



Intralingual subtitles, interlingual subtitles, and L2 vocabulary: developments from an exploratory study

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ABSTRACT. This paper examines the effects of intralingual and interlingual subtitles on Brazilian English as a Foreign Language (EFL) learners' L2 vocabulary learning as a result of their processing and comprehension of a North-American sitcom. Thirty-six intermediate-level EFL learners, enrolled in the Extracurricular Language Courses at *Universidade Federal de Santa Catarina* (UFSC), were evenly divided into two experimental groups (intralingual subtitles and interlingual subtitles) and one control group (no subtitles). Participants' performance was measured based on an L2 vocabulary test (pre-test, test, and post-test), considering factors influencing word learnability (Laufer, 1997). Regarding the effects of subtitling availability, statistical tests and analyses performed revealed that experimental conditions were not found to substantially foster L2 vocabulary learning, and no statistically significant differences among the experimental groups and the control group were found. Across time, the results obtained point out to more positive growth in performance by the intralingual subtitles group, followed by the interlingual subtitles group, and then the control group. These results are discussed in light of the possible different processing mechanisms employed as well as some of the potentials and drawbacks that both intralingual and interlingual subtitles may offer for L2 learning/instructional purposes.

Keywords: foreign language; L2 vocabulary learning; subtitling.

Legendas intralinguais, legendas interlinguais e vocabulário em L2: desenvolvimentos a partir de um estudo exploratório

RESUMO. Este estudo examina os efeitos de legendas intralinguais e interlinguais na aprendizagem de vocabulário em L2 por aprendizes brasileiros de Inglês como Língua Estrangeira (ILE) resultante do processamento e compreensão de um *sitcom* Norte-Americano. Trinta e seis aprendizes de ILE, matriculados nos Cursos Extracurriculares de Língua da Universidade Federal de Santa Catarina (UFSC), foram igualmente divididos em dois grupos experimentais (legendas intralingual e legendas interlinguais) e um grupo controle (sem legendas). O desempenho dos participantes foi medido em um teste de vocabulário em L2 (pré-teste, teste e pós-teste), levando em conta fatores que influenciam a aprendizagem de palavras (Laufer, 1997). Em relação aos efeitos das legendas, os testes estatísticos e as análises revelaram que as condições experimentais não promoveram substancialmente a aprendizagem de vocabulário em L2, e não foram encontradas diferenças significativas entre os grupos experimentais e o controle. Com o tempo, os resultados obtidos apontam para ganhos mais positivos de desempenho do grupo de legendas intralinguais, seguido pelo de legendas interlinguais e finalmente pelo controle. Os resultados são discutidos à luz de diferentes possíveis mecanismos de processamento empregados e de alguns potenciais e limitações que ambos os tipos de legendas podem oferecer para a aprendizagem/instrução em L2.

Palabras-chave: língua estrangeira; aprendizagem de vocabulário em L2; legendagem.

Introduction

The disciplinary field of Second Language Acquisition (SLA) has devoted considerable scholar attention to the research behind the use of subtitled videos in and outside language classrooms focusing on vocabulary learning. In some perspectives, vocabulary is viewed as the bulk of communication and language learning, without which any attempt of communication is impossible (Laufer, 1997) or the

most important component for L2 learners (Gass & Selinker, 1994).

Vocabulary learning has, for quite some time now, awakened the interest of scholars in SLA, questioning long-held assumptions, especially as to the role that vocabulary plays in the picture of learning/acquiring a language (Ellis, 1997). Simply put, learning a word, according to Ellis (1994), would minimally entail its recognition and its

entrance to our mental lexicon. The scholar also posits that there is no single process of learning a word since the processes are logically, pedagogically, and psychologically separable.

In order to make videos accessible to populations that do not fully master the language spoken in the dialogues of the videos or to facilitate students' overall comprehension, subtitles tend to be used. Regarding this translational aid, an important distinction is in order: while interlingual subtitles¹ specifically refer to target-language texts, varying depending on the country, typically displayed at the bottom of the screen, intralingual subtitles refer to same-language subtitles (also known as captions), which originally had the function to serve the hearing-impaired (Neuman & Koskinen, 1992).

As Neuman and Koskinen (1992) explain, the instructional use of subtitled video materials involves many benefits, some of which could be summarized as follows: (i) videos' combination of sounds and pictures might enhance the relationship between words and meanings; (ii) videos have entertainment qualities that constitute a potential advantage over static texts; and (iii) viewing could be perceived as a cognitively active experience – when suitable material is used (Anderson & Collins, 1988). Moreover, from a learning styles standpoint, subtitled videos might cater for different types of learners, such as visual and auditory ones at the very same time.

Studies on interlingual and intralingual subtitled videos have covered a number of language domains, such as: the improvement of Foreign/Second Language (L2) reading (Markham & Peter, 2003; Kruger & Steyn, 2014), L2 listening comprehension with/without L2 vocabulary learning (Garza, 1991; Huang & Eskey, 1999; Markham, Peter, & McCarthy, 2001; Stewart & Pertusa, 2004; Winke, Gass, & Sydorenko, 2010; Matiolo, Oliveira, Baretta, 2017), L2 vocabulary learning (D'Ydewalle & Van de Poel, 1999; Bianchi & Ciabattini, 2008; Matiolo, Collet, & D'Ely, 2013), the effects on implicit and explicit memory and cognitive processing (Bird & Williams, 2002), and the acquisition of L2 grammar (Van Lommel, Laenen, & D'Ydewalle, 2006; Bianchi & Ciabattini, 2008). Although there is a substantial body of knowledge to date concerning the effects of subtitling on L2 development, very few studies have been carried out with the Brazilian population so far. In this sense, this paper, which is part of a larger

PhD study, reports on the effects of intralingual and interlingual subtitles on L2 vocabulary learning, more specifically on how these translational aids affect Brazilian L2 learners' vocabulary gains when watching a North-American sitcom in a pre-test, test, and post-test study design.

This article has been organized into four sections in addition to this introductory one. Section 2 presents a brief review of the literature, stressing the main findings related to subtitling availability and L2 novel word learning. Section 3 centers on the methodological aspects informing the present research. Section 4 focuses on the descriptive statistics, the results, and the discussion of the main findings. Finally, section 5 offers a summary of the key results as well as some limitations and implications that have emerged.

Intralingual subtitles, interlingual subtitles, and L2 vocabulary

In light of 18 empirical studies reviewed, carried out between 1991 and 2013 on the use of intralingual and interlingual subtitles to foster L2 development, a thought-provoking picture conjures up. Although most studies on L2 word learning aided by subtitling availability have found more beneficial effects with the use of intralingual subtitles (Neuman & Koskinen, 1992; D'Ydewalle & Van de Poel, 1999; Koolstra & Beentjes, 1999; Markham, 1999), one study has found more beneficial effects with the use of interlingual subtitles (Raine, 2013) and two studies have found no significant differences between the effects of intralingual and interlingual subtitles (Yuksel & Tanriverdi, 2009; Matiolo, Collet, & D'Ely, 2013).

It could be argued that subtitles have proven effective, regardless of their type of translational aid. Nonetheless, when singling out studies involving university-level participants from studies involving other populations, the number adds up to a total of 13 studies. In analyzing the results obtained by these studies with a focus on those that looked at a direct comparison of intralingual subtitles and their absence, out of the six studies, the scenario we get is that four of them favored the presence of intralingual subtitles, whereas two of them found no differences between experimental and control groups, when their focus was not on L2 word learning per se. In light of these results, there still seems to be a need for further scrutiny regarding the effects of intralingual and interlingual subtitles for language development, especially when one considers the fact that certain populations of EFL learners have been underinvestigated – Brazilian EFL learners being the case in point.

¹ Interlingual subtitles are also commonly referred to as standard subtitles or simply as subtitles, that is, the type of translational aid involving one linguistic pair (when soundtrack and subtitles present two different languages). Intralingual subtitles, on the other hand, are also often referred to as captions in that they present the same language on both soundtrack and subtitles, though a few technical differences can be observed (Danan, 2004).

Method

This study, which is of a mixed design (qualitative and quantitative) nature, was aimed at looking at the effects of intralingual and interlingual subtitles on L2 vocabulary learning. More specifically, it was aimed at investigating how these translational aids seem to affect Brazilian L2 learners' vocabulary gains when watching a North-American sitcom in a pre-test, test, and post-test study design.

Participants

A total of 36 participants participated in the data collection (20 female; 16 male), all of which are Brazilian intermediate EFL learners in the 18-60 age range (mean age of 22 years old), chosen on the basis of their proficiency level. Participants were enrolled in level 5 (intermediate) in the Extracurricular (non-credit) Language Courses at Universidade Federal de Santa Catarina (UFSC), Florianópolis, Santa Catarina state, Brazil. Studies on the effects of subtitled video materials have typically comprised intermediate learners of the language, and an assumption behind that is that these participants are usually at a threshold proficiency level that enables them to read the subtitles on screen in the foreign language, given the short display time for subtitles (2-4 seconds, only).

Participants were randomly assigned to one of the treatment groups or the control group: Intralingual Subtitles Group ($n = 12$), Interlingual Subtitles Group ($n = 12$); and Control Group – no subtitles ($n = 12$). Participants were explained about all the stages in the data collection in the first meeting, when they were invited to participate in the research, signed the Consent Form², and had the opportunity to clarify doubts related to the goals and the design of the study.

Most of the participants (75%) had been studying English for at least three or four years, had been having contact with the English language mostly by attending EFL classes, as well as by listening to music and watching films and TV series. 97.22% of the participants informed that they had been studying English because they seek professional and personal development and 83.36% reported to watch films or TV series at least twice or three times a week. The majority of all participants (86.11%) reported watching TV series with interlingual subtitles, whereas a few of them (13.89%) reported watching TV series with intralingual subtitles.

Participants' teachers were also given a questionnaire in Portuguese in order to provide more information about their education and experience with English language teaching. They were also inquired about their pedagogical use of videos in the classroom. Overall, teachers mentioned that the decision to use intralingual subtitles or interlingual subtitles (or none) depends on the type of activity and their goals.

Material

Materials: on the TV series

The participants watched a 20-minute episode of the American TV series *The Big Bang Theory*, which premiered in 2007. In Brazil, the show is broadcast with Portuguese subtitles on Warner channel and is a critically acclaimed show. The sitcom (situational comedy) depicts Leonard Hofstadter and Sheldon Cooper, two brilliant physicists who are best friends and roommates, who are friends with two of their co-workers, with whom they spend time working on their individual work projects, playing video games, watching science-fiction movies, or reading comic books. As they are self-professed nerds, they have little or no luck with women.³

The sitcom was selected to be used in the present investigation based on a series of criteria. First of all, the series and the specific episode adopted in this research were used elsewhere (Matielo, Collet, & D'Ely, 2013). Additionally, they were also chosen on the basis of its genre, since a sitcom was thought to be appealing and appropriate to the target audience. From the profile questionnaire administered in the very first session in the data collection, 31 out of the 36 participants reported watching sitcoms, thus suggesting their familiarity with the genre. The episode used in the study was 'The grasshopper experiment', the eighth episode on the first season. The episode was chosen since it contained a complete story line and did not require students to be familiar with the series or previous episodes.

Materials: On the L2 Vocabulary Test

The L2 vocabulary test contained three parts: a pre-test, a test, and a post-test. The pre-test was aimed at assessing the participants' previous knowledge of the target vocabulary, in the first session. They received a 20-word list in English in which 10 of them were distractors. They were asked to write their meaning, a synonym or an explanation in Portuguese or English using their own words.

² The research project was submitted to the university's Ethics Committee and an approval was obtained. It is registered under the code 36597314.9.0000.0118. Participants' teachers also signed a consent form.

³ Information retrieved from <http://www.imdb.com/title/tt0898266>.

The target words were chosen taking into account factors influencing word learnability (Laufer, 1997). For instance, some words were chosen because of their facilitated word learning aspect, such as familiar morphemes (e.g., 'pointless' and 'membership'), whereas other words were chosen due to their difficulty-inducing factors, such as the presence of foreign morpheme (e.g., 'obnoxious'), and some were selected as neutral, such as those related to concreteness or abstractness of a lexical item (e.g., 'wrath').⁴ Moreover, words are related to the themes portrayed in the episode, but are not semantically related (Erten & Tekin, 2008).

Regarding the number of times the target-words appear in the selected episode, half of them was uttered and was shown in the subtitles – both intralingual and interlingual – twice (slot, membership, guinea pigs, showdown, and wrath), whereas the other half of the target-words was uttered or shown in the subtitles once (embodiment, pointless, pushy, obnoxious, and resemblance). The short exposure to the input is hereby acknowledged, although one has to have in mind that the video length is also short (20 minutes).

Other important criteria considered in the selection of the target-words relate to whether the words actually appeared in the interlingual and intralingual subtitles and whether they were somehow relevant to the story being narrated on screen, which could facilitate participants' processing and future recognition. Distractors, on the other hand, contained words that were likely to be familiar based on semantic familiarity (e.g., 'affection' and 'mint') and unfamiliarity (e.g., 'award' and 'moisturizer'), taking into account their proficiency level. Another aspect that was not controlled for was word frequency.

The L2 vocabulary test required the participants to reanalyze the 10 target-vocabulary word list from the pre-test in English (excluding the distractors) and write their meaning, a synonym or an explanation in Portuguese or English using their own words immediately after watching the video, in the second session. As for the post-test, one week later, participants were provided with a test identical to the one they had been given a week before to check whether they were able to recognize the words they encountered when watching the video. The participants were asked to write their meaning, a synonym or an explanation in Portuguese or English using their own words. As in the L2 vocabulary test, distractors were not included.

The video was shown with the use of a standard DVD player with a digital image display projector and external speakers in a relatively small classroom with a large screen, with regular viewing and listening conditions. No time frame was established in any treatment conditions in order to ensure that the participants felt at ease to answer the questions.

Scoring of the L2 vocabulary test and statistical procedures

The L2 vocabulary test was scored strictly with the help of three raters. Raters assigned 1 point for each acceptable synonym, explanation or translation of the target-words in the pre-test, test, and the post-test. Cronbach's Alpha correlation tests were run in order to check for inter-rater reliability in terms of the rating of each part of the L2 vocabulary test (pre-test, test, and post-test) for each of the groups (intralingual subtitles, interlingual subtitles, and control), separately because raters did not agree with the responses provided. The results obtained in inter-rater reliability tests for the pre-test revealed that the rating was very or highly reliable (intralingual subtitles group, $\alpha = 0.85$; interlingual subtitles group, $\alpha = 0.75$; control, $\alpha = 0.98$). In relation to the test part, the results obtained in the inter-rater reliability tests revealed that the rating was highly reliable (intralingual subtitles group, $\alpha = 0.92$; interlingual subtitles group, $\alpha = 0.95$; control, $\alpha = 0.99$). Finally, in relation to the post-test, the results obtained in the inter-rater reliability tests also revealed that the rating was very or highly reliable (intralingual subtitles group, $\alpha = 0.88$; interlingual subtitles group, $\alpha = 0.97$; control, $\alpha = 0.98$).

Given that most of the data were not approximately normally distributed, with varying skewness and kurtosis, two sets of statistical tests were run: In order to investigate how intralingual and interlingual subtitles affect learners' L2 vocabulary gains, as measured by pre-test, test, and post-test, Kruskal-Wallis One-Way ANOVA tests were run; in order to examine significant differences in terms of gains across time, for any experimental condition, Friedman's Two-Way Analysis of Variance was run.

Results and discussion of findings

This section has been divided into two subsections. Subsection 4.1 reports on the statistical tests and the results obtained for the L2

⁴ All of the examples have been taken from the actual test, devised and used in this study.

vocabulary test, whereas subsection 4.2 focuses on the discussion and highlights the main findings.

L2 Vocabulary test: descriptive statistics and results

The results obtained by the two experimental groups and the control group on the L2 vocabulary pre-test, test, and post-test are displayed in Table 1:

Table 1. L2 vocabulary tests' results.

Groups	Statistics	Pre-Test Score	Test Score	Post-Test Score
Intralingual Subtitles (n = 12)	Mean	0.58	0.94	1.02
	SD	0.621	0.826	0.846
	Min.	0.00	0.00	0.00
	Max	1.67	2.67	2.67
Interlingual Subtitles (n = 12)	Mean	0.47	0.66	0.63
	SD	0.593	0.898	0.926
	Min.	2.00	3.00	3.00
	Max	1.11	1.16	1.41
Control (n = 12)	Mean	1.11	1.16	1.41
	SD	1.25	1.34	1.29
	Min.	0.00	0.00	0.00
	Max	3.67	3.67	4.00

n = sample size; SD = standard deviation; minimum and maximum obtainable scores: 0–10 points.

The performance of the three groups on the L2 vocabulary test points out to different mean scores on the pre-test, test, and post-test parts. The scores allowed for a minimum of 0 and a maximum of 10 points each, and a quick look at the participants' scores reveals that the scores obtained by the groups are different. Looking at the pre-test scores alone, it is possible to state that the three groups are slightly different from start: while the performance of the experimental groups did not differ much apparently ($M = 0.58$ and $M = 0.47$, for the intralingual and interlingual subtitles groups, respectively), the performance of the control group was found to be better ($M = 1.11$). As for the test scores, it is possible to perceive that the control group ($M = 1.16$) outperformed both experimental groups, though a better performance by the intralingual subtitles group ($M = 0.94$) over the interlingual subtitles groups ($M = 0.66$) was also found. Finally, in relation to the post-test scores, a similar trend is observed in that the control group ($M = 1.41$) outperformed the intralingual subtitles group ($M = 1.02$), who in turn outperformed the interlingual subtitles group ($M = 0.63$).

Examining the minimum and maximum scores obtained on the L2 vocabulary pre-test, test, and post-test by the two experimental groups and the control group provides an idea of the test difficulty. The minimum score obtained on the tests was 0 points by the intralingual subtitles group and the control group (on the pre-test, test, and post-test), whereas the highest score obtained

on the tests was 4 points, which was obtained by the control group on the post-test.

A careful inspection of the histograms and box plots was informative since it revealed the presence of outliers: on the pre-test, Participant 22 (interlingual subtitles group) was considered an outlier, obtaining a score of 2 points when the mean score of the participant's group is .47. Moreover, the same participant can be considered an outlier on the post-test, when s/he obtained a score of 3 points in a group whose mean score is 0.63. Lastly, on the post-test as well, Participant 30 (control group) was considered an outlier, scoring 4 points in a group whose mean score is 1.41. Nevertheless, the results obtained by the statistical tests revealed that the groups were not statistically significant among themselves, with or without the aforementioned outliers. Thus, the researchers decided to keep Participants 22 and 30 in the sample.

The next step was to verify whether the apparent differences in performance by the three groups on the three testing moments – pre-test, test, and post-test – were statistically significant. To this end, a Kruskal-Wallis One-Way ANOVA test was run, and the results obtained with the statistical test are shown in Table 2:

Table 2. Kruskal-Wallis one-way ANOVA on the L2 vocabulary test.

	Pre-Test	Test	Post-Test
Chi-Square	1.310	0.916	3.830
df	2	2	2
Asymp. Sig.	0.520	0.633	0.147

df = degrees of freedom; Asymp. Sig. = asymptotic significance.

Despite the differences in mean scores shown in Table 2 obtained by the groups, a Kruskal-Wallis One-Way ANOVA test showed that the differences between the groups did not reach statistical significance and therefore did not reveal a significant effect of subtitle availability on L2 vocabulary ($H(2) = 1.310$, $p > 0.05$ for the pre-test; $H(2) = 0.916$, $p > 0.05$ for the test; $H(2) = 3.830$, $p > 0.05$ for the post-test). Therefore, no post-hoc tests were run. Moreover, a small effect size (ranging from 2% on the test to 10% on the post-test) was found in the data, which refers to the percentage of the variability in the L2 vocabulary test that suggests that availability of subtitles did not seem to play a determining role in the participants' performance on the test.

In order to gather insights into the variation of the participants' performance on the L2 vocabulary test across time, three separate Friedman's Two-Way ANOVA tests were run for each of the two treatment groups and the control

group. The tests were aimed at verifying whether the groups' L2 vocabulary test performance statistically differed across time considering their pre-test, test, and post-test moments. The results obtained are reported in Tables 3, 4, and 5:

Table 3. Friedman's Two-Way ANOVA Test on L2 vocabulary test: intralingual subtitles group.

n	12
Chi-Square	3.588
df	2
Asymp. Sig.	0.166

n = sample size; df = degrees of freedom; Asymp. Sig. = asymptotic significance.

Table 4. Friedman's Two-Way ANOVA Test on L2 vocabulary test: interlingual subtitles group.

n	12
Chi-Square	0.963
df	2
Asymp. Sig.	0.618

n = sample size; df = degrees of freedom; Asymp. Sig. = asymptotic significance.

Table 5. Friedman's Two-Way ANOVA Test on L2 vocabulary test: control group.

n	12
Chi-Square	4.455
df	2
Asymp. Sig.	0.108

n = sample size; df = degrees of freedom; Asymp. Sig. = asymptotic significance.

The results herein obtained with the separate Friedman's Two-Way ANOVA tests on the L2 vocabulary test (pre-test, test, and post-test) revealed no statistically significant difference across time for the intralingual subtitles group ($\chi^2(3) = 3.588$, $p > 0.05$), interlingual subtitles group ($\chi^2(3) = 0.963$, $p > 0.05$), and control group ($\chi^2(3) = 4.455$, $p > 0.05$). This means that the treatment – the availability of subtitles – did not have a statistically significant effect on the sample investigated in this experiment, that is, a statistically significant change on the L2 vocabulary test scores across time.

Even though Friedman's Two-Way ANOVA tests revealed no statistically significant differences concerning pre-test, test, and post-test scores on the L2 vocabulary test, the researchers further inspected gain scores in order to gather more information about the participants' performance. In computing the variance in gain scores, it is possible to generate valid data on which group benefitted the most from the treatment, even if statistical significance was not achieved. The results of gain scores comparisons from test to pre-test and post-test to test are presented in Table 6.

The data displayed in Table 6 show positive, negative, and neutral gain scores considering the L2 vocabulary pre-test, test, and post-test for the experimental conditions – intralingual and

interlingual subtitles – and the control condition. These numbers are discussed in the next subsection.

Table 6. Gain scores in L2 vocabulary.

	Participant	Test to Pre-Test Gain Scores	Post-Test to Test Gain Scores
Intralingual Subtitles (n = 12)	P1	1.00	0.00
	P2	0.00	0.00
	P3	1.00	0.00
	P4	0.00	-0.33
	P5	0.00	0.67
	P6	0.67	0.00
	P7	-0.33	0.00
	P8	-0.33	0.33
	P9	0.67	-0.67
	P10	1.00	0.00
	P11	0.33	1.33
	P12	0.33	-0.33
Interlingual Subtitles (n = 12)	P13	0.00	-0.33
	P14	0.33	0.33
	P15	0.00	0.33
	P16	0.00	0.00
	P17	0.00	0.00
	P18	-0.33	0.00
	P19	0.00	0.00
	P20	-0.33	-0.33
	P21	1.00	0.00
	P22	1.00	0.00
	P23	0.67	-0.33
	P24	0.00	0.00
Control (n = 12)	P25	0.00	0.00
	P26	0.00	0.00
	P27	0.00	0.00
	P28	-0.67	0.00
	P29	0.00	0.67
	P30	0.00	0.33
	P31	0.33	-0.33
	P32	0.00	0.00
	P33	0.00	1.00
	P34	1.00	0.33
	P35	0.00	0.00
	P36	0.00	1.00

n = sample size.

Intralingual subtitles, interlingual subtitles, and L2 vocabulary: discussion of the main findings

The effects of subtitling upon L2 vocabulary have been explored in several studies over the last years (Markham, 1999; Bird & Williams, 2002; Stewart & Pertusa, 2004; Winke, Gass & Sydorenko, 2010; Matiolo, Collet, & D'Ely, 2013; Perez, Peters, & Desmet, 2014, to name but a few). Overall, what the literature shows is that L2 vocabulary development is possible to be aided by the use of subtitled material, but the degree to which the effectiveness of intralingual subtitles and/or interlingual subtitles is related to such development in different L2 populations still poses challenges, doubts, and inconsistencies to researchers and L2 practitioners.

In this study, participants' mean scores on the L2 vocabulary test were in fact higher than the pre-test, which confirms that the treatment must have had some effect. Despite this effect, which relates to the (un)availability of subtitles, the statistical tests revealed that the groups are not significantly

different from each other ($H(2) = 0.916, p > 0.05$). Thus, inspecting gain scores was very informative because it revealed that more positive gain scores in the test/pre-test comparison were obtained by the intralingual subtitles group, followed by the interlingual subtitles group and finally the control group, regardless of the fact that the control group outperformed both experimental groups in the pre-test, but not on the test.

The more positive gain scores that the participants in the intralingual subtitles condition obtained in relation to the other groups may be attributed to a large number of factors. First, all participants had seen the target-words prior to video watching on the pre-test, which means that they had been provided with an untimed opportunity to visualize the word form, even if they were unsure of its meaning at that point. Yet, only participants in the intralingual subtitles group had the chance to see the target-words in written form again while watching the subtitled TV series episode, in the English subtitles. On the one hand, participants in the interlingual subtitles would have had to attend to the auditory channel and the translation of that word in the Portuguese subtitles. Participants in the control condition, on the other hand, would have had to rely exclusively on their listening skills if they were to attend to the target-words from the video itself.

The fact that the intralingual subtitles group had more gains in L2 vocabulary in the pre-test/test comparison may seem attributable to this fact, even if they did not even examine the content provided via auditory input, thus ignoring it. The literature on subtitling and L2 vocabulary has given rise to many conflicting results, but as far as intralingual subtitles and no subtitles are concerned, more positive effects with intralingual subtitles for L2 vocabulary development have been obtained mostly (Neuman & Koskinen, 1992; Markham, 1999), though no differences were found in Yuksel and Tanriverdi (2009).

Winke et al. (2010) state that the use of intralingual subtitles provides learners with an opportunity to attend to different input modalities, which can impact not only overall understanding, but also target-vocabulary recognition. It is important to keep in mind that their study did not require participants to explain the target-words in any language nor provide a synonym to them. Instead, participants were only asked to indicate whether they knew the words prior to the treatment or not, which was quantified on a vocabulary recognition scale. It is possible that participants in the present research might have purely recognized more words after the treatment in relation to the

amount of target-words they 'knew' before, though this was not measured on any word recognition scale. Recognizing a word, nevertheless, could be regarded as the beginning of L2 vocabulary development (Ellis, 1997), though it does not explain the whole story.

Yuksel and Tanriverdi (2009) stress the importance of encountering words in context. In their study, participants' ability to recognize target L2 words did not differ statistically considering the intralingual subtitles group and the control group, even though the former outperformed the latter. The authors also bring up the fact that no test announcement was included in the study, so their participants also did not know on what to focus while they were watching the video. This also seems to the case in the present study.

Another crucial aspect regards the low scores obtained in the L2 vocabulary test by the participants in all groups in the present study. Unlike the relationship between subtitling and L2 comprehension, in which learners may infer aspects of the story being told on screen more easily from different input sources, such as the auditory channel and the visual channels, L2 vocabulary development is dependent on several meaningful and comprehensible encounters with the input provided (Nation, 1990; Horst, Cobb, & Meara, 1998).

The performance obtained by the participants in this research might possibly be at the threshold of what those learners are capable of obtaining, considering the video adopted, the target-words, their proficiency level, and the conditions under which they performed. In other words, with such a short, limited exposure to the input – a 20-minute video – containing the target-words, across the different experimental conditions, the processing of certain parts of the input may not even have occurred at times. This argument relates directly to the Noticing Hypothesis (Schmidt, 1990; 2010), which, in a nutshell, presupposes that input does not become intake for language learning or language development unless it is noticed, that is, consciously attended, which would also count towards explaining the low mean scores obtained by the participants.

Although the Noticing Hypothesis has been harshly criticized for being vague or lacking empirical support (Schmidt, 2010), it would provide an interesting perspective into the results hereby obtained. It would make sense to assume that most target-words may not have even been noticed by the participants – let alone processed – which then would have given them no chance to recognize them or make other higher level of cognitive processing, such as inferring their meaning,

providing a synonym or coming up with a translation for them based on the context of the story in which they appeared. Conversely, it is valid to acknowledge that not everything that one learns or eventually acquires language wise is necessarily explicitly taught. This is the stance that proponents and researchers in the explicit versus implicit learning paradigm take and have devoted part of their academic life to investigate. Most scholars seem to agree that unlike the first few thousand most common words in a given language, L2 vocabulary is mainly acquired incidentally (Huckin & Coady, 1999).

Nevertheless, Gass (1999) and Ellis (1994) both criticize those who equate implicit or incidental learning with unconscious learning. Some level of consciousness is very likely to be present in any (language) learning scenario. Thus, it is possible to assume that the fact that the participants did not pick up many L2 lexical items after having watched the video could also be attributable to a lack of consciousness as a product of attention (Schmidt, 1990). Successfulness in L2 vocabulary recognition is possibly dependable on a large amount of attention directed towards lexical items. As Ellis (1997) states, the learning of novel vocabulary consists of the development of associative connections that are highly dependent on repetition, learning, and practice. In the present study, the tests designed might not have offered the participants with enough and meaningful chances to develop such associative set of connections because the input provided to them must have not contained enough enhancement to foster participants' more successful L2 vocabulary uptake.

In their retrospective questionnaire, participants reported insightful information about their perceptions of the L2 vocabulary test. The most frequent aspect mentioned by the intralingual subtitles group was that, differently from the comprehension part, they claimed that they did remember reading the words on the subtitles but they could not remember exactly what they meant. In other words, they were unable to infer their meaning. Two of them also reported that they were surprised because they remembered having seen the words both on the pre-test and on the subtitles of the video, but they were unsure of their meaning.

Interestingly, participants in the interlingual subtitles group reported different opinions: three participants wrote that they had never seen the words before, which means that they could not even recall the words from their encounter on the pre-test. This confirms that the target-words were not attended by them via auditory channel or translation

in the Portuguese subtitles. Two participants in this group reported that they were unsure of their meaning and were afraid of making mistakes by guessing or trying to provide an answer that would be inaccurate. Most importantly, all of the participants in this group wrote that they considered the vocabulary part of the test very difficult.

As for the control group, ten participants reported that they could not remember the target-words, but none of them specified whether they were referring to the video alone or if that inability to recall words encompassed the pre-test too. Given that a one-week gap between pre-test, test, and post-test was established, the researchers assume that the participants referred to the video itself.

The results reveal that some participants in all three conditions – experimental conditions and control condition – presented neutral and negative gain scores in the test/pre-test comparison. With regard to neutral gains, it is clear that more participants in the control group obtained that type of score. This means that the absence of a treatment – a subtitled video – was impactful in terms of their L2 vocabulary performance as much as it did the experimental groups because more neutral gains scores were obtained by this group in relation to the experimental ones. As for negative gain scores, a possible explanation is that a few participants in these groups may have changed their answers after watching the video by the time they took the L2 vocabulary test in relation to the pre-test they had taken a week before.

Concerning the availability of intralingual subtitles, we assumed that participants in that condition would be provided with a chance to establish some relationship of the target-words with the surrounding lexical items, whose meanings would then be inferable from the context in which they occurred in the subtitles, by matching their occurrence with what was being narrated on screen, which did not happen effectively. As previously discussed, participants in any subtitling condition had to deal with the issue of time, that is, the duration of subtitles on screen. It is quite possible that the 2 seconds for one-liners and up to 4 seconds for the two-liners are not enough for participants to read, register, and carefully analyze the written input. Target lexical items were possibly mostly unattended, that is, they did not become intake partly because they were not properly processed or even noticed in the input. Furthermore, the frequency must have also been a decisive factor, since the target-words were not very salient in the input, given that they appeared in the audio/subtitles mostly twice.

As to the availability of interlingual subtitles, a different type of processing might have been involved. Perhaps participants would have had to make an extra effort to associate the input provided in the auditory channel with the written input provided in the subtitles. This, we posit, would unavoidably require the actual processing of both auditory and visual channels. In doing so, participants in the interlingual subtitles condition would also have had to establish a successful translation relationship between the target-words and their meanings, synonyms or explanations. This would have entailed a second piece of processing effort on their part, one that might be even more cognitively demanding than noticing itself.

In relation to the control condition, their only chance to begin their lexical development of the target-words through the video watching task would be to successfully notice and process them in the auditory input. Once that is done, we believe that they could match them onto visual cues, such as the images of the video, and/or other clues in the story to make sense of them and eventually infer their meaning. This scenario I would assume to be the less advantageous for L2 vocabulary development to occur in comparison with the other two scenarios with different input modalities. It is, to some extent, clear that L2 vocabulary recognition could be the onset of L2 vocabulary development per se in a context such as the one hereby investigated. However, in different subtitling conditions, the nature of processing would differ, as just hypothesized.

In terms of how many exposures one needs to learn novel vocabulary, though the answer is not straightforward, the literature does present somewhat converging insights into this matter. Nation (1990) has claimed that 5-16 exposures are needed in order to learn a word from context, whereas Meara (1997) suggested a 0.01 hypothesis – 1 uptake every 100 exposures – for L2 learners, arguing that these learners are usually unable to be exposed to large quantities of text. Horst et al. (1998), in a study with low intermediate EFL learners reading a 109-page book over a ten-day period, obtained a 20% pick-up rate as regards novel lexical items. Interestingly, they also observed that words appearing over eight times in text were more likely to be picked up than those that were repeated less.

Conclusion

Taken together, the results are suggestive of the potentials (and exciting challenges) that subtitling

can have for L2 learning, instructional, and experimental purposes. Despite the lack of robust L2 vocabulary learning results, studies with subtitled video materials are still much needed to address how L2 learners may benefit most from them in order to develop their linguistic skills.

As for the successfulness of L2 vocabulary learning, specifically, many factors are expected to play a decisive role. The mastery of a new word axes on many other factors such as the salience of the word in context (Brown, 1993), as well as the richness of certain contextual clues, the learner's attitudes, and possibly the size and quality of their existing repertoire of vocabulary (Laufer & Hadar, 1997). Further research is thus necessary to continue exploring this issue, most of all with underinvestigated populations, such as Brazilian EFL learners.

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