

INTENTIONAL AND INCIDENTAL LEARNING OF ENGLISH GRAMMAR THROUGH CAPTIONED VIDEO EXPOSURE

Applied Linguistics and Language Acquisition in Multilingual Contexts



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Abstract

The vast majority of the research into the role of captions in language learning has focused on listening comprehension, vocabulary learning, pronunciation, and reading. Only a few studies have been dedicated to investigating the implications of subtitle (L1 on-text screen) use on grammar learning. This thesis aims to explore the effects of captioned (L2 on-text screen) videos on grammar learning of English conditional sentences. Four intact classes of a total of 23 school aged English as a Foreign Language (EFL) students participated in the study. The experiment examined intentional and incidental learning of different age and proficiency groups. Statistical tests revealed that watching the captioned material twice led to significant gains in grammar acquisition in both types of learning. The proficiency advantage reported in previous research is supported in the present study. The results of this study have several pedagogical implications as captions seem to facilitate classroom instruction, lead to better knowledge of grammar structures, and result in incidental acquisition of grammar structures which are not explained in class. Captioned video appears to be a useful tool for language learners and language teachers.

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1. Introduction

Captions, also known as teletext subtitles, closed captions, intralingual subtitles, L2 subtitles, and same-language subtitles, are the transformation of the soundtrack into the written text in the same language. The benefits of captions have been reported in more than 100 empirical studies, according to Gernsbacher (2015). These studies found substantial evidence that captions are not only useful for hearing impaired or deaf individuals, but may also help children's reading skills, improve teenagers' written and spoken vocabulary, boost foreign language learners' pronunciation, comprehension, vocabulary, and increase literacy rates in developing countries. The results documented that most of the participants who were exposed to captioned videos tended to benefit from them. Moreover, the effects are not restricted by age; it was suggested by Gernsbacher (2015) that everyone from younger children to older adults may benefit from captioned videos.

Beginning as a tool for the deaf and hearing impaired individuals, nowadays the effect of captioned videos is an increasing area of research in the field of second language acquisition and teaching (Vanderplank, 2013). Captioning is a resource of multimodal input which consists of three different input channels: the visual picture, the soundtrack in the L2 (in case of SLA setting) and the text for reading in the L2. One of the first studies on captioning for English as a Second Language (ESL) learners explored whether exposure to captioned materials improves comprehension (Price, 1983). The results of 500 participants revealed a significant benefit of watching captioned video showing the possibility of using them not only for the hearing impaired and deaf people, but also for language learners who can easily access TV programs and make them a valuable resource of learning. Price's study was the onset of the research of captions use for foreign/second language learning. Since then many studies have been focused on topics such as captions and the development of listening comprehension, captions and literacy development, subtitling and captioning as language training, effects of different modes of subtitling/captioning, and subtitles and incidental language learning (Vanderplank. 2010). In his state-of-the-art

review of ten years' research (1999-2009) on captions, Vanderplank stated that a lot of questions regarding captions and language learning remained under-researched and, in addition, captions continued to be undervalued.

In the next section, the literature review will discuss several relevant studies on captioning (on-screen text in L2), subtitling (on-screen text in L1), and language learning.

2. Literature review

2.1 The case of captioning

The cognitive theory of multimedia learning (Mayer, 2003) aims to describe how people learn from words and visuals. It is based on the multimedia principle which suggests that students learn material better when words are presented with pictures as it allows learners to make connections between them. The theory includes three assumptions: the dual-channel assumption, the limited capacity assumption, and the active processing assumption. The dual-channel assumption suggests that there are two independent processing systems: the visual channel and the verbal channel, and that people separately process pictures in the visual channel and speech in the verbal channel. The amount of information processed at one time in each channel is limited. The active learning assumption means that learners need to pay attention and "...engage in active cognitive processing" (p.129) in order to enhance the learning process. Once active learning happens, the materials learnt are sorted in the long-term memory and can be used in problem-solving transfer (when a student uses previous problem-solving experience to find a solution for a new task).

As multimedia instruction includes words (text) and pictures (dynamic graphics in case of videos), the cognitive theory of multimedia learning may be applied to learning from captioned videos as the latter include multimodal input (picture, sound, and text). Mayer et al. (2014) attempted to apply the multimedia learning theory to captioned video in the university academic classroom where English was not the students' L1. The authors hypothesized that students may not

benefit from captions due to the demands of L2 learning itself taking up too much of their cognitive capacity for them to pay attention to the various channels of multimodal input. They suggested null or negative results from captioned video exposure may appear due to demands of extraneous processing which “...does not support instructional goal and does not result in any useful knowledge being constructed in the learner’s working memory” (Mayer, 2014: 59) As a result, students may not benefit from captions due to their cognitive capacity being overloaded, which would result in cognitive cost. The aim of the study was to explore the effectiveness of captions in learning a new academic topic in the learners’ L2. The participants were university undergraduate students (mean age 19.9) with high listening skills (TOEFL average score 24.98 out of 30). Two groups (experimental and control) viewed a 9-minute extract on a new Chemistry topic and completed an immediate post-test on the video’s content and questions regarding the application of the information contained in the video. The results revealed no significant difference between the caption group and the no-caption group. Captions neither benefited nor disadvantaged participants’ learning in L2. Although it does not support the hypothesis that students would be overloaded by captions, the results also do not suggest any benefit of captions for L2 learning.

In contrast to Mayer et al.’s (2014) study, Vanderplank (2016, p.147) claimed that the use of audio, textual, and visual channels may result in the distribution of information among the 3 channels of input and reduce the cognitive load on the learner’s working memory. Captions would therefore tend to support comprehension instead of overloading cognitive capacity as the three input channels could balance each other.

2.2 Captions and proficiency

The possible impact of an individual’s proficiency in L2 on the effects of captioning has been frequently reported. For instance, it was argued that captions might not be as valuable for beginners as they are for more advanced learners due to beginner level students’ limited processing capacity in the target language. (e.g., Danan, 2004; Taylor, 2005, Mayer et al., 2014). For example, Danan

mentions a possible minimum language competency threshold for language learners to benefit from captioning. Consequently, different materials should be carefully prepared for all levels of language proficiency to provide comprehensible input which would result in beneficial learning outcomes.

Other authors supported the view that even beginner learners might benefit from captions. For instance, Markham (1989) found modest evidence for beginner learners benefiting from exposure to captions. The experiment aimed to determine the effects of captioned video in an ESL classroom at the university setting. The author looked at the effects of captions on the listening comprehension of 76 participants with beginner, intermediate, and advanced proficiency levels in English. The results suggested considerable listening comprehension advantages for all levels of proficiency as the experimental group (with captions) scored significantly better than the control group (without captions).

However, there does appear to be some advantage for higher proficiency learners. A later study compared the students' comprehension of captioned videos with low and high audio/video correlation (Markham, 1993). Highly educated students with upper-intermediate and advanced levels of English participated in the experiment. Both groups recalled significantly more after watching the extract with high audio/video correlation. The advanced students scored better than the intermediate group, showing a proficiency advantage.

The effectiveness of captioned video on foreign language comprehension with beginner Spanish language learners was explored in Taylor (2005). The sample consisted of 85 beginner students of Spanish at the university and included experimental and control groups. The groups were divided and compared according to the length of study of the target language. The first group was composed of first-year students and the second group of third-year students. The results showed that beginner level learners may have limited processing capacity in Spanish and tend to have difficulties in paying attention to three channels of input (audio, picture, and text) simultaneously. Although the first year participants found captions confusing, most students in both groups shared a positive attitude

towards captioning. Comparing the two proficiency groups, the group who had studied Spanish longer outperformed the other group. The author predicted that captions may assist beginner level learners after longer language learning and exposure to captioned videos.

The effects of English proficiency level on English listening comprehension while watching captioned video were discussed in Chang et al. (2011). The study aimed to explore whether captions had a positive impact on high- and low-proficiency participants' listening comprehension. The sample included 117 university students of applied foreign language in a Taiwanese university. All participants had at least an intermediate level of English and were divided into low- and high-proficiency groups. The results revealed that both proficiency groups benefited from captions on listening comprehension, but the higher-proficiency group advanced to a greater degree from captions and scored better than the lower-proficiency group.

Several experiments have compared the effect of captions and subtitles on different levels of proficiency and age. The short- and long-term effects of captioning and subtitling on different levels of English proficiency were explored at the University of Pavia (Bianchi & Ciabattoni, 2008). A total of 85 volunteer psychology university students with beginner, intermediate, and advanced levels of English were recruited for the experiment. The sample was randomly distributed into three groups: English captions, Italian subtitles, and no captions/subtitles group. The short-term results of vocabulary comprehension and language-in-use tests suggested that subtitles were more useful than captions when the proficiency of participants was lower, while higher-proficiency groups obtained better results from captions. The authors assumed that higher proficiency students are able to process captions, while subtitles are processed automatically by lower-proficiency learners.

A Taiwanese study (Lwo & Lin, 2012) investigated the impact of various types of captions on L2 word and sentence comprehension within a teenage group of lower and higher proficiency levels. The experiment contained four conditions:

No captions/subtitles, English captions, Chinese subtitles, Chinese subtitles + English captions (together) with the audio material in English. The study used animations which were created for the target foreign language learners. The post-tests proved that English captions and Chinese subtitles + English captions helped the low proficiency level participants to understand the simple sentence structure while more proficient learners did not show a significant difference between the type of captions they were exposed to. The results provided evidence that captions have a different effect on various levels of L2 proficiency.

The role of age and proficiency in subtitle and caption reading was discussed in Muñoz (2017). An eye-tracking study looked at the influence of age and proficiency on reading L1 subtitles and L2 captions while listening to L2 audio. Compared to teenagers and adults, children read more subtitles/captions and spent more time on them. The same results were obtained in the comparison of beginner, intermediate, and advanced groups. The higher the proficiency the more subtitles and captions were skipped. The explanation for this is the dependence of the lower L2 proficiency individuals on on-screen text as the task is seen as challenging and complex; as a result, children and beginner learners use it as a support for comprehension. The intermediate and advanced learners seemed to skip fewer captions than subtitles. The results of this study support the contrast in caption effects on different learners from various age and proficiency groups.

Participants of different proficiency levels in the studies discussed above benefited to varying degrees by watching captioned/subtitled videos. Although students with a beginner level of L2 were assisted better by subtitles, they still benefited from captions when compared to control groups. The results indicated the higher the proficiency, the better the outcome of captions in the post-tests. In addition, several authors have suggested that lower-proficiency students may benefit from captions if materials correspond to learners' language skills (e.g. Danan, 2004). Besides, beginner learners may be trained to watch captioned video and benefit from it (Taylor, 2005). To make it happen, careful preparation of

materials for the selected proficiency is required.

2.3 Captions and intentional/incidental language learning

Several studies have looked at intentional and incidental foreign language acquisition. Long (in press) defines intentional learning as "...a conscious operation in which the learner attends to aspects of a stimulus array in the search for underlying patterns or structure" (p.21). Intentional learning also refers to situations when students are instructed to learn and focus on form with the expectation of a test to follow (Van Lommel et al., 2006). Incidental learning is more complicated in its nature; it occurs when one is learning without intention while his/her attention is focused on something different (Long, in press). Van Lommel et al. (2006) define incidental learning as a condition where "...the instructions do not refer to learning and the subsequent test is unexpected" (p. 246). The present paper follows the definitions of intentional and incidental learning suggested by Van Lommel et al. (2006).

d'Ydewalle & Van de Poel (1999) explored incidental foreign language acquisition by children watching subtitled television programs. Children from 8 to 12 and adults from previous studies were chosen to compare the implicit language learning capacities of the groups. It was expected that children would outperform adults and provide evidence for the sensitive language-acquisition period. The authors included three tests on vocabulary, morphology, and syntax claiming that the acquisition of the latter two could be possible if the children had previously received some formal instruction. The results demonstrated strong support for vocabulary acquisition while there was no effect on syntax and morphology even after formal instruction and learning at school. Compared to adults, children seemed to acquire more when the foreign language was in the soundtrack than in the subtitles. The short 10-minute exposure seemed to lead to foreign language vocabulary acquisition; however, the evidence for children learning more than adults was not found. The results can be explained by the minimum language threshold necessary for learning from captions and subtitles (Danan, 2004).

A more recent study in the Flemish area of Belgium looked at incidental foreign language acquisition from long-term media exposure to subtitled English television films and programs (Kuppens, 2013). The pool of participants included 374 primary school students (average age 11 years, 5 months, and 3 days) who completed an English media survey and translation tests. According to self-reported data on foreign media exposure, those who were watching subtitled television with higher frequency outperformed other participants on both English-Dutch and Dutch-English translation tasks. The results revealed a significant effect of exposure to English subtitled television claiming strong long-term effects of subtitles on incidental language acquisition. As intentional and incidental language learning are different in nature, the author suggests that the results should not be over-generalized for both ways of learning.

2.4 Captions and grammar

A great number of studies have looked at the effects of captions on vocabulary acquisition, listening comprehension and reading, while the possibility of grammar acquisition from captioned media is still an under-researched area. Only a few papers were dedicated to unveiling the implications of subtitle use on grammar learning. As seen above, d'Ydewalle and Van de Poel (1999) found no grammar acquisition of syntax and morphology after a 10-minute exposure to subtitled video. Closely related to that study was a paper by Van Lommel et al. (2006) where two experiments on intentional and incidental Esperanto grammar learning were conducted. The younger children (11 years old on average) were expected to outperform the older participants (around 17 years old) in the incidental condition while the older children should have benefited from the prior rules presentation (intentional condition). The first experiment applied reversed subtitling (Dutch in soundtrack, Esperanto in subtitles), and the second used standard subtitling (Esperanto soundtrack, Dutch subtitles). Both results rejected the incidental acquisition of the rules, showing that merely watching a movie cannot lead to grammar learning. However, the results significantly improved for both age groups when the grammar rules were presented explicitly in advance,

supporting intentional learning. Considering the age variable, older learners significantly outperformed younger participants when the rules were presented in advance, as it was predicted in the hypothesis. Interestingly, both groups performed at similar level when the rules were not presented before the viewing. This rejects the prediction that younger participants would outperform older group in the incidental condition, which concurs with the results of d'Ydewalle & Van de Poel (1999). It is important to notice that the test results were only significant for “old items” which were identical to those that appeared in the movie, not for “new items” which were new sentences representing the same grammar rules. This suggests that participants remembered the grammar items from the extract, but could not apply the rule to the sentences which did not appear in the movie. The main conclusion was that in contrast to vocabulary acquisition, grammar might be too complex to learn from a short video presentation as grammar acquisition is a slow, gradual process. First learners acquire chunks of language, such as vocabulary and phrases and then, after a longer exposure to movies, subtitles/captions may lead to potential positive outcomes in grammar acquisition. (e.g. Kuppens 2010; Matielo et al., 2015).

Although previous studies on foreign grammar acquisition while watching subtitled television programs (d'Ydewalle & Van de Poel, 1999; Van Lommel et al., 2006) found only modest evidence of grammar learning, some studies have supported incidental grammar acquisition through exposure to reading and listening. A study concerning the processing of Spanish future tense morphology incidentally while reading in a second language was reported by Lee (2001). Beginner second-year university learners of Spanish were expected to learn the third-person singular form of Spanish future tense incidentally through reading. The amount of target forms in the texts enhanced the comprehension of future forms; interestingly, even a small amount of input led to incidental learning of future tense (6 vs 16 tokens). Lee concluded that the greater the exposure to target forms, the greater the effect. Rodrigo (2006) explored the effect of a combination of narrow listening and extensive reading with intermediate Spanish as a Foreign Language university students. The majority of the participants were 18-25 years

old and had studied Spanish for more than 4 years. The author hypothesized the amount of written and aural input has an effect on learners' acquisition of grammar when no explicit instruction on grammar nor focus on forms is provided. The results suggested the effectiveness of extensive exposure to listening and reading on incidental grammar acquisition with intermediate learners. This seems to indicate that grammar can be acquired incidentally through reading and listening.

A more recent paper on teaching English grammar with videos (Saeedi & Biri, 2016) tested the effect of multimedia on learning conditional structures and students' attitudes towards video-oriented grammar instruction. The purpose of the experiment was to explore the effectiveness of animated video on learning target forms (conditional sentences). Although the main focus of the study was learning grammar from video, captions were included to ease watching and facilitate comprehensibility. Intermediate level EFL learners were divided into experimental and control groups. The control group was explicitly taught grammar structures while the experimental group was exposed to 12 animated videos during 6 sessions. The procedure included pausing and replaying the video every time the target structures appeared in the soundtrack and on the screen to draw the learners' attention to conditional structures. Next, participants practiced target grammar forms in class with their teacher. According to the results, the experimental group scored significantly better in the post-test, indicating that exposure to video enhanced grammar learning compared to traditional explicit grammar instruction. Moreover, most of the experimental group participants showed a positive attitude and were willing to continue learning grammar through videos. The results of the study could not be generalized to the positive effects of captioned videos, as the procedure did not include natural viewing of the extracts (without pausing and replaying), but in-class practice with the teacher. In order to explore the effects of captions on L2 grammar learning, more research should focus on this issue.

3. Aims and research questions

The vast majority of the work on the role of captions in SLA has focused on language comprehension and vocabulary learning. To date, scant attention has been paid to the role of captions in grammar learning and there is no robust evidence that captions may facilitate grammar learning. However, following Rodrigo's (2006) results, it appears possible that captioning may lead to grammar acquisition while watching the video as this involves multimodal input consisting of the text, sound, and picture. This gap in the research indicates the need to understand to what extent grammar learning may be facilitated by captioned videos. In addition, most studies have examined adult learners at university and fewer studies have focused on school-age learners. The present paper attempts to explore the effects of captioned video on intentional and incidental grammar learning of teenage lower- and higher-intermediate proficiency EFL students.

The following research questions were addressed in this study:

1. To what extent does an intervention with captioned video improve students' knowledge of English factual, predictive, and hypothetical conditional sentences?
2. Does exposure to captioned video result in the incidental grammar learning of conditional structures (specifically the counterfactual conditional)?
3. To what extent are the results of intentional and incidental learning age and/or proficiency dependent?

4. Methodology

4.1 Participants

Four intact classes with a total of 23 participants were recruited for the experiment. All the participants had English classes twice a week in a private academy. They were bilingual Catalan/Spanish speakers attending secondary school in the same area. Their age ranged from 12 to 16 years old ($M=14,3$, $SD=1.2$) and their proficiency of English was intermediate, from B1 to B2

according to the Common European Framework of Reference, as shown by their Oxford Placement Test (OPT) scores (see below). In order to examine the effects of age, two groups were formed. The first group consisted of younger participants whose age range was between 12 and 13 years old. The second group included older students from 14 to 16 years old. This age range was chosen following students' distribution into classes by the school. The median split of OPT scores was used to divide students into lower and higher proficiency groups. The low-proficiency group was between 35 and 50 and the high-proficiency group was between 51 and 72 OPT scores. They all signed a consent form to participate in the study.

4.2 Materials

An episode of a popular American sitcom TV series “How I Met Your Mother” was chosen as a treatment video because it was considered to be an appropriate material for the study's population. A particular episode was selected because a 14-minute extract that contained 25 tokens of the target conditional forms could be used for the experiment. Although the show is broadcast on Spanish TV, none of the participants reported to have watched the episode used for the study. The episode “Lucky Penny” was shortened from 22 to 14 minutes and English captions were added manually with the use of VideoPad editor. In order to make the events in the episode more comprehensible for the language learners, the word list of 10 items from the extract with definitions and pictures was provided and discussed before watching the video (see Appendix A). The extract was played on the interactive white board. The instructions made clear that students needed to watch it attentively.

To assess the learning of English conditional structures, which were the target forms in the present study (see below), a test was constructed for the 4 grammar forms: factual, predictive, hypothetical, and counterfactual conditionals (see Appendix B). The materials were adapted from the books English Grammar in Use (Murphy, 2012) and Active Grammar Level 2 (Davis & Rimmer, 2011). The tests comprised a total of 20 multiple choice sentences (5 questions per

grammar form). The post-test included the same materials and the order of the questions was randomized to avoid memorization.

In order to measure the participants' level of proficiency, the grammar part of the pen and paper Oxford Placement Test, a standardized English proficiency measure, was chosen. This test was selected due to its reliability, accessibility, and relatively short time needed for completion.

4.3 Target forms

Conditionals consist of two clauses: a subordinate and a main clause. Conditional structures are more syntactically and semantically complex than other grammar structures, which makes them complicated to learn and teach.

The present study uses the four most frequent conditional structures in English: factual (zero), predictive (first), hypothetical (second), and counterfactual (third), the patterns and examples of which are illustrated in Table 1 below.

Factual conditionals express relationships which are typical, habitual, true, and unchanging. Predictive conditionals refer to future plans and possibilities. Hypothetical conditionals are used for imaginary or impossible situations in the present or for unlikely but possible events in the present or future to happen. The last type is counterfactual conditionals which refer to impossible actions in the present or the past. Both hypothetical and counterfactual conditionals are known as “unreal”, while factual and predictive are “real”. For simplicity, terms zero, first, second, and third conditional will be used herein.

Since the participants had not been exposed to the third conditional structure in their English classroom, the third conditional became the target form to examine incidental learning, while zero, first, and second are the target forms that were used to examine intentional learning.

Table 1

Types of English Conditional Sentences

	If clause	Main clause
Factual (0)	Present simple	Present simple
	<i>If we miss this flight,</i>	<i>it's all Barney's fault.</i>
Predictive (1 st)	Present simple	Future simple
	<i>If we miss this flight,</i>	<i>I'll never forgive myself.</i>
Hypothetical (2 nd)	Past simple	Would
	<i>If he had time,</i>	<i>he would go to Mexico.</i>
Counterfactual (3 rd)	Past perfect	Would have
	<i>If I hadn't picked up that penny,</i>	<i>I wouldn't have met your mother.</i>

Adapted from Celce-Murcia & Larsen-Freeman, 1999

4.4 Pilot study

In order to check the suitability of the test developed for the intermediate level of English, a pilot study was conducted. A total of five participants with comparable age and proficiency level were given the pre- and post-tests. The materials were suitable for the given population as none of the participants scored either the maximum or minimum scores. They completed the test within a 10-minute period and it was not tiring for them, so the test was viewed as a normal classroom activity. The participants reacted positively to the task, none of them complained about the content.

4.5 Procedure

One week before the experiment the participants were taught zero, first, and second conditional structures by their English teachers during two classes (3 hours). Two teachers, including the author, used the same materials and procedure to introduce the target forms. The second teacher was fully aware of the experiment and was asked not to reveal the nature of the study to the participants. Although the participants were not explicitly informed about the upcoming test the next class, this study will consider such learning as intentional learning as the experiment was held in the classroom setting where any previous instruction implies a test or exercise to complete after presenting the new grammar rule.

The data was collected during the participants regular scheduled classes with their teachers for about 30 minutes each group per session. During the first session subjects completed the grammar part of the Oxford Placement Test. The consent forms were collected by the school head of studies on the same day.

The following session included the pre-test and first viewing of the episode. One week later, the participants watched the extract for the second time and completed the immediate post-test. One point was awarded for each correct answer in the tests.

5. Results

Ages and OPT scores per participant are presented in Table 2. The data collected for the experiment were analyzed in SPSS Statistics software. First, Shapiro-Wilk normality tests were run and it was found that the scores for the incidental learning pre-tests were not normally distributed (.006); it was decided to use non-parametric tests for incidental learning. The intentional learning gains, pre-and post-test scores (.386; .450 and .083; respectively) were normally distributed and analyzed with parametric tests.

Table 2

Participants

Participant	Gender	Age	OPT score
1	m	13;0	40
2	f	15;7	35
3	m	16;3	43
4	f	14;6	65
5	f	13;4	47
6	f	12;5	46
7	f	12;8	69
8	f	12;2	52
9	f	13;5	44
10	m	12;3	38
11	m	16;4	62
12	m	14;0	60
13	f	15;5	70
14	f	16;2	36
15	m	14;3	50
16	m	14;8	46
17	f	15;2	45
18	f	15;6	44
19	f	13;8	52
20	f	14;9	51
21	f	14;0	71
22	f	15;4	49
23	f	14;6	72

5.1 Captions and intentional learning

The first research question aimed to examine the extent to which watching a captioned video that contains the target forms, when the rules are presented in advance, leads to significant learning gains. The raw scores out of 5 and the percentages of correct answers per target form in the pre- and post-tests are presented in Table 3. As it can be seen from descriptive statistics, participants were already familiar with the target forms before the intervention and they improved their performance on all target forms in the post-test.

Table 3

Correct answers per target form

	Pre-test scores	Post-test scores
Zero Conditional	3.8, 77%	4.5, 90%
First Conditional	3.3, 66%	4.0, 82%
Second Conditional	2.3, 47%	3.0, 60%

The initial set of analyses examined the impact of the treatment by comparing the pre- and post-tests' mean scores for intentional learning. As shown in Table 3 and Figure 1 below, the mean scores in the pre- and post-tests for intentional learning were different. A paired sample t-test showed that participants scored significantly higher in the post-test than in the pre-test ($t(22) = 4.71, p < .000$) and the effect size was medium-to-large (0.72). The results confirm the improvement of explicit knowledge of zero, first, and second conditional structures after the treatment.

Table 4

Descriptive Statistics for Intentional Learning

	Pre-test scores	Post-test scores
Mean	57.8	71.7
SD	19	19

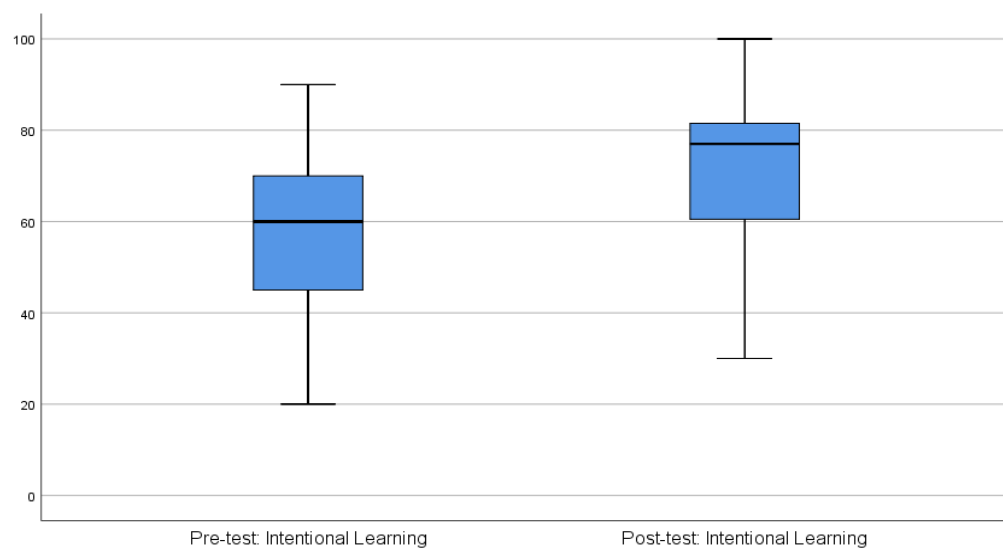


Figure 1. Box plots with pre- and post-intentional tests' results

5.2 Captions and incidental learning

The second research question explored the incidental grammar learning of the third conditional structure. The results for pre- and post-incidental tests are presented in Figure 2 below. The data for incidental pre-tests' scores were not normally distributed and, for this reason, the Wilcoxon Signed Rank test was used. The test revealed a significantly higher performance in the post-treatment test (Mdn=25 vs. Mdn=66; respectively; $Z= 4.14$, $p=.000$). The results showed incidental learning after the treatment and the effect size was large (0.86).

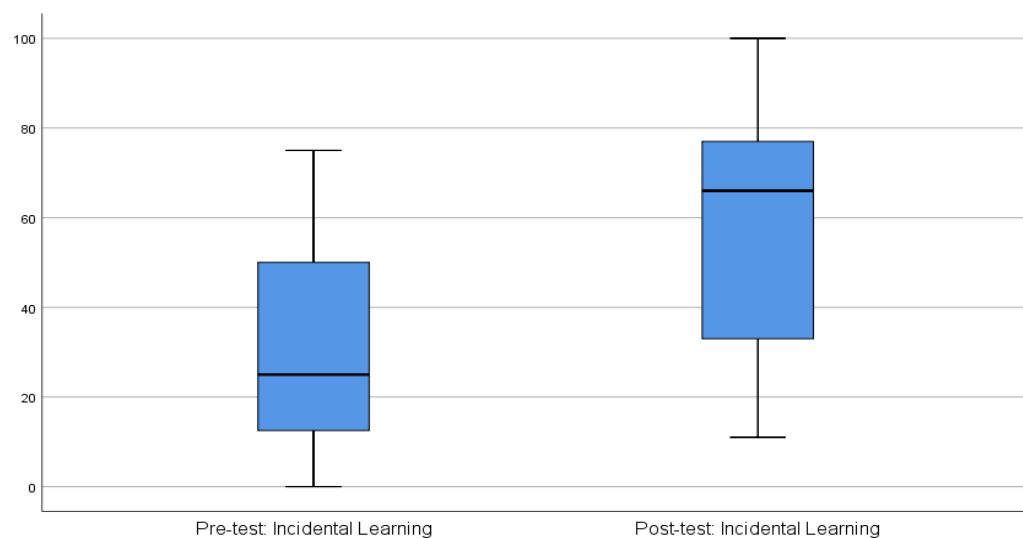


Figure 2. Box plots with pre- and post-incidental tests' results

5.3 Age and proficiency

Further analyses, addressing the third research question, examined whether the results could be age or proficiency dependent. First of all, to confirm that there was no confound between age and proficiency, Pearson's correlation was run to see whether these two independent variables were correlated. The results revealed no significant correlation between age and proficiency ($r= -.050$, $p= .822$), suggesting that it is appropriate to divide the participants into age and proficiency groups and look at the effect of each independent variable separately.

Descriptive statistics of age and proficiency (as measured by the OPT) for the two types of learning appear in Table 5. To identify the possible role of age and proficiency in intentional learning of the target grammar forms with captioned video, a two-way ANCOVA was run. It was conducted to determine whether statistical differences exist between proficiency and age on gains in incidental learning, controlling for the results in the pre-tests. The results revealed a marginally significant effect of proficiency ($F(1,18) = 3.75, p = .068, \eta^2 = .173$) and age ($F(1,18) = 3.82, p = .066, \eta^2 = .175$) on learners' post tests for intentional learning after controlling for the pre-tests' results. The age x proficiency interaction was not significant ($F(1,18) = .269, p = .61, \eta^2 = .015$), indicating that the effects of age and proficiency were independent.

Table 5
Learning Gains

Group	Intentional			Group	Incidental		
	N	Mean	SD		N	Mean	SD
Age (12-13)	8	21.8	10	Age (12-13)	8	22.2	12
Age (14-16)	15	11.8	8	Age (14-16)	15	28	15
Lower-Proficiency <50	13	14	10	Lower-Proficiency <50	13	19.6	11
Higher-Proficiency >51	10	16.9	10	Higher-Proficiency >51	10	34.2	14

Prior to evaluating the role of age and proficiency in incidental learning, a Shapiro-Wilk normality test was run to see if the gains in incidental learning were normally distributed (.421). The result allowed us to use a parametric test. Specifically, to evaluate the role of age and proficiency in incidental learning, a

two-way ANOVA¹ was used. The test demonstrated significant main effects of proficiency ($F(1,19) = 6.53, p = .019, \eta^2 = .256$), but not of age ($F(1,19) = .599, p = .448, \eta^2 = .031$) on incidental learning gains. Still no interaction between age and proficiency was found ($F(1,19) = .591, p = .452, \eta^2 = .03$), suggesting that participants' level of proficiency did not depend on participants' age.

6. Discussion

This study set out with the aim of assessing grammar learning through exposure to captioned video. The first research question sought to determine the possible effect of captioned video intervention on students' previous knowledge of zero, first, and second conditional structures. All participants received classroom instruction on these target forms before watching a captioned video extract. This constitutes the intentional learning condition in this study. To answer the first question, the pre- and post-tests' scores were analyzed. The statistical test revealed a significant difference between the two tests, suggesting a positive effect of watching captioned video twice on learning target forms intentionally.

Such findings do not concord with the results from the study by d'Ydewalle & Van de Poel (1999) where subtitles did not facilitate grammar learning even after formal instruction at school. This difference may be due to type of instruction, target grammar structures, type of tests, age groups and proficiency levels used in the two studies. Nevertheless, the present finding seems to be consistent with other research which found that watching subtitled video may facilitate previous grammar rules instruction and result in L2 grammar learning. For example, Van Lommel et al. (2006) found a strong effect of advance rule presentation on participants' performance, as they improved substantially after viewing the subtitled extract. The authors found significant learning of "old

¹ It was not appropriate to run ANCOVA and control for the results in the pre-test because incidental learning pre-test scores were not normally distributed.

items” in the test (phrases which appeared in the video), but no increase was shown in performance on “new items” which did not appear in the extract. Participants could not transfer their grammar knowledge to new sentences, which may be explained by memorization of subtitles presented on the screen. In contrast to Van Lommel et al., the present study’s post-test did not include items which appeared in the video. The better performance in the post-test could not be interpreted as memorization of captions and/or soundtrack, but may be the result of deep learning and/or problem-solving transfer (Mayer, 2003) where learners can apply their knowledge to new tasks. In addition, this finding may be due to the difference between subtitles (L1 text) and captions (L2 text). Previous studies on grammar learning used subtitles as part of multimodal input, while the goal of the present study was to examine the effects of captions on grammar learning. To our knowledge, no studies have been conducted on intentional grammar learning from captioned videos. It is possible to hypothesize that captions could facilitate grammar acquisition more than subtitles as the former visualizes grammar structures in the text and provides more foreign language input. Additionally, Danan (2004) suggested that students may learn better from captions if they are supplemented with in-class instruction, while subtitles are most beneficial for less proficient students who need first language input. The results of the present study support the claim that captions tend to facilitate in-class rule presentation.

The results of this study are consistent with those of Saeedi and Biri (2016) who demonstrated that grammar rules presentation and viewing of captioned video resulted in significant conditional structure learning. They compared traditional explicit grammar instruction gains and learning through captioned video with in-class grammar practice facilitated by the teacher. The current study applied natural viewing of the extract, without pausing and repetition while teacher in the former study stopped the video every time the target form appeared on the screen to draw learners’ attention to it. Although the procedures in Saeedi and Biri and in the present study were different, the results of both studies support a positive effect of captions on grammar learning. The present study’s participants scored significantly higher in the post-test without

teachers' intervention in the watching task. Taking into consideration these results, it could be claimed that conditional structures may be acquired intentionally through non-stop viewing of the captioned extract. However, Saeedi and Biri had a control group which was taught grammar explicitly without captioned video exposure. There the experimental group outperformed the control group and provided clear evidence for the benefit from captions in grammar learning. In contrast, the present study did not involve a control group who were taught the rules but did not watch the captioned video, so some caution is required in its interpretation as we cannot be certain of the extent to which the improvement that was observed is due to the watching task/multimodality. It is possible that post-test scores were not affected substantially by the captioned video and were primarily a result of continuous classroom learning.

The second research question addressed the issue of incidental learning of the third conditional structure from exposure to captioned video. It aimed to explore whether simple exposure to captioned video may result in significant gains in incidental learning when no previous rules presentation is provided. The statistical analysis determined that the pre- and post-test scores were significantly different. The participants scored better in the post-test after watching the captioned video twice. In contrast to earlier findings (d'Ydewalle & Van de Poel, 1999; Van Lommel et al., 2006), the current study supports incidental grammar learning through watching captioned video. Van Lommel et al. (2006) found that performance in tests on syntax and morphology in an incidental condition remained moderately poor and incidental learning was limited to vocabulary. The present finding that the third conditional structure was acquired incidentally after watching captioned video may be related to several factors. First, participants of the present study were exposed to captioned video twice in a two-week period, while the participants in the study by Van Lommel and colleagues viewed the extract only once. Second, a possible explanation for these results may be the difference between target languages. Van Lommel and colleagues used the artificial language Esperanto which participants had not learnt before, with the result that watching a movie with Esperanto soundtrack or subtitles did not lead to

grammar acquisition. In contrast, the present study examined the grammar learning of English, a language which participants are familiar with. As it was argued in Danan (2004), there may be a minimum language competency threshold which is needed to benefit from captions. It was discussed above that we cannot be sure of the extent to which captioned video facilitated grammar learning due to the lack of the control group which watched the video without captions. However, the fact that students increased their scores in incidental learning of the third conditional which they were not taught before, gives us some confidence that captioned video benefited participants' grammar learning. In sum, these findings confirm the usefulness of captioned video in grammar learning when the rules were not presented before. Moreover, the results provide evidence that participants benefited from watching captioned video in both tested types of learning: intentional and incidental.

The third research question dealt with the dependency of the results on age and proficiency. The initial set of analysis determined that age and proficiency were not correlated; moreover, further analysis revealed no interaction between age and proficiency in both types of learning, so it was important to look at these factors separately. The effect of age and proficiency on intentional learning gains was marginally significant. It could be suggested that there is a tendency for both proficiency and age to have an effect on gains when we control for pre-test scores. It is possible that the results would be significant if there were a bigger sample size. The incidental learning gains did not depend on participants' age, but the analysis revealed a significant main effect of proficiency on incidental learning gains. The following discussion will look at the effects of age and proficiency separately.

Modest evidence was found regarding effects of age on intentional grammar learning while watching captioned videos. Van Lommel et al. (2006) expected older participants to score higher in the intentional condition when the grammar rules were presented explicitly in advance and their results confirmed their hypothesis. The current study results go in line with Van Lommel et al, as

older participants outperformed the younger group in the post-test and benefited more from advance rule presentation and viewing of the extract. Although the results were only marginally significant, there is still a tendency for the older group to learn more grammar from the captioned video after rules presentation in the classroom. A possible explanation for marginally significant results in the current study may be lack of an adequate age range. The difference between younger and older age groups was small, which is probably insufficient to determine a significant difference in the performance. Further research should consider a wider age difference as a factor in grammar learning from captioned video. As for incidental learning, Van Lommel et al. (2006) hypothesized that a younger group would score higher in an incidental learning test, but they found no age difference in the incidental condition. Their results match those observed in d'Ydewalle and Van de Poel (1999) where children did not outperform adolescents and adults in incidental learning. In the current study, there was no significant difference in the gains of younger- and older-groups in incidental learning, either. A common finding of the three studies was no age-related benefit in incidental grammar learning from subtitled/captioned video, both age groups performed at the same level in the incidental grammar post-test.

An important finding of the present experiment was the significant role of proficiency in learning conditional structures in incidental learning (and a tendency in intentional learning too). Those students with higher levels of proficiency benefited more from watching captioned video. This study produced results which corroborate the findings of previous studies that have demonstrated a proficiency advantage in learning from captioned videos (e.g. Markham, 1993; Taylor, 2005; Chang et al., 2011). Some authors have speculated that a certain level of proficiency is needed in order to benefit from captioned videos due to the possible limited processing capacity in learners' L2 (e.g. Danan, 2004, Mayer, 2014). The higher-level proficiency participants in the current study had possibly crossed the alleged competency threshold and, as a result, benefitted from intervention to a greater degree than lower-proficiency students. An additional possible explanation for these results may be explained by the effects of

proficiency on the reading behavior of EFL learners. Muñoz (2017) suggested that because learners with higher vocabulary sizes have faster reading rates, they can deal with captions better and may learn to a greater degree from captioned videos.

In summary, captions significantly facilitated intentional grammar learning when rules were presented in advance, and incidental grammar learning when students only watched captioned video. Participants increased their previous knowledge of zero, first, and second conditionals after captioned video intervention. This finding goes in line with previous research on intentional grammar learning (Van Lommel et al., 2006). Contrary to the same study, the current experiment found significant gains in incidental learning. Students learned the third conditional structure after two viewings of the captioned video. In both types of learning tested, participants could apply their grammar knowledge to new tasks, supporting Mayer's deep learning and problem-solving transfer (2003). Regarding age and proficiency, no significant differences were found for age, but proficiency seems to have had an effect on the participants' grammar learning gains. The higher the proficiency, the better the results in both intentional and incidental learning.

The findings of this experiment have several pedagogical implications. First, it was found that captioned video enhances previously learned grammar content. Foreign language instructors may include appropriate captioned video extracts with target grammar forms in the curriculum. Secondly, watching captioned videos at home might be promoted as it leads to incidental grammar learning. However, it must be taken into account that all materials should correspond to learner's proficiency level and age, which implies a careful and time-consuming process of video selection.

7. Conclusions and further research

The purpose of the present research was to explore the effects of captions on L2 grammar learning. This paper makes a contribution to the area of learning foreign language through captioning. To our knowledge, this is the first study to explore the effects of captions on intentional and incidental grammar learning of

two school age groups (younger, older) and two proficiency groups (lower, higher). The evidence from this study suggests that all participants may benefit from captioned video intervention. The findings of this study make several contributions to the current research paradigm. First, an implication is the possibility that foreign language learners might acquire grammar structures both intentionally and incidentally from captioned material. Second, captions facilitate classroom instruction and lead to better knowledge of grammar structures. Third, captioned video exposure results in incidental acquisition of grammar structures which are not explained in class. Finally, the present study confirms previous findings and contributes additional evidence that suggests a proficiency advantage in learning from captions: the higher the proficiency, the higher the learning gains.

Although this study has successfully demonstrated that captions facilitated grammar learning, it has certain limitations in terms of design. The most important limitation lies in the absence of a control group who would be taught the rules but not watch the video. This did not allow us to determine to what extent learning gains were obtained due to multimodal input treatment. Nevertheless, the incidental learning gains provide us some evidence of learning from captions. Further research could also include another type of control group (no captions) in the design to exclude the possibility of learning to the same degree from dual modal input. Moreover, the presence of this control group would suggest whether captions overload learners' cognitive capacity (Mayer, 2014) or enhance grammar learning (Vanderplank, 2016). Another limitation of this study is that the number of participants was relatively limited. Caution must be applied with a small sample size, as the findings may not be transferable to a bigger population. Another source of weakness in this study, which could have affected the age difference results, was a poor age range in the younger- and older-groups. There was only a one-year difference between the groups for some participants, and only a five-year range in total. Further research regarding the role of age as an independent variable in grammar learning from captions should compare a wider range of ages. Longer time of intervention and more than two exposures to captioned video could be included in further research. It is unfortunate that the

study was not able to include a delayed post-test due to the limited time-frame. A further study could assess the long-term effects of captioned video on grammar knowledge. Further research should also be done to explore the learning of grammar from captioned video by participants with different L1 or L2. Participants L1s in this research (Spanish/Catalan) and English share conditional structures, another possible area of future research would be to investigate learning of grammar structures which are not shared. An issue that was not addressed in this study was whether the individual styles of watching captioned video would affect grammar learning. In addition, an eye-tracking methodology could provide more information regarding reading behaviors (see Muñoz, 2017) and noticing of grammar structures.

This study has demonstrated the benefits of captioned videos for L2 grammar learning. All participants, older or younger, higher or lower proficiency, obtained some benefit. Captioned video as a source of multimodal input tends to support in-class grammar instruction, but also provides benefits for grammar development where there has been no previous instruction. Taking this into account, captioned video appears to be a useful tool for language learners and language teachers.

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Appendix A Word List

Destiny unchangeable or uncontrollable things that will happen in the future



Turnstile an entrance (in the metro)



Court date a day when you have to show up at the court

Bet to risk money on the result of a race, game, competition

Subway metro



Break a toe

Fault it is your fault if you made a mistake or failed to do something

Camp out people camp out when they want to buy the tickets for a very popular



concert, or to buy something on sale

Nap a short sleep during the day



Penny a coin

Appendix B Test Items

1. Water boils faster if you _____ salt in it.
a. Doesn't put b. won't put c. don't put
2. If I pass my exams, I _____ chemistry at the university.
a. Will study b. would have studied c. would study
3. What would you do if you _____ the exam?
a. Fail b. failed c. will fail
4. If it rains this evening, I _____ out.
a. Didn't go b. won't go c. don't go
5. We would have gone swimming if it _____ sunny.
a. Was b. is c. had been
6. I _____ to the party if I hadn't been ill.
a. Will go b. went c. would have gone
7. Be careful! If you _____ those sweets in your cola, the bottle will explode.
a. Put b. will put c. have put
8. If I _____ the answer, I would tell you.
a. Know b. had known c. knew
9. If you _____ cheese for too long, it gets really smelly.
a. Kept b. will keep c. keep
10. If we _____ the match, I would have been so upset.
a. Lost b. lose c. had lost
11. He plays football if he _____ time off.
a. Had b. has c. will have
12. The chemicals in cola won't be bad for your teeth if you _____ them carefully.
a. clean b. will clean c. have cleaned
13. If I found an insect in my salad, I wouldn't _____ it.
a. Eat b. ate c. have eaten
14. If the children _____ more breakfast, they wouldn't have been hungry.
a. Ate b. had eaten c. eat
15. If I _____ to go out, I would go.
a. Wanted b. want c. had wanted
16. If I had enough money, I _____ a new tablet.
a. Have bought b. would buy c. will buy
17. I don't concentrate well if I _____.
a. Will be tired b. was tired c. am tired
18. We _____ horse-riding if we don't wear helmets.
a. Can't go b. couldn't go c. wouldn't go
19. The manager will call you if you _____ a message.
a. Left b. leave c. will leave
20. If he _____ to be like his father, he might never have started boxing.
a. Didn't want b. doesn't want c. hadn't wanted