

‘Incidental + Intentional’ vs ‘Intentional + Incidental’ Vocabulary Learning: Which is More Effective?

Ekaterina Sinyashina¹

Abstract. This study compares the effectiveness of two combinations of new vocabulary learning techniques: ‘incidental + intentional’ and ‘intentional + incidental’. For the incidental part, the participants viewed 3 hours of captioned authentic videos, whereas for the intentional one they were asked to do a set of tasks with the target vocabulary at home. Three aspects of the target words were tested: form recognition, meaning recall and written use in a sentence. The overall scores revealed better performance of the ‘incidental + intentional’ condition in the three tests. Nevertheless, a variety of scores in the sample for the three aspects of word knowledge and the lack of statistical evidence did not allow us to conclude with certainty which combination is more or less effective for new vocabulary learning.

Keywords: vocabulary learning, incidental learning, intentional learning, authentic videos.

[es] Aprendizaje de vocabulario ‘incidental + intencional’ vs ‘intencional + incidental’: ¿cuál es más efectivo?

Resumen. Este estudio compara la efectividad de dos combinaciones de técnicas de aprendizaje de nuevo vocabulario: ‘incidental + intencional’ e ‘intencional + incidental’. Para la parte incidental, los participantes vieron 3 horas de videos con subtítulos, mientras que para la parte intencional se les pidió que hicieran en casa 3 ejercicios con el vocabulario objetivo. Se pusieron a prueba tres aspectos de las palabras objetivo: el reconocimiento de la forma, la capacidad de recordar el significado y el uso activo en una frase. Las puntuaciones generales mostraron mejor rendimiento del grupo ‘incidental + intencional’ en las tres pruebas realizadas. Sin embargo, la variedad de puntuaciones en la muestra para los tres aspectos del conocimiento de palabras y la falta de evidencia estadística no nos permitió concluir con seguridad cuál de las dos combinaciones resulta ser más o menos efectiva para el aprendizaje de nuevo vocabulario.

Palabras clave: aprendizaje de vocabulario, aprendizaje incidental, aprendizaje intencional, videos auténticos.

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1. Introduction

New vocabulary can be learned intentionally, while consciously intending to do so, and incidentally when the learning itself is not in the focus of an activity. Many scholars highlight the importance of intentional learning and teaching when target language (TL) learners want to achieve high results in new lexis acquisition (see, for example, Nation 2004, Marzano 2005, Sweller, Kirschner & Clark 2006, Sonbul & Schmitt 2010, Subon 2016, etc.). Direct teaching techniques, such as completing vocabulary tasks and activities either in a classroom or at home, may facilitate the initial meeting of a new word and its recycling (Schmitt 2007, Jack 2015).

At the same time, various studies provide evidence that TL learners can incidentally learn new vocabulary while reading a text in the TL (e.g. Nagy, Herman, & Anderson 1985; Day, Omura & Hiramatsu 1991; Hulstijn, Hollander & Greidanus 1996; Horst, Cobb & Meara 1998; Waring & Takaki 2003, etc.). Moreover, incidental learning of new

¹ Department of English Philology, University of Alicante.
ORCID: 0000-0002-9399-3480
kate.sinyashina@ua.es

lexis through watching captioned/subtitled² videos has received a lot of attention in the last years (e.g. Rodgers 2013; BavaHarji, Alavi, & Letchumanan 2014; Gorjian 2014; Chen, Liu, & Todd 2018; Pujadas & Muñoz 2019). All these experiments reveal that TL learners can incidentally acquire new words while viewing captioned/subtitled authentic audio-visual material.

In many cases, however, due to the complex and incremental nature of vocabulary learning (Nation 2004; Schmitt 2008, 2012), a combination of these two types of new vocabulary learning is required in order to guarantee the best outcome for learners in their pursuit of mastering TL lexis (Nation 2004, Schmitt 2007, Hulstijn 2013). Thus, for example, watching subtitled/captioned authentic videos can supplement and reinforce new lexis learning that may take place during the intentional learning session. It can provide the first encounter with new lexis, which is later studied through a set of vocabulary tasks. At the same time, it can help to review the vocabulary that was earlier in focus of the intentional session. To my knowledge, no study has so far examined which order of these two types of new vocabulary learning leads to better TL lexis learning: incidental vocabulary learning through watching captioned authentic videos, which is followed by a set of vocabulary tasks, or the reverse condition. The present study was designed to try to answer this question.

1.1. Incidental and intentional vocabulary learning: definitions

Incidental learning, according to Krashen (1989: 440), occurs when learners do not know they are acquiring a language because their “conscious focus is on the message, not form”. Gass (1999) defines incidental learning as a by-product of other cognitive exercises involving comprehension. Swanborn & de Glopper (1999: 262) use reading activity as an example and define incidental vocabulary learning as the one in which “the purpose for reading does not specifically provoke learning or directing attention to the meaning of unknown words”. Nation (2004: 232) draws our attention to the importance of the context and sees incidental vocabulary learning as the one that occurs when a TL learner is “reading or listening to normal language use while the focus of the learners’ attention is on the message of the text”. According to van Zeeland and Schmitt (2013: 609), “incidental learning occurs when learners acquire new aspects of their L2 without being focused on doing so”. Barcroft (2015: 41) speaks about the term *incidentally oriented vocabulary learning*, which is “picking up new words from context without intending to do so, such as when engaging in a conversation or reading a text for meaning and processing new words as input and inferring their meanings”.

By contrast, intentional learning requires a deliberate attempt to commit factual information to memory, which often includes “the use of rehearsal techniques” (Hulstijn 2013: 1). Barcroft (2015: 42) speaks about *intentional vocabulary learning* as the one in which new words are learned while TL learners “consciously attempting to do so, such as when studying a list of new words, trying to learn new words while viewing word-picture pairs, or consciously attempting to learn new words from context while reading a text”. According to Barcroft (2015: 51), in the case of the intentional vocabulary learning a learner has a high degree of concentration on vocabulary learning “instead of other possible tasks or other possible stimuli in the learner’s immediate environment”.

1.2. The effectiveness of intentional and incidental vocabulary learning through reading

Krashen (1989), one of the main supporters of incidental TL acquisition, believes that it is the main source of vocabulary competence, which helps effectively acquire both vocabulary and the spelling of new words without any prior instruction or teaching. Moreover, incidental picking up of new vocabulary from reading “is more time-efficient than methods that aim to give students a thorough knowledge of words” (Krashen 1989: 452). Regarding incidental learning of new lexis through reading, scholars agree that certain vocabulary gains can take place incidentally while reading a text in the TL. According to Swanborn & de Glopper (1999), for example, natural reading can make a certain contribution to vocabulary growth. Nation (2004) also agrees that there is no reason to doubt that learners gain small amounts of vocabulary knowledge from each meaning-focused reading of an appropriate text. What is more, numerous empirical studies recorded incidental vocabulary gains, even in its modest form, through the reading type of input (see, for example, Nagy, Herman, & Anderson 1985; Day, Omura, & Hiramatsu 1991; Hulstijn, Hollander, & Greidanus 1996; Horst, Cobb, & Meara 1998; Waring & Takaki 2003; Pigada & Schmitt 2006; Tekmen & Daloğlu 2006; Pellicer-Sánchez & Schmitt 2010; Ponniah 2011).

Despite this evidence of incidental vocabulary learning while reading in the TL, scholars draw our attention to the fact that simple exposure without any further work on the vocabulary does not lead to high results. Hulstijn (1992), for example, acknowledges the usefulness of reading for vocabulary acquisition but points out that “the retention of word meanings in a true incidental learning task is very low indeed” (Hulstijn 1992: 122). Hulstijn, Hollander, and Greidanus (1996: 337) also warn that although “reading is conducive to vocabulary enlargement”, “reading for global meaning alone will not do the job”. TL learner’s attention and effort are, therefore, necessary in order to achieve any level of input processing (Paribakht & Wesche 1999). Empirical studies that compared the effectiveness of inciden-

² While captions or closed captions are “the type-written version of the audio component” of authentic videos that includes “visual display of the dialogue, narration, music and sound effects” for hearing impaired people (see Jelinek Lewis 1999), subtitles are mainly intended for people without hearing problems and only show the spoken content, but not the sound effects or other audio elements.

tal and intentional learning also support this idea and reveal better vocabulary gains of the intentional groups. For example, Coyne, Mc Coach & Kapp (2007) compared the effectiveness of extended instruction to embedded and incidental exposure to the target words through reading. The authors concluded that extended explicit instruction resulted in greater learning of expressive and receptive measures of the target words than either incidental exposure or embedded instructions. Similarly, better performance of the intentional groups was observed in the study by Alemi & Tayebi (2011).

In general, however, scholars note that the nature of the incidental-intentional relationship should not be treated as effective or non-effective, but rather as a reciprocal one. Schmitt (2008, 2012), for example, explains that intentional and incidental types of new lexis learning are rather complementary and require each other. Barcroft (2015: 26) fairly points out that “even if one attempts to teach all vocabulary indirectly, some intentional L2 vocabulary is going to take place”, and vice versa. Intentional teaching of new vocabulary, therefore, “can add to incidental learning of the same words and can raise learner’s awareness of particular words so that they notice them when they meet them while reading” (Nation 2004: 127). Incidental vocabulary acquisition through reading, for example, “can be substantially boosted by techniques that make students *look up the meaning* of unknown words, *process* their form-meaning relationship *elaborately*, and process them *again* after reading...” (Hulstijn 2013: 4). Similarly, incidental learning can help to reinforce earlier learned material or provide the first encounter with new vocabulary.

1.3. Incidental vocabulary learning through watching captioned/subtitled authentic videos

Watching captioned/subtitled authentic videos can be useful for improving TL learners’ vocabulary skills due to various reasons. Firstly, they provide the multimodal input of visual, audio and verbal information, which improves the processing of information (see the Dual Coding Theory (DCT) by Clark & Paivio 1991, Paivio 1991). As a result, viewing authentic videos makes it “easier for learners not only to work out the meaning of an unknown vocabulary item, but also to learn the new item” (Lin & Siyanova-Chanturia 2014: 4).

Another advantage of authentic videos for the TL teaching and learning lies in the fact that they give learners “the chance to observe communication in a diversity of informal, communicative contexts” (Lin & Siyanova-Chanturia 2014: 3). Vanderplank (2016: 20) explains, for example, that television programmes can “offer the range of situations and settings, the knowledge of and insights into target language attitudes, values and behaviour”. What is more, authentic material provides an opportunity for seeing language-in-use and, therefore, for cross cultural awareness (Harmer 2003).

Finally, authentic videos can have a strong motivational effect on TL learners (Cruse 2007). In the case of long authentic videos, for example, showing complete film may enhance students’ motivation to such an extent that they become “visibly impressed with how much English they can figure out” (King 2002: 513). Moreover, young people are happy to spend many hours watching authentic videos (Lin & Siyanova-Chanturia 2014) and believe that they can help them to improve their linguistic competence.

There is a growing body of experimental studies into the usefulness of watching captioned/subtitled authentic videos for incidental TL vocabulary learning (see, for example, Koolstra & Beentjes 1999; D’Ydewalle & Van de Poel 1999; Yuksel & Tanriverdi 2009; Zarei 2009; Rodgers 2013; BavaHarji, Alavi, & Letchumanan 2014; Gorjian 2014; Frumuselu, De Maeyer, Donche & Gutiérrez Colon Plana 2015; Chen, Liu & Todd 2018; Pujadas & Muñoz 2019). In some of these studies, the participants were exposed to a maximum of 1 hour of authentic video (Koolstra & Beentjes 1999, D’Ydewalle & Van de Poel 1999, Yuksel & Tanriverdi 2009, Bisson et al. 2014), whereas other experiments dealt with longer viewing time (Zarei 2009; BavaHarji, Alavi, & Letchumanan 2014; Gorjian 2014; Frumuselu et al. 2015; Chen, Liu & Todd 2018; Peters & Webb 2018; Pujadas & Muñoz 2019).

Many of the above-cited studies were conducted with TL learners of pre-intermediate to intermediate proficiency level (e.g. Yuksel & Tanriverdi 2009; Zarei 2009; Rodgers 2013; BavaHarji, Alavi, & Letchumanan 2014; Gorjian 2014; Peters & Webb 2018; Pujadas & Muñoz 2019). As for the data collection instruments, some experiment used various vocabulary tests to assess incidental learning of different aspects of target words knowledge (e.g. D’Ydewalle & Van de Poel 1999, Rodgers 2013, Chen, Liu & Todd 2018, Peters & Webb 2018). On the whole, although these papers differ in the proficiency level of the participants and data collection instruments, they all reveal that TL learners managed to acquire new vocabulary incidentally while being exposed to authentic audio-visual input.

2. The study

2.1. Objectives

The present study compares the sequence in which incidental and intentional learning should be combined in order to allow TL learners to achieve the best results in new vocabulary learning. The following question was addressed: which combination of new vocabulary learning techniques, ‘incidental + intentional’ or ‘intentional + incidental’,

is more effective for the learning of the following three aspects of the target words: form recognition, meaning recall and written use in a sentence? To answer this question, the performance of the participants was compared under two experimental conditions: ‘incidental + intentional’ and ‘intentional + incidental’ vocabulary learning. A set of three tasks with 16 target words was developed for the intentional part of this study. As for the incidental part, the participants had to watch 3 hours of captioned authentic videos, in which the target words were repeated from 3 to 5 times.

2.2. Participants

The study was conducted with the first-year students of the English Studies degree of the University of Alicante. Before the actual experiment, 90 students took part in a pre-testing procedure, which consisted of several stages and helped to select participants who were interested in taking part in the study and had similar English language proficiency level. Firstly, the vocabulary level of the subjects was determined through *Vocabulary Levels Test* developed by Schmitt, Schmitt, and Clapham (2001). At the same time, we consulted the grades and performance of the potential participants at the English Language I subject. This subject is taught at the University of Alicante during the first semester of the first year of the English Studies degree, and one of its specific objectives is to develop speaking, listening, grammar and vocabulary competences that correspond to the B1 level of the Common European Framework of Reference (CEFR). Considering the results of the *Vocabulary Levels Test* and students’ grades and performance at the English Language I subject, fifty-seven potential participants were selected at this stage of the pre-testing procedure. They were then asked to answer a pre-experimental questionnaire concerning the type of video material chosen for the study (Appendix A) and took part in a consequent personal interview. The purpose of this stage of the pre-testing procedure was to find out if the students like watching TV series dealing with the crime investigation topic and if they were interested in participating in the study. At the same time, we wanted to make sure that the potential participants had no prior knowledge of the TV documentary chosen for the study. Thirty-five students met the inclusion criteria and were eventually selected for the experiment. These students were randomly distributed between two experimental groups: Group INC+INT (‘incidental + intentional’) and Group INT+INC (‘intentional + incidental’). It is worth noting, however, that five participants from the ‘intentional + incidental’ group dropped out before completing the experiment. The number of the participants in each experimental group as well as their age, gender and L1 characteristics are reflected in Table 1.

Table 1. Participants.

Groups	Number of participants	Age range	Male	Female	L1
Group INC+INT ‘incidental + intentional’	17	18-22	3	14	Spanish
Group INT+INC ‘intentional + incidental’	13	18-22	1	12	Spanish

2.3. Authentic video material

Eleven episodes of the 11th season of the *Forensic Files* TV documentary were chosen as authentic video material for the incidental part of this study. Each of the eleven episodes lasts approximately 20 minutes. The approximate total running time of the eleven episodes was 3 hours.

2.4. Target words

In order to choose sixteen target words, the *Range* program with BNC/COCA lists of 25,000 words (Nation 2017) and the *Frequency* program were consulted. The *Range* program helped to choose low-frequency words, which belong to the 5,000 to 11,000-word family lists. As the participants of the B1 to B2 level of English should know approximately 4,000 most frequent words (see Meara & Milton 2003, in Milton & Alexiou 2009: 198), we tried to select mainly low-frequency target words, starting with the 5,000-word frequency band. Nevertheless, 4 target words from the 3,000 and 4,000-word family lists were also included in the target words list. This decision was made basing on the results of the pre-testing procedure and the fact that the author of this paper was also teaching the participants during the semester the experiment took place and, therefore, was familiar with their English proficiency level and the material used in the university classes.

The *Frequency* program, in its turn, helped to determine the number of repetitions of the target words in the video, which varied from three to five repetitions. Although the *Frequency* program treats singular and plural forms of the target words as two independent units, we decided to count them as various repetitions of the same word. The target words and the results of the analysis of the *Range* and *Frequency* programs are presented in Table 2.

Table 2. Target words with their number of repetitions and frequency.

Target Words	Number of Repetitions	Frequency BNC/COCA word lists of 25000 words
pliers	3	baselist 9
to ransack	3	baselist 13
a gouge	3	baselist 11
a sketch	3	baselist 3
debris	3	baselist 7
a hunch	4	baselist 10
a leash	4	baselist 8
manslaughter	4	baselist 11
bizarre	4	baselist 5
compelling	5	baselist 5
a muffler	5	baselist 9
brewery	5	baselist 4
whereabouts	5	baselist 3
maroon	5	baselist 6
a bumper	5	baselist 3
parole	5	baselist 9

2.5. Material for intentional learning

The material for the intentional learning part of the experiment consisted of three vocabulary tasks (see Appendix C), which were designed for practising three aspects of the target words: form recognition, meaning recall and written use in a sentence. First, the participants had to match the target words to their meanings and equivalents in the participants' L1 (Spanish). In the second task, the participants had to write each target word three times, thus focusing on their spelling. In task 3, the participants were asked to make up sentences with the target words. The beginning of each sentence was provided for the students in order to make sure that they used the target words in the appropriate contexts.

2.6. Vocabulary tests

Three tests were developed to measure vocabulary gains in each of the two experimental groups. The first test focused on the form recognition aspect. A multiple-choice format was used, in which the target words appeared with three distractors (see Appendix D). The distractors were designed to have orthographic similarity with the target words (Webb 2008).

Meaning recall of the target words was measured by means of the translation test (Appendix E). The participants were asked to provide translations of the target words into their L1 (Spanish). One point was awarded when a participant translated correctly each one of the target words. No points were assigned in the case of erroneous translation or lack of it. When the translation was partially correct, 0.5 points were given. For example, translating the target word *manslaughter* as 'asesinato' was considered as a partially correct answer.

Finally, in order to evaluate the learning of the productive aspect (written use in a sentence), the participants were asked to make up sentences with each target word (Appendix F). The sentences were analysed in terms of grammatical and contextual accuracy. If a target word was used in a correct grammatical position and an appropriate context, a maximum of one point was awarded. If only one of the two mentioned criteria was correct, 0.5 points were assigned. Sentences with erroneous context and grammatical inaccuracy were awarded zero points.

2.7. Procedure

As was mentioned in Section 2.2., the participants were randomly assigned into two experimental groups:

1. Group INC+INT: 'incidental + intentional';
2. Group INT+INC: 'intentional + incidental'.

The participants from Group INC+INT were asked to watch the eleven episodes of the TV documentary for three weeks at home at the most appropriate time for them (see Appendix B). They had to watch the episodes with captions in English because previous research revealed their effectiveness for new vocabulary learning (see, for example, Baltova 1999; Frumuselu et al. 2015; Montero Pérez, Peters & Desmet 2017; Pujadas & Muñoz 2019). The actions of the participants (e.g. looking up unknown words in a dictionary, writing them down, discussing them with a classmate, etc.) that could have taken place during the 3-week watching period were not controlled. After that, they were given one week to do three vocabulary tasks at home (see Appendix C). The purpose of the tasks was to focus the participants' attention on the three aspects of the target words (word form, meaning and written use in a sentence), which were further tested in the three vocabulary tests. After the participants finished doing the tasks, they had two weeks of rest.

The reverse procedure was applied to Group INT+INC. First, the participants had one week to complete at home the set of the vocabulary tasks. Then they had to watch the eleven episodes of the *Forensic Files* TV documentary during three weeks. Once the participants finished watching the videos, they had two weeks of rest.

It is important to note that the author of this paper later checked the three tasks completed by the participants of both experimental groups during the intentional learning session. Feedback was given to the participants in a tutoring session regarding the observed errors or mistakes.

The framework of the procedure established for each group is reflected in Table 3.

Table 3. Procedure.

Timeframe	3 weeks	1 week	2 weeks	
Group INC+INT	viewing 11 episodes of the TV documentary	completing three vocabulary tasks at home	rest time	three tests
Timeframe	1 week	3 weeks	2 weeks	
Group INT+INC	completing three vocabulary tasks at home	viewing 11 episodes of the TV documentary	rest time	three tests

Three delayed surprise tests were conducted two weeks after Group INC+INT completed the intentional vocabulary learning tasks and Group INT+INC finished watching the episodes of the TV documentary. The answer sheets of the vocabulary tests were given to the participants in the following order:

1. form recognition test;
2. meaning recall test;
3. written use in a sentence test.

This order was followed so that the participants could not copy the answers from one answer sheet to another. The data collected by means of the three vocabulary tests were further analysed using mean percentage scores and the statistical Fisher test analysis for each target word.

2.8. Results

In order to answer the research question, we compared the performance of the two experimental groups in the three tests. As we can see in Table 4, which reflects the results for the form recognition aspect, 87% of the participants from the 'incidental + intentional' group managed to recognise the forms of the target words. By contrast, the subjects from Group INT+INC recognised 77% of the target word forms. As for the meaning recall aspect, the 'intentional + incidental' group recalled the meanings of 28% of the target words, whereas the participant from the 'incidental + intentional' group managed to remember the meanings of 42% of the target words (see Table 5).

Table 4. Form recognition results.

Target words	Group INT+INC			Group INC+INT			% increase	Fisher test results (bilateral)	
	Participants	ca ³	%	Participants	ca	%			
pliers	13	11	85%	17	15	88%	4%	1	not significant
to ransack	13	11	85%	17	15	88%	4%	1	not significant
a gouge	13	10	77%	17	16	94%	17%	0.290	not significant
a sketch	13	13	100%	17	16	94%	-6%	1	not significant
debris	13	7	54%	17	13	76%	23%	0.255	not significant
a hunch	13	5	38%	17	14	82%	44%	0.023	significant
a leash	13	7	54%	17	12	71%	17%	0.454	not significant
manslaughter	13	8	62%	17	12	71%	9%	0.705	not significant
bizarre	13	13	100%	17	16	94%	-6%	1	not significant
compelling	13	10	77%	17	14	82%	5%	1	not significant
a muffler	13	9	69%	17	14	82%	13%	0.666	not significant
brewery	13	9	69%	17	11	65%	-5%	1	not significant
whereabouts	13	10	77%	17	17	100%	23%	0.07	not significant
maroon	13	12	92%	17	17	100%	8%	0.433	not significant
a bumper	13	12	92%	17	17	100%	8%	0.433	not significant
parole	13	13	100%	17	17	100%	0%	-	not significant
Total: 16	208	160	77%	272	236	87%	10%		not applicable ⁴

Table 5. Meaning recall results.

Target words	Group INT+INC			Group INC+INT			% increase	Fisher test results (bilateral)	
	Participants	ca	%	Participants	ca	%			
pliers	13	3	23%	17	10	59%	36%	0.071	not significant
to ransack	13	4	31%	17	6.5	38%	7%	1	not significant
a gouge	13	2	15%	17	3	18%	2%	1	not significant
a sketch	13	7.5	58%	17	14	82%	25%	0.242	not significant
debris	13	1	8%	17	3	18%	10%	0.613	not significant
a hunch	13	1	8%	17	4	24%	16%	0.355	not significant
a leash	13	2	15%	17	5	29%	14%	0.427	not significant
manslaughter	13	3.5	27%	17	6	35%	8%	1	not significant
bizarre	13	11	85%	17	13	76%	-8%	0.672	not significant
compelling	13	0	0%	17	2	12%	12%	0.492	not significant
a muffler	13	4	31%	17	9	53%	22%	0.283	not significant
brewery	13	3	23%	17	8	47%	24%	0.259	not significant
whereabouts	13	5	38%	17	8	47%	9%	0.721	not significant
maroon	13	5	38%	17	12	71%	32%	0.138	not significant
a bumper	13	1	8%	17	6	35%	28%	0.104	not significant
parole	13	5	38%	17	6	35%	-3%	1	not significant
Total: 16	208	58	28%	272	115.5	42%	15%		not applicable

³ correct answers.⁴ It is noteworthy that the Fisher test cannot be applied to the total mean scores of both groups in the three vocabulary tests because the total number of participants in each of the two experimental groups was 13 and 17, not 208 or 272. Therefore, the statistical analysis of the overall scores would lead to erroneous interpretation of the outcome of the study.

Table 6. Written use in a sentence results.

Target words	Group INT+INC			Group INC+INT			% increase	Fisher test results (bilateral)	
	Participants	ca	%	Participants	ca	%			
pliers	13	5.5	42%	17	9.5	56%	14%	0.484	not significant
to ransack	13	2.5	19%	17	10	59%	40%	0.071	not significant
a gouge	13	2	15%	17	3	18%	2%	1	not significant
a sketch	13	6	46%	17	11.5	68%	21%	0.46	not significant
debris	13	0	0%	17	3	18%	18%	0.238	not significant
a hunch	13	1.5	12%	17	4	24%	12%	0.672	not significant
a leash	13	2	15%	17	5	29%	14%	0.427	not significant
manslaughter	13	3.5	27%	17	3.5	21%	-6%	0.465	not significant
bizarre	13	9	69%	17	9.5	56%	-13%	0.672	not significant
compelling	13	1	8%	17	3	18%	10%	0.613	not significant
a muffler	13	4.5	35%	17	8	47%	12%	0.721	not significant
brewery	13	1.5	12%	17	7	41%	30%	0.229	not significant
whereabouts	13	5	38%	17	8.5	50%	12%	0.721	not significant
maroon	13	7	54%	17	13.5	79%	26%	0.255	not significant
a bumper	13	1.5	12%	17	5.5	32%	21%	0.196	not significant
parole	13	3.5	27%	17	4.5	26%	0%	1	not significant
Total: 16	208	56	27%	272	109	40%	13%		not applicable

Regarding the written use in a sentence test, the results, which are presented in Table 6, reveal a similar tendency that can be observed for the other two aspects: higher total score of the ‘incidental + intentional’ group (40%) in comparison to the ‘intentional + incidental’ one (27%).

The percentage scores of each target word in the three tests were further analysed in both experimental groups. For the aspect of form recognition, the percentage difference between the two experimental groups showed that the participants from Group INC+INT managed to give more correct answers in the form recognition test for the following target words: *a gouge* (17%), *debris* (23%), *a hunch* (44%), *a leash* (17%), *a muffler* (13%) and *whereabouts* (23%). The participants from Group INT+INC, however, were slightly better at recognising the forms of the target words *a sketch* (-6%), *bizarre* (-6%) and *brewery* (-5%). Very little difference in the results between the two groups was observed for the target words *pliers* (4%), *to ransack* (4%), *compelling* (5%), *maroon* (8%) and *a bumper* (8%). The word *parole* achieved the highest score (100%) in both experimental groups. A further Fisher test, however, found that the difference in the percentage scores between the two experimental groups was statistically non-significant for almost all of the target words (except for the target word *a hunch*).

In the meaning recall test, little percentage difference in the results (no more than 10%) was observed for the target words *to ransack* (7%), *a gouge* (2%), *manslaughter* (8%), *whereabouts* (9%) and *parole* (-3%). Better performance of the ‘incidental + intentional’ group was noted for the target words *pliers* (36%), *a sketch* (25%), *debris* (10%), *a hunch* (16%), *a leash* (14%), *compelling* (12%), *a muffler* (22%), *brewery* (24%), *maroon* (32%) and *a bumper* (28%). It should be mentioned, however, that the Fisher test revealed that the difference in scores between the two groups was statistically non-significant for all the target words.

Concerning the written use in a sentence aspect, the detailed analysis showed that the ‘incidental + intentional’ group managed to outperform Group INT+INC for the majority of the target words. Higher percentage scores were observed in Group INC+INT for 14 out of the total 16 target words (*pliers*, *to ransack*, *a sketch*, *debris*, *a hunch*, *a leash*, *compelling*, *a muffler*, *brewery*, *whereabouts*, *maroon* and *a bumper*). Both groups provided similar number of correct sentences for the target word *parole* and almost no difference in the results between two experimental groups was noticed for the target word *a gouge*. The ‘intentional + incidental’ group was better at using in a sentence the target words *manslaughter* and *bizarre*. Similarly to the meaning recall aspects, the Fisher test did not find the difference in scores between the two experimental groups for all of the target words statistically significant.

2.9. Conclusions and discussion

The aim of this experiment was to compare the effectiveness of two combinations of new vocabulary learning techniques: ‘incidental + intentional’ and ‘intentional + incidental’. The overall percentage results showed better performance of the ‘incidental + intentional’ group in comparison to the ‘intentional + incidental’ one in the three

vocabulary tests: an improvement of 10%, 15% and 13% was observed for the form recognition, meaning recall and written use in a sentence aspects, respectively. At first sight, these mean scores seem to point to the idea that the ‘incidental + intentional’ combination resulted to be more effective for new TL vocabulary learning. Nevertheless, a more detailed analysis of the results of the target words revealed a variety of scores in the sample for the three aspects of word knowledge. On the one hand, the ‘incidental + intentional’ group managed to noticeably outscore the other experimental group in the case of the following target words: *a hunch* for the form recognition test; *pliers*, *a sketch*, *maroon*, *a bumper* for the meaning recall aspect; *to ransack*, *brewery*, *maroon* and *a bumper* for the written use in a sentence test. On the other hand, many target words achieved very similar scores in both experimental groups. This variety of scores in both experimental groups in the three vocabulary tests and the lack of statistically significant results observed in the detailed analysis of the target words should be discussed in terms of different variables that undoubtedly affect new lexis learning, which can occur either incidentally or intentionally.

Thus, the choice of the target words and their characteristics can explain high results of some target words in the three tests. De Groot and Keijzer (2000: 42), for example, draws our attention to the fact that presence of a cognate can facilitate the learning of a new word (De Groot & Keijzer 2000: 34). In the present study, this variable could have had some positive effect on the results of the target word *bizarre*. Although, according to the *DLE (Diccionario de Lengua Española)*, the meaning of this word in Spanish is ‘valiente’, “the term *bizarro* can be applied in reference to a thing with the meaning ‘extraño, raro, insólito’, as is indicated in the *Diccionario de americanismos*, of the Academy of Languages” (our translation, see Fundéu BBVA). Similarly, the presence of a deceptive cognate, or what we know as a *False Friend* (see O’Neil & Casanovas Catalá 1997, Chamizo Domínguez & Nerlich 2002), could explain very high results of the target word *maroon* in the test of form recognition for both groups. Even though this target word is a false cognate for Spanish learners of English in terms of its meaning, its form resembles the Spanish word *marrón*. This similarity in the form could have undoubtedly helped the participants to choose the correct answer in the form recognition test.

Word frequency is another characteristic of the target words that should be considered when interpreting the scores of this experiment. As was mentioned in Section 2.4., learners of English of B1 moving to B2 level should have the knowledge between 2,750 and 3,750 most common lemmatised words (Meara & Milton 2003, in Milton & Alexiou 2009: 198). That is why, most of the target words chosen for the current experiment were of low frequency and only four of them belong to 4,000 most frequent word families. One of these highly frequent words is the target word *a sketch*, which showed one of the highest results in the three tests. For instance, in the form recognition test, this target word achieved 100% of correct answers in the ‘intentional + incidental’ group and 94% in the ‘incidental + intentional’ one. Better scores of the target word *a sketch* in comparison to the other target words can also be observed in the meaning recall and written use in a sentence test for both groups (see Tables 5 and 6). Curiously, however, no similar effect of the frequency factor was observed for the target words *brewery*, *whereabouts* and *a bumper*, even though they also belong to the 3,000–4,000 most frequent words. It is also very likely that the participants, who were all native Spanish speakers, knew the word *a sketch* because it is a frequently used borrowing from English.

Apart from commenting on the variables that could have affected the vocabulary learning process, an observation should be made regarding the contribution of watching 3 hours of authentic videos to the overall results of the study. It must be noted, however, that this observation is based on the average scores of both experimental conditions, which, as was earlier mentioned in this section, were higher for the ‘incidental + intentional’ group in the three vocabulary tests. These better results of Group INC+INT raised our concern regarding the proportional effect that viewing 3 hours of authentic videos had on the outcome of both groups. That is, did watching the videos help the participants from the ‘incidental + intentional’ group to ‘meet’ the target words for the first time, and, in the case of Group INT+INC, did it facilitate the revision of the target vocabulary, which was earlier focused on during the intentional session? In the present study, the main learning effect of the target vocabulary in both experimental groups was expected during the intentional learning session through a set of tasks. The purpose of viewing the videos was to reinforce vocabulary acquisition by providing some extra exposure to the target words. In the ‘intentional + incidental’ group, viewing 3 hours of authentic videos played a particularly important role as the time that passed between the intentional session and the final tests was longer (5 weeks) than in the case of the ‘incidental + intentional’ group (2 weeks). Schmitt (2012) explains that, according to the ‘forgetting’ effect, the major loss of new material usually takes place one day after it was learned. After that, even though “the rate of forgetting decreases”, learners still continue to forget the learned material, if it is not revised (see Schmitt 2012: 130). Basing on this, the poorer performance of the ‘intentional + incidental’ group in the three tests seems to suggest that some extra forgetting may have occurred during the three weeks when the participants from the ‘intentional + incidental’ group had to watch the authentic audio-visual material. Hence, lower percentage results of the ‘intentional + incidental’ group. This, in its turn, leads us to the supposition that watching 3 hours of captioned authentic videos made very little (if any) contribution to the overall results of this group. At the same time, it is not clear to what extent the better performance of the ‘incidental + intentional’ group can be attributed to the combination of these two types of new vocabulary learning techniques. It is plausible that watching 3 hours of authentic videos in the ‘incidental + intentional’ group did not help the participants to notice the target words for the first time and most of the target vocabulary was acquired during the intentional learning session, which took place closer to the final tests. Once again, it is important to note that these assumptions are based on the mean scores observed in the three vocabulary tests and are not corroborated by any statistical evidence.

In general, although the results of the ‘incidental + intentional’ group can be characterised as very promising, there is no consistent outperformance of this ‘incidental + intentional’ group in comparison to the ‘intentional + incidental’ one. Furthermore, the percentage data provided by this experiment were not supported by statistical evidence because the Fisher test revealed that the difference in scores for almost all of the target words in the three vocabulary tests was non-significant. Consequently, our data do not allow us to conclude with certainty which of the two combinations of new vocabulary learning is more or less effective for TL vocabulary learning. Further research, which considers the limitations of this study, is needed. The first limitation is related to the small number of subjects in both experimental groups of this study, which made us use the stricter Fisher test instead of the most common chi-square one. It is possible that had it not been for this limited number of participants, the scores obtained in this experiment could have resulted in being statistically significant. The second drawback of this experiment is associated with the target words, more precisely with their frequency and the presence of a cognate in the case of some of the target words. Moreover, the distribution of the target words across the episodes of the TV documentary may have had a certain effect on the incidental learning of new lexis while watching the episodes of the TV documentary (see, for example, Peters & Webb 2018). We can assume it might not be the same to encounter a word three times in the first episode or distributed across the thirteen episodes. This variable was out of range of the current study but should undoubtedly be considered for further investigation of this kind. Similarly, the study did not control the distribution of the watching sessions or the actions of the participants that might have taken place while they were viewing the episodes. Consequently, we do not have this valuable information, which could have helped with the interpretation of the results. For instance, we do not know if the participants watched the episodes on the last or the first days of the 3-week watching period of time and if the subjects consulted a dictionary, wrote down unknown words, etc. Lastly, it is worth mentioning that no pre-test with the target words was conducted before the experiment, as we did not want to draw the potential participants’ attention to the target words, which were later used in the study. This lack of the pre-test, however, had a negative effect on the analysis of the results as it did not allow us to say with certainty whether the participants were familiar or not with the target words prior to the experimental part. That is why this downside of the current study should be borne in mind for further research.

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APPENDICES

Appendix A

Pre-experimental questionnaire

Do you like watching documentaries, films or TV series about crime investigation?

Yes No

Would you like to participate in a study that consists of watching 11 Episodes of the TV series called *Forensic Files* (approximately 3 hours)?

Yes No

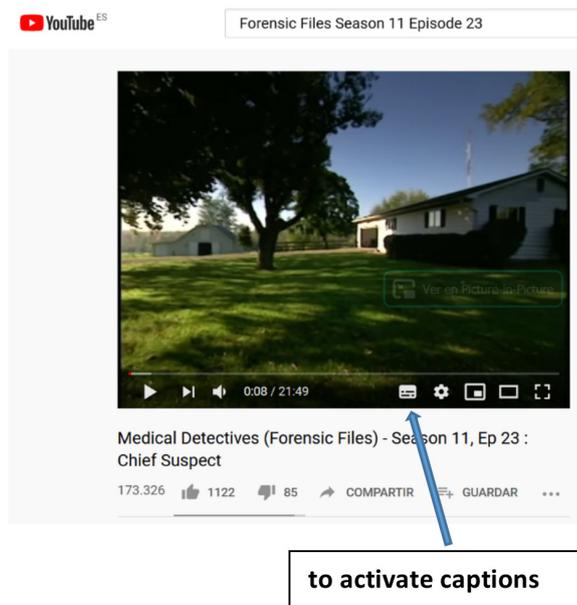
Appendix B

Instructions for the incidental part of the study

1. Go to the following link: <https://www.youtube.com/watch?v=fqC9kw05X5E> or type this line in You Tube: *Forensic Files* Season 11 Episode 23



2. Activate the captions.



3. Watch the following episodes with captions in English: 23, 27, 28, 30, 31, 33, 34, 35, 38, 40, 41.

Appendix C**Tasks for the intentional part of the study****Task 1. Match the words to their definitions in English and equivalents in Spanish**

pliers	a. homicidio involuntario
to ransack	b. el paradero
a gouge	c. una marca en forma de hueco
a sketch	d. cervecería
debris	e. correa
a hunch	f. silenciador
a leash	g. restos o escombros
manslaughter	h. tenazas, alicates
bizarre	i. convincente
compelling	j. raro, extraño
a muffler	k. corazonada, intuición
brewery	l. boceto
whereabouts	m. saquear
maroon	n. libertad condicional
a bumper	o. granate
parole	p. parachoques

1. a metal bar, usually horizontal, for protecting the front or back of a vehicle
2. the killing of a human being in which there is no prior intent to kill
3. a feeling or guess about something (for example, about the future)
4. the release of a person from prison before the end of the sentence, with a condition of good behaviour
5. a dark brownish red colour
6. a mark (spot, scratch)
7. a chain or strap for controlling or leading a dog or other animal;
8. to search through so as to rob or find something
9. unusual in appearance, style, or character
10. the place where a person or thing is
11. a silencer
12. a building or company for brewing beer
13. convincing
14. the remains of something destroyed
15. a tool used for bending wire, holding small objects, etc.
16. a simply made drawing giving basic features

Task 2. Write each word from the previous task 3 times**Task 3. Make up sentences with the following words**

pliers

- What did he use to remove the nail from the floor?
- He _____

to ransack

- What did the police do to find the necessary evidence?
- They _____

a gouge

- What is this on the floor?
- _____ made by _____

a sketch

- The girl described the person who attacked her.
- We could _____ to find the criminal.

debris

- The building was destroyed by the fire. Do you think we will be able to find any evidence of the crime?
- We can _____

a hunch

- Why did you decide to go there? Did you know that you would find the witness there?
- _____

a leash

- You can't have this dog on the loose, it is dangerous.
- Ok, I will _____

manslaughter

- How should we classify this crime? It seems that the victim was trying to protect herself.
- It is _____

bizarre

- How would you describe his behaviour?
- _____, he kept on talking about the ghosts and spirits.

compelling

- Why did you believe him?
- _____

a muffler

- Nobody heard the shots.
- It's because the murderer _____

brewery

- Where does he work?

- _____

whereabouts

- Have you found the suspect?

- No, unfortunately _____

maroon

- Which dress do you prefer?

- _____

a bumper

- How did you survive the car accident?

- _____

parole

- I didn't know he was out of prison.

- Yes, _____.

Appendix D

Form recognition test

Circle the correct spelling of the existing words in English.

- | | | | |
|--------------------|-----------------|-------------------|-------------------|
| 1. a) plaise | b) liers | c) pliaris | d) pliers |
| 2. a) to ranjack | b) to rangeck | c) to ransack | d) to ranseck |
| 3. a) a goase | b) a goarse | c) a gouge | d) a gouse |
| 4. a) a swetch | b) a sketch | c) a sweath | d) a sweth |
| 5. a) debreis | b) debrais | c) debries | d) debris |
| 6. a) hunch | b) hanch | c) hinche | d) hintch |
| 7. a) a sleesh | b) a sleash | c) a leesh | d) a leash |
| 8. a) a menslogger | b) a manslogger | c) a menslaughter | d) a manslaughter |
| 9. a) bizarre | b) buzar | c) bizare | d) buzare |
| 10. a) compelling | b) compeling | c) compounding | d) componing |
| 11. a) a mufler | b) a maffler | c) a muffle | d) a muffler |
| 12. a) blewery | b) brevery | c) brewery | d) blevery |
| 13. a) howabouts | b) whereabouts | c) howabout | d) whereabouts |
| 14. a) masoon | b) maroon | c) maloon | d) manoon |
| 15. a) a bamper | b) a bumper | c) a bupper | d) a bapper |
| 16. a) perose | b) parose | c) parote | d) parole |

Appendix E

Meaning recall test

Translate the following words into Spanish. If you do not know or not sure about the translation, leave the corresponding line in blank.

1. pliers
2. to ransack
3. a gouge
4. a sketch
5. debris
6. a hunch
7. a leash
8. manslaughter
9. bizarre
10. compelling
11. a muffler
12. brewery
13. whereabouts
14. maroon
15. a bumper
16. parole

Appendix F

Written use in a sentence test

Make up sentences with the following words.

pliers
to ransack
a gouge
a sketch
debris
a hunch
a leash
manslaughter
bizarre
compelling
a muffler
brewery
whereabouts
maroon
a bumper
parole