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M.A. Thesis

The Effects of Regular and Enhanced Captions on Incidental Vocabulary Acquisition

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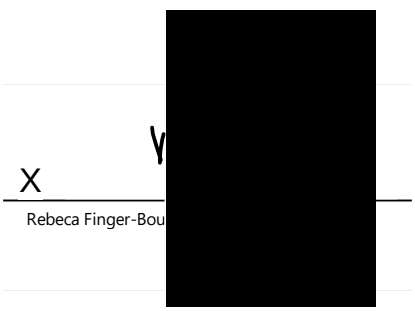

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Abstract

This study explores the effects of regular and enhanced captions through short exposure to a documentary on incidental vocabulary acquisition by L1-Spanish/Catalan learners of English. This research work also analyses how the potential vocabulary learning might be affected by individual differences such as previous vocabulary knowledge or language learning aptitude as measured by the LLAMA B and D subtests. Two randomly distributed groups were formed. Group 1 was provided with regular captions, whereas group 2 viewed the same audio-visual material with enhanced captions. Vocabulary gains were assessed through pre-, immediate post- and delayed post-tests that tapped into meaning recall, meaning recognition and form recognition knowledge. Results showed a significant advantage of enhanced captions over regular captions only in within-group scores. Vocabulary size emerged as the most significant predictor, whereas LLAMA B and D had a non-significant contribution. Level of proficiency in which participants were enrolled at the language school had a significant interaction with time at testing for meaning recall, regardless of experimental condition. Retrospective questionnaires on participants' focus of attention reported an almost unanimous emphasis on captions and comprehension. Participants from the EC group described mixed opinions about the amount of distraction typographically enhanced items provoked in their attention.

Keywords: multimodal input, incidental vocabulary acquisition, enhanced captions, regular captions, individual differences, focus of attention.

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1. Introduction

As a devoted enthusiast of binge-watching TV series and, in general, cultural media in any form, the area of second language acquisition through multimodal input drew my attention ever since I was enrolled in an introductory course of applied linguistics in my undergraduate degree. For that reason, when I found myself scouting for an MA thesis topic, the role of captions –that is, on-screen transcriptions of the spoken part of audio-visual materials– and subtitles –the translated versions of the former– on language acquisition was an intriguing and fascinating field of research which granted me the opportunity to develop a study on a categorically motivating subject for me.

2. Literature Review

The massive availability of multimodal L2 input in modern times is one of the major reasons that may explain "the growing importance of multimodal input for SLA researchers and practitioners" (Montero Perez, 2020, p. 656). In other words, the universal, easy, and convenient accessibility of multimedia data in diverse languages has drawn researchers' attention towards this subfield of second language acquisition. As a matter of fact, several studies have revealed that language learners are indeed motivated to watch television in an L2 (Peters & Muñoz, 2020). Mayer's (2014) cognitive theory of multimedia learning ascertains that language learning is greater when information is not only processed in spoken mode but also in written mode, for learners produce mental connections between "the aural and the visual information" (Peters & Muñoz, 2020, p. 489), providing that there is a temporal proximity. In that sense, television programs also supply L2 learners with repeated encounters with both high-frequency and low-frequency words (Rodgers & Webb, 2011), which could "potentially fuel L2 vocabulary growth with regular viewing" (Feng and Webb, 2019, p. 503).

Considering multimodal input as a combination of pictorial information, written verbal information –in the form of captions or subtitles–, and acoustic verbal input (Peters & Muñoz, 2020), Montero Perez (2020a) determines that multimodal input can enhance language learning whenever all channels, that is, visual and verbal information, are activated simultaneously. Rodgers and Webb (2019), for example, conducted a pre-test/post-test design experiment on the effects of viewing a "full-length TV program"

(p. 551), in this case, a 1-hour documentary on incidental vocabulary learning at the form recognition, meaning recall and meaning recognition levels. Results showed a significant effect of viewing TV on both meaning recall and meaning recognition.

2.1. Vocabulary Acquisition Through Multimodal Input

Based on Paivio's (1986) dual coding theory, Mayer's (2014) model of multimedia learning proposes that "learning is more effective with both words and pictures compared to when words or pictures alone are present" (Majuddin, 2020, p. 132). In that sense, research has sought to throw light upon the effects of captions on language acquisition in general and has succeeded in doing so by demonstrating the statistically significant advantage of participants who watch multimodal materials with captions (Montero Perez, 2020b) or subtitles (Gesa, 2019; Pujadas, 2019; Pujadas & Muñoz, 2019). The use of captions has hence been corroborated to have a positive impact on L2 comprehension (Pujadas & Muñoz, 2020; Rodgers & Webb, 2017), vocabulary (Gesa, 2019; Lee & Révész, 2020; Pujadas, 2019; Pujadas & Muñoz, 2019; Suárez & Gesa, 2019) and grammar (Pattemore & Muñoz, 2020) learning, as word recognition is assisted by the breaking down of speech into separated items.

As explained in Montero Perez et al.'s (2013) meta-analysis, captioning offers learners support as well as a fully target-like learning environment. Yet the external validity of captioned-based research on L2 acquisition is considered problematic for two main reasons: on the one hand, studies have generally analysed the effectiveness of captions for widely different proficiency levels; and, on the other hand, studies have measured and operationalised distinct components of listening and vocabulary learning to do so. In the ten studies identified as focusing on vocabulary learning, Montero Perez et al. (2013) ascertain that learners exposed to captioned videos "significantly outperformed learners in the control group" (p. 730), establishing as well that proficiency played a major role in vocabulary gains. In order to provide several causal explanations to the findings, the authors suggest that bimodal input might foster vocabulary learning as the presence of captioning may contribute to a conscious focus on form, especially for new expressions, attention, and initial form-meaning links (Winke et al., 2010). In this respect, Montero Perez et al. (2013) also found significant effects of captioning on word recognition and word recall.

So as to examine the effects of test modality, Mohd Jelani and Boers (2018) used aural test prompts to investigate whether the use of written word prompts could give an advantage to the experimental group. After watching a ten-minute TED talk with or without captions, participants were asked to complete a word recognition task and a word meaning task from both written and aural input. The author found that the captioned group did remember the target words more, which was, again, consistent with the findings of previous studies (Montero Perez, et al., 2013; Montero Perez, et al., 2014). As for the role of test modality, results evidenced a significant effect only for the word meaning task, and only in the written prompts. Furthermore, Rodgers and Webb (2017) also accounted for significant gains for both the captions group and the no captions group in several comprehension tests, after conducting a 10-episode experiment where participants watched a single television program with or without captions. In general, results showed that scores for those participants who watched the program with captions were always higher, although their analysis indicated that it was only significantly superior for three out of the ten episodes.

2.2. Enhanced Captioning

As has been illustrated in the previous section, vocabulary acquisition through multimodal input and the use of captions has been widely investigated and corroborated. Nonetheless, more recent studies comprising captions have intended to redirect and refocus learners' attentions by typographically enhancing specific parts of those captions, as noticing has been widely recognised as a relevant and essential part of language learning and a key element to vocabulary acquisition that can be guided by the teacher, self-directed, explicit or implicit (Lewis, 1993). As Lee and Révész (2020) put it, when the material salience of single-words is typographically enhanced in captions, learners of a second language will expectedly pay more attention and learn new L2 vocabulary items.

With this in mind, Montero Perez et al. (2014) examined how three captioning types, namely regular, enhanced and keyword captions assisted and enhanced L2 incidental vocabulary acquisition. Their findings revealed that captioning groups scored equally well on form recognition, whereas only enhanced and keyword captions groups outperformed the control group on meaning recognition. All in all, enhanced captions were found to be more efficient in vocabulary gains than regular captions, as the authors found a large effect size of caption type and vocabulary size on meaning recognition.

Another study by Montero Perez et al. (2015) focused on the effects of type of captioning and test announcement on the amount of attention that participants paid to the target words through three types of eye-tracking measures. The results of this work suggested that the physical salience of target words in enhanced captions helped learners pay more attention and learn new vocabulary items. As has been seen, both mentioned studies confirm Sharwood Smith's (1991, 1993) proposition that making target linguistic constructions visually salient in the input will attract learners' attention and therefore promote subsequent L2 development.

Furthermore, Majuddin's (2020) doctoral dissertation also tried to extend the line of research on pedagogical interventions on second language acquisition, and more specifically, on multiword expressions (MWEs) by exploring the effects of learning condition, namely incidental and intentional, repetition and typographic enhancement. MWE learning was evaluated through tests that tapped into form and meaning knowledge at the level of both recall and recognition. Results showed that both types of captions increased participants' form recall knowledge in comparison to uncaptioned viewing. Moreover, under the intentional learning condition, typographically enhanced captions did lead to better results in form recall compared to unenhanced captions. On the contrary, there was no difference between types of captions in the incidental learning condition. Caption condition was only found to have a significant effect at the level of form recall and recognition. Nevertheless, the author reported that the potential advantage of typographically enhanced captions "did not lead to significantly higher short-term and long-term gains compared to the normal captions" (p. 162).

Given these points, previous research on incidental vocabulary acquisition through multimodal input suggest future studies to consider the use of different types of captions such as "captions with enhanced target structures if the aim is to draw learners' attention to specific linguistic features […] and stimulate their learning of those structures" (Montero Perez, 2020a, p. 660). Other authors further suggest that studies focused on textual enhancement in captions "include both an immediate and delayed post-test" (Lee & Révész, 2018, p. 573). In fact, an under-review study by Pattemore and Muñoz (n.d.) shows that the potential advantages of textual enhancement have a more short-term effect on grammar gains, as participants' scores significantly decreased in the delayed post-test.

2.3. Individual Differences: Previous Vocabulary Knowledge and Language Learning Aptitude

Regarding learner-related factors, or individual differences, research has found that proficiency level (Gesa, 2019; Montero Perez et al., 2013; Suárez & Gesa, 2019), previous vocabulary knowledge, that is, vocabulary size (Feng & Webb, 2020; Majuddin, 2020; Montero Perez et al., 2014; Peters & Webb, 2018; Pujadas, 2019; Rodgers & Webb, 2019), or working memory (Montero Perez, 2020b; Pattemore & Muñoz, 2020) may impact vocabulary gains and the processing of multimodal input. In light of this, research has indicated that the higher a learner's vocabulary level, "the more likely they could learn new words through reading and viewing" (Feng and Webb, 2020, p. 505). In other words, previous studies show that prior vocabulary knowledge is one of the most important factors affecting incidental vocabulary acquisition (Lee & Révész, 2020). Peters and Webb (2018), for example, found that the bigger the learners' prior vocabulary knowledge (inferred from the participants' results in a frequency-based vocabulary test), the better the odds of a correct response in the immediate meaning recognition test.

On another note, a rather small number of studies have analysed the association of language learning aptitude as measured by the LLAMA tests with vocabulary learning through multimodal input. In Suárez and Gesa's (2019) study, for example, aptitude was found to be statistically significant only in the learning of target word meanings, not forms, after exposure to captioned videos. Moreover, the authors also found a main effect for proficiency on the learning scores for both target word forms and meanings. Contrary to the mentioned study, however, Pattemore and Muñoz (2020) did not find any significant effect of the LLAMA tests on grammar construction learning from captioned audio-visual exposure. The authors propose that learners might cease to rely on language learning aptitude when surpassing a certain proficiency threshold, as suggested by Winke (2013). Ultimately, factors that have been seen to play a role in incidental vocabulary acquisition through multimodal input include previous vocabulary knowledge as measured by vocabulary size scores and language learning aptitude as measured by the LLAMA tests, where most of these studies have not included enhanced captions.

2.4. Learners' Focus of Attention

Given the positive relationship between captioning and L2 vocabulary development, research has started to illustrate the "direct evidence for the processes that may underlie the observed benefits of exposure to captioned materials" (Lee & Révész, 2020, p. 627) through eye-tracking methodology, in which a participant's eye movements are captured and thus analysed to reflect on their attentional processes when interacting with visual information.

Previous studies on eye-tracking suggest that learners can process both pictorial and written verbal information (Bisson et al., 2012) provided that they are familiar with the script of the foreign language (Winke et al., 2013). To this extent, studies have used the technology of eye-tracking to analyse the extent to which input enhancement is able to draw learners' attention to certain target items (Lee & Révész, 2018; Montero Perez et al., 2015). Results showed that fixation time-spans were proportionally correlated to vocabulary gains, for "the longer their fixations on a given word, the more likely correct recognition became" (Montero Perez et al., 2015, p. 308).

Considering the pandemic from which we are all trying to survive, in which higher education is currently taught online, an alternative method for examining learners' focus of attention is that of retrospective questionnaires that resemble "think-aloud verbal protocols" (Winke, 2013, p. 328), which allows researchers to extract subjective and self-reflective information on the conducted experiments. With these conditions in mind, the present study will aim at analysing the effects of caption enhancement on incidental vocabulary acquisition in L1-Spanish/Catalan students of English as a Foreign Language. More specifically, this study pursues to answer the following research questions:

2.5. Research Questions

1. Is there evidence of incidental vocabulary acquisition after viewing a captioned documentary? If so, is the potential learning retained after two weeks?

2. Does the enhancement of captions have an effect on incidental vocabulary acquisition in comparison to regular captions in L1-Spanish/Catalan EFL learners? If so, is the potential learning retained after two weeks?

3. To what extent do previous vocabulary knowledge and language learner's aptitude, as measured by LLAMA B and D, play a role in potential vocabulary gains through viewing a captioned documentary?

4. How do enhanced and regular captions affect L1-Spanish/Catalan EFL learners' self-reported focus of attention when viewing a captioned documentary?

3. Methodology

3.1. Participants

The participants of this study consisted of 31 L1-Spanish/Catalan learners of English, who were enrolled in different EFL levels at a language school in a small city of the Baix Penedès region. More specifically, the participants included six students from 4th of *ESO* (B1), four from 1st of *Batxillerat* (B1+), eight from 2nd of *Batxillerat* (B2), three adult (B1+), three adult (B2) and seven adult (C1), which makes a total of six B1, seven B1+, 11 B2 and seven C1, as displayed in Table 1. Participants' ages varied from 14 to 64 years old (M = 22.46, SD = 11.11). All courses were taught by the same teacher, that is, all participants had the same teacher, who was in convenient contact with the researcher.

A background information questionnaire was handed out prior to the experiment so that personal information such as age, sex and previous education could be collected, as well as information on external sources of input, that is, out-of-school exposure to L2 media (see Appendix 1). Parental consent forms were distributed to all underaged students, whereas adult learners signed to accept their own participation.

Two randomly distributed groups were formed. Group 1 was provided with regular captions (RC), whereas group 2 visualised the same audio-visual material with enhanced captions (EC).

Table 1

Descriptive information of participants

	Age				Level				Sex
	Mean	SD	Min	Max	B1	B1+	B2	C1	
Regular (n = 15)	19.65	6.03	14.00	37.60	2	5	5	3	6 female, 9 male
Enhanced (n = 16)	25.09	14.06	15.00	64.00	4	2	6	4	10 female, 6 male
All participants (n = 31)	22.46	11.11	14.00	64.00	6	7	11	7	16 female, 15 male

3.2. Target Constructions

A total of 21 target words were chosen from the script of *Viral: The 5G Conspiracy Theory* (Livingston, 2020), a 25-minute documentary from the BBC that was released in 2020 in which the conspiracy theories that erupted ever since the beginning of the global pandemic are critically reviewed. Words in the documentary were assessed through *LexTutor* to extract 21 target words (from the 1k, 2k, Academic Word List, and OFF types) that appeared at least twice in the audio-visual material, as research provides compelling evidence "for the positive role of repetition in facilitating the uptake of single words" (Majuddin, 2020, p. 22) and Uchihara et al. (2019) also suggest that repeated encounters "within a short time span would be more beneficial for incidental word learning" (in Muñoz et al., 2021, p. 4). An enhanced version of the regular captions was created with the application *SubtitleEdit* (v3.5.18) and embedded on the video with *HandBrake* (v1.3.0-v1.3.3), where target words were presented in yellow and bold. Moreover, a virtually equivalent number of words that belonged to the same frequency lists which did not appear in the documentary were selected to function as distractors. Target words and distractors were revised and approved by the participants' teacher.

3.3. Instruments

Vocabulary gains were assessed through pre-, immediate post- and delayed post-tests that tapped into meaning knowledge at the level of recall and recognition, to gather information at the two different sensitivities based on Nation's (2001) nine components of word knowledge. Additionally, immediate post- and delayed post-tests on form recognition were included to assess whether learners remembered seeing target words on the documentary, as noticing a new word is the first step towards acquisition and it has been suggested that captions generally help learners with both written and aural form recognition and with developing form-meaning connections (Pujadas & Muñoz, 2020). Besides, considering the briefness of this study, the most to expect from participants is to notice the form. When taking the tests, target words and distractors were provided through an audio file recorded with the teacher's voice that repeated each word twice, whilst the written forms could be read in the paper where participants were to answer, which guaranteed them encountering the same modalities in the tasks as those in the multimodal input, and therefore all channels of input were re-activated simultaneously (see Appendix 2 and 3). All tests were piloted by five L1-

Spanish/Catalan learners of English whose ages (M = 36.8, SD = 14.9) ranged very similarly to the study's participants (M = 22.46, SD = 11.11), and, as a result of the piloting, alterations were made, for example, to include more pauses between the oral words, or having the meaning recognition test developed both in Catalan and Spanish. Pre-test scores in the two languages were controlled for all participants to calibrate the relative difficulty of dealing with target words (SPA (n = 24) = 72.4% vs CAT (n = 7) = 70.7%)[1].

Participants' previous vocabulary knowledge was measured by means of Meara and Miralpeix's (2015) *V_YesNo* (v1.01), a basic vocabulary size test which uses the Yes/No methodology previously developed in the Eurocentres Vocabulary Size Test (Meara & Jones, 1990). Language learning aptitudes for vocabulary learning and listening for new words were measured through Meara and Rogers's (2019) *LLAMA B* (v3.00) and *D* (v3.00). On the one hand, LLAMA B consists of a vocabulary learning task in which participants must remember large amounts of words. This subtest measures the users' "ability to attach unfamiliar names to unfamiliar objects" (Rogers et al., 2017, p. 50). LLAMA D, on the other hand, is a phonetic memory subtest, where users must recognise spoken language "that they were exposed to a short while earlier" (Yalçin et al., 2016, p. 450). The remaining LLAMA subtests, namely LLAMA E and F, are not relevant to this study, and thus not used, as they would measure the participants' ability to make connections between sounds and symbols as well as their ability to pick up grammar rules, two unrelated topics which are not dealt with in this work.

An additional test with three comprehension questions that had no relation to the target words was utilised in the immediate post-test, as Uchihara et al. (2019) state that informing learners of an upcoming comprehension test after a meaning-focused task, such as watching the documentary film in this case, increases incidental vocabulary learning. Furthermore, Likert-scale questionnaires adapted from Muñoz et al. (in preparation) that resemble "think-aloud verbal protocols" (Winke, 2013, p. 328) were also distributed to the different groups so as to collect retrospective information on learners' self-reported focus of attention (see Appendix 4).

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[1] A series of chi-squared tests revealed that only for one item (*ripper*) the difference between difficulty indexes in the two languages was statistically significant (p = .011). Opinions reflected in the retrospective questionnaire did not account for any extra difficulty when dealing with different items in the meaning recognition tests.

3.4. Procedure

The five experimental sessions were organised during regular class time across three consecutive months between the second and third trimesters of the academic year, as can be seen in Table 2. The nature of the experiment was unknown to all participants and the teacher did not provide any extra practice on vocabulary.

Table 2

Experimental schedule.

Session 1	Session 2	Session 3	Session 4	Session 5
Background information questionnaire	Pre-test	Individual differences	Documentary viewing + Immediate post-test	Delayed post-test
Out-of-school exposure to L2 media	Meaning recall	V_YesNo	Comprehension test (T/F)	Form recognition + meaning recall
Consent form	Meaning recognition	LLAMA B	Form recognition + meaning recall	Meaning recognition
		LLAMA D	Meaning recognition	Retrospective questionnaire

During the first two weeks, participants completed the background questionnaire, the vocabulary size test, the language learning aptitude tests, and the pre-test. Six weeks later, all subjects watched the documentary with either regular or enhanced captions, and then immediately answered three true or false comprehension questions that had no relation to the target words, as well as post-tests on form recognition, meaning recall and meaning recognition. In other words, students were asked whether they had seen a particular item in the documentary, whether they could provide a translation for that item, and whether they could identify the correct translation of the item out of four options. Two weeks later, a delayed post-test was carried out to compare the effectiveness of these treatments in the short- and the long-term. Finally, participants completed the retrospective questionnaire on learners' self-reported focus of attention, to identify their reactions and emphasis when conducting the study according to their own perceptions.

It should be noted that, due to the pandemic, all classes over six students had to be conducted online until mid-May. For that reason, sessions 1 to 4 were performed online for the eight students from 2nd of *Batxillerat* (B2) and the seven adults attending the Advanced class (C1). All materials and procedures were transposed to an online environment (*Google Forms* for the tests and *Edpuzzle* for the viewing of the

documentary) to imitate as accurately as possible the in-person format of the experiment. In that regard, tests and viewing sessions were undertaken during class time but in an online environment. The rest of participants (16 in total) were able to complete all tasks face-to-face from beginning to end.

3.5. Scoring and Data Analysis

One point was assigned for a right answer per item. That is, for the form recognition, meaning recall and meaning recognition tasks, one point was awarded to each correct answer, and zero points to incorrect answers. A mean for all answers was estimated, for a total of 1 point per test, which was then multiplied by 100 in the reports, to aid visualise and understand group differences.

The normal distribution of all groups' scores was assessed and confirmed through the software *IBM SPPS Statistics 25 version.* Several statistical analyses were performed in order to answer all the research questions. First, several independent samples t-tests were conducted to assess the comparability between experimental groups. Individual differences such as vocabulary size scores (p = .338), LLAMA B scores (p = .349) and LLAMA D scores (p =.384) between the two groups were normally distributed and non-significantly different[2]. Next, a series of Generalized Linear Mixed Models (GLMMs) were used to answer the first, second and third research question, to explore differences among means so as to provide a comparison of the actual vocabulary gains scores across the different groups (regular and enhanced) and different times at testing (pre-, immediate post- and delayed post-test), as well as to determine whether our independent variables, namely previous vocabulary knowledge and language learning aptitude were significant predictors of vocabulary scores across both experimental groups. Furthermore, quantitative and qualitative analyses of the retrospective questionnaires were undertaken to understand learners' self-reported focus of attention when watching the documentary with regular or enhanced captions.

Finally, three crosstabulation relations (Table 3) between correct and incorrect answers in the form recognition post-tests were conducted so as to guarantee that participants' answers were mostly correct (>50%), and therefore the study could

[2] Pre-analyses showed that all independent variables were not highly correlated (r < .7), and that independent and dependent variables were significantly related (p < .05). Only correlations between LLAMA B and form recognition scores were found non-significant (p = .151).

consider their answers in the analyses. As can be seen, there was more guessing in the delayed post-test, ten days after having watched the documentary, as knowledge was fading.

Table 3

Crosstabulation relations of form recognition between correct and incorrect answers (for both target words and distractors).

	Immediate post-test		Delayed post-test		TOTAL	
	Correct	Incorrect	Correct	Incorrect	Correct	Incorrect
Target words	75.27%	24.73%	63.13%	36.87%	69.20%	30.80%
Distractors	70.69%	29.31%	62.27%	37.73%	66.48%	33.52%

4. Results

The descriptive statistics of the variables of the two groups, as well as those for all participants, appear in Tables 4 and 5.

Table 4

Individual differences per experimental group.

	Vocabulary size (max: 10000)				LLAMA B (max: 20)				LLAMA D (max: 20)			
	Mean	SD	Min	Max	Mean	SD	Min	Max	Mean	SD	Min	Max
Regular (n = 15)	4917.80	1053.16	3096	6537	11.13	4.14	5	20	9.33	4.12	2	15
Enhanced (n = 16)	5343.38	1347.43	3310	7704	9.63	4.65	3	20	8.19	3.06	2	13
All participants (n = 31)	5137.45	1213.31	3096	7704	10.35	4.40	3	20	8.74	3.60	2	15

Table 5

Descriptive statistics per experimental group.

	Meaning recall											
	Pre-test score (max: 100)				Immediate post-test score (max: 100)				Delayed post-test score (max: 100)			
	Mean	SD	Min	Max	Mean	SD	Min	Max	Mean	SD	Min	Max
Regular (n = 15)	51.43	26.89	4.76	85.71	57.46	26.30	4.76	90.48	60.63	25.74	9.52	100.00
Enhanced (n = 16)	55.95	22.03	14.29	90.48	66.67	24.96	14.29	95.24	63.69	22.80	19.05	100.00
All participants (n = 31)	53.76	24.19	4.76	90.48	62.21	25.61	4.76	95.24	62.21	23.90	9.52	100.00
	Meaning recognition											
	Pre-test score (max: 100)				Immediate post-test score (max: 100)				Delayed post-test score (max: 100)			
	Mean	SD	Min	Max	Mean	SD	Min	Max	Mean	SD	Min	Max
Regular (n = 15)	71.75	16.83	47.62	95.24	77.14	20.77	38.10	100.00	74.92	22.00	38.10	100.00
Enhanced (n = 16)	72.32	17.75	38.10	95.24	83.63	18.40	42.86	100.00	81.25	16.45	42.86	100.00
All participants (n = 31)	72.04	17.03	38.10	95.24	80.49	19.53	38.10	100.00	78.19	19.28	38.10	100.00
	Form recognition											
	Immediate post-test score (max: 100)				Delayed post-test score (max: 100)				Comprehension test (max: 3)			
	Mean	SD	Min	Max	Mean	SD	Min	Max	Mean	SD	Min	Max
Regular (n = 15)	70.76	8.19	56.82	88.64	61.82	9.50	47.73	77.27	2.80	0.56	1	3
Enhanced (n = 16)	74.86	12.38	47.73	90.91	63.49	12.95	34.09	88.64	2.88	0.34	2	3
All participants (n = 31)	72.87	10.59	47.73	90.91	62.68	11.25	34.09	88.64	2.84	0.45	1	3

A series of independent t-tests showed that there were no significant differences between their pre-test scores at meaning recall (p = .248) or meaning recognition (p = .870), even though the mean score of the EC group was always slightly higher than the RC group. Moreover, an additional analysis of the comprehension task revealed that students responded correctly more than 90% of the time, and there was no significant difference in comprehension between the two experimental groups (p = .654).

Analyses were conducted separately for meaning recall, meaning recognition and form recognition using GLMMs. Neither *LLAMA B* nor *LLAMA D* scores had significant main effects, and thus they were eliminated from the final models. Similarly, another explored fixed factor was *Level*, that is, the level in which participants were enrolled in at the school (B1, B1+, B2 and C1). As only in one of the following analyses *Level* was found significant, it was eliminated from every other model. However, vocabulary size scores did have a significant main effect in all tests. For that reason, the common fixed factors in all the remaining models were *Vocabulary Size* alongside with *Time* (pre-test, immediate post-test, and delayed post-test), whereas *Subject* (participants) and *Item* (target words) were included as random intercepts.

4.1. L2 Vocabulary Acquisition Through Short Exposure to a Documentary

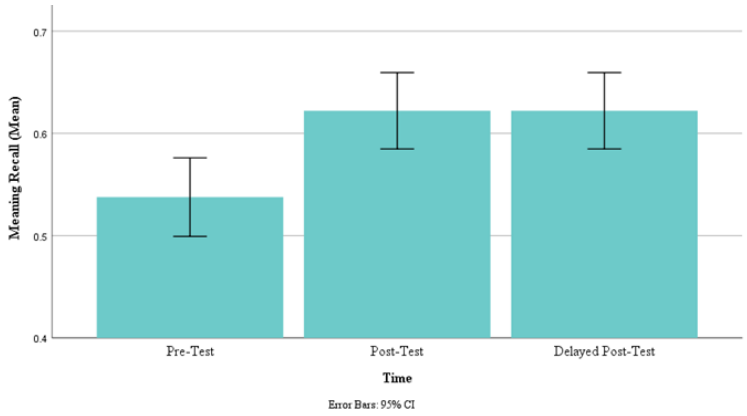
The first research question addressed the effects of multimodal input on L2 vocabulary acquisition regardless of the experimental condition through the assessment of several tasks that tapped knowledge at meaning recall, meaning recognition and form recognition levels.

4.1.1. Meaning Recall

For meaning recall, as can be seen in Figure 1, participants from both groups showed improvement from pre-test to both post-tests. In the analysis of this task, a significant interaction between the level in which participants were enrolled and time at testing was found (p = .034), and thus *Level* was included as another fixed effect in the GLMM only for this variable. Pairwise comparisons of scores at pre-test, immediate post-test and delayed post-test showed that differences between pre-test and immediate post-test and pre-test and delayed post-test were significant (p < .001 in both cases), whereas differences between immediate post-test and delayed post-test were not (p = .425).

Figure 1

Meaning Recall by Time



Significant main effects of *Vocabulary Size* (F (1,1940) = 17.117, p <.001), *Time* (F (2, 1940) = 13.584, p < .001) and a significant interaction between *Level* and *Time* (F (6, 1940) = 2.277, p = .034) were found in the analysis, as well as a non-significant main effect of Level (F (3, 1940) = 1.082, p = .356).

Table 6

Results from GLMM: fixed effects for meaning recall regardless of condition.

Source	F	df_1	df_2	Sig.
V_Size	17.117	1	1940	**< .001**
Time	13.584	2	1940	**< .001**
Level	1.082	3	1940	.356
Level * Time	2.277	6	1940	**.034**

Table 7

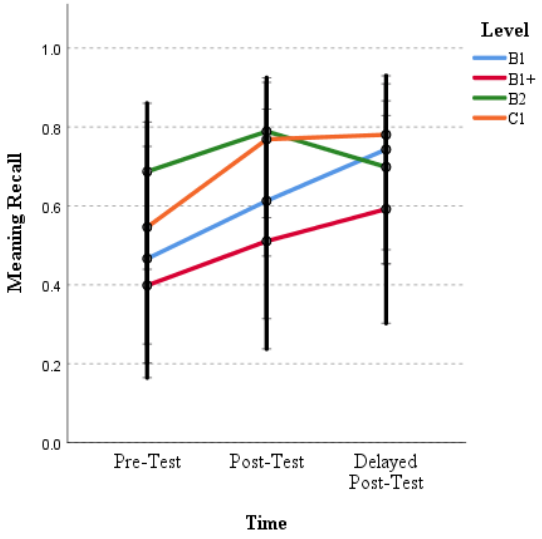
Results from GLMM: fixed coefficients for meaning recall regardless of condition.

	Coefficient	SE	t	Sig.	95% Confidence Interval		Exp (Coefficient)	95% CI for Exp(Coefficient)	
					Lower	Upper		Lower	Upper
Intercept	-3.404	1.520	-2.240	.025	-6.385	-.423	.033	.002	.655
V_Size	.001	< .001	4.137	**< .001**	< .001	.001	1.001	1.000	1.001
Time=1	-1.083	.345	-3.140	**.002**	-1.760	-.407	.338	.172	.666
Time=2	-.067	.367	-.184	.854	-.788	.653	.935	.455	1.921
Level=1	-.206	.778	-.265	.791	-1.733	1.320	.814	.177	3.745
Level=2	-.896	.801	-1.118	.264	-2.467	.675	.408	.085	1.964
Level=3	-.428	.714	-.599	.549	-1.828	.973	.652	.161	2.645
[Level=1] * [Time=1]	-.113	.492	-.230	.818	-1.077	.851	.893	.341	2.342
[Level=2] * [Time=1]	.300	.482	.623	.533	-.645	1.245	1.350	.525	3.472
[Level=3] * [Time=1]	1.029	.416	2.474	**.013**	.213	1.845	2.799	1.238	6.327
[Level=1] * [Time=2]	-.535	.506	-1.057	.290	-1.529	.458	.585	.217	1.581
[Level=2] * [Time=2]	-.262	.495	-.529	.597	-1.233	.709	.769	.291	2.031
[Level=3] * [Time=2]	.544	.438	1.244	.214	-.314	1.402	1.723	.731	4.065

As for the aforementioned significant interaction, pairwise comparisons between *Level* and *Time* show significant differences, on the one hand, between pre-test and delayed post-test only for B1 (p = .003) and C1 (p = .018), with B1+ nearly significant (p = .052) and B2 differences non-significant at all (p = .816). On the other hand, only the C1 level managed to show significant differences between pre- and immediate post-tests as well (p = .018).

Figure 2

Meaning Recall by Time by Level



4.1.2. Meaning Recognition

At the meaning recognition level, a significant main effect of *Vocabulary Size* (F (1,1947) = 32.152, p < .001) was found, alongside a non-significant main effect of *Time* (F (2, 1947) = 1.303, p = .272) and a significant interaction of *Vocabulary Size* and *Time* (F (2,1947) = 3.472, p = .031).

Table 8

Results from the GLMM: fixed effects for meaning recognition regardless of experimental group.

Source	F	df_1	df_2	Sig.
V_Size	32.152	1	1947	**< .001**
Time	1.303	2	1947	.272
V_Size * Time	3.472	2	1947	**.031**

Table 9

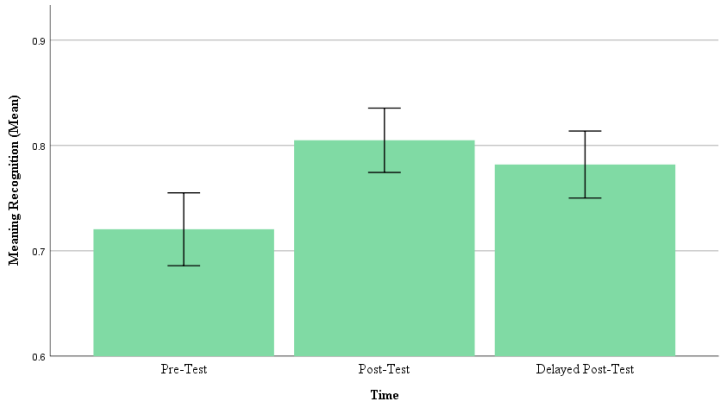
Results from the GLMM: fixed coefficients for meaning recognition regardless of experimental group.

	Coefficient	SE	t	Sig.	95% Confidence Interval		Exp (Coefficient)	95% I for Exp(Coefficient)	
					Lower	Upper		Lower	Upper
V_Size	.001	.000	5.286	**< .001**	.001	.001	1.001	1.001	1.001
Time=1	1.036	.773	1.339	.181	-.481	2.552	2.817	.618	12.833
Time=2	-0.076	.838	-.091	.928	-1.719	1.567	0.927	.179	4.790
V_Size * [Time=1]	< .001	< .001	-2.048	**.041**	-.001	< .001	1.000	.999	1.000
V_Size * [Time=2]	< .001	< .001	.366	.715	< .001	< .001	1.000	1.000	1.000

Again, pairwise comparisons showed significant differences between pre- and immediate post-test as well as pre- and delayed post-test (p = .014 and p = .021, respectively). A non-significant difference between immediate post- and delayed post-test (p = .226) further suggests that word knowledge was not significantly lost.

Figure 3

Meaning Recognition by Time



4.1.3. Form Recognition

Form recognition results presented a significant main effect of *Vocabulary Size* (F (1, 1298) = 15.439, p < .001), a non-significant main effect of *Time* (F (1, 1298) = 3.208, p = .074) and a non-significant interaction between these two fixed factors (p = .516).

Table 10

Results from the GLMM: fixed effects for form recognition regardless of experimental group.

	F	df_1	df_2	Sig.
V_Size	15.439	1	1298	**< .001**
Time	3.208	1	1298	.074
V_Size * Time	.422	1	1298	.516

Table 11

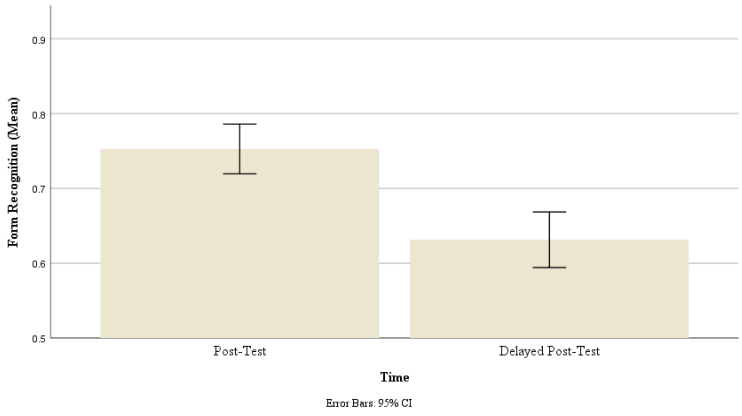
Results from the GLMM: fixed coefficients for form recognition regardless of experimental group.

	Coefficient	SE	t	Sig.	95% Confidence Interval		Exp (Coefficient)	95% CI for Exp (Coefficient)	
					Lower	Upper		Lower	Upper
V_Size	< .001	< .001	3.881	**< .001**	< .001	.001	1.000	1.000	1.001
Time=2	1.078	.602	1.791	.074	-.103	2.258	2.938	.902	9.568
V_Size*[Time=2]	< .001	< .001	-.650	.516	< .001	< .001	1.000	1.000	1.000

Form recognition differences between immediate post- and delayed post-tests showed a significant reduction of accuracy ($p < .001$) from one time to the other.

Figure 4

(Target) Form Recognition by Time



4.2. The Effects of Enhanced Captions

The second research question focused on the effects of enhanced captions on L2 vocabulary acquisition in comparison to regular captions. As has been seen in Table 5, all participants gained knowledge at the three separate levels, as differences between pre-, immediate post- and delayed post-tests showed a general and significant increase in scores. GLMMs were used to estimate differences between experimental groups.

After analysing which independent variables had significant effects, only *Vocabulary Size* and *Time* were maintained as fixed factors and *Subject* and *Item* as random intercepts, with *Caption* (regular, enhanced) as the new included fixed factor.

4.2.1. Meaning Recall

In the meaning recall level, significant main effects of *Vocabulary Size* (F (1, 1946) = 27.692, $p < .001$) and *Time* (F (2, 1946) = 11.067, $p < .001$) were found, with non-significant effects of *Caption* and the interaction between *Caption* and *Time* (p =.759 and p = .289, respectively).

Table 12

Results from the GLMM: fixed effects of meaning recall with caption distinction.

	F	df_1	df_2	Sig.
V_Size	27.692	1	1946	**< .001**
Caption	.094	1	1946	.759
Time	11.067	2	1946	**< .001**
Caption * Time	1.241	2	1946	.289

Table 13

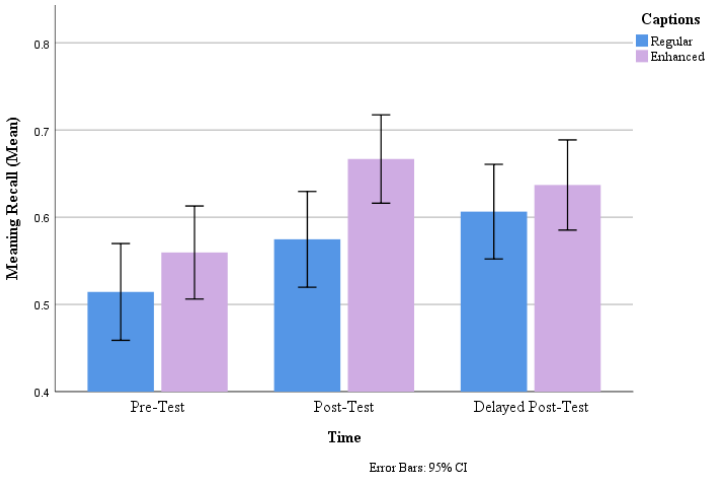
Results from the GLMM: fixed coefficients of meaning recall with caption distinction.

	Coefficient	SE	t	Sig.	95% Confidence Interval		Exp (Coefficient)	95% CI for Exp(Coefficient)	
					Lower	Upper		Lower	Upper
V_Size	.001	< .001	5.262	**< .001**	.001	.001	1.001	1.001	1.001
Caption=1	.064	.465	.138	.890	-.847	.975	1.066	.429	2.651
Time=1	-.556	.208	-2.675	**.008**	-.964	-.148	.573	.381	.862
Time=2	.224	.212	1.058	.290	-.191	.640	1.251	.826	1.896
[Caption=1] * [Time=1]	-.123	.301	-.411	.681	-.713	.466	.884	.490	1.594
[Caption=1] * [Time=2]	-.463	.305	-1.520	.129	-1.061	.135	.629	.346	1.144

Even though comparisons at specific testing times were non-significant between the two groups (p = .898, p = .394 and p = .890 for pre-, post- and delayed post-test), the pairwise contrasts showed that participants with enhanced captions had significant differences between both pre- and immediate post-test (p = .002) and pre- and delayed post-test (p = .020), whereas the regular captions group only showed significant differences between pre- and delayed post-tests (p = .009).

Figure 5

Meaning Recall by Time by Captions



4.2.2. Meaning Recognition

For meaning recognition, a significant main effect of *Vocabulary Size* (F (1, 1941) = 30.718, $p < .001$) resulted from the analysis, as well as a marginally significant interaction between *Vocabulary Size* and *Time* (F (2, 1941) = 2.916, $p = .054$).

Table 14

Results of the GLMM: fixed effects for meaning recognition with caption distinction.

	F	df_1	df_2	Sig.
V_Size	30.718	1	1941	**< .001**
Caption	.415	1	1941	.519
Time	1.007	2	1941	.365
V_Size * Time	2.916	2	1941	**.054**
Caption * Time	.104	2	1941	.901
V_Size * Caption * Time	.335	3	1941	.800

Table 15

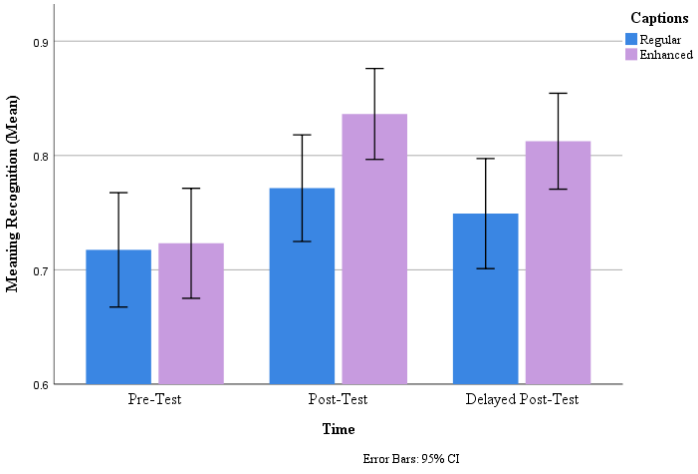
Results of the GLMM: fixed coefficients for meaning recognition with caption distinction.

	Coefficient	SE	t	Sig.	95% Confidence Interval		Exp (Coefficient)	95% Confidence Interval for Exp(Coefficient)	
					Lower	Upper		Lower	Upper
V_Size	.001	< .001	3.496	**< .001**	< .001	.001	1.001	1.000	1.001
Caption=1	-1.359	2.063	-0.659	.510	-5.405	2.687	.257	.004	14.690
Time=1	.937	1.110	.845	.398	-1.239	3.114	2.553	.290	22.500
Time=2	-.415	1.258	-.330	.741	-2.882	2.052	.660	.056	7.782
V_Size*[Time=1]	< .001	< .001	-1.572	.116	-.001	< .001	1.000	.999	1.000
V_Size*[Time=2]	< .001	< .001	.542	.588	< .001	.001	1.000	1.000	1.001
[Caption=1] * [Time=1]	-.065	1.562	-.042	.967	-3.129	2.999	0.937	.044	20.061
[Caption=1] * [Time=2]	.630	1.701	.370	.711	-2.705	3.965	1.877	.067	52.725
V_Size*[Caption=1]*[Time=1]	< .001	< .001	.851	.395	< .001	.001	1.000	1.000	1.001
V_Size*[Caption=1]*[Time=2]	< .001	< .001	.162	.871	-.001	.001	1.000	.999	1.001
V_Size*[Caption=1]*[Time=3]	< .001	< .001	.525	.599	-.001	.001	1.000	.999	1.001

In fact, pairwise comparisons between experimental groups displayed significant differences between testing times exclusively for the EC group (p = .030 and p = .033 for pre- vs immediate post-test and pre- vs delayed post-test, respectively). That is to say that participants who watched the documentary with enhanced captions significantly increased their score in both the immediate post-test and the delayed post-test, and therefore, gained a significant amount of knowledge at the meaning recognition level, whereas participants in the regular captions group did not. RC's scores did not differ significantly between any of the three time points, even if the scores did tend to increase.

Figure 6

Meaning Recognition by Time by Captions



4.2.3. Form Recognition

As for the form recognition test, both *Vocabulary Size* (F (1,1294) = 13.075, $p < .001$) and the interaction between *Caption* and *Time* (F (1,1294) = 4.707, $p = .030$) were found statistically significant.

Table 16

Results from the GLMM: fixed effects for form recognition with caption distinction.

	F	df_1	df_2	Sig.
V_Size	13.072	1	1294	**< .001**
Caption	.539	1	1294	.463
Time	3.051	1	1294	.081
V_Size * Time	.349	1	1294	.555
Caption * Time	4.707	1	1294	**.030**
V_Size * Caption * Time	1.677	2	1294	.187

Table 17

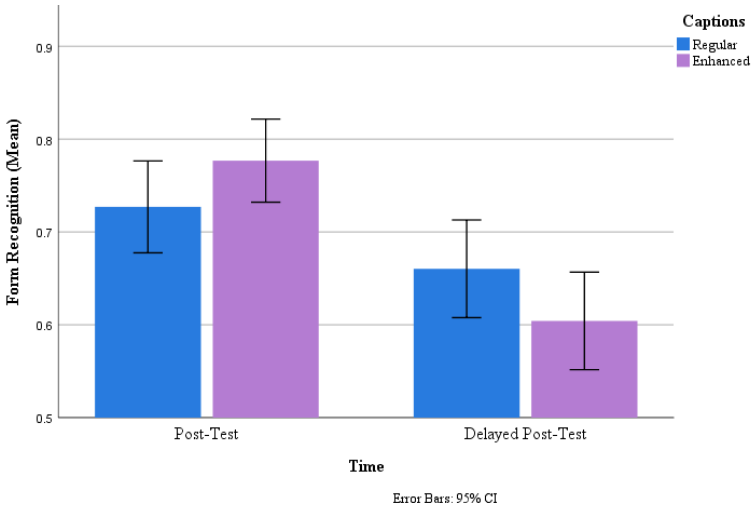
Results from the GLMM: fixed coefficients for form recognition with caption distinction.

	Coefficient	SE	t	Sig.	95% Confidence Interval		Exp (Coefficient)	95% CI for Exp(Coefficient)	
					Lower	Upper		Lower	Upper
V_Size	.001	< .001	3.883	**< .001**	< .001	.001	1.001	1.000	1.001
Caption=1	2.265	1.394	1.624	.105	-.470	4.999	9.626	.625	148.300
Time=2	2.401	.828	2.900	**.004**	.777	4.025	11.033	2.174	55.981
V_Size*[Time=2]	< .001	< .001	-1.723	.085	-.001	< .001	1.000	.999	1.000
[Caption=1]*[Time=2]	-2.660	1.226	-2.170	**.030**	-5.066	-.255	.070	.006	.775
V_Size*[Caption=1]*[Time=2]	< .001	< .001	.137	.891	-.001	.001	1.000	.999	1.001
V_Size*[Caption=1]*[Time=3]	< .001	< .001	-1.366	.172	-.001	.000	1.000	.999	1.000

No significant differences were found at specific testing times ($p = .537$ for immediate post-test and $p = .230$ for delayed post-test). Both experimental groups had significant differences between immediate post- and delayed post-tests ($p = .041$ for the regular group and $p < .001$ for the enhanced group), with the enhanced group scoring better at the immediate post-test (EC 81.12% vs RC 77.91%) but worse than the regular group at the delayed post-test (EC 61.61% vs RC 69.94%). In that sense, participants from the RC were able to retain more information than those from the EC.

Figure 7

Form Recognition by Time by Captions



4.3. Learners' Awareness, Self-Perceptions and Overall Experience

The fourth and final research question focused on EFL learners' self-reported focus of attention when viewing a captioned documentary. Through a series of retrospective questions, information on different levels of attention was gathered. First of all, as can be seen in Table 18, participants' self-reported focus of attention was very similar from one experimental group to the other. In fact, a series of independent t-tests revealed that none of the differences between percentages were statistically significant ($p > .05$).

Table 18

Participants' self-reported focus of attention (out of a total of 100%).

	Captions (%)				Audio (%)				Image (%)			
	Mean	SD	Min	Max	Mean	SD	Min	Max	Mean	SD	Min	Max
Regular (n = 15)	36.89	18.99	5	80	35.55	15.81	10	70	27.55	15.75	10	70
Enhanced (n = 16)	40.31	18.48	10	70	34.38	14.36	15	65	25.31	13.84	10	50
All participants (n = 31)	38.65	18.50	5	80	34.95	14.84	10	70	26.40	14.59	10	70

Standard deviations of the distribution are high, which indicates that the data is more spread out, or, in other words, that the mean is not that reliable. In general, participants reported to focus more on *captions*, followed by the *audio* and the *image*. Even though the tendency of the EC group is to focus more on *captions* (perhaps because of the enhancement of target words), as has been commented earlier, the difference with the RC group is non-significant. Results showed that the tendency of

RC was to focus more on the *image* than the EC, as well as in the case of the *audio* input.

Secondly, as for participants' self-reported linguistic focus of attention displayed in Table 19, differences among experimental groups were, once again, found non-significant ($p > .05$), so participants' distribution of percentages were statistically similar. The common order for all linguistic features in both experimental groups is *general comprehension*, *new vocabulary*, *pronunciation*, *expressions* and *intonation*.

Table 19

Participants' self-reported linguistic focus of attention (out of a total of 100%).

	General Comprehension (%)				New vocabulary (%)				Pronunciation (%)			
	Mean	SD	Min	Max	Mean	SD	Min	Max	Mean	SD	Min	Max
Regular (n = 15)	38.87	18.78	15	80	18.87	10.52	0	40	17.60	8.53	4	35
Enhanced (n = 16)	41.88	17.88	15	80	17.50	7.75	5	30	16.09	10.12	3	40
All participants (n = 31)	40.42	18.08	15	80	18.16	9.06	0	40	16.82	9.26	3	40

	Expressions (%)				Intonation (%)			
	Mean	SD	Min	Max	Mean	SD	Min	Max
Regular (n = 15)	13.07	6.79	0	25	14.60	7.04	4	25
Enhanced (n = 16)	14.06	6.64	5	25	10.47	7.20	0	25
All participants (n = 31)	13.58	6.62	0	25	12.47	7.31	0	25

Furthermore, regarding participants' self-reported amount of learning, which can be seen in Table 20, both experimental groups described having learned similar amounts of knowledge (again, non-significantly disparate). The general mean, as well as the individual means per group, is between 2 and 3, which suggests that most of participants' self-perceived acquisitions range from *a little bit* to *quite something*, in line with the acquisition quantitatively registered in the previous sections.

Table 20

Participants' self-reported amount of learning.

	Learning Perception			
	Mean	SD	Min	Max
Regular (n = 15)	2.40	0.63	1	3
Enhanced (n = 16)	2.38	0.50	2	3
All participants (n = 31)	2.39	0.56	1	3

Note. Likert-scale from 1–nothing (*res*), 2–a little bit (*una mica*), 3–quite something (*bastant*) to 4–a lot (*molt*).

On another note, participants were asked to answer a series of open questions regarding their learning experience and whether they had learned anything that they could explicitly remember. Most answers addressed general aspects of language like vocabulary, technicisms, and familiarisation with the foreign accent:

- "He après paraules soltes que les recordo, relacionades amb el documental, *lockdown*, *jaw*. He aprés també a comprendre amb general el que es volia fer entendre amb el vídeo i entendre allò que es deia en general, no em vaig sentir perduda."
- "Hi havia molt vocabulari que no sabia i al principi em va resultar molt difícil recordar les paraules, ja que de moltes no sabia el seu significat."
- "El vídeo del 5G sobre el coronavirus és el que més m'ha agradat, m'ha cridat molt l'atenció, és el que més vaig entendre i més m'ha ajudat a saber el significat de les paraules."
- "La pronunciació de certes paraules, paraules noves i que havíem escoltat poc abans. Les paraules i el seu significat escrit és el que més m'ha ajudat a entendre millor i aprendre-les."

Finally, participants were additionally asked whether they had any comments on the experiment in general, and whether they had realised anything in particular during all the sessions. More often than not, participants reported to have enjoyed the experience as well as to have become aware of both internal characteristics about themselves and external variables regarding second language acquisition:

- "S'entenen bastant les paraules desconegudes quan les fiques en context."
- "Me han gustado las pruebas y cómo se han llevado a cabo. Así también me he dado cuenta de que aún me queda mucho vocabulario por aprender."
- "L'experiència ha estat molt bona, hem de donar-li més importància al que escoltem i relacionar-lo amb el significat."
- "M'ha agradat molt veure el documental, en l'àmbit de llengua i de notícia."

4.3.1 Attention vs Distraction

In addition, participants from the EC group were invited to comment upon their awareness of the enhancement in respect of attention and distraction. The first of these questions asked whether they had paid more attention to the words in bold and yellow. Most of the answers were affirmative and learners reported that enhanced words seemed "more important," somehow, which caught their attention "without compromising general comprehension."

- "Sí, pensava que eren algun tipus de senyal per estar atent."
- "Pensava que eren més important que la resta i els hi prestava una miqueta més d'atenció."
- "En el moment que sortien captaven l'atenció però sense evitar la comprensió general."

Concerning the level of distraction that these yellow words evoked in all participants, answers were divided in two. On the one hand, some participants did state that the enhancement distracted them not only from "the rest of the captions" but also from the documentary itself. On the other hand, others believed that the enhancement merely caught their attention without disrupting the general comprehension.

- "No, era ràpid i ajudava a entendre."
- "Sí, perquè era com que només llegia aquella paraula, no em parava a llegir la resta."
- "Potser sí que distreien una mica..."

Lastly, participants answered whether they believed they had retained better those words in yellow, and their responses were predominantly in agreement (although some participants did deny any influence in that sense). Participants usually reported that the enhancement helped them fixate their attention to gain the knowledge afterwards:

- "Sí, ja que pensava que serien més importants per després."
- "Sí, perquè destacaven més visualment."
- "No, em vaig concentrar en recordar només les paraules desconegudes."

5. Discussion

This aim of this study was to explore the effects of regular and enhanced captions as well as individual differences on incidental vocabulary acquisition –by tapping into meaning recall, meaning recognition and form recognition knowledge– through the viewing of a documentary while accounting for participants' self-reported focus of attention.

The first research question addressed the overall effects of watching the documentary on L2 vocabulary acquisition, without considering the experimental condition of the two groups, namely RC and EC. All participants significantly gained knowledge from pre-test to either of the two post-tests for both meaning recall and meaning recognition, which suggests that viewing the captioned documentary was effective, and knowledge was significantly retained after two weeks. For meaning recall, a significant interaction between time at testing and level in which participants were enrolled (B1, B1+, B2 or C1) arose in the GLMM and thus was included in the analysis of this task. In fact, pairwise comparisons between level and time suggested that only for B1 and C1 participants differences between pre-test and delayed post-test were significant. In that sense, this study has corroborated that "multimodal input is not only beneficial for intermediate to advanced students" (Montero Perez, 2020a, p. 660), as B1 students could be considered low-intermediate. In other words, not only higher proficiency has been related to higher gains, but low-intermediate students have also benefited from the intervention, contrary to what was found in previous studies such as Pujadas and Muñoz (2019), who used the Oxford Placement Test (OPT) to evaluate participants' proficiency levels, or Gesa (2019), who distinguished participants' proficiency by their educational level. It should be borne in mind, however, that the proficiency levels in these studies are rather different, a typical obstacle in this line of research disclosed by Montero Perez et al. (2013). For meaning recognition, a significant interaction between vocabulary size and time was found for the slope between pre-test and immediate post-test.

For form recognition, participants' scores were significantly higher in the immediate post-test in comparison to the delayed post-test, which suggests that participants' ability to recall having seen a particular item in fact deteriorates with time. This is to be expected, as not encountering the items again after the viewing of the documentary hinders the possibility of forming new form-meaning connections. Interestingly enough, whereas differences between post-tests for both meaning recall and meaning recognition were non-significant, in the case of form recognition, there was a significant difference. Again, a significant main effect of vocabulary size was found for this task, but neither of LLAMA B nor D. Overall, the results of the three tasks for all participants are widely consistent with previous literature, which has evidenced a positive effect of captions on L2 vocabulary learning (Gesa, 2019; Lee & Révész, 2020; Pujadas, 2019; Pujadas & Muñoz, 2019; Suárez & Gesa, 2019).

The second research question aimed at examining whether differences between types of captions occurred at the various levels of word knowledge under analysis. Results from this study showed that there were no significant differences between caption types for the three tests at all testing times, only significant within-group differences arose. For meaning recall, on the one hand, participants who watched the documentary with EC significantly differed from their own pre-test scores in both post-tests, whereas those who viewed the documentary with RC only did from pre-test to delayed post-test. On the other hand, for meaning recognition, scores only differed significantly between testing times for the EC group. Nevertheless, as has been mentioned, differences between groups were non-significant, following Montero Perez et al.'s (2014) findings, where the authors did not find significant differences between captioning groups, as well as Majuddin's (2020) outcomes, since the author did not find a difference between types of captions in either the form recall or meaning recognition (for the incidental learning condition, that is). Resembling the mentioned studies, no caption effects were found significant for either meaning recall or recognition. As differences between post-tests were non-significant for all groups, we could say that the potential learning of meaning recall and meaning recognition was not significantly lost after two weeks.

As for the form recognition task, results showed that differences between immediate post-test and delayed post-test were significant for the EC group but non-significant for the RC group. Regardless of these differences, when comparing the scores individually at each testing time, groups did not differ significantly, which resembles Montero Perez et al.'s (2014) findings. A significant interaction between caption type and time arose from the GLMM, but no main effects were found, in opposition to Majuddin's (2020) previous results, where the author reported that captions had significant main effects in the form recall and form recognition of multi-word expressions. Even though the EC group performed better in the first test, the RC group was able to retain more knowledge in the delayed post-test, as their scores were higher. This would suggest that the potential advantages of textual enhancement in captions is more of a short-term effect also in vocabulary gains, and not only in grammar, as was found in Pattemore and Muñoz (n.d.), since the EC group was not able to significantly retain the form recognition scores after two weeks.

The third research question was concerned with the extent to which individual differences such as previous vocabulary knowledge, that is, vocabulary size, and language learning aptitude, as means of the LLAMA B and LLAMA D tests, influenced participants' scores at the different meaning and form levels. Through the different GLMMs conducted in the analysis of the study, only vocabulary size had significant main effects at all levels of knowledge for all times at testing. These results are in line with most of the literature, which suggests that previous vocabulary knowledge is one of the most influential factors involving vocabulary learning (Feng & Webb, 2020; Lee & Révész, 2020; Majuddin, 2020; Montero Perez et al., 2014; Peters & Webb, 2018; Pujadas, 2019; Rodgers & Webb, 2019). As a matter of fact, it may even be suggested that the non-significant advantage in vocabulary size observed in the EC group might have helped these participants obtain an advantageous improvement, as vocabulary size did significantly interact with time at several points of the experiment. At the same time, no significant main effect arose from either one of the LLAMA tests when included as fixed factors in the statistical tests, in line with Pattemore and Muñoz (2020); not even in the learning of target word meanings, as Suárez and Gesa (2019) did find.

The fourth and final research question intended to provide a quantitative and qualitative examination of learners' self-reported focus of attention. Results showed that all participants, regardless of the experimental group, stated to focus more on captions, followed by the audio and the image, in this order. In light of previous research, the longer fixation duration, the more learning would occur (Lee & Révész, 2018; Montero Perez et al., 2015). Therefore, as participants from this study described that their attention was mainly assigned to captions, then our significant results would corroborate that positive relation as well. On another note, their linguistic focus was mainly put on general comprehension, followed by new vocabulary, pronunciation, new expressions, and intonation. Results from the immediate post-test on comprehension confirmed that participants (all except for one) did understand the documentary's essential plot. Also, as has been mentioned before, there were gains at meaning recall and recognition for all groups, which goes in line with the subjects' second most appointed linguistic focus of attention, that is, new vocabulary. In fact, this is also confirmed by the participants' own words, some of them reported in the previous section, as they verified that, according to their own perceptions, they had learned new vocabulary and had got familiarised with all of the accents.

Regarding the juxtaposition of attention versus distraction, which was accounted for participants in the enhanced captions group, a series of mixed opinions were found. First of all, almost all participants agreed upon the fact that enhanced items had caught their attention more than those unenhanced. Secondly, whereas some participants believed that the typographic enhancement did not distract them from the overall experience, some others did report having forgotten about the rest of the captions or having fixed their attention only on those words. Finally, almost all participants stated that they considered the enhancement as helpful, and most of them believed that enhanced captions was the reason behind having subsequently retained some target words. All in all, participants were consciously aware of the typographic enhancement of certain words and, as they described in their own words, how they had noticed and, later on, acquired new vocabulary.

6. Conclusion

The current study contributes to the area of second language acquisition through multimodal input with results from a very short exposure to a contemporary documentary during face-to-face and online classes. This study has examined the use of regular and enhanced captions so as to target learners' focus of attention and has not found significant differences between experimental groups, although there were significant within-group differences, highlighting the relevance of out-of-classroom exposure to L2 media. Furthermore, this work has also reinforced the importance of individual differences, confirming once again the significance of vocabulary size when learning single-word items, while also studying the non-significant contribution of the LLAMA tests, which are commonly used due to its convenient availability but had not been widely studied in the context of caption enhancement. Finally, through the retrospective questionnaire, this study has been able to describe participants' thoughts, opinions and ideas about the experiment in general, and about the enhancement of captions in particular.

The findings reported in this paper should be considered in the light of some limitations. Firstly, the overall higher gains from the enhanced group could have been influenced by their general higher vocabulary size scores, even though pre-analyses showed that differences between groups were non-significant. Secondly, due to the unavailability of additional participants, this study has not accounted for either a no-captions group or a control group who would not have viewed the documentary, to re-

assess and validate the efficacy of the treatment. Thirdly, due to the pandemic, until the final session of the experiment, half of the participants conducted the tasks online. Even though this study tried to control for cheating, as some of the websites used did not allow participants to change tabs during tasks, there is an extent to which fraud cannot be fully disregarded. In that sense, this study could have also accounted for guessing subjects or incomplete acquisition, by eliminating those who scored 1 in the pre-test but 0 in the immediate post-test. Next, this work could have included frequency of appearance in the different analyses, as Uchihara et al. (2019) recommended studies on incidental vocabulary learning to explore how frequency of occurrence relates to different variables, such as vocabulary gains, previous vocabulary knowledge or language learning aptitude, rather than merely focusing on a frequency threshold. Moreover, this study could have eliminated the target word *ripper* from the final analyses, as a series of chi-squared tests revealed that, in the meaning recognition test, the difference between difficulty indexes for this item in the two languages for the was statistically different (p = .011). The distractors were the same for both languages, but the correct options were not cognates: *destripador* (SPA) vs *esquinçador* (CAT), which could have caused the significant difference in the results and made this item extremely difficult for some participants. Finally, in light of Montero Perez et al.'s (2013) registered problematics regarding this particular line of research, this study could have utilised yet another form of evaluation, such as the OPT, to account for proficiency in more than one way and to increase the comparability of the results with previous research.

This study has some pedagogical implications and suggestions for future research as well. On the one hand, this work has demonstrated the potential advantage of multimodal input for acquiring languages. In that sense, language teachers could provide students with effective and, as some of the participants from this experiment stated, "fun," "good," and "enjoyable" experiences, which, in the end, motivate students to continue to learn every day by implementing the use of multimodal input as a way of promoting language acquisition. Some participants of this study, however, commented upon the "strangeness" of doing test after test without receiving any feedback or solutions to the different tasks. This could be amended, for instance, by incorporating a complementary activity after the post-test, in which students are provided the translations of the different target words, to check whether their hypotheses were correct. That is, they could confirm or disregard their assumptions without influencing

the potential effects of captions. On the other hand, future studies could also investigate the effects of telling participants about the enhancement of captions, or, for example, having pre-teaching activities as well as warning them of the posterior types of tests that they will conduct, as Pujadas and Muñoz (2019) or Majuddin (2020) respectively do when comparing incidental and intentional learning.

In essence, this research work has been able to gather meaningful results which contribute not only to the area of Second Language Acquisition, but to all parties that have collaborated in the development of this study, namely, the participants involved, the teacher at the language school, and, of course, myself. Together, we have ascertained the power of captioned materials, which belong to our everyday life in this virtual world of ours. Altering Dr Karan Rangarajan's words from the documentary, "spread knowledge, not the virus" (Livingston, 2020, 00:17:45–00:17:47), I want to conclude this study by asserting that we can spread culture, knowledge and languages through multimodal input, so go ahead and spread the word!

Word count: 10157.

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Appendices

Appendix 1

Background Information Questionnaire

Nom i cognoms:

Edat (anys i mesos):

Sexe: HOME / DONA

Grup:

1. Quan vas començar a aprendre anglès?

- Naixement
- Preescolar
- Escola Primària
- Secundària
- Edat adulta

2. Quin és el màxim nivell d'estudis (finalitzats) que heu rebut?

- Educació primària
- Educació secundària
- Batxillerat
- Grau mitjà / superior
- Grau universitari
- Màster
- Doctorat
- Altres: _____

3. Has assistit a classes d'anglès a part de les obligatòries a l'escola? Si és així, digueu-nos quan / quant de temps / per què?

4. A més d'anglès, parleu altres idiomes? Indiqueu quins idiomes i quin nivell de coneixement creieu que teniu (A1, A2, B1, B2, C1, C2...)?

5. Indiqueu amb quina freqüència realitzeu les activitats següents **en anglès**:

	Mai	Entre 1-3 vegades al mes	Entre 1-3 vegades a la setmana	Entre 4-6 vegades a la setmana	Cada dia
Jugar a videojocs					
Veure pel·lícules i/o series de televisió					
Lectura (per exemple, llibres, revistes, articles, còmics)					
Navegar per internet					
Redacció (per exemple, e-mail, xat, WhatsApp, Facebook, Twitter)					
Veure vídeos al YouTube					
Parlar (en anglès) amb amics					
Parlar (en anglès) amb la família					
Parlar (en anglès) a la feina					

6. Veieu pel·lícules i/o sèries de televisió amb subtítols? Si és així, especifiqueu l'idioma dels subtítols. Indiqueu el temps que passeu veient cada tipus de material audiovisual (percentatges). La seva suma ha de ser del 100%.

Per exemple: Amb subtítols en català/castellà 0% + Amb subtítols en anglès 40% + Sense subtítols 60% = **100%**

	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Amb subtítols en català/castellà											
Amb subtítols en anglès											
Sense subtítols											

7. Quan mireu pel·lícules i/o sèries de televisió en anglès **amb subtítols**...

	Mai	De vegades	Sovint	Molt sovint	Sempre
Intenteu escoltar l'àudio abans de llegir els subtítols					
Llegiu els subtítols abans d'escoltar l'àudio					
Només llegiu els subtítols si no enteneu l'àudio					

8. Feu **alguna de les accions següents per millorar el vostre anglès** mentre mireu pel·lícules i/o sèries de televisió en anglès? Marqueu tot el que correspongui.

- o Torneu a reproduir escenes de nou

- Repetiu en veu alta vocabulari i expressions noves
- Atureu el vídeo per escriure vocabulari i expressions noves
- Busqueu vocabulari i expressions desconegudes al diccionari
- Intenteu utilitzar el vocabulari i les expressions del vídeo
- Presteu atenció a les paraules i expressions noves
- No fas res
- Altres: _____

9. Feu servir **algun altre mètode** o utilitzeu **alguna altra tècnica** més per millorar l'anglès fora de la classe (a **més d'activitats relacionades amb la vostra titulació**)?

MOLTES GRÀCIES PER LA VOSTRA PARTICIPACIÓ!

Appendix 2

Form Recognition + Meaning Recall

Nom i cognoms:
Grup:
Data:

➔ Algunes de les paraules següents van aparèixer al documental i altres no. Recordeu haver vist o escoltat les següents paraules al documental? Senyaleu amb una creu (X) les paraules que creieu que **SÍ** han aparegut al documental.

➔ Proporcioneu, a més, el significat de totes les paraules. Podeu utilitzar una traducció al català o castellà, una definició o un sinònim mentre escolteu les paraules en anglès.

		X	
1.	CORE		
2.	APPEALING		
3.	LOCKDOWN		
4.	ACHING		
5.	HARMFUL		
6.	ARSON		
7.	ILLNESS		
8.	CLAP		
9.	LONE		
10.	MURDERER		
11.	SHAKE		
12.	OPPOSED		
13.	HARVEST		

14.	DRAFT		
15.	DISTORTED		
16.	FLAVOURING		
17.	RATER		
18.	NETWORK		
19.	MAD		
20.	RETAINER		
21.	DAMAGING		
22.	RISKING		
23.	LINKED		
24.	BOASTFUL		
25.	PRESUMING		
26.	UNDERMINING		
27.	SCOPE		
28.	INFER		
29.	KNEE		
30.	RELUCTANCE		
31.	ADVERT		
32.	REMOVE		

33.	RIPPER		
34.	APPROACH		
35.	MAST		
36.	STRESS		
37.	FRAMED		
38.	THREAT		
39.	LECTURE		
40.	FINGER		
41.	ACHIEVE		
42.	RANDOMNESS		
43.	GOAL		
44.	CELL		
45.	ENFORCING		
46.	EVIDENCE		
47.	SPREAD		
48.	RANGE		
49.	JAW		
50.	CARER		

Appendix 3

Meaning Recognition

Nom i cognoms:
Grup:
Data:

➔ Quin és el significat de les següents paraules? Encercleu la resposta que creieu correcta o marqueu *no ho sé* si no esteu segurs de la solució mentre escolteu les paraules en anglès.

1.	CORE	a. Cor b. Nucli	c. Nus d. Corretja	e. No ho sé
2.	APPEALING	a. Apàtic b. Atractiu	c. Simpàtic d. Empàtic	e. No ho sé
3.	LOCKDOWN	a. Cadenat b. Confinament	c. Taquilla d. Entorpiment	e. No ho sé
4.	ACHING	a. Falsejat b. Dolorós	c. Accelerat d. Arxivat	e. No ho sé
5.	HARMFUL	a. Harmoniós b. Nutritiu	c. Farcit d. Danyós	e. No ho sé
6.	ARSON	a. Arsènic b. Incendi	c. Implicació d. Arsenita	e. No ho sé
7.	ILLNESS	a. Confrontació b. Sospita	c. Tractament d. Malaltia	e. No ho sé
8.	CLAP	a. Roncar b. Clapar	c. Trencar d. Aplaudir	e. No ho sé
9.	LONE	a. Longeu b. Lamentable	c. Feroç d. Solitari	e. No ho sé
10.	MURDERER	a. Mossegador b. Mossegada	c. Assassí d. Assassinat	e. No ho sé
11.	SHAKE	a. Enxampar b. Sacsejar	c. Sospesar d. Témer	e. No ho sé
12.	OPPOSED	a. Oportú b. Opressiu	c. Oprobiós d. Oposat	e. No ho sé
13.	HARVEST	a. Collita b. Fardam	c. Menjar d. Fam	e. No ho sé
14.	DRAFT	a. Racó b. Bodegó	c. Esborrany d. Barca	e. No ho sé
15.	DISTORTED	a. Distorsionat b. Distribuït	c. Distret d. Torçat	e. No ho sé

16.	FLAVOURING	a. Saboritzant b. Flavi	c. Flavina d. Saborós	e. No ho sé
17.	RATER	a. Rater b. Avaluador	c. Ratapeus d. Avançador	e. No ho sé
18.	NETWORK	a. Netedat b. Xarxa	c. Xat d. Deure	e. No ho sé
19.	MAD	a. Madò b. Boig	c. Confrontat d. Trist	e. No ho sé
20.	RETAINER	a. Sostenidor b. Retenció	c. Entrenador d. Retard	e. No ho sé
21.	DAMAGING	a. Prejudicial b. Damnable	c. Perjudicial d. Demagògic	e. No ho sé
22.	RISKING	a. Riscós b. Esquerp	c. Oferidor d. Perdut	e. No ho sé
23.	LINKED	a. Internat b. Connotat	c. Enlairat d. Enllaçat	e. No ho sé
24.	BOASTFUL	a. Ric b. Intel·ligent	c. Arrogant d. Antipàtic	e. No ho sé
25.	PRESUMING	a. Suportable b. Solidari	c. Presumptuós d. Suposable	e. No ho sé
26.	UNDERMINING	a. Desautoritzant b. Desarmant	c. Sospesant d. Soterrant	e. No ho sé
27.	SCOPE	a. Centre b. Escopeta	c. Abast d. Escopinada	e. No ho sé
28.	INFER	a. Deduir b. Infestar	c. Reduir d. Infectar	e. No ho sé
29.	KNEE	a. Natja b. Cuixa	c. Genoll d. Taló	e. No ho sé
30.	RELUCTANCE	a. Reticència b. Reluctivitat	c. Serenitat d. Serialisme	e. No ho sé
31.	ADVERT	a. Advertència b. Adversari	c. Advocat d. Anunci	e. No ho sé
32.	REMOVE	a. Treure b. Agitar	c. Remar d. Bolcar	e. No ho sé
33.	RIPPER	a. Rapador b. Esquinçador	c. Lladre d. Policia	e. No ho sé
34.	APPROACH	a. Aprofundir b. Apropar	c. Confortar d. Arribar	e. No ho sé

35.	MAST	a. Deure b. Màstil	c. Mossegada d. Mastí	e. No ho sé
36.	STRESS	a. Emfatitzar b. Estriar	c. Trencar d. Escombrar	e. No ho sé
37.	FRAMED	a. Obscur b. Incriminat	c. Desmesurat d. Enfocat	e. No ho sé
38.	THREAT	a. Trefilatge b. Fil	c. Amenaça d. Tret	e. No ho sé
39.	LECTURE	a. Lactància b. Lectura	c. Lliçó d. Lector	e. No ho sé
40.	FINGER	a. Fingiment b. Bou	c. Dita d. Dit	e. No ho sé
41.	ACHIEVE	a. Aconseguir b. Assistir	c. Arxivar d. Aclamar	e. No ho sé
42.	RANDOMNESS	a. Randatge b. Randella	c. Al·legació d. Aleatorietat	e. No ho sé
43.	GOAL	a. Gola b. Cola	c. Objectiu d. Objecció	e. No ho sé
44.	CELL	a. Cel b. Cela	c. Cel·la d. Cella	e. No ho sé
45.	ENFORCING	a. Imposant b. Enfonsant	c. Esforçant d. Esfondrant	e. No ho sé
46.	EVIDENCE	a. Proves b. Vident	c. Protecció d. Indicació	e. No ho sé
47.	SPREAD	a. Esperar b. Estendre	c. Esposar d. Esprintar	e. No ho sé
48.	RANGE	a. Remolc b. Adreça	c. Distància d. Ranura	e. No ho sé
49.	JAW	a. Colze b. Ullal	c. Mandíbula d. Turmell	e. No ho sé
50.	CARER	a. Cuidador b. Carícia	c. Carrer d. Cartró	e. No ho sé

Appendix 4

Retrospective Questionnaire (*EC version*)

Nom i cognoms:
Grup:
Data:

➔ Si us plau, responeu a les següents preguntes:

1. Digueu a què li dedicàveu més atenció durant la visualització del documental en percentatges (la suma ha de ser del 100%):

Per exemple: *subtítols 50%, àudio 25%, imatge 25%*

	%
Subtítols	
Àudio	
Imatge	

2. Digueu a què li dedicàveu més atenció durant la visualització del documental en percentatges (la suma ha de ser del 100%):

Per exemple: *comprensió 20%, pronunciació 25%, paraules desconegudes 55%*

	%
Comprensió general	
Paraules desconegudes	
Pronunciació	
Expressions	
Entonació	
Altres:	

3. Encercleu quant anglès creieu que heu après de veure aquest vídeo, de molt (4) a res (0):

1. Res	**2.** Una mica	**3.** Bastant	**4.** Molt

4. Quantes coses heu après? Les podeu recordar? Si us plau, escriviu tantes coses com podeu recordar:

5. Quan apareixien les paraules destacades en groc, què pensàveu? Prestàveu més atenció a aquelles paraules que a la resta?

6. Penseu que les paraules destacades en groc us distreien en general del documental? I més concretament de la resta de subtítols?

7. Creieu que recordàveu les paraules destacades en groc millor que les normals després de veure el documental?

8. Teniu algun comentari sobre l'experiència que vulgueu compartir amb nosaltres? Alguna cosa de la qual us hàgiu adonat mentre dúieu a terme les diferents proves?

MOLTÍSSIMES GRÀCIES PER PARTICIPAR!!!!!

Si vols conèixer els resultats de l'estudi, si us plau, contacta amb mi a través de l'adreça: fingerbou@gmail.com