table above demonstrates that all the words used in the dictation are included in the corpus of the most frequent words of the English language. Dolch list (Dolch, 1936) does not include the frequency of appearance of the words in the running texts and divides HFW into two big groups: functional words according to the level of difficulty with corresponding grade to teach these HFW, and noun list, which incorporates lexical words. As for Fry list (Fry, 2000), the words are classified according to their frequency and are distributed along 10 lists of 100 words. Furthermore, in GSL (West, 1953) all the words have a corresponding number according to frequency and the frequency of occurrence in written texts is stated. This word list is based on the analysis of language corpora and includes headwords with their corresponding word families (e.g. *usual – usually*).

Data collection and analysis procedures

It should be noted that the dictation, object of this work, was carried out during the English language classes by the teachers of the English language in their corresponding groups. Each word was dictated twice at a slow speed, and, finally, all the words from the list were read at a faster speed for correction (Nation & Newton, 2009). Each dictation was assigned a code (student's number) and the only information visible for the researchers was the school code and the gender (girl/boy). The period of data collection was in the 1st term of 2019-20 and 2020-21 academic courses.

Based on the dictation, the number of times each student misspelled the given words was counted. This enabled generating a database with the following variables: the student's identification code (the database was anonymous), sex, the student's type of school (girls', boys' or co-ed) and the number of errors committed on the test.

A quantitative analysis based on statistics, both descriptive and inferential, was considered the most appropriate method to identify relevant and significant differences

related to all the variables object of the study. Therefore, the database was imported to the SPSS Statistics program, version 24 in order to carry out the different statistical tests and analysis.

The absolute and relative frequencies of the accumulated errors according to gender and school type were calculated to know their distribution in respect to those variables, and necessary calculations were made in respect to the measures of central tendency, namely the mean, the median and the standard deviation.

To carry out the correct statistical tests to identify statistically significant differences in the means of the errors committed in respect to the variables studied, the Kolmogorov-Smirnov model was used for normality tests of the errors committed, given the number of records in the sample.

After verifying that the data did not show a normal distribution, nonparametric analysis was used to detect the differences in the errors committed by the different groups of analysis. The tests selected were the Kruskal-Wallis test to compare the means of the errors committed on the basis of the type of school, since there were more than two categories (boys', girls' and co-ed schools) and the Mann-Whitney U-test to compare the median of errors committed by the students according to gender, which consisted of two categories (male and female).

The next step of the research was to determine the extent to which the errors committed by students according to their gender were affected by the type of school they attended. To detect this factor, a new analysis was carried out with the Mann-Whitney U test, this time separating the students who attended single-sex schools from the students who attended co-ed schools.

Lastly, the specific words which were misspelled were identified, and the differences between these words were studied according to the gender of the single-sex school students. To verify whether the differences were relevant, the nonparametric Chi-square statistic tool was used.

Results

The results of the descriptive tests related to the errors made by students according to their gender and type of school are shown below.

Table 2

Absolute and relative frequencies of errors per word

Word	Frequency	Percentage
usually	515	15.9
because	440	13.6
watch	434	13.4
sometimes	344	10.6
school	312	9.6
father	304	9.4

Word	Frequency	Percentage
very	301	9.3
friend	281	8.7
home	155	4.8
are	151	4.7
Total	3,237	100

The results revealed that the number of errors in the words dictated did not show homogeneous values. The words which entailed the greatest difficulty were *usually*, (15.9% of total errors), followed by *because* (13.6%) and *watch* (13.4%). In contrast, the words which entailed the least difficulty and that most students wrote correctly were *are* (4.7%) and *home* (4.8%).

The results of the descriptive tests in connection with the errors committed by students according to their gender and type of school are the following:

Table 3

Errors according to gender

Sex	Mean	Median	N	Standard Deviation
Boy	4.62	4.00	289	2.690
Girl	5.69	6.00	334	2.401
Total	5.20	5.00	623	2.592

Table 4

Errors according to the type of school

School	Mean	Median	N	Standard Deviation
Boys'	3.74	3.00	126	2.470
Girls'	5.93	6.00	176	2.437
Co-ed	5.36	6.00	321	2.504
Total	5.20	5.00	623	2.592

The data showed that on average the boys commit fewer errors (M=4.62; SD=2.69) than the girls (M=5.69; SD=2.40). In respect to the variable of the type of school, boys at single-sex schools (M=3.74; SD=2.47) committed fewer errors, followed by the students from co-ed schools (M=5.36; SD=2.50), with girls at single-sex schools having the highest average of errors committed (M=5.93; SD=2.43).

The differences of the averages of errors committed were identified as being statistically significant ($U=59.854$; $p<0.001$), likewise the differences of the averages of errors committed according to the type of school were proved to be relevant ($K(2)=58.80$; $p<0.001$).

When the errors committed by students at co-ed schools according to their gender were analysed, the results were the following:

Table 5

Median of errors according to gender in co-ed schools

Sex	Mean	Median	N	Standard Deviation
Boy	5.31	6.00	163	2.660
Girl	5.42	5.00	158	2.339
Total	5.36	6.00	321	2.504

In the case of co-ed schools, boys committed fewer errors (M=5.31; SD=2.66) than girls (M=5.42; SD=2.33). However, these differences were not identified as statistically significant (U=13.100; p>0.05), indicating that the differences in the average mistakes made by students cannot be explained based on their gender.

To verify the words in which students made the most mistakes according to gender, the students of single-sex schools who had shown differences with their average errors in the tests were screened, excluding the students at the co-ed schools. When the errors committed in the different words were analysed according to students' gender, significant differences were found ($x^2(9)=40.16$; p<0,001). The data obtained with this sample showed that whereas boys committed more errors than expected by the statistical test in the words *school*, *usually* and *watch*, girls committed more errors in the words *are*, *because*, *father*, *friend*, *home* and *sometimes*.

Discussion and conclusions

To bridge the gap in empirical study of early L2 literacy, the aim of this study was to analyse HFW writing in relation to gender differences and schooling in Spanish schools. There is limited time allocated for learning to write in English in the classroom. As a result, L2 learners have scanty knowledge of HFW in spite of many years learning English (Dang et al., 2020; Webb & Nation, 2017)second or third thousand word frequency levels through comparison with the British National Corpus and the Corpus of Contemporary American English (BNC/COCA. Likewise, the results of this study demonstrate that HFW present a significant difficulty in spelling.

As for the first objective, it was found that the number of errors committed by both groups is not homogeneous, perhaps due to quantity of exposure and orthographic complexity of the HFW tested in the dictation. Among the words which are more challenging for writing are *usually, because* and *watch.* In comparison to *are* and *home* which the children have been exposed to, both orally and in print, since kindergarten; *usually, because* and *watch* are incorporated in English language textbooks only in Primary. Furthermore, the complexity of spelling of these words may be explained by irregularity of grapheme-phoneme correspondences and the major number of graphemes they contain.

These results can be corroborated by the research carried out by Spencer (2007) with 7-11-year-old children which conclude that frequency of exposure, phonemic length and orthographic depth and complexity directly influence written output.

As for gender differences in spelling, contrary to the results obtained in other studies (Babayiğit, 2015; Lundberg et al., 2012), in general terms boys commit less errors in HFW writing than girls. As the normal strategy in HFW learning is memorization, boys, who have better visual abstract and spatial memory (Pearson, 2017; Wei et al., 2012), retain the whole shape of HFW better. Thus, their encoding strategies in irregular words writing may be slightly superior to these of girls'. The latter apply their long-term memory phonological representations which can lead to over-regularization (Hartshorne & Ullman, 2006; Kaushanskaya et al., 2013) in HFW writing.

As for type of school, in single-sex schools males commit less errors followed by co-ed schools and girls' schools with the highest percentage of errors. It seems that boys' written performance improves in a single-sex environment, perhaps due to cohesiveness among students, personalised methodologies and teachers' approaches and expectations, which conform to the findings of Hussain's (2020) and Riordan's (2015) research. Nevertheless, surprisingly, the opposite happens in girls' schools as their level of spelling accuracy decreases. These findings suggest that it is required to observe whether this tendency remains the same in most Primary single-sex girls' schools.

In co-ed schools no relevant differences were found according to sex, as boys and girls commit the same number of mistakes. Therefore, gender is not influential factor in the quantity of spelling mistakes (Adams & Simmons, 2019; Williams & Larkin, 2013). In accord with the research findings which evidenced that the gender difference in literacy tend to disappear by Grades 2-4 (Below et al., 2010; McTigue et al., 2021), the current study results show that 8-9-year-old girls and boys have similar spelling performance. In the line with *Gender Similarity Hypothesis* (Hyde, 2005), which upholds similarity in academic performance of both sexes, in the same educational environment boys and girls perform alike.

As for gender differences in HFW writing, it seems that boys encounter special problems in the spelling of the following words from the list: *usually, watch* and *school;* whilst *are*, *because*, *father*, *friend*, *home* and *sometimes* are related to girls. This finding can have strong pedagogical implications since it is highly advisable to scaffold the spelling of these words in a gender-oriented way.

Furthermore, the results obtained in this research point to the possibility that spelling performance of HFW does not depend upon gender as such but upon the type of school the children attend. The type of school, single-sex or co-ed, proved to be a more influential factor than gender in HFW writing. In the recent systematic review on gender difference according to type of school, Robinson et al. (2021) conclude that single-schools have a potential for unsettling some gender norms. Therefore, schooling can be a tool to face the stereotype threat (Inzlicht & Ben-Zeev, 2000)such as gender composition, sufficient for creating a threatening intellectual environment for females—an environment that elicits performance-impinging stereotypes? Two studies explored these questions. Participants completed a difficult math or verbal test in 3-person groups, each of which included 2 additional people of the same sex as the participant (same-sex condition and mitigate male disadvantage in spelling. However, a more in-depth

study would shed light on whether in single-sex girls' schools the writing performance is affected by educational environment. In addition, the efficiency of methodologies to teach spelling in single-sex schools should also be analysed.

Finally, as the knowledge of HFW forms solid foundations for not only recognition and comprehension of oral and written texts, but it also contributes to comprehension fluency on a general level, HFW teaching should be introduced at early stages of reading/writing acquisition. And since there are relatively few empirical studies on the efficiency of the Dolch and Fry lists in HFW acquisition by Spanish young learners, further research is required.

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