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THE INFLUENCE OF THE GENDER VARIABLE ON CHILEAN EFL PRIMARY STUDENTS' LEXICAL AVAILABILITY

LA INFLUENCIA DE LA VARIABLE GÉNERO EN LA DISPONIBILIDAD LÉXICA DE ESTUDIANTES CHILENOS DE PRIMARIA

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ABSTRACT

Lexical knowledge of language learners is a priority when thinking of teaching a foreign language successfully, and lexical availability tasks appear to be an effective tool for teachers to obtain evidence of vocabulary acquisition. This study seeks to determine the incidence of the variable gender on the L2 available lexicon of primary students. The research was conducted with a sample of 99 fifth-grade students in a subsidized school in San Pedro de la Paz, Chile, 52 males, and 47 females. A quantitative methodology was used with a non-experimental design, where data was gathered through a lexical availability test with five centers of interest from a non-probability sample. Findings indicate that gender is a variable that does not affect the available lexicon of primary students. This research will serve as a base for future studies on different variables that can affect primary students' lexical availability, to improve language teaching practices.

Palabras clave:
disponibilidad léxica, género, centros de interés, inglés como lengua extranjera.

RESUMEN

El conocimiento del léxico de estudiantes de un idioma es prioridad cuando se piensa en enseñar de manera exitosa una lengua extranjera, y las pruebas de disponibilidad léxica aparecen como una herramienta efectiva para profesores para obtener evidencia de la adquisición de vocabulario. Este estudio busca determinar la incidencia de la variable género en el léxico disponible de una lengua extranjera de estudiantes de educación primaria. La investigación fue conducida con una muestra de 99 estudiantes de quinto grado de un colegio particular subvencionado en San Pedro de la Paz, Chile, 52 varones y 47 damas. Una metodología cuantitativa fue usada con un diseño no-experimental, donde los datos fueron recogidos a través de una prueba de disponibilidad léxica con cinco centros de interés de una muestra no-probabilística. Resultados indican que el género es una variable que no afecta el léxico disponible de estudiantes de enseñanza básica. Este estudio sirve como base para

futuros estudios en distintas variables que pueden afectar la disponibilidad léxica de estudiantes de educación primaria, para así poder mejorar las prácticas de enseñanza de un idioma.

Introduction

A primary concern of English Language Teaching as a second language nowadays, generally accepted by recent research according to Herreros (2015), is that lexicon is a fundamental factor in the process of teaching-learning a foreign language. She states that there is a change of perspective that goes from considering lexicon as a secondary element in the learning of a language; to revaluing and integrating it as a primary element. The lexicon is a key aspect that makes sense to the linguistic system, considering that without the lexical learning of a language, effective communication in different situations cannot exist (Palapanidi, 2012).

Cepeda, Granada, and Pomes (2013) state that lexical development in children is a complex and progressive process where different intrinsic and extrinsic factors influence the process of vocabulary acquisition. In this context, Porporato (2014) claims that any human being has a mental lexicon that varies according to different factors such as age, gender, social class, and education. Jiménez and Ojeda (2009) also sustain that in the context of the foreign language classroom other variables, such as age, grade, type of instruction, the kind of language test given to students, and gender may influence the learning process, interfering in their outcomes in the foreign language.

Regarding gender, Agustín and Terrazas (2012) state that many studies have reported that this variable is an important aspect affecting several areas of second language acquisition, such as reading comprehension, listening comprehension, writing, speaking, vocabulary acquisition, or learning strategies. These authors also claim there are contradictory findings within research on language acquisition considering gender's effect: some of them (Jiménez, 2003; Van der Slik, Van Hout & Schepens, 2015, Galdames, Guerrero & Toledo, 2018; Calero & Serrano, 2019; Abibi, 2021) confirm the superiority of females above males, while others (Edelenbos & Vinjé, 2000; Lin & Wu, 2003) show the superiority of males, as well as others (Jiménez & Terrazas, 2005-2008; Rudzinska, 2013, De la Maya Retamar & López-Perez, 2020; Quintanilla & Kloss, 2020) that sustain there are no major differences in language acquisition regarding gender. Jiménez and Ojeda (2009) suggest that there are no permanent differences between male and female students and that there are gender tendencies that may emerge in some language learning contexts because of the interrelation of individual and instructional variables. Within the process of vocabulary acquisition, Cepeda, et al. (2013) sustain that there are some observable differences between males and females because the social context is a factor that influences the way children acquire and use the language such as their parents, school, peers, sociocultural practices, or even biological differences.

Grammar is a major area of interest within the field of the teaching of English as a second language. According to González (2014), in any curriculum design of a foreign language teaching program, the grammatical contents are carefully planned and supported by enough research that analyzes how and when to teach the different syntactic structures. However, this author sustains that the same does not happen with the lexicon, where its selection has been left to the teacher's intuition or the text authors without an objective criterion. Hence, Cepeda, et al. (2013) state that it is necessary to count with mechanisms that allow us to know the available words required for people in different contexts because lexical knowledge is a basic linguistic competence for the learning process of a language and for the communicative process.

The aim of this study is to shine new light on these debates of the available lexicon and the individual differences that may influence their learning process. A primary concern in this research is to investigate the incidence of the gender variable through the

examination of the lexical availability of students of primary education. As a result, the following research questions arise:

1. How many words do female and male primary students at a subsidized school produce on average in a lexical availability task?

2. Are there any differences in the type of words produced in a lexical availability task by female and male primary students at a subsidized school?

Lexical Availability

The concept of lexical availability was born in 1951 when the French Ministry of Education established a special committee to build up the lexicon that would best accomplish the requirements of students of French as a foreign language, the most suitable words needed to communicate in the language based on the criteria of word appearance frequency (Ávila, 2017). It was decided that the focus should be given to the most frequent words because they were the most useful words to be included at an elementary level in a language teaching program (Payne, 2016). However, López (1995) suggests that the list of words that came out from a frequency analysis reflected an absence of the familiar and most common words used in a language; therefore, this methodology was not good enough to cover the fundamental or basic lexicon of a language, because the words that appeared on these lists were mostly grammatical rather than semantic. As an attempt to solve this problem, Bartol (2006) states that the concept of lexical availability appears as an option for researching the available lexicon of a language. He declares that the available lexicon is a new approach to the study of the lexicon, as it considers the words that are organized in our mental lexicon that are ready to be used or available when a certain communicative situation requires it beyond a specific stimulus. At the beginning of lexical availability, Michėa (1953) states that the available lexicon is characterized because it comes up in the speakers´ mind in an immediate and natural way when dealing with a specific topic. It is a word that is not necessarily frequent, but potentially lives in the speaker and it is updated when associations are produced.

From the perspective presented, the frequency words, which include mostly grammatical words, are complemented with specific thematic words, aimed to address certain themes in daily life. Lexical availability, therefore, provides the vocabulary that native speakers would potentially use in connection with a certain topic; consequently, this is the vocabulary that foreign speakers should also know and must be included in explicit EFL teaching, regardless of their position in frequency lists (Šifrar, 2014).

For elaborating the available lexicon, data is gathered from controlled associative tests, which are an artificial technique to get words to come up to the surface through written or oral lists, as responses to a specific stimulus, produced by certain speakers.

Centers of Interest

The available lexicon obtained by the lexical availability tasks is grouped in notional fields, which in lexical availability are called centers of interest, which are very similar to the topics and subtopics developed by the domains considered in the Common European Framework of Reference for Languages (CEFR) (Bartol, 2006).

Most research regarding lexical availability has used these centers of interest, sometimes not all of them. They are thematic stimuli relatively wide, aiming to cause the lexical answers of the individuals interviewed, which are the same for all the individuals. The methodology applied in lexical availability studies follows the proposal of the PanHispanic project, which includes 16 centers of interest that serve as a stimulus to activate the mental lexicon of the participants to produce in a written task an opened list of the available lexicon in two minutes for each center of interest (Mena, 1986). With these

results, some social factors are examined depending on the objective of the study, to finally make a homogenization from the data and get the lexical availability index of each word from computing software (Palapanidi, 2012).

Lexical Availability Index

Researchers committed to studying lexical variation based on lexical availability have developed mathematic formulas to obtain the lexical availability index (LAI). López and Strassburger (1987) proposed a formula to obtain lists of words consistent with the lexical available indexes. The formula intended to have the dispersion factor to be systematic, without considering a fixed number of words for each center of interest, which was one of the inconsistencies of the previous formulas proposed by other authors (López & Pérez, 2014). The formula is based on:

a. The absolute frequency where the word was produced in every position.

b. The absolute frequency of the word, that comes up from the addition of the different frequencies in each position.

c. The number of participants.

d. The number of positions obtained in the task in the center of interest.

e. The position in which the word was produced.

Figure 1

Lexical availability formula

$$D(P_j) = \sum_{i=1}^{n} \left(\frac{f_{ij}}{I} \right) e^{-2.3 \left(\frac{i-1}{n-1} \right)}$$

Where:

D (Pj) = availability of the word j.

n = highest position in the center of interest.

I = position number.

j = index of the word.

e = natural number (2.718181818459045).

fij = absolute frequency of the word j in the position i.

i = number of participants.

The measurement of lexical availability by an index allows researchers to analyze each word beyond its frequency of appearance, also considering its position and number of participants in the study. The results obtained must be between 0 and 1, where 1 is the highest availability and 0 is the lowest (Garzón & Penagos, 2016).

Empirical Studies on Lexical Availability and Gender in Second Language (L2)

There are a few studies on lexical availability considering the effect of gender in the field of second language acquisition, compared with other factors that affect vocabulary acquisition such as age or language learning strategies. This section offers a detailed description of studies addressing the gender component in L2 (English and Spanish) lexical availability.

First, a study carried out by Agustín-Llach and Fernández (2014) took a sample of 190 EFL students and measured their lexical availability at two points of time, when they

were 12 years old and when they were 15 years old. They wanted to find out if there was an effect of gender on their available lexicon over time. Data collected showed that females outperformed males in all the prompts of the lexical availability task when they were 12 years old, a difference that remained three years later. In six out of nine of the prompts included in the lexical availability task applied to the students at both points of time, females had a better performance than males with a significant difference on both results, and both males and females increased their vocabulary over time.

Another study aiming to identify gender-based differences of EFL learners in their lexical availability that revealed a statistically significant female advantage was conducted by Fernández (2010). This study pointed out the possible effect of gender and motivation on the vocabulary production of 250 EFL second grade secondary school students in Spain. The results of the lexical availability test that included six cue words in English showed that the 139 females outperformed the 111 males of the sample.

Furthermore, Jiménez and Ojeda (2009), in their study on girls' and boys' lexical availability in EFL, claimed that girls achieved higher results on their available lexicon in each of the 15 cue words included in the lexical availability task. The research was conducted with 210 female and male learners of Spanish in primary education and provided evidence of the higher lexical productivity of female students. The results concluded there was a difference between the number of words produced by girls and boys, and that it was more relevant for some cue words than others, but in general, the pattern of girls' over-performance was consistent for all the cue words of the lexical availability task.

Another study in EFL learners conducted by Quintanilla and Kloss (2020) investigated the influence of gender on lexical availability among 46 fifth graders. The study focused on analyzing the impact of gender on lexical availability in the centers colors, family members, sports, animals, and food and drink. The results from the associativity test revealed that both male and female students had diverse lexicons, but the gender variable did not significantly affect the quantitative or qualitative aspect of lexical availability.

Regarding studies that examined Spanish as L2 and the gender effect on lexical availability within the Spanish proficiency level, Verdeses-Mirabal (2012) showed the lexical availability of Hispanic students of Redwood City in California. Findings that emerged from a given sample of 518 students of twelfth grade in high school, 245 male and 273 female students, showed that females provided more responses in each of the prompts of the lexical availability test, and they were statistically significant. This study showed the gender variable as the factor that has a major incidence in all the prompts, more than other factors such as the L1, the regular language used, the Spanish proficiency level, the immigrant generation, and the sociocultural level.

In addition, a study conducted by Sandu (2012) highlighted the gender effect on Spanish as L2 lexical availability and its correlation of gender with the students' scholar level. With a sample of 280 students, where 76 of them were 18 years old, 101 were 15 years old, and 103 were 12 years old, where 204 were females and 76 were males, he confirmed a clear quantitative superiority of females above males in all the 16 semantic fields included in the lexical availability test, a difference that was statistically significant. Also, the most frequent words that appeared in the results provided by the test were similar between females and males, but the order of appearance in the lists (LAI) was different. Considering the different scholar levels, the superiority of females was maintained, but the difference that increased through the years among the available lexicon from females and males was more qualitative.

Yet, despite findings females show higher performance on lexical availability than males, and this makes the quantitative difference less relevant than the qualitative ones (Cepeda et al., 2013). However, little research has been carried out in the Chilean context.

Method

This research follows a non-experimental design as no variables are manipulated in the study; only a stimulus through an associative controlled test is given to the participants in a laboratory context to activate the students' lexical items production.

The study was conducted in a subsidized school in San Pedro de la Paz (Chile). The participants in the study came from an original pool of 99 beginner learners (47 female, 52 male) of 5th grade (ages 10-11) in primary education.

Data were collected through a lexical availability test. "Lexical availability is measured by means of a test that reflects the participants' spontaneous vocabulary production" (Payne, 2016 p.18).

The lexical availability test includes the students' consent form, the information required about their gender, and five columns for the centers of interest to be studied (see Appendix A). These centers include topics that are part of the vocabulary keywords proposed by the Chilean national curriculum of English for 5th grade, they are family members, body parts, clothes, food and drinks, and animals (MINEDUC, 2012).

When the participants received the test, they were given the following instructions:

a. The test is answered voluntarily.

b. They are asked to mark their gender and consent for participating in the study.

c. The participants are asked to write as many words as possible (without a word limit) from the given topic in an open list included in the test within two minutes.

After the tests have been collected, they are all gathered and separated into two groups, girls, and boys. Then, the data were edited and included in order of appearance in an Excel spreadsheet for each of the centers of interest. The following exclusion criteria were considered to edit the data:

a. Tests that had a center of interest in blank were discarded.

b. Spanish words were discarded as well as words that do not appear as lexical entries in dictionaries.

c. Repeated words in the same center of interest were discarded.

d. Spelling mistakes were corrected if the meaning is understood from the word.

e. Singular forms were considered.

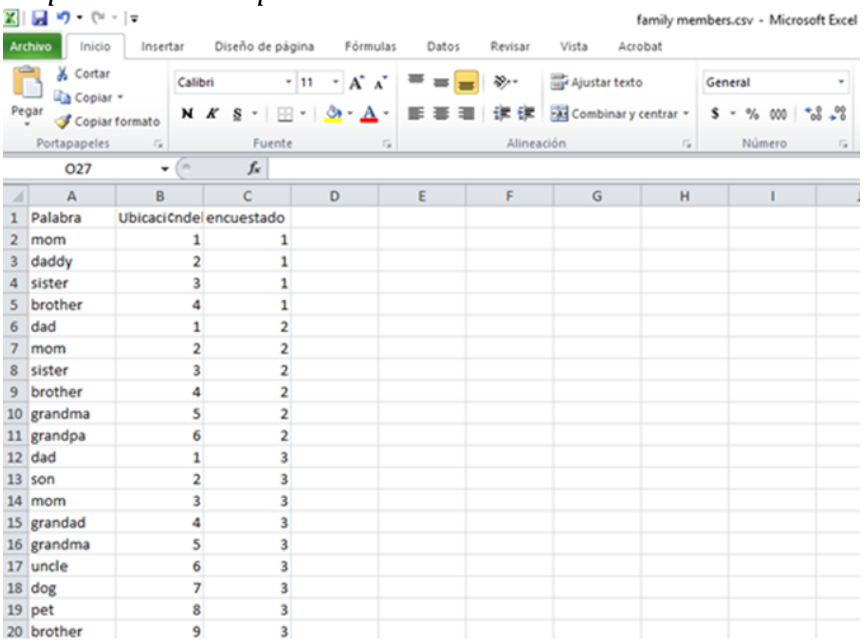
f. Brand names were deleted.

g. Words were edited in lowercase letters.

The data gathered from the participants' available lexicon were edited in a Microsoft Excel spreadsheet format (CSV), in the original word order from the test, separated by the two groups: one spreadsheet for a center of interest for boys, and another spreadsheet for the same center of interest for girls, following the same procedure for all the centers of interest. In the Excel spreadsheet, the first column corresponds to the words (produced by the participants) in order of appearance, the second column has the word position from the list of the test, and the third column has the participant number, as it appears in the example of Figure 2. A different spreadsheet for each of the centers of interest was used.

Figure 2

Microsoft Excel spreadsheet sample



family members.csv - Microsoft Excel

	A	B	C
1	Palabra	Ubicación del	encuestado
2	mom	1	1
3	daddy	2	1
4	sister	3	1
5	brother	4	1
6	dad	1	2
7	mom	2	2
8	sister	3	2
9	brother	4	2
10	grandma	5	2
11	grandpa	6	2
12	dad	1	3
13	son	2	3
14	mom	3	3
15	grandad	4	3
16	grandma	5	3
17	uncle	6	3
18	dog	7	3
19	pet	8	3
20	brother	9	3

Then, data were entered into the computational platform Lexmath (www.lexmath.com). The reports obtained in this platform (see Figure 3) display the words in a table ordered according to the lexical availability index. The information also includes the following indexes: the total of words (the number of collected words in the center of interest) TW, XW is the mean of the total words (the number of words collected in the center of interest divided into the number of individuals in the sample), TDW is the number of total different words collected, and CI is the Cohesion index that represents the similarity of words appearing in the sample (Salcedo, del Valle, Contreras & Pinninghoff, 2015).

Figure 3

Lexmath report sample

LexMath

Reporte.

Fecha:	02-12-2017
Categoría:	
N° de Encuestas Realizadas:	52

Total de Palabras	XR	PD	IC
350	6.73	36	0.18697

Palabra	Frecuencia Absoluta	Frecuencia Relativa	IDL
mom	43	0,82692	0,747888462
dad	41	0,78846	0,747846154
brother	47	0,90385	0,688152293
sister	44	0,84615	0,634467258
grandma	24	0,46154	0,306152864
grandpa	20	0,38462	0,2387799
grandad	18	0,34615	0,221652146
dog	17	0,32692	0,2012268
cat	12	0,23077	0,128924181
father	8	0,15385	0,1278936
grandmom	11	0,21154	0,124579047
uncle	8	0,15385	0,088833431
mother	5	0,09615	0,074942308
daddy	4	0,07692	0,069788462
granny	5	0,09615	0,059567712
son	5	0,09615	0,057173352

Results

The analysis is presented as follows: The TW, XW, TDW, and CI from both groups are going to be compared to see if there are quantitative differences in each of the centers of interest individually, followed by the ten most available words obtained in the semantic field to find out similarities in the LAI and type of words between the groups. Then, the analysis is going to present all the centers of interest, comparing the results of both groups. Finally, a statistical analysis using a t-test is going to be carried out for the indexes TW, XW, and TDW, to determine whether there are statistically significant differences between the mean of both groups.

Family Members

In the semantic field family members, Table 1 presents the results obtained from the preliminary analysis of the lexical availability of females and males.

Table 1
Family Members

Family members	TW	XW	TDW	CI
Females	343	**7.3**	**43**	0.16972
Males	**350**	6.73	36	**0.18697**

Males wrote seven more words than females who wrote 343 words, but females wrote one more word on average than males, with a mean of 7.3, and males with 6.73 words. Considering the different words, females outperformed with 43 different words within the group, seven more than males. This behavior could be interpreted because of the social characteristics of the female gender that is considered much closer to the topic family; therefore, they are more interested in this semantic field. Regarding the CI, it can be seen from the data in Table 1 that males have a higher cohesion than females, with 0.18697 compared to 0.16972. It is apparent from these results that the lexical production of both groups on the topic family members is similar, being males less diverse in their word availability.

Table 2
Family member's ten most frequent words

Females		Males	
Word	**LAI**	**Word**	**LAI**
MOM	0,810138085	MOM	0,747888462
DAD	0,756099787	DAD	0,747846154
BROTHER	0,691380702	BROTHER	0,688152293
SISTER	0,647334064	SISTER	0,634467258
DOG	0,283581843	GRANDMA	0,306152864
GRANDPA	0,236817806	GRANDPA	0,2387799
CAT	0,231968388	GRANDAD	0,221652146
GRANDMA	0,203760343	DOG	0,2012268
GRANDAD	0,199474409	CAT	0,128924181
GRANDMOM	0,144895159	FATHER	0,1278936

The results, as shown in Table 2, indicate that the first ten words produced by females and males are practically the same, which shows that both groups have a similar available lexicon. However, the difference in the order of the words in the lists is based on

the latency of the words in the speakers' minds. The four most available words in both groups are mom, dad, brother, and sister. These words represent the stereotype of a nuclear family (Quintanilla & Salcedo, 2019). The most available word for females and males is mom, with a lexical availability index of 0.810138085 and 0.747888462 respectively. The only different word from both groups is father from males and grandmom from females, but as a group the type of words provided are very homogeneous.

Animals

The results obtained for females and males in the semantic field animals, provided by Table 3, are similar too as the previous center of interest family members.

Table 3
Animals

Animals	TW	XW	TDW	CI
Females	648	**13.79**	**66**	0.2089
Males	**714**	13.73	62	**0.22146**

The mean of words produced by females is 13.79, almost the same as 13.73 from males. The different words were superior in females one more time, 4 more than the 62 obtained by males. The cohesion index is 0.2089 for females and 0.22146 for males. The total of words is the only data that presents different results, for females is 648 and for males is 66 higher, that is, 714 words. The results are higher than in any other center of interest, which could be because this was the last content work in the fifth-grade syllabus in this school, therefore, words are more available for the students.

Table 4
Animals' ten most frequent words

Females		Males	
Word	**LAI**	**Word**	**LAI**
CAT	0,703544118	DOG	0,726779565
DOG	0,702805557	CAT	0,67677419
CHEETAH	0,317787062	CHEETAH	0,401980163
ANT	0,31010264	LION	0,367191938
PANDA	0,288266191	PARROT	0,337896535
SPIDER	0,269132251	CROCODILE	0,336428785
CROCODILE	0,255498457	ELEPHANT	0,290945046
KOALA	0,254893206	MONKEY	0,290390858
ZEBRA	0,254650042	HIPPO	0,258285027
LION	0,246405624	ANT	0,250870574

The results, as shown in Table 4, indicate that in both groups the first three most available words of animals, cat, dog, and cheetah, are similar (Quintanilla & Kloss, 2020). Based on a cognitive standpoint, Hernández-Muñoz, Izura, and Ellis (2006) suggest that the appearance of cat and dog as the most available words of the center could be attributed to factors such as familiarity and typicality. Then, considering the following seven words, only two of them are the same appearing in a different order (lion and crocodile), the other five differ within females and males. The most available word for females is cat with an LAI of 0.703544118, and for males is dog with an LAI of 0.726779565.

Body Parts

The results obtained from the preliminary analysis of the available lexicon provided by both groups, females, and males in the semantic field body parts, are summarized in Table 5.

Table 5

Body parts

Body parts	TW	XW	TDW	CI
Females	382	**8.13**	28	**0.29027**
Males	**418**	8.04	**38**	0.21154

The total number of words produced by females, 382 words, is less than the words produced by males in 36 words. The other different result is the number of different words produced, which is higher in males than in females by 36%. This could be explained because males are socially considered more familiar with video games, and many of them include part of the vocabulary of body parts. The similar results are in the average of words produced, which are around 8, and in the cohesion index, which is a little higher in females, 0.29027 in females, and 0.21154 in males.

The semantic field body parts share the same ten most available words that appear in Table 6 in both groups, varying the order of availability, excepting face for females and fingers for males. The three most available words for females are eyes, nose, and mouth, and for males are in the eyes, legs, and nose, with an LAI for eyes of 0.650602457 for females and 0.643387033 for males.

Another important aspect that can be seen from the list of words in Table 6 is that some pairs of words are presented in the same order in both groups; these are nose-mouth, hand-head, and hair-ears. The reason for this behavior could be a phonetic association because these pairs of words have similar sounds.

Table 6

Body parts ten most frequent words

Females		Males	
Word	**LAI**	**Word**	**LAI**
EYES	0,650602457	EYES	0,643387033
NOSE	0,635018109	LEGS	0,520144505
MOUTH	0,473550377	NOSE	0,508889732
LEGS	0,449835917	MOUTH	0,440641708
HAIR	0,408146411	HEAD	0,421947692
EARS	0,379497138	HAND	0,390323574
HAND	0,36843857	FINGERS	0,342787179
HEAD	0,348327452	HAIR	0,296173232
TEETH	0,277255291	EARS	0,282970877
FACE	0,220403381	TEETH	0,203879

Food and Drinks

Table 7 compares the lexical availability of the semantic field food and drinks in females and males.

Table 7
Food and drinks

Food and drinks	TW	XW	TDW	CI
Females	**466**	**9.91**	**75**	**0.13220**
Males	431	8.29	74	0.11201

As can be seen from the table above, the results show that females have a better performance than males, they produced a total of 466 words compared to the 431 words produced by males. Females wrote on average almost ten words, while males wrote eight, findings that show a first small advantage for females. The variety of words is almost the same, 75 different words for females, and 74 different words for males, and the cohesion index is similar for both groups, but it is a little higher in females, 0.13220, compared to males 0.11201.

Table 8
Food and drinks ten most frequent words

Females		Males	
Word	**LAI**	**Word**	**LAI**
APPLE	0,402015987	APPLE	0,358920529
JUICE	0,379465722	JUICE	0,32094035
PIZZA	0,289556785	CHICKEN	0,30445102
MILK	0,266620566	WATER	0,284578917
COLA	0,262484894	COLA	0,239251923
BANANA	0,26246904	PIZZA	0,213324269
WATER	0,261919263	BANANA	0,213026414
CHICKEN	0,241325674	WATERMELON	0,199074334
ORANGE	0,229314166	ORANGE	0,187578127
WATERMELON	0,221504062	ICE-CREAM	0,183189881

Data from Table 8 reveals that the ten most available words are the same for females and males, except for *milk* for females and *ice-cream* for males. The first two words that appear in the list have the same order in both groups, they are *apple* and *juice,* and the LAI is higher in females, 0.402015987 and 0.379465722 compared to 0.358920529 and 0.32094035 in males.

Clothes

Within the semantic field *clothes*, Table 9 provides another overview of the similarities in the results of females and males in the lexical availability test.

Table 9
Clothes

Clothes	TW	XW	TDW	CI
Females	276	**5.87**	42	**0.13982**
Males	**277**	5.33	42	0.12683

The total of words provided by both groups is almost the same, only one word of difference in favor of males. The average of the available lexicon is five words for females and males, and they also have the same different words provided by both groups. The last index, cohesion, is higher in females, even though the difference is not relevant, 0.13982 compared to 0.12683. This is the semantic field that showed the most similar results.

Table 10
Clothes' ten most frequent words

Females		Males	
Word	**LAI**	**Word**	**LAI**
T-SHIRT	0,798099787	T-SHIRT	0,7156075
SHIRT	0,415358319	SHIRT	0,399807062
SHOES	0,353878691	JEANS	0,341558885
DRESS	0,291284511	SHOES	0,331619971
JEANS	0,269736436	SHORT	0,304590192
SHORT	0,258961277	JACKET	0,234261193
SOCKS	0,187996774	JUMPER	0,230233885
PANTS	0,183247681	PANTS	0,209712135
JACKET	0,143133967	SOCKS	0,192994635
SKIRT	0,123682728	HAT	0,116336817

Table 10 above illustrates the similarities between the ten most available words provided by females and males in the semantic field of *clothes*. This center presents the same characteristics as the other four semantic fields analyzed before. It is possible to observe a similar available lexicon for the first ten words produced by both groups, except for two words, *dress* and *skirt* for females, and *jumper* and *hat* for males, a difference that can be because *dress* and *skirt* are clothes connected mostly to females, therefore, is a more available lexicon for them. A coincidence in the first two words is present among females and males, the words *t-shirt* and *shirt* are the most available words for both groups, varying only in the LAI, which is a little higher in females.

Analysis by gender

Regarding gender, results are presented below separated for females and males within the five centers of interest considered in the lexical availability tests.

It can be seen from the data in Table 11 and Table 12 gathered from females and males' lexical availability in all centers of interest, that the most productive semantic field for both groups is *animals,* followed by *food and drinks, body parts, family members* and *clothes.* It is important to highlight that the number of words in the most productive center of interest, *animals*, is greatly above the number of words obtained in the least productive center of interest, *clothes*, with a difference of 372 words for females and 437 words for males.

Table 11
Females

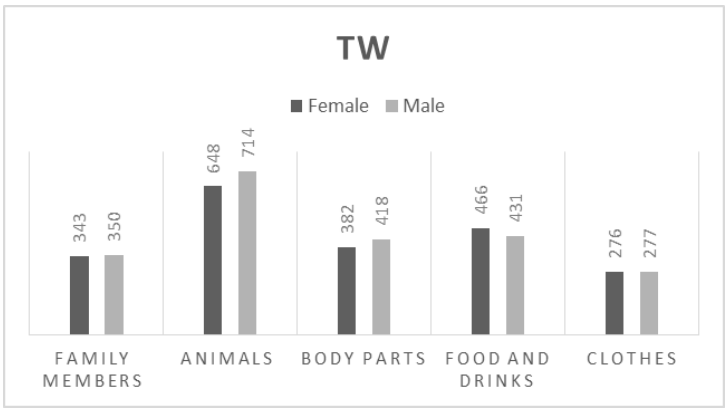
Center of interest	**TW**	**XW**	**TDW**	**CI**
Family members	343	7.3	43	0.16972
Animals	648	13.79	66	0.20890
Body parts	382	8.13	28	0.29027
Food and drinks	466	9.91	75	0.13220
Clothes	276	5.87	42	0.13982
Mean	**423**	**9**	**50.8**	**0.188182**

Table 12
Males

Center of interest	TW	XW	TDW	CI
Family members	350	6.73	36	0.18697
Animals	714	13.73	62	0.22146
Body parts	418	8.04	38	0.21154
Food and drinks	431	8.29	74	0.11201
Clothes	277	5.33	42	0.12683
Mean	**438**	**8.424**	**50.4**	**0.171762**

Comparing the total number of available words produced by both groups, as seen in Figure 4, in all centers of interest males outperformed females, except in the semantic field *food and drinks* where females had a better performance, results that showed no relevant differences.

Figure 4
Total of words

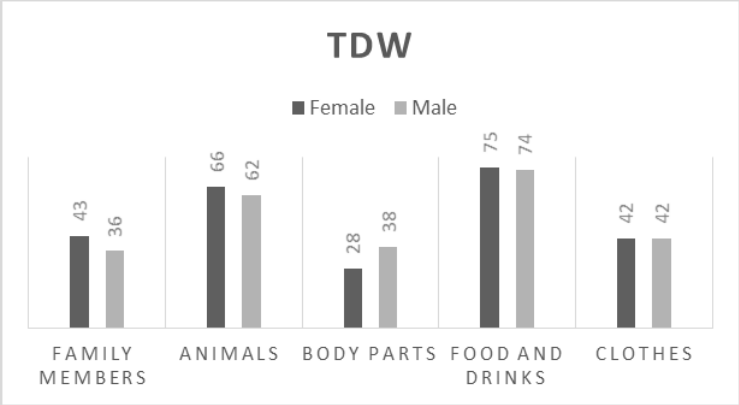


According to the results presented in Figure 5, obtained for the mean of words, females had a better performance than males in all centers of interest, a difference that is not relevant; however, this indicates that as a group the average of available words in females is higher, meaning that as a group they are more homogeneous in lexical availability.

Finally, considering the different words (Figure 6), the only center of interest that showed more different results in the two groups was in *body parts,* where males produced a wider range of different words, ten more than females.

Figure 5
Mean of words

Figure 6
Total different words



Statistical analysis

A simple statistical analysis was used to see if there are any significant differences between the results of lexical availability between females and males. The results considered for this analysis were the total of words, the mean of words produced, and the different words in both groups. T-tests were used to analyze the relationship between the results obtained by females and males.

Table 13
Total of words

TW	Females	Males
Mean	423	438
P(T<=t)	0,882253819	

The first statistical analysis examined the effect of the variable gender on the total of words produced by fifth-grade students in a subsidized school. It can be seen from the data in Table 13 that the group of males wrote 15 more words than females, 423 words compared to 438. From these results we can see that p = 0,882, and it is > 0,05, indicating that the difference between both groups is not statistically significant.

Table 14
Average of words

XW	Females	Males
Mean	9	8,424
P(T<=t)	0,777928818	

The second statistical analysis examined the impact of the variable gender on the mean of words produced by the same group of students. The results obtained from the preliminary analysis can be compared in Table 14, where the mean of words obtained by females and males are almost the same, 9 and 8,4 each. According to the result of p = 0,78 which is > 0,05, there were no significant differences between the two groups.

Table 15
Total number of different words

TDW	Females	Males
Mean	50,8	50,4
P(T<=t)	0,972863227	

From the data in Table 15, we can see that the total number of different words produced by females and males is the same, around 50 words. All the students have the same different available lexicon on average for all the centers of interest, therefore, according to the value of p= 0.97, being > 0.05, no significant differences were found between the two groups.

The results presented above seem to reflect the null effect of gender in the variable lexical availability of fifth-grade students in a subsidized school in Chile.

Discussion and conclusions

The present study was designed to determine the effect of the variable gender on the L2 available lexicon of primary students from a subsidized school in Chile. Interestingly, the findings of this investigation show that gender is a variable that does not affect the available lexicon produced by fifth-grade Chilean students, because of the very similar results obtained by females and males in the vocabulary in all the semantic fields presented in the lexical availability task (family members, animals, body parts, food and drinks and clothes).

The first question in this study sought to determine the average number of words that female and male primary students produced in a lexical availability task. On average, from the five centers of interest included in the lexical availability test, females produced a total of 423 words in each center of interest, 3.42 % less than the total of 438 words produced by males, a difference that was statistically not significant. When analyzing the average of words produced by each student in each of the five centers of interest, females produced 9 words and males 8.4 words, a difference that statistically was also not significant. In summary, these results show that males as a group produce more words in all the centers of interest than females, but females as a group are more homogeneous in terms of lexical availability because individually on average in each of the centers of interest, they produce more words than males. However, the findings of the current study do not support the previous research of Jiménez and Ojeda (2009), Fernández (2010), Verdeses-Mirabal (2012), Sandu (2012), and Agustín-Llach and Fernández (2014) who

state that gender is a variable that has a major incidence in the lexical availability of students, confirming that females always outperform males, showing a richer and more varied lexical competence (Abibi, 2021).

The second question in this research was if there were any differences in the type of words produced by females and males in a lexical availability task. The available lexicon from students is more productive in some cue words than others. Males produce more words in the semantic fields animals, body parts, and family members, whereas females are more productive in the semantic fields food and drinks, and clothes, even though these differences are not statistically significant.

When analyzing qualitative differences, we confirm that differences are more qualitative than quantitative, as stated by Cepeda et al. (2013). Even though the average of words produced by each of the students in each center of interest is very similar for females and males, the difference comes from the different words they produce in all the centers of interest, except clothes. In the semantic field family members, animals, and food and drinks, females produce more different words than males, who produce more words in the semantic field body parts. Also, in general, the ten most available words tend to be very similar in both groups. However, the order of appearance (availability) varies between males and females. This finding corroborates the ideas of Sandu (2012), who claims that despite the high percentage of common words produced by females and males, the variable gender affects the order in which the words appear. Other research indicates that qualitative differences may be due to the thematic differentiation of specific centers of interest that refer to activities or attributes traditionally regarded as feminine or masculine (Fernandez-Merino, 2014; Pacheco, Cabrera & Gonzalez, 2017).

The results obtained in this study, in the opinion of the authors, are undoubtedly the result of the low linguistic level of the subjects in the sample. It is possible that no major differences were observed between men and women at both the quantitative and qualitative levels due to the low vocabulary of both groups.

This work contributes to the existing knowledge of lexical availability among primary students in the Chilean context and the effect of the variable gender in the L2 available lexicon. The present study provides additional evidence with respect to the fact that gender would not be an important variable that affects the quantitative results of lexical availability. The empirical findings in this study also provide a qualitative analysis of the most available lexicon within female and male primary students, and the difference between them, which practically does not exist in research related to gender effect in EFL lexical availability, which was even a suggestion for future research in the study carried out by Jiménez and Ojeda (2009) and Aabidi (2021). The evidence provided by the study is also important information that can be used to develop targeted interventions aimed to improve vocabulary learning practices inside our classrooms, to enhance vocabulary acquisition in an inclusive and effective way.

The generalizability of these results is subject to certain limitations because of the characteristics of the sample, as it only corresponds to the reality of primary students from a Chilean subsidized school. However, the size of this sample of 97 students is not less relevant comparing it with the 200 students in most of the other similar studies. There is a need for more research because of the lack of empirical evidence in this area.

Future research should, therefore, concentrate on the investigation of the gender effect in vocabulary learning in second language acquisition, considering, for example, the qualitative differences among females and males' lexical availability in different semantic fields, and the difference over time considering gender effect on students' lexical availability at different school levels.

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