International Journal of Educational Innovations
ISSN 3078-5677

International Journal of Educational Innovations
Volume 2, Issue 1, 6-21
https://doi.org/10.46451/ijei.260102

Received: 13 August, 2025
Accepted: 20 October, 2025
Published: 1 January, 2026

Older and Younger Learners' Productive Vocabulary in Spanish L1 and EFL: Vocabulary Structure and Lexical Access

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Abstract
This study aims to explore the impact of age on vocabulary production in English as a Foreign Language (EFL) and Spanish as an L1. Age is a recurrent variable in second language acquisition (SLA) research, but it also marks lexical knowledge in the L1. In terms of vocabulary production, age has been identified as a key factor affecting how speakers acquire and use vocabulary both in their L1 and additional languages. For this purpose, a semantic fluency task was conducted to explore the responses that senior primary (n = 17) and secondary school (n = 17) students elicit in response to the prompts 'Love' and 'Amar/amor'. All students (n = 34) shared Spanish as their L1 and had learned English through formal instruction, achieving a general proficiency level of A1/A2. The research questions that this study sought to answer were (1) to ascertain learners' vocabulary size in Spanish L1 and EFL, (2) to identify shared responses, and (3) to account for differences and similarities in lexical organisation between student cohorts. The results showed significant differences in the average number of tokens and types produced. The lexical availability graphs (LAGs) revealed that learners present similar categorisation patterns in both Spanish L1 and EFL. However, qualitative differences can be spotted in the most available words produced by older and younger learners.

Keywords
Age, EFL, vocabulary production, semantic fluency, Spanish L1

Introduction: Semantic Categorisation in SLA and Lexical Access

Semantic categorisation is a human activity that helps us, by means of grouping semantically similar words and items, to make sense of the world. Also, semantic categorisation supports efficient retrieval in comprehension and production, which improves access speed and contributes to effective vocabulary development in second language acquisition (SLA) (e.g., Meara, 2005; Schmitt, 2008). Research approaches semantic categorisation and lexicon organisation via the semantic or mental lexicon metaphor which lies on the idea that words or

lexical-semantic items are clustered and establish links among them depending, mainly though not exclusively, on semantic similarity; thus, semantic categories such as 'Animals', 'Countryside' or 'Love' appear (e.g., Fitzpatrick & Thwaites, 2020).

In SLA contexts, stronger semantic organisation in a foreign language (FL) correlates with fluency and lexical depth (Nation, 2001). Semantic fluency tasks, which consist of naming words in a category within a one- or two-minute timespan, tap into learners' lexical depth and network organisation and, at the same time, provide an insightful assessment of learners' mental lexicon accessibility both in the first language (L1) and second/foreign language (L2/FL) (Troyer, Moscovitch & Winocur, 1997, De Deyne & Storms, 2014, Palapanidi, e.g. this volume). Additionally, qualitative aspects such as clustering patterns and semantic density are key metrics for understanding how learners construct and access their FL lexicons (e.g., De Deyne & Storms, 2014).

The present study operationalises vocabulary structure and lexical access via a semantic fluency task of the lexical availability type (cf. Jiménez Catalán, 2014) on the category 'Love', enabling comparison across age (i.e., younger vs. older), language (Spanish vs. English), and proficiency context (L1 vs. L2/FL). In addition, it uses graph analysis as a methodology to explore how age and languages affect lexical availability and network topology.

Semantic Fluency in Younger vs. Older Language Users

Semantic fluency tasks, which ask individuals to generate the largest number of items within a semantic category in a limited time, are a robust method to study lexical access and lexical organisation in terms of age and language proficiency (Houtzager et al., 2014).

In bilingual and sequential FL learners, semantic fluency presents further complexity. In this regard, Rosselli et al. (2002) and Gollan et al. (2002) compared Spanish-English bilinguals to monolinguals, revealing that bilinguals produced fewer exemplars in semantic fluency tasks across languages. They concluded that late L2 learners underperform in comparison with their L1 peers and early bilinguals, as they elicited weaker lexical connections (Rosselli et al., 2002; Gollan et al., 2002; Ivanova & Costa, 2008). The latter could probably be due to a reduced use of L2 words, which might result in weaker links and hinder or slow down retrieval.

Research in the specific realm of L1 semantic fluency with the semantic fluency task demonstrates clear age-related differences in vocabulary breadth, productivity, and topic-related lexical access. Young children (typically aged 6-10) tend to produce fewer words in semantic fluency tasks, often with a more limited semantic range and higher repetition rates than adolescents or adults. Herránz-Llácer and Gómez Devis (2022) provide an extensive overview of research in connection with children's lexical availability across the years and languages. These studies, with mostly a pedagogical perspective, reveal that the number and the cohesion of responses are not only dependant on age, but also on the semantic field studied. They advocate, thus, for an FL vocabulary curriculum that draws on the lexical availability of L1 peers.

Studies on L2 vocabulary learning have demonstrated that older learners produce more responses. Within the field of lexical availability research, age has not typically been treated as a central variable. However, some studies do reveal a trend toward an increased number of lexical items produced as learners grow older–a pattern which tends to parallel their academic progression. At the same time, there is evidence of cross-age consistency in response patterns. More specifically, some prompts yield similar productivity across age groups, with the same

cue words generating both the highest and lowest number of responses, regardless of age. For instance, Carcedo González (1998) observed that learners of Spanish as an FL across different age groups tended to produce the same top five responses for a set of prompts. Interestingly, these findings align with those reported in Spanish L1 studies involving learners of different ages or school levels (see Samper Hernández, 2002), which may point to a shared or universal structure in the mental lexicon, spanning L1, L2, and FL contexts.

In a later study that specifically examined age-related differences among learners with equivalent L2 proficiency levels, Jiménez Catalán et al. (2014) uncovered notable qualitative contrasts. Younger learners often engaged in inventive strategies, such as creating new words, while older learners were more likely to rely on cognates. The authors attributed these differences to variations in cognitive development, personal experience, and instructional background. Additionally, Agustín Llach (2022) found that older and more proficient learners produced more responses in terms of both tokens and types (see also Samper Hernández, 2014; Sánchez-Saus, 2009). The scholar concluded that older learners might have increased storage capacity, cognitive flexibility, and greater capacity for strategy application for lexical-semantic search. Nevertheless, high degrees of similarity were found among the most available words in younger and older learner cohorts, which might point to the existence of a common core vocabulary, a basic vocabulary shared by EFL learners at different ages, proficiency levels, and school grades (cf. Šifrar Kalan, 2016; López González, 2010). Previous studies on typical category members listed by bilingual children and adults in English and Spanish L1 revealed very similar results (Shivabasappa et al., 2017), coinciding with lists for Spanish as an L1 and FL in adult informants (Šifrar Kalan, 2016). These findings highlight the importance of cognitive maturity and metalinguistic awareness in L2 lexical availability.

Lexical availability is strongly influenced by the thematic domain or prompt. Age differences are often more pronounced in academic or abstract topics. For example, Meara and Fitzpatrick (2000) observed that adult learners activate more specialised lexical items when responding to academic prompts, while children remain within a basic, familiar vocabulary set. Similarly, Samper Padilla (2005) found that adolescents produced more vocabulary related to school, leisure, and technology, whereas younger children provided a higher number of responses in categories like ‘Animals’ or ‘Toys’, illustrating the importance of age-appropriate topics in semantic fluency tasks.

Expressing Emotion: Older vs. Younger Learners

The intersection between age, L2 learning, and emotional expression forms a clear area of emerging research. Younger FL learners, especially primary school children and adolescents, tend to show less varied emotional vocabulary and lower semantic-affective density. In the specific realm of lexical availability studies, Jiménez Catalán and Dewaele (2017) examined primary Spanish EFL learners’ lexical availability in emotion prompts like ‘Love’, revealing fewer items and a predominance of basic nouns and fewer emotional adjectives or emotionally rich metaphors in semantic fluency tasks with the category ‘Love’. Younger learners rely on classroom-taught, lexicalised vocabulary rather than flexible emotional lexicon. The latter highlights a shallow emotional network structure in young EFL learners.

In the particular domain of semantic fluency and lexical availability, research traditionally focuses on general or academic prompts (e.g., ‘School’, ‘Animals’, ‘Food’), but in recent years there has been growing interest in emotion-related categories such as ‘Love’, ‘Hate’, ‘Fear’, ‘Joy’, or ‘Sadness’ due to their cognitive, affective, and developmental significance. Emotional vocabulary is deeply connected to identity, socialisation, and communicative competence.

 ISSN 3078-5677

Therefore, analysing how speakers access and produce emotion-related words can shed light on both linguistic development and cultural conceptualisation of emotion. Studies employing graph analysis reveal that younger learners' emotional networks likely have low-average degree and clustering coefficients, reflecting shallow lexical structures (cf. Quintanilla & Salcedo, 2019). Among older learners, positive structural differences may emerge in L2 networks, yet compared to L1, they remain smaller and less cohesive.

Expressing Emotion: L1 vs. L2

Research on emotional expression in L1 versus L2 consistently reveals the phenomenon of "emotional attenuation", which refers to the emotionally charged words that evoke weaker emotional responses (Pavlenko, 2008; Ferré et al., 2018). Studies by Ferré et al. (2018) and Caldwell-Harris (2015) show that advanced FL learners can reduce the emotional gap between L1 and L2 and may develop more connected and deeper emotional lexicons, especially when acquisition started early in time and in immersion over school contexts. Emotional access in the L2 seems to be mediated by proficiency, frequency of use, and context of acquisition, which relates to the functions, contexts, and people where the L1 and the L2 are used. For instance, formal or family contexts (cf. Dewaele, 2008; Caldwell-Harris, 2015; Ferré et al., 2018).

Spain-based studies show emotional transfer from L1 in L2 learners. Blanco Canales and Pérez-García (2024) asked Spanish learners to rate three hundred core L2 English words in valence and arousal. The scholars observed strong correlations with L1 ratings, suggesting learners transplant emotional connotations from Spanish lexicons. Yet, the English native data diverged, indicating L2 emotional networks are shaped by translation rather than by an independent semantic structure.

In L1 contexts, studies have shown that age and cognitive maturity play a key role in how individuals respond to emotion-based prompts. Children tend to produce more concrete and situational responses, while adolescents and adults generate more abstract, metaphorical, or evaluative language.

Studies on lexical availability and emotional vocabulary development in Spanish consistently show age-related differences in how individuals respond to emotional prompts. Research with Spanish primary school children indicates that younger participants often produce concrete, experience-based responses to emotional cues such as *love*, *fear*, or *sadness*—frequently naming people (*mamá* [mum], *papá* [dad]), everyday actions (*abrazar* [hug], *llorar* [cry]), or basic evaluative adjectives (*feliz* [happy], *malo* [bad]) (Jiménez-Catalán & Dewaele, 2017). Normative data from the SANDchild database confirm that familiarity, concreteness, and imageability ratings for emotional words vary significantly across age groups, with older children tending to know and use more abstract and culturally nuanced terms (Ferré et al., 2017). Developmental research using the EVER measure likewise shows a progressive increase in both the breadth and abstraction of emotional vocabulary from middle childhood onward (Beaudry et al., 2020). Longitudinal and cross-sectional evidence further suggests that the acquisition of emotion-laden words continues into adolescence and adulthood, with later-learned words often being less concrete, more contextually bound, and more influenced by cultural and literary sources (Ponari et al., 2022). Large-scale panhispanic studies of emotional lexical availability support this developmental pattern, revealing that adults' responses to affective prompts frequently include abstract nouns (*traición* [betrayal], *libertad* [freedom]) and metaphorical or literary expressions (*alma* [soul], *eternidad* [eternity]), in contrast to the more concrete lexical fields generated by younger participants (Samper Padilla & Bellón Fernández, 2023).

 ISSN 3078-5677

When used in semantic fluency tasks, this type of prompt can impact the emotional and lexical complexity of L2 writing. Studies using fine-grained textual analysis tools have shown that different prompt types (e.g., 'Pandemic' vs. 'Non-pandemic') affect the emotionality and lexical complexity of essays written by L2 learners (see Tabari & Wand, 2021), with L2 proficiency playing a central part in how emotion is approached in the L2. This is because higher proficiency learners tend to use a wider range of emotional vocabulary and show more nuanced emotional expression (Mavrou et al., 2023).

Graph-based studies (e.g., Moors et al., 2013; Pérez-Sánchez et al., 2021) reveal that emotional prototypicality correlates with network centrality. However, FL networks often underrepresent emotion nodes or show lower connectivity, leading to less accessible and coherent emotion fields. The latter might indicate weaker semantic-affective links. Graph theory predicting such attenuation manifests as smaller clusters, less interconnectivity, and more fragmented emotional networks in L2. These findings were corroborated in Spanish EFL and Swedish FL learners (Opitz & Degner, 2012; Moors et al., 2013).

Graph analysis extends this understanding. Ferreira and Echeverría (2010) used graph theory to compare native with EFL lexicon structures. Their results show that L1 speakers form well-clustered networks with subcategories, whereas FL learners exhibit flatter, less-cohesive structures. Spanish-based graph studies (e.g., Quintanilla & Salcedo, 2019) applied metrics like clustering coefficients and average degree to show low cohesion in L2 networks. In light of these previous findings, the present study seeks to compare L1 and L2 vocabulary structures in the field of 'Love'.

Research Questions

We believe that the network approach provides a promising framework for analysing semantic fluency data. It predicts that age and language proficiency might modulate network structure in the 'Love' category.

Accordingly, and with all the above considerations in mind, the present study seeks to answer the following research questions:

1. What are the differences between primary and secondary school learners in the number of responses produced in a semantic fluency task?
2. What are the qualitative similarities and differences between primary and secondary school learners in terms of the responses produced?
3. What is the age/language intersection and what does it tell us about the access and organisation of the semantic category 'Love'?

Methodology

As stated in the research questions, this study aims to quantitatively and qualitatively compare senior primary and secondary school students' semantic fluency in response to the emotional prompt 'Love' in both Spanish L1 and EFL.

Participants

The EFL learners (n = 34) who participated in this research study were organised into two student cohorts according to the age variable. The first group was formed by 17 senior primary school pupils (grade 6) aged between 11 and 12 years old. The second group, meanwhile, comprised 17 students enrolled in their final secondary school year (grade 10) aged between 15 and 16 years old. The fact that learners were attending their senior years of primary and secondary compulsory education allowed us to test the emotional vocabulary that learners elicit at the end of both educational stages. Additionally, all students shared Spanish as their L1 and

presented a general EFL proficiency level of A1/A2 according to the Common European Framework of References (CEFR), which helped us isolate the age variable.

Instruments

In order to analyse learners' emotional productive vocabulary, a semantic fluency task including the prompts 'Amar/amor' and 'Love' was designed. The cue words were first presented in the L2 and afterwards in the L1. Moreover, 10th-grade learners completed an English placement test to ensure that their EFL proficiency level was A1/A2. Primary school participants were ascribed to the A1/A2 level. Additionally, the ELT textbook contents were aimed at A1/A2 EFL learners.

Semantic Fluency Task

Learners were tested on their emotional productive vocabulary by means of a semantic fluency task. Informants were granted two minutes to write as many words as came to their minds in response to the prompts 'Amar/amor' and 'Love' in separate sheets of paper with numbered lines.

English Placement Test

The EFL proficiency level of 10th-grade students was measured through the online version of the Oxford Placement Test (OPT). This exam is suitable for grading upper secondary school and adult learners' EFL knowledge and comprises two sections: Use of English (i.e., grammar and vocabulary) and Listening. Depending on the scores obtained, learners were placed in their corresponding CEFR proficiency level: pre-A1 (0.1-1 points), A1 (1-21 points), A2 (21-41 points), B1 (41-61 points), B2 (61-81 points), C1 (81-101 points), and C2 (101-120 points) (see Purpura, 2024).

Procedure

Data were collected during students' regular class schedule. Before the distribution of the tasks, the researchers explained the instructions of completion in Spanish. Additionally, they were responsible for controlling the time scheduled for each of the prompts. In order to ensure participants' anonymity, each learner was assigned an identification number to track their responses across the different tests.

Data analysis

The results from the semantic fluency task were coded and processed in a Microsoft Excel file according to the age variable and following the same protocols employed in previous research on semantic fluency (see Geoghegan, 2023; Jiménez Catalán, 2023; Jiménez Catalán & Agustín Llach, 2017): 1. Spelling mistakes were corrected; 2. Unintelligible words or words in other languages were excluded; 3. Repeated words were counted only once; 4. Lexical phrases were lemmatised as one lexical unit; and, 5. Plural words were changed to their singular form.

The online OPT scores, meanwhile, were marked automatically. Therefore, the 10th-grade learners who obtained a CEFR level higher than A2 were excluded from the final sample to ensure that all participants had a beginner or pre-intermediate EFL proficiency level.

Finally, LexPro was used to conduct data analysis. This programme was developed by the University of Salamanca and the University of Elche to process lexical data resulting from semantic fluency tasks (see Hernández Muñoz et al., 2023). It provides valuable information for both quantitative (i.e., total number of tokens, total number of types, mean tokens) and qualitative (i.e., shared and non-shared words, lexical availability graphs) analysis.

Additionally, Microsoft Excel formulae were useful to analyse data quantitatively. For example, to measure the standard deviation (SD) values of the total number of tokens.

Results

The main objective of this research study is to ascertain whether EFL learners of different ages display similar or different emotional productive vocabulary. Therefore, the following sections present the results in accordance with the three research questions formulated above.

Vocabulary size

The first research question of this study asked whether primary and secondary school learners differed in the emotional vocabulary size in Spanish (L1) and English (L2). In this regard, the semantic fluency output was assessed in terms of token and type production.

Table 1 comprises the descriptive results of the semantic fluency task in both languages. As can be observed, the results indicate that younger learners elicited more tokens and types in both languages. However, the two learner cohorts display similar lexical patterns, as they are more productive in Spanish (L1) than in English (L2). Additionally, the type-token ratio (TTR) was calculated to measure participants' lexical diversity (Zenker & Kyle, 2021). In this respect, 10th-grade learners exhibited higher lexical diversity than their younger counterparts in the two languages. The latter thus suggests that older learners possess richer and more varied vocabulary knowledge.

Table 1
Descriptive Results in Spanish (L1) and English (L2)

Prompt	6th-grade learners			10th-grade learners		
	Types	Tokens	TTR	Types	Tokens	TTR
Amar/amor	95	219	0.43	91	201	0.45
Love	85	172	0.49	66	132	0.5

In order to check whether the quantitative differences between groups are statistically significant, a Welch's *t*-test was conducted. As illustrated in Table 2, the results from the test revealed that the differences between groups were meaningful as the *p*-values obtained were lower than 0.05, especially in the case of English (L2). Thus, one may affirm that the younger learners have a larger vocabulary size than their older peers.

Table 2
Statistical Analysis of Token Results in Spanish (L1) and English (L2)

Prompt	6th-grade learners			10th-grade learners			*p*-value
	Tokens	Mean	SD	Tokens	Mean	SD	
Amar/amor	219	12.8	5.2	201	11.8	3.4	0.019
Love	172	10.1	4.2	132	7.7	2.9	< 0.001

Shared and non-shared words

To address the second research question regarding the qualitative differences and similarities between older and younger EFL learners, the shared and non-shared words produced in the semantic fluency task were analysed.

Table 3 conveys the divergence (i.e., non-shared words) and the convergence (i.e., shared words) according to the total number of tokens produced per prompt by each learner cohort. As shown in Table 3, the words shared in the prompt 'Amar/amor' prompt amount to over 5 %

of the total tokens elicited. With respect to the cue word 'Love', the words shared by the two groups correspond to less than 5 % of the total lexical items produced in the case of the younger learners and slightly over 5 % of the words elicited by the older learners. These results, therefore, point out to great qualitative differences in the emotional productive vocabulary of the two learner cohorts across their whole linguistic repertoire.

Table 3
Shared and Non-shared Words in Spanish (L1) and English (L2)

Prompt	6th-grade learners			10th-grade learners		
	Tokens	Divergence	Convergence	Tokens	Divergence	Convergence
Amar/amor	219	205	14	201	187	14
Love	172	164	8	132	124	8

So as to conduct a deeper analysis concerning the words shared by younger and older learners, Table 4 includes the shared words by the two groups in terms of frequency and the number of repetitions. As can be seen, most of the shared words in Spanish (L1) are linked to the family and affection semantic fields, such as *abrazo* [hug], *querer* [like], and *abuelo* [grandfather]. Although the family semantic field is also present in English (L2), the words elicited seem to be less affectionate since they are merely descriptive. For example, heart and friend. With respect to word class, nouns are prevalent in both languages. Nevertheless, learners elicited a verb in Spanish (L1) (i.e., *querer* [like]) and an adjective in English (L2) (i.e., pink). The latter thus might suggest that participants produce and share more emotional words in their mother tongue than in EFL.

Table 4
Shared Words in Spanish (L1) and English (L2)

Amar/amor	6th-grade learners	10th-grade learners	Love	6th-grade learners	10th-grade learners
Amigo	9	4	Heart	1	12
Abrazo	1	10	Friend	9	2
Beso	1	9	Boyfriend	1	8
Chocolate	6	4	Family	3	3
Corazón	2	7	Chocolate	2	3
Abuelo	10	1	Father	3	1
Familia	5	4	Pink	2	1
Padre	7	2	Daughter	1	1
Sentimiento	1	5			
Querer	1	4			
Hijo	1	3			
Felicidad	2	1			
Amistad	1	1			
Mascota	1	1			

In contrast, Table 5 comprises the ten most available words elicited by the two groups in Spanish (L1) and English (L2), as well as the number of encounters among learners' responses in brackets. As illustrated, the learner cohorts do not share any of their most elicited words, which is not surprising since the percentages of shared words in both prompts were remarkably low (see Table 3). In accordance with the non-shared words in the two prompts, one may affirm that older learners associate the semantic category 'Love' with romantic love, as the 10th-grade

 ISSN 3078-5677

learners' most available words are *heart* and *boyfriend*. Younger learners, meanwhile, produced more diverse responses to the prompt since the most available words present fewer repetitions. However, the 6th-grade learners' most available words are related to the household, such as *dad* and *friend*. As regards word class, the two groups predominantly produced nouns. However, younger learners also elicited adjectives in Spanish (L1) (e.g., *gratis* [free]) and verbs in English (L2) (e.g., *eat, sleep*). Taking these results into account, it can be stated that younger and older learners differ qualitatively in their productive emotional vocabulary in both their L1 and L2.

Table 5
Top 10 Most Available Words in Spanish (L1) and English (L2)

	6th-grade learners	10th-grade learners
Amar/amor	Amigo [friend] (9), abuelo [grandfather] (10), chocolate [chocolate] (6), abuela [grandmother] (8), dinero [money] (5), madre [mother] (8), tía [aunt] (8), familia [family] (5), padre [father] (7), gratis [free] (4)	Beso [kiss] (9), pareja [couple] (10), abrazo [hug] (10), novio [boyfriend] (9), corazón [heart] (7), sanvalentín [saintvalentine] (6), boda [wedding] (6), novia [girlfriend] (6), cupido [cupid] (7), flecha [arrow] (6)
Love	Dad (11), mom (8), friend (9), money (4), brother (5), eat (5), sleep (4), grandpa (4), dog (5), family (3)	Heart (12), boyfriend (8), girlfriend (8), kiss (7), valentinesday (6), cupid (4), hug (4), couple (3), flower (6), dear (2)

Lexical organisation

In connection with the third and last research question related to younger and older learners' lexical organisation, some lexical availability graphs resulting from the participants' responses to the semantic fluency task were analysed. A lexical availability graph (LAG) is the representation of an "ideal inter-subjective mental lexicon" (Agustín Llach & Rubio, 2024, p. 2) which displays how words are stored in the mind. Therefore, this type of graph provides valuable information to conduct a qualitative analysis in terms of lexical-semantic patterns such as node interconnection, word clusters, and centrality.

As regards lexical organisation in Spanish (L1), Figures 1 and 2 illustrate 6th-grade and 10th-grade learners' semantic networks in response to the prompt 'Amar/amor'. As can be observed, older learners exhibited a more centralised lexicon than their younger counterparts, as their most elicited words (i.e., *corazón* [heart], *abrazo* [hug], *beso* [kiss]) are found in the middle-lower part of the graph whereas younger learners' most repeated words (i.e., *abuelo* [grandfather], *amigo* [friend], *dinero* [money]) are shifted toward the margins of the graph. Concerning node interconnectivity, some clear word clusters can be spotted among younger learners which could be classified as 'family' (i.e., *padre-abuelo-abuela-madre* [father-grandfather-grandmother-mother]) and 'daily activities' (i.e., *comer-dormir-jugar-correr* [eat-sleep-play-run]). Additionally, the most produced pairs of nodes or bigrams by 6th-grade learners are linked to the household such as *padre-madre* [father-mother], *abuelo-abuela* [grandfather-grandmother] or *familia-amigo* [family-friend]. Older learners, meanwhile, display a less clear word cluster that can be related to 'romantic love' (i.e., *chocolate-abrazo-beso-carta-sanvalentín* [chocolate-hug-kiss-letter-saintvalentine]). In the case of 10th-grade learners, the most elicited bigrams are also associated to the couple like *abrazo-beso* [hug-kiss] and *novio-novia* [boyfriend-girlfriend].

 ISSN 3078-5677

Figure 1
6th-grade learners' LAG in Spanish (L1)

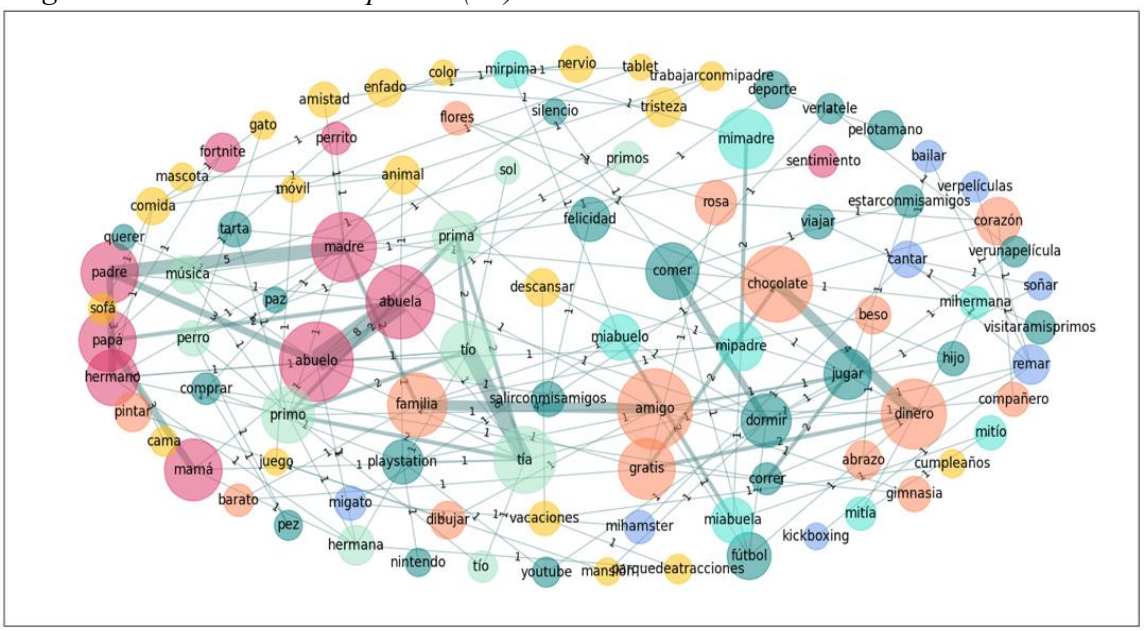
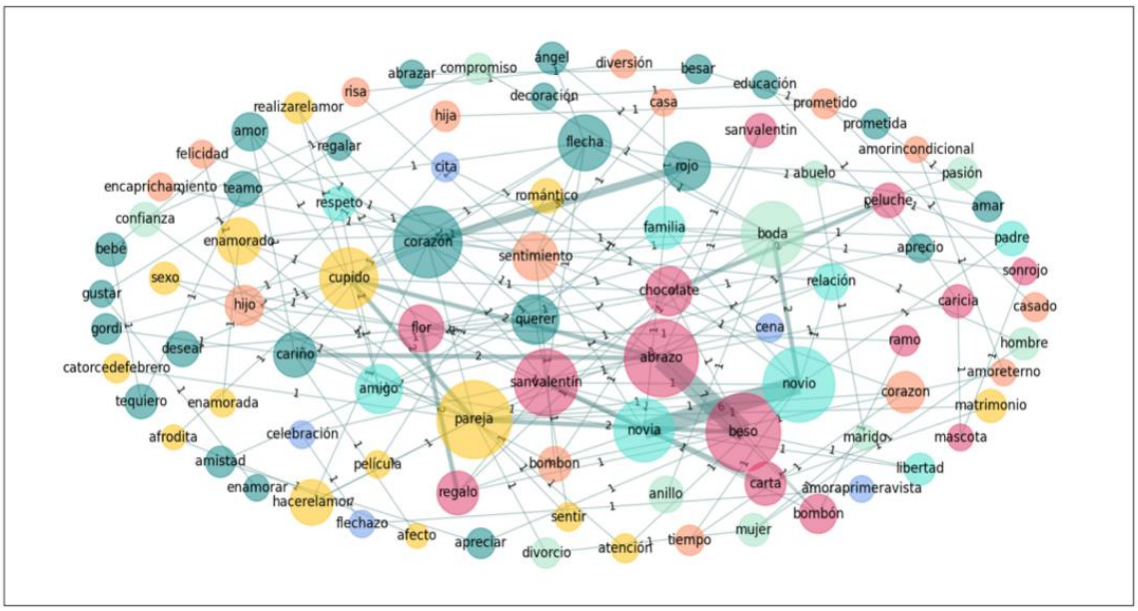


Figure 2
10th-grade learners' LAG in Spanish (L1)



Pertaining to learners' lexical organisation in English (L2), Figures 3 and 4 comprise participants' mental lexicon in reaction to the cue word 'Love'. As illustrated, there is a notable difference between the two learner cohorts in terms of centrality, as younger learners' most elicited words (i.e., mom, dad, friend) appear in a more central position than the ones of their older peers (i.e., heart, kiss, boyfriend, girlfriend). Furthermore, 6th-grade learners' nodes are more interconnected. In this regard, some word clusters related to 'family members' (i.e., mom-dad-grandma-grandpa) and 'pets' (i.e., cat-dog-turtle) are to be mentioned. When it comes to older learners, no clear word clusters can be identified. However, 10th-grade learners produced solid bigrams, as is the case of boyfriend-girlfriend, hug-kiss, red-heart.

 ISSN 3078-5677

Figure 3
6th-grade learners' LAG in English (L2)

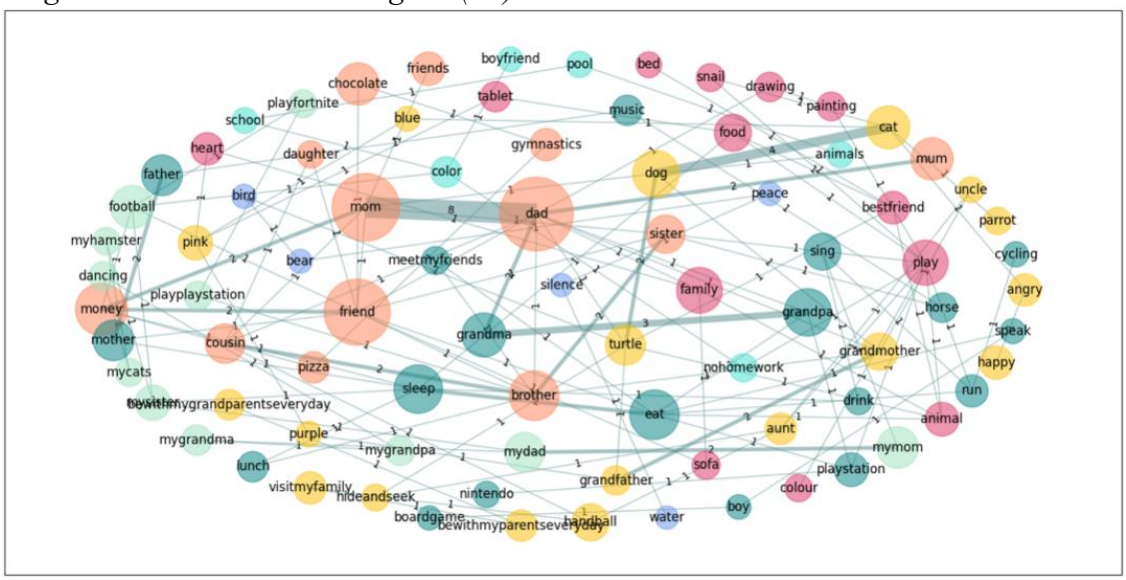
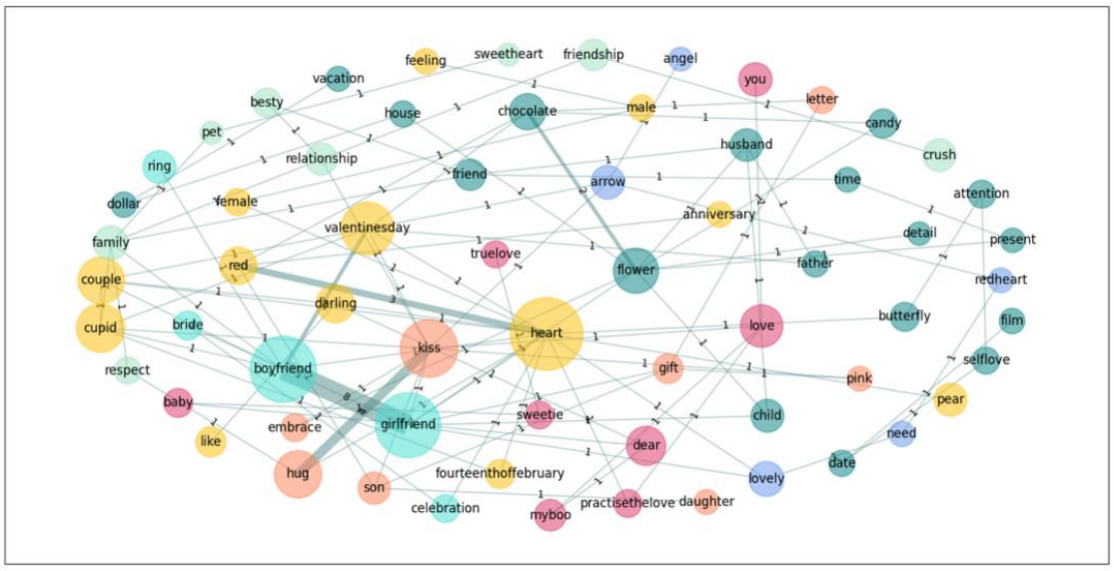


Figure 4
10th-grade learners' LAG in English (L2)



Having analysed the graphs, some similarities and differences can be established between the groups in terms of lexical organisation. On the one hand, the two learner cohorts exhibited more centralised and interconnected lexical-semantic patterns in Spanish (L1) than in English (L2). On the other hand, younger learners' EFL mental lexicon was more centralised and interconnected than that of their older peers. Therefore, these results suggest that younger learners' lexical organisation is similar in the two languages whereas older learners differ more notably in the way they store their lexical items in their minds in their whole linguistic repertoire.

Discussion

The main goal of the present study was to explore the emotional vocabulary that EFL learners of different ages produce in Spanish (L1) and English (L2). For that purpose, a semantic fluency task was administered to account for any possible similarities and differences between

primary and secondary school learners. From a broad perspective, the results found that younger and older EFL learners differ greatly in their productive emotional vocabulary both in their mother tongue and EFL.

The first research question aimed to determine whether primary and secondary school learners differ in terms of their emotional vocabulary size in Spanish (L1) and English (L2). In this regard, a *t*-test was conducted to compare the total number of tokens produced by each group. The results showed that younger learners significantly outperformed their older counterparts in Spanish (L1) and, more notably, in English (L2). Our findings thus differ from previous research studies concluding that older learners produce more tokens and types and, consequently, that their lexical-semantic search is more highly developed (Agustín Llach, 2022; Samper Hernández, 2014; Sánchez-Saus, 2009). However, these results may be strongly influenced by learners' lexical creativity and the type of prompt (see Mora Guarin and Geoghegan, this volume). It might be that children learn positive emotion words earlier, probably because they are immersed in a context where love and tenderness have a main role. For instance, the words they are exposed to from parents, caregivers, teachers, learning materials or media are generally nice and positive. Because of this high frequency of exposure, the conceptual domain for 'Love' might be readily accessible and highly available for younger learners.

To address the second research question, dealing with the qualitative differences and similarities between older and younger EFL learners' emotional lexical production, the shared and non-shared responses by the two groups were analysed. In this respect, the results point to great qualitative differences, as the percentage of shared words is very low in both Spanish (L1) and English (L2). However, the two learner cohorts shared more emotional lexical items in their mother tongue. These results contradict previous research in the field that advocate in favour of a common core vocabulary to any language user independently of their age or proficiency level (López González, 2010; Shivabasappa et al., 2017; Šifrar Kalan, 2016). Our results, meanwhile, suggest that cognitive maturity shapes semantic conceptualisation across time. Younger learners produced more concrete and situational responses such as people (i.e., family members) and basic nouns (i.e., pets) (see Jiménez Catalán & Dewaele, 2017), whereas older learners elicited more abstract and emotionally charged words. Nevertheless, given that all participants' EFL mastery was A1/A2, the two groups tend to produce more frequent and concrete words in English (L2) than in Spanish (L1). Therefore, this finding suggests that proficiency level plays a key role when expressing emotion in the target language (Mavrou et al., 2023; Ferré et al., 2018).

Concerning the third and last research question of this study, related to younger and older learners' lexical organisation, the graph analysis revealed that learners exhibit a more centralised and interconnected mental lexicon in Spanish (L1) than in English (L2). Our results point in the same direction as previous studies that have analysed emotional vocabulary across learners' linguistic repertoire, suggesting that smaller word clusters and less interconnectivity can be observed in the L2 than in the L1 (Moors et al., 2013). In addition, the cross-linguistic differences exhibited by older learners' lexical organisation seem to be more notable than those of their younger peers. The latter could be due to the fact that older learners have already shaped their identity and, consequently, establish weaker semantic-affective links in the FL (Opitz & Degner, 2012). This might also point to the idea that learners at lower proficiency levels tend to transpose the responses of their L1 into L2 equivalents, with a shift towards more native-like responses and fewer translation equivalents as they increase proficiency; this alludes to the

mediating role of the L1 in L2 acquisition processes (Palapanidi, this volume, for a through account of this and how it relates to the Revised Hierarchical Model).

Having discussed the results in relation to the three research questions previously formulated, it can be affirmed that age is a key factor when expressing emotions in any language. Thus, semantic conceptualisation is shaped by cognitive maturity and, consequently, undergoes changes over time. Moreover, older learners' differences between their responses in L1 and L2 seem to be broader, as they produced fewer emotionally loaded terms and showed less emotional lexical diversity in EFL. The latter could be motivated by two main factors: the low EFL proficiency level and a more defined identity blocking the semantic-affective links in EFL. Additionally, as a future follow-up of this study, it would be interesting to further explore the age variable and emotionality in the L1 and L2/FL by analysing younger and older learners' responses to other emotion prompts such as 'Hate', 'Fear' or 'Joy' (see Jiménez Catalán & Dewaele, 2017).

Conclusions

The present research study makes an important contribution to the field of SLA and, more specifically, to emotional vocabulary learning and production across EFL learners' whole linguistic repertoire. Additionally, this paper broadens the scope of studies addressing the age variable (see Agustín Llach, 2022; Jiménez Catalán et al., 2014) and the productive emotional vocabulary (see Jiménez Catalán & Dewaele, 2017) in lexical availability studies.

Regarding the results from the semantic fluency task in response to the emotional prompt 'Love', our findings suggest that EFL learners, regardless of their age, display emotional attenuation in English (L2). In other words, responses in the L1 are more related to family and feelings whereas in the L2 learners tend to list family members solely and patterns are more difficult to spot. The latter can be especially observed among older learners with low L2 proficiency level, as their identity has been previously built through their L1. However, the acquisition of the FL at early stages or the enrolment in language immersion programmes could smooth the semantic-affective boundaries between languages. Pertaining to the age-language interaction, younger learners produce fewer and less varied emotional terms overall whereas older learners access prototypical emotional terms (e.g., love, passion, affection) more easily but exhibit less lexical richness than in the L1. These findings thus point in the same direction as previous research that supports the importance of qualitative analysis (i.e., frequency, word clusters, emotional word type) in addition to quantitative analysis (i.e., token and type production, TTR) to understand the structure of emotional vocabulary and its lexical access in younger and older learners.

Understanding lexical availability differences across ages has significant implications for language education. On the one hand, as regards L1 instruction, it suggests the importance of thematic vocabulary development and the exposure to diverse lexical fields as children progress through school. On the other hand, concerning L2 learning and particularly at early stages, the incorporation of interactive and context-rich tasks can enhance lexical activation and production. At later stages, meanwhile, structured lexical fields and explicit vocabulary instruction can foster the expansion of both receptive and productive lexicons. Furthermore, integrating semantic fluency tasks into classroom assessment can help teachers identify gaps in accessible vocabulary and target instruction accordingly (see Geoghegan & Agustín Llach, 2023).

Taking all the above into account, one may conclude that the use of emotional prompts in lexical availability studies opens a window into the affective dimension of language development, which is particularly relevant in contexts such as bilingual education, heritage language maintenance, and intercultural communication. In this regard, future studies could focus on many and varied linguistic aspects. For instance, the age variable could be further explored through direct, large-scale comparative research studies on the responses that children, adolescents or adults provide in reaction to emotional prompts. Another interesting perspective that could be approached is cross-linguistic analysis in order to explore how different cultures (e.g., Spanish vs. English vs. Japanese) structure emotion fields. Additionally, emotional vocabulary could be tackled from a pedagogical perspective. Studies could delve into emotion vocabulary acquisition in different types of instruction, such as immersion programmes or traditional FL learning. The findings from these studies might help teachers and textbook writers integrate this type of vocabulary in a more deliberate way into formal language instruction, especially in L2 settings to support both linguistic richness and emotional literacy. For instance, the implementation of activities based on emotional prompts (e.g., *Tell me words you associate with love*) can encourage deeper lexical activation and cultural reflection among students.

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