



## Vocabulary learning from watching YouTube videos and reading blog posts

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### Abstract

*This study compared second language vocabulary acquisition from engagement with two different online media: written blog posts and video blogs. It also explored whether there were differences between which aspects of vocabulary knowledge (i.e., orthography, semantics, and grammatical function) were best learned from these media. The results showed that incidental vocabulary learning occurred in approximately equal amounts from reading blog posts and watching video blogs. There were some indications that different types of vocabulary knowledge were gained from the two types of media. The written blog entries promoted greater gains in orthographic knowledge than the videos. There was also tentative evidence that the videos promoted greater recall of the target words' grammatical functions and greater recognition and recall of their meanings.*

**Keywords:** Reading, Social Networking, Virtual Environments, Vocabulary

**Language(s) Learned in This Study:** English

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### Introduction

Vocabulary knowledge is fundamental to comprehending and producing a second language (L2). Indeed, Alderson (2005, p. 88) concludes that “language ability is to a large extent a function of vocabulary size.” Consequently, acquiring vocabulary is a key challenge facing L2 learners, particularly in instructed contexts with limited language exposure (Green & Meara, 1995).

Teachers and researchers often advocate reading as the most effective method for learning vocabulary outside of instructed contexts. Most importantly, reading is presumed to account for the acquisition of lower-frequency words. These words are not often taught explicitly and some researchers claim that learners are unlikely to derive them from sources such as day-to-day conversations or radio and television programs (Nation, 2001). However, technological advances have created new opportunities for interacting with the L2. There has been increasing research interest in *informal second language learning* (ISLL) through a variety of media primarily accessed online, such as music, television series, and blogs (e.g., Sockett, 2014; Sockett & Toffoli, 2012; Toffoli & Sockett, 2010). The current study contributes to this growing body of research by investigating (a) the extent to which watching video blogs (vlogs) and reading blog posts can support L2 vocabulary acquisition, and (b) whether the modality of the L2 input (audio-visual vs. written text) influences the amount and aspects of vocabulary knowledge gained.

### Theoretical Background

Toffoli and Sockett (2010, p. 4) describe online ISLL as “unofficial, unscheduled, and impromptu,” that is, taking place not in formal learning environments, but through learners’ interactions with online media of their own choice in their free time. They suggest that these resources facilitate language learning by providing input, often in more than one modality (e.g., visual and auditory), and because the user’s inherent

interest in the content and desire to understand it leads to deep engagement with that input. This description of the mechanisms behind ISLL draws on Krashen's (1981) comprehensible input hypothesis, as well as the theory of multi-channel communication (discussed in depth in Moore, Burton, & Myers, 2004), which lies at the heart of multimedia approaches to education, stating that encountering new information in various modalities facilitates learning. Because ISLL is not planned by the learners—who may or may not even be aware of its occurrence—connections can also be drawn to another prominent concept in L2 acquisition: incidental learning.

### **Incidental Learning**

Researchers typically distinguish between incidental and intentional learning. While intentional learning is generally thought to occur when learners' attention is focused on acquiring new language features (Nation, 2001; Schmitt, 2000), some scholars use the term incidental learning to describe acquisition which occurs in the absence of a conscious intention to learn, or rather when learners' attention is focused not on language learning, but on understanding the material they engage with (e.g., Hulstijn, 2001; Nation, 2001; Schmitt, 2000). For this reason, incidental learning has also been described as a byproduct of communicative language tasks (Hulstijn, 2001).

For example, learners may begin to acquire a new word when they encounter it in a text on a topic that interests them, using contextual information and background knowledge to infer its meaning. To be able to do this, learners need to have good comprehension of the overall text, which, in turn, requires a minimum *lexical coverage* (ratio of known and unknown words in the text). Research findings converge to indicate that a lexical coverage of about 95% provides learners with adequate comprehension and that this is attained by a vocabulary of about 5,000 word families (e.g., Adolphs & Schmitt, 2004; Hu & Nation, 2000; Laufer & Ravenhorst-Kalovski, 2010; Stæhr, 2008).

In addition to this, scholars also widely agree that, to acquire a new word, learners must first notice it in the input (see the noticing hypothesis by Schmidt, 1990), which requires a certain degree of conscious attention. This implies that the difference between incidental and intentional learning cannot lie only in the presence or lack of attention. Therefore, the depth of processing theory by Craik and Lockhart (1972) suggests that the two types of learning differ quantitatively, not qualitatively: how deeply a specific linguistic feature is processed stands in direct relation to the extent of learning that results. Alternatively, Ellis (1999) proposed that the difference may lie in where learners place their focal and peripheral attention: in intentional learning, the focal attention is on the linguistic forms, whilst peripheral attention is given to understanding the overall message, and vice versa in incidental learning.

In sum, it seems that a clear distinction between incidental and intentional learning is not easy to maintain based on attention allocation alone. Furthermore, operationalising attention-based definitions is problematic, because learners' minds cannot be directly accessed to determine the focus of their attention (form or meaning) at any given moment. The current study therefore adopts Hulstijn's (2001) operationalisation of incidental learning, which assumes that any learning resulting from engagement with L2 input is incidental when learners have not been forewarned that they will be tested on their language gains—and thus have no extrinsic reason to focus on language learning other than simply understanding the content. This operationalisation has been employed widely in previous research—and in most of the studies reviewed below—for its convenience. Nevertheless, we acknowledge that learners (including those in the current study) may, at certain moments, bring greater conscious attention to bear on unfamiliar words they encounter and that this may affect the extent and nature of any resulting vocabulary learning.

### **Assessing Vocabulary Knowledge**

The question of what it means to know a word is also far from straightforward. First, extensive research demonstrates that vocabulary acquisition is an incremental process, whereby learners slowly build up knowledge of new words through repeated encounters over time, and that at least 10 such encounters are needed for measurable learning to occur (e.g., Waring & Takaki, 2003; Webb, 2007). Therefore, vocabulary knowledge cannot be assessed simply as an *all-or-nothing* construct (i.e., where a learner either knows the

word or does not).

Second, researchers widely agree that lexical knowledge is complex and comprises more than just form–meaning connections. Thus, a combination of tasks should be used to evaluate various dimensions of vocabulary knowledge (Henriksen, 1999). Nation's (1990, 2001) well-known framework of vocabulary knowledge, for example, distinguishes knowledge of spoken and written forms, grammatical function, collocations, meaning, and constraints on word use.

Third, it is generally accepted that receptive knowledge of a word (i.e. being able to understand it when encountering it in language input) is different from, and usually precedes, productive knowledge (i.e. being able to retrieve the appropriate word to express a certain meaning when speaking or writing; DeKeyser & Sokalski, 1996; Nation, 1990, 2001). Thus, learners may initially only recognise a word's form but not know its associated meaning. But eventually, after passing through various phases of partial word knowledge, they may be able to produce its spoken and written forms and use the word appropriately in grammatical, semantic, and collocational contexts.

In sum, vocabulary acquisition research should include tests that measure various aspects of receptive and productive vocabulary knowledge and that in some way account for partial knowledge. Nevertheless, presumably for methodological convenience, most previous studies have focused solely on learners' ability to recognise word forms or meanings (for examples of studies taking a multidimensional approach to measuring lexical knowledge, see, Pigada & Schmitt, 2006; Waring & Takaki, 2003; Webb, 2007, 2008). As will be seen below, the current study attempts to address this limitation of previous research.

### **Incidental Vocabulary Learning Research**

We mentioned earlier the importance often accorded to reading as a vehicle for vocabulary acquisition. Extensive research in this area indeed provides some evidence that large amounts of sustained written input, for example in extensive reading programs, can lead to substantial cumulative gains in vocabulary knowledge (e.g., Elley, 1991; Pigada & Schmitt, 2006; Zahar, Cobb, & Spada, 2001). However, it might be suspected that many learners do not read sufficiently in their L2 to achieve such sustained and extensive input (e.g., Waring, 2009). Therefore, numerous studies have also explored vocabulary acquisition through other media, with which learners may engage more readily: for example, films and television series (e.g., Hui, 2007; Markham, 1999; Vidal, 2003, 2011; Winke, Gass, & Sydorenko, 2010); songs and comic books (Milton, 2008); online role-playing games (Huang & Yang, 2012); and social network-based flash games (Çetin, Sözcü, & Kinay, 2012). However, only few studies to date have directly compared vocabulary learning through these different media. The current study addresses this gap and investigates whether the modality of the L2 input (audio-visual vs. written) affects the extent and nature of incidental vocabulary gains. To the authors' knowledge, only two previous studies have directly compared vocabulary learning from these modalities: one by Neuman and Koskinen (1992) and another by Vidal (2011). As these form a key basis for the current investigation, we review them in detail below.

The participants in the study by Neuman and Koskinen (1992) were 179 middle-school learners of L2 English in the US. They had various first language (L1) backgrounds and were selected from an at risk population, their academic performance being on average 2–3 years below their grade-level peers. Over nine weeks, two groups of participants watched nine segments of a science TV show: one group with captions and one without. A third group listened to and read along with the same segments' scripts. From each segment, judges chose what they perceived to be the 10 most difficult words (mainly academic vocabulary), which served as target words in a series of vocabulary tests. In the pre-test, participants self-reported their knowledge of the target words (*I know this word or I don't know this word*). Their lexical gains from the TV segments and scripts were then evaluated in several post-tests. First, each week, students were tested on form recognition of that week's target words using a multiple-choice test. Second, the authors counted the number of occurrences of these target words and the concepts behind them (idea units) in the students' weekly written homework assignments, to measure productive knowledge. Third, at 3-week intervals, participants completed a multiple-choice test in which they were required to select the sentences

in which the target words were used in their correct senses (sentence anomaly test). Finally, at the end of nine weeks, they completed a multiple-choice test assessing their ability to recognise the words' meanings in context. On all tests (except one sentence anomaly test), the captioned video group scored significantly higher than both the no-caption group and the reading/listening group. The authors also found higher means for the no-caption group than for the reading/listening group on almost all measures (although statistical significance levels were not reported).

Overall, the research by Neuman and Koskinen (1992) indicates that video materials can serve as useful input for incidental vocabulary learning and that this type of learning could lead to greater gains than reading in some receptive and productive aspects of vocabulary knowledge. It is unclear, however, whether the demonstrated lexical knowledge can be exclusively attributed to the video segments or scripts, because the participants could also have learned these words from other sources over the course of the study (e.g., in other school subjects). Furthermore, the generalisability of these results to other L2 learner populations is questionable, given that the participants were deemed at risk.

A more recent study directly comparing incidental vocabulary learning from watching videos and reading was conducted by Vidal (2011). Her participants were 230 Spanish undergraduates learning English as a foreign language (EFL), divided into three treatment groups. Over three weeks, one group watched three videotaped academic lectures (14–15 minutes each), one read three academic texts on the same topics, and the control group received no treatment. The lectures and readings had the same content and target words; according to Vidal, only the style was slightly altered according to the medium. The 36 target words, from the University Word List (Guoyi & Nation, 1984), were repeated in each lecture or text between one and six times. Gains were assessed in pre-, post- and delayed post-tests (after one month) using a modified vocabulary knowledge scale (Wesche & Paribakht, 1996), which assessed form recognition, L2–L1 translation, recall of meaning, and syntactic knowledge. The scale had been constructed and demonstrated to be reliable by Vidal (2003). The immediate post-test indicated that both the videos and readings resulted in significant vocabulary gains. Scores on the delayed post-test, although lower than those on the immediate post-test, were still significantly higher than pre-test scores, indicating a certain durability in these gains. The immediate gains of the reading group were significantly greater than those of the video group in all four aspects of knowledge tested. The reading group also showed significantly greater retention on the delayed post-test. However, the differences between the two groups was smaller for higher-proficiency participants, who may thus have been able to benefit equally from both media. There were no significant changes in the control group's scores from the pre- to post-tests, indicating that the experimental groups' gains could be attributed to the treatment.

The extent to which Vidal's (2011) results can be generalised to informal learning from other media is questionable. First, academic lectures are not representative of materials that L2 learners might typically engage with in their spare time. Second, the visual aspects of the videos used in this study are not specified—for example, whether they showed the lecturer or any pictures or slides. Vidal does not seem to attribute great effects to these visuals, referring to learning from the videotaped lectures as learning from listening. She does not discuss how the affordances of watching a videotaped lecture might differ from listening to an audiotape.

It is important to note that the findings by Neuman and Koskinen (1992) and Vidal (2011) are contradictory: the former found greater vocabulary gains from watching a TV show than reading the scripts; the latter found greater gains from reading academic texts than watching video-taped lectures. There is, then, clearly a need for further studies that directly compare vocabulary learning from reading on the one hand, and from engaging with audio-visual media on the other. Furthermore, resulting from recent technological advances, many students now use a range of L2 media frequently in their everyday lives (including online video and texts; Sockett, 2014) which have been little studied to date, especially in direct comparison to each other and other media. The current study addresses these gaps in research and aims to help L2 learners and teachers gain a better understanding of ISLL.

This study was designed to address the following two research questions:

1. Which medium (video blogs or written blog posts) leads to greater incidental vocabulary learning?
2. Are there differences regarding which aspects of vocabulary knowledge are best learned from these media?

## Methodology

The study took a quantitative, experimental approach but, unlike most prior research on incidental vocabulary learning, did not employ pre- and post-tests to assess learning gains. There are several disadvantages to the pre- and post-test methodology: First, pre-tests may be insufficiently sensitive, overlooking any partial knowledge of the target words that participants may already possess. Second, encountering the target words during pre-testing may itself contribute to their acquisition, calling into question whether any learning gains can really be attributed to the treatment. Finally, pre-testing may draw participants' attention to the fact that the study is concerned with vocabulary acquisition, possibly leading them to try harder to learn new words encountered during the treatment and thereby violating Hulstijn's (2001) operationalisation of incidental learning. Therefore, instead of using a pre- and post-test design, this study ensured that participants had no prior knowledge of the target words by replacing them with pseudo-words (following Waring & Takaki, 2003; Webb, 2007, 2008). Since participants cannot have encountered these words before, all vocabulary knowledge in the post-test can be attributed to the treatment.

## Participants

The participants were 84 EFL learners from various backgrounds, who volunteered to complete the study online following a call for participants posted on social media sites associated with the Nerdfighter<sup>1</sup> online community. This sampling method was chosen as it was thought that these individuals were likely to be more familiar with, and more interested in, the format and content of the videos and blog posts in this study than a random or institutional sample of language learners would have been.

As an inevitable result of the voluntary sampling, there was some demographic variation among the participants: They were 14 to 25 years old ( $M = 20.2$ ,  $SD = 2.8$ ) and spoke 19 different L1s, most commonly German ( $n = 23$ ) and Dutch ( $n = 18$ ). While some participants still attended secondary school ( $n = 14$ ), most had either completed their secondary education ( $n = 37$ ) or had completed at least some time at university ( $n = 32$ ). Measures were taken, however, to ensure a degree of homogeneity in the participants' L2 abilities: First, all participants had learned English in school for at least five years ( $M = 10.4$ ,  $SD = 3.3$ ), but they had not been raised bilingually, had not attended an English-speaking school, and had not lived in an English-speaking country for more than three months. Second, participants were excluded from the analysis if they did not appear to have sufficient lexical coverage to adequately comprehend the videos or texts.

## Criteria for Exclusion: Lexical Coverage

To ensure that all participants in this study had sufficient lexical coverage, they completed the 5,000-word Vocabulary Levels Test (VLT) Version 1 (Schmitt, 2000). The VLT measures semantic word knowledge by asking test-takers to match lexical items and their definitions. It includes vocabulary at different frequency levels and can be "utilized ... to inform decisions concerning whether an examinee [is] likely to have the lexical resources necessary to cope with certain language tasks, such as reading authentic materials" (Schmitt, Schmitt, & Clapham, 2001, p. 56).

Five participants, who answered fewer than 23 out of 27 items correctly (85%), were excluded from the analysis. This threshold was chosen to approximate the criterion of mastery of a vocabulary level set by Schmitt et al. (2001; i.e., 26 out of 30 items, or 86.7%). The scores of the remaining 79 participants ( $M = 25.8$ ,  $SD = 2.2$ ) suggested that their vocabulary knowledge was such that they would likely understand the input materials without problems. To support this assumption, a frequency profile of the input materials was also created using the [Lextutor Vocabprofile software](#) (Cobb, 2013). When excluding proper nouns

from the analysis, but including the pseudo-words, only 13 out of 337 lemmas in the scripts (3.9%) were not part of the 5,000 most frequent English words. Knowledge of the most frequent 5,000 word families would thus give participants 96.1% coverage, presumably making the input adequately comprehensible.

## Procedure

Participants completed the study using a browser-based web survey. To avoid priming them to focus intentionally on learning new words, the study's purpose was not fully revealed at the beginning. Instead, participants were told that the study was about learners' comprehension of English-language blogs and YouTube vlogs. Furthermore, to prevent participants from discovering that the study used pseudo- rather than real words (e.g., by attempting to look up their meanings), they were instructed not to use other websites or materials while completing the survey.

After completing the VLT, participants were randomly assigned to one of two treatment groups. The participants in the *video group* ( $n = 38$  after VLT-based exclusions) watched three vlogs, two to five minutes long, in which video bloggers (vloggers) talked directly to the camera about online friendships. Some photographs which the vloggers talked about were also shown on screen. The participants who were assigned to the *blog group* ( $n = 42$  after exclusions) read three blog posts created from the video scripts. Each post was 450–800 words long (1,691 total) and included the same photographs as the videos. The blog texts and hyperlinks to the videos appear in the [Appendix](#).

After reading the blogs or watching the vlogs, both groups completed a test measuring different aspects of knowledge of six pseudo-words included in the videos and texts (see below). Finally, participants were debriefed about the study's full purpose and about the fact that the test items had been pseudo-words.

## Input Materials and Target Words

To make the blogs and videos as authentic as possible, they were created in collaboration with three well-established YouTube content creators. The topic (online friendships) was considered by both the researchers and these creators as one that was likely to appeal to a wide audience. To enable a fair comparison of the effects of the input modality (audio-visual versus textual) on vocabulary learning, the videos and blogs were matched in terms of linguistic content. That is, the video scripts were used as the blog posts, with only minimal alterations where necessary (e.g., *write to you* instead of *talk to you*).

Six target words (*time zone*, *message*, *photo*, (to) *travel*, (to) *write*, and *interesting*) were chosen on the grounds that they were easy to repeat frequently when discussing online friendships, yet (in the opinion of the researchers and content creators) would not be vital to understanding the overall gist. Three nouns, two verbs, and one adjective were selected, being the word classes most commonly found in natural speech. These numbers also reflect their proportional frequency of occurrence in general speech (Kucera & Francis, 1967). In the case of *travel*, the vloggers were instructed to use the word only as a verb (not as a noun).

In line with the findings of previous studies (as noted above), it was anticipated that participants would need to encounter each target word at least 10 times to achieve measurable learning. Each target word was therefore incorporated into each video or text three to six times—but not more often than that, to avoid making them overly salient. Each item was thus repeated 11–14 times in total (see [Table 1](#)).

The target words were then replaced by pseudo-words, adopted from Webb (2007). They respected English morphological conventions, phonotactic constraints, and spelling patterns. All were bisyllabic and had five or six letters in their written forms. [Table 1](#) shows the target words and their pseudo-word substitutes. In the videos, the pseudo-words were given standard English grammatical inflections.

**Table 1.** *Target Words, Pseudo-Words, and Number of Repetitions*

| Word Forms  |             | Number of Repetitions |          |          |       |
|-------------|-------------|-----------------------|----------|----------|-------|
| Target Word | Pseudo-Word | Script 1              | Script 2 | Script 3 | Total |
| time zone   | pacon       | 3                     | 4        | 4        | 11    |
| message     | masco       | 4                     | 4        | 5        | 13    |
| photo       | sagod       | 4                     | 4        | 6        | 14    |
| (to) travel | tasper      | 4                     | 4        | 5        | 13    |
| (to) write  | ancon       | 4                     | 4        | 5        | 13    |
| interesting | dangy       | 4                     | 4        | 4        | 12    |
| Total       |             | 24                    | 23       | 29       | 76    |

The vloggers were asked to write a script for a video of about two to five minutes in length and received instructions about how often to include the target words. In terms of content, however, they were entirely free to decide how to approach the specified topic of online friendships. They wrote the scripts independently of each other, so that the videos would reflect their own individual styles as authentically as possible. The scripts were edited by the researchers only regarding consistent usage and relatively even spread of the pseudo-words. The vloggers then filmed their videos according to the revised scripts, which also formed the basis for the blog posts. Finally, the researchers uploaded the videos and blog posts to a YouTube channel and BlogSpot page created for this study and included the hyperlinks in the web survey.

### Measuring Vocabulary Gains

After watching the videos or reading the blog posts, the participants completed five tasks designed to measure different aspects of vocabulary knowledge. The tasks were adapted from Webb (2007), but to reduce the overall testing burden and thus the risk of attrition, only 5 of Webb's 10 tests were used. As in Webb's study, the tasks were "sequenced to avoid earlier tests affecting answers to later tests" (2007, p. 54). The format was not altered, with the exception of the tests of knowledge of meaning: In Webb's study, these were L2–L1 translation tests, but in the present study, participants spoke a variety of L1s. Monolingual tests of meaning recognition and recall were therefore adapted from another study by Webb (2008).

Descriptions of the five tests appear in Table 2, listed in the order in which participants completed them. As mentioned before, word learning is not an all-or-nothing phenomenon. Therefore, Table 2 also explains how the recall tasks were scored in a way that recognised partial knowledge. For example, in the *Recall of Meaning* task, paraphrases or synonyms were marked correct even if they matched only one of the target word's meanings.

In the tasks, all lexical items were presented without contexts, as these may have cued recall and provided clues for the later tasks. To help suspend participants' possible disbelief about the realness of the pseudo-words, all tasks also included four distractors, which were low-frequency words that appeared only once in the input materials. The answers for distractor items were not analysed. Finally, to mitigate any effects of a guessing bias (cf. Schmitt, 2010), participants were told in each test that they should try to answer only if they thought they knew the words, but not to guess if they did not (and instead to answer *I don't know*).

It was expected that the participants would perform better on the recognition tasks, as these were more sensitive to partial knowledge: they were multiple-choice tests in which the distractors were very different from the correct answer, so that the participants would be able to choose the correct answer even if they possessed only partial knowledge of the target word. The recall measures were designed to be more difficult and require fuller knowledge of the target words, so that, taken together, the tests would show sensitivity to partial gains as well as exploring different aspects of receptive and productive word knowledge.

**Table 2.** *Description of Tasks and Accepted Answers in the Post-Test*

| <b>Aspect of Knowledge</b>          | <b>Task</b>  | <b>Accepted Answers</b>  |
|-------------------------------------|--|--|
| Recall of Orthographic Form         | Write down the pseudo-word after hearing an audio recording of the spoken form   | Correct spellings; plausible forms with minor spelling alternations (e.g., <i>paycon</i> for <i>pacon</i> ), as judged by two English native speakers                      |
| Recall of Meaning                   | Write a short description of the meaning of the pseudo-word  | Either the target word itself (e.g., <i>message</i> for <i>masco</i> ) or a plausible synonym or circumlocution (e.g., <i>written communication</i> for <i>message</i> )   |
| Recall of Grammatical Function      | Write a sentence containing the pseudo-word  | Any sentence in which the pseudo-word is used as the correct part of speech (irrespective of whether the sentence reflected a correct understanding of the word's meaning) |
| Recognition of Grammatical Function | Multiple-choice; choice of three sentences in which the pseudo-words were used in different grammatical functions (i.e., nouns, verbs, adjectives) | Successful identification of the sentence in which the pseudo-word was used as the correct part of speech  |
| Recognition of Meaning              | Multiple-choice; choice of the correct meaning plus three plausible alternatives related to the topic of the videos                                | Successful identification of the correct meaning   |

## Results

A preliminary comparison of the groups was conducted using independent *t*-tests (for age, years of L2 experience, and VLT scores) and a Mann-Whitney *U* test (for level of education). These found no significant differences between the two groups. Thus, it was assumed that they were indeed comparable and that any differences in vocabulary learning could be attributed to the input modality.

### Research Question 1. Comparison of Overall Lexical Gains

The first research question asked which medium—video blogs or written blog posts—led to greater incidental vocabulary learning. To answer this question, the two groups' total vocabulary gain scores were compared. These scores were calculated for each participant by adding together the scores of all six items (0 = false, 1 = correct) from all five post-tests. Total scores could thus range from 0 to 30, and their distribution was found to be normal for both groups, with skewness and kurtosis figures falling between -2 and +2 (Cameron, 2004).

An independent samples *t*-test indicated no significant difference between the video and blog groups regarding total gains (see Table 3). However, there was a significantly higher variation in the scores of the blog group than the video group: Levene's Test of Equal Variances was violated ( $F = 5.75, p < .05$ ). The middle 50% of scores (25th to 75th quartile) fell between 12 and 28 out of 30 in the blog group, and between 17 and 26 in the video group.

### Research Question 2. Comparison of Gains in Different Aspects of Vocabulary Knowledge

To answer the second research question, whether there were differences regarding the aspects of vocabulary knowledge gained from the vlogs and blogs, the groups' mean scores (out of six) on the various tasks were compared, using a series of independent samples *t*-tests (Table 3). A Bonferroni adjustment was applied to correct for the effect of multiple comparisons, setting the critical level of significance at  $\alpha = .005$ . There

was one statistically significant difference between the two groups: the blog group scored higher than the video group on orthographic knowledge. This means that they were, on average, able to produce a correct or plausible spelling for one additional word out of six. Cohen's  $d$  (Cohen, 1988) indicated that this was a medium- to large-sized effect ( $d = .72$ ).

According to Cohen's  $d$ , there was also a medium-sized effect of the input modality on meaning recognition ( $d = .43$ ) and two small effects on the recall of grammatical function and meaning (both  $d = .25$ ). On these tests, the video group outperformed the blog group, but the differences in their scores did not reach statistical significance. Although in terms of raw scores the differences between the groups may appear small (e.g., on average the video group recalled the meaning of only 0.5 words more than the blog group), it should be borne in mind that the maximum possible score was only 6.0. Therefore, the differences may have appeared greater, had there been a larger number of target items.

**Table 3.** Comparison of Vocabulary Gains by the Video and Blog Groups

| Variable                              | Video |      |     | Blog  |      |     | $t$   | $df$ | $p$   | $d$ |
|---------------------------------------|-------|------|-----|-------|------|-----|-------|------|-------|-----|
|                                       | $M$   | $SD$ | $n$ | $M$   | $SD$ | $n$ |       |      |       |     |
| Total Vocabulary Gain                 | 20.77 | 6.35 | 38  | 19.76 | 8.37 | 41  | 0.58  | 73   | .561  | .13 |
| Orthography                           | 3.71  | 1.66 | 38  | 4.79  | 1.30 | 38  | -3.16 | 74   | .002* | .72 |
| Grammatical Function<br>(Recognition) | 4.26  | 1.41 | 38  | 4.07  | 2.07 | 41  | 0.48  | 71   | .637  | .11 |
| Grammatical Function<br>(Recall)      | 4.11  | 1.69 | 36  | 3.61  | 2.20 | 41  | 1.13  | 73   | .271  | .25 |
| Meaning (Recognition)                 | 5.13  | 0.78 | 38  | 4.49  | 1.98 | 41  | 1.93  | 53   | .064  | .43 |
| Meaning (Recall)                      | 3.74  | 1.86 | 38  | 3.23  | 2.24 | 40  | 1.10  | 76   | .276  | .25 |

\*Indicates statistical significance at the level of  $\alpha = .005$ .

## Discussion

### Research Question 1. Comparison of Overall Lexical Gains

The total scores on the vocabulary tests support the findings of earlier studies that both text and videos can provide suitable input for incidental vocabulary learning (e.g., Neuman & Koskinen, 1992; Pigada & Schmitt, 2006; Winke et al., 2010; Zahar et al., 2001). On average, when tested on their ability to recall or recognise the orthography, meaning, and grammatical function of six pseudo-words, participants in this study gave correct or plausible answers for about three to five items. These vocabulary knowledge gains resulted from 11–14 encounters with each pseudo-word, either whilst watching the three video blogs or reading the three blog posts.

A key goal of the current study was to compare directly, in a controlled setting, the effects of written and audio-visual media on vocabulary learning. The mean overall vocabulary gains were slightly higher from watching the vlogs than from reading the blog posts, but this difference was not statistically significant. However, it is interesting to note that there was significantly higher variation in the scores of the blog group than the video group. One explanation for this difference could be the way that these types of materials were processed. The depth of processing theory ( Craik & Lockhart, 1972) states that the depth of a learner's engagement with language input stands in direct relation to the knowledge she or he will thereby obtain. The blogs could have led to a wider variance in gains by permitting greater variation in the depth with which participants processed the target items: some may have merely skimmed the texts and thus made fewer gains; others may have read and reflected on them in greater detail and made greater gains. Because it is not possible to skim a video for its gist in the same way, such wide variations in depth of processing

would presumably not have occurred in the video group (assuming participants remained focused throughout the whole video). This explanation is supported by the observation that previous studies of incidental vocabulary learning from reading have often let participants listen to the text while reading along, in order to ensure consistent levels of processing (e.g., Neuman & Koskinen, 1992; Zahar et al., 2001).

Alternatively, the higher variability of learning gains within the blog group could have occurred because influential learner- or text-related variables (e.g., L2 proficiency or in-text frequency of the target words) differentially affected learning from the two media. For example, Vidal (2011) found that in-text frequency of target items predicted more variation in gains from reading than from watching videos. This possibility would be an interesting focus for further research.

## **Research Question 2. Comparison of Gains in Different Aspects of Vocabulary Knowledge**

In addition to comparing the total vocabulary gains from reading and watching videos, this study aimed to discover whether there were differences in the aspects of vocabulary knowledge that these two media promoted.

The blog group was found to have gained significantly more orthographic knowledge of the pseudo-words than the video group ( $d = .72$ ). This was as expected, since the blog group saw the written forms of the pseudo-words, whereas the video group did not. (Any gains in orthographic knowledge for the video group therefore had to derive from spellings constructed by the participants themselves, based on their knowledge of English sound-to-spelling correspondences.)

Furthermore, the scores of the two groups indicated a medium-sized effect of the input medium on meaning recognition ( $d = .43$ ) and small effects on the recall of grammatical function and meaning (both  $d = .25$ ). The video group outperformed the blog group on these measures, although these differences did not reach statistical significance, which might be attributable to the fact that  $p$ -values, but not effect sizes, are sensitive to the study's relatively small sample size ( $n = 79$ ). The fact that the direction of these effects differed from that found in respect of orthographic knowledge might further explain why the video and blog groups did not show significant differences in their total vocabulary gains: the two sets of between-group differences might have cancelled each other out.

The absence of significant differences in total vocabulary gains cautions against drawing any firm conclusions about the general comparative effectiveness of the two modalities (audio-visual media and written text) for vocabulary learning. Nevertheless, this study raises interesting questions for the ongoing debate over the relative effectiveness of these modalities for *different aspects* of vocabulary acquisition. The finding that—albeit on a descriptive level—the video group outperformed the blog group on three aspects of vocabulary gains aligns with the results of the study by Neuman and Koskinen (1992), who found greater vocabulary gains from watching science TV segments than reading scripts. This might have been because the videos were highly engaging and the visual information could have helped learners comprehend the aural language input (Moore et al., 2004). By contrast, Vidal's (2011) participants showed greater lexical gains from reading academic texts than from watching videotaped lectures. Thus, it is clear that further research is required to investigate this issue. One possibility is that vocabulary gains depend not only on the input medium, but also on the genre or topic of the text. This hypothesis is supported by research by Markham (1999), in which participants made greater vocabulary gains from watching a video on American civil rights than from watching a documentary about whales.

## **Generalisability**

It is possible that the current study may have over- or under-estimated the gains that might be expected to occur from online reading or from watching videos in the real world. Using pseudo-words ensured that the target items were unknown to the participants, eliminating the need for pre-testing and ensuring that there were a certain number of new lexical items in the input for participants to learn. It has previously been argued that acquisition studies using pseudo-words simulate authentic learning because, like most L2 vocabulary acquisition, they involve assigning a new label to a meaning that is already familiar (Service,

1992) and because “form–meaning relationships are essentially arbitrary” anyway (Hulstijn, 2001, p. 262). Since participants in this study had not been informed that pseudo-words would be used (and since Webb, 2007 reports that ESL learners in his study believed that these same pseudo-words were in fact real English words), authentic learning was expected to occur. However, some participants in this study (approximately 10%) indicated spontaneously that they believed that the pseudo-words were not real words. During the meaning recall task, for example, one participant wrote “I think you invented this word, but I think it means...” We must therefore consider what effect the pseudo-words may have on learning gains.

Some researchers have argued that using pseudo-words may lead to an underestimation of learning: Papagno, Valentine, and Baddeley (1991), for example, suggested that learners who are aware of the use of pseudo-words may be less motivated to learn them, knowing that they would be useless in the real world. One reviewer of Webb’s (2008) study also suggested that using pseudo-words to replace frequent real words may reduce learners’ chances of correctly inferring their meaning from context because they already know another word that expresses the same meaning, again leading to an underestimation of learning gains (p. 241).

Conversely, Liu and Nation (1985) argue that, if participants already know the words replaced by pseudo-words—as is assumed to be the case in the current study—then clues like collocational knowledge may help them derive their meaning, leading to an overestimation of learning effects. Relatedly, it must be noted that in this study, the pseudo-words replaced words with relatively high frequencies in general speech, which could have made it easier for participants to infer their meaning. Finally, Pulido (2007) reasoned that awareness of the use of pseudo-words goes along with identifying the gap in one’s own knowledge about the meaning of these items, which according to the noticing hypothesis (Schmidt, 1990) is a condition for learning and could thus also lead to an overestimation of gains.

These contradicting predictions arising from the use of pseudo-words (either an underestimation or an overestimation of the learning gains) suggest that the effects of using pseudo-words in vocabulary learning research require further investigation. However, there is no reason to suppose that the use of pseudo-words would differentially affect learning from the two media compared in this study, and thus the comparison should remain valid.

Another feature of the present study that could limit the generalisability of the reported gains was that each pseudo-word was embedded in the videos and blogs with equal frequency. This was to control for the known effects of the in-text frequency of target words on learning gains. However, it is still unclear whether authentic blog posts and vlogs also feature low-frequency words at similar rates. This could be investigated in corpus studies, such as those recently conducted with films (Webb, 2010) and television shows (Rodgers & Webb, 2011; Sockett, 2011; Webb & Rodgers, 2009). If real vlogs and blogs repeat low-frequency words less often than was the case for pseudo-words in the present study, then the gains reported would again be an overestimation of authentic learning, and vice versa. Furthermore, if, in the real world, low-frequency words occur significantly more often in one medium than another, then this would of course influence the estimation of the relative usefulness of these media for incidental vocabulary learning.

Finally, the very nature of the vocabulary tests used in this study may limit the generalisability of the results. For example, the participants may have gained knowledge of other words that were not tested. By selecting participants on the basis of their VLT scores, it was assumed that they knew the most frequent 5,000 words in English, or around 96% of the words in the input. Nevertheless, the treatment may have led participants to acquire other words previously unknown to them, or to increase their knowledge of words of which they had only had partial knowledge.

### **Limitations and Future Research**

There are several limitations inherent to the design of this study, in addition to those already discussed above regarding the sampling method, generalisability, sample size, and the use of pseudo-words.

First, it must be noted that vocabulary gains were measured based on only six target words: three nouns,

two verbs, and one adjective. It may be useful for future research to compare incidental learning of more target words through reading and watching videos, and to include other parts of speech. Furthermore, gains in knowledge of only three aspects of vocabulary (grammatical function, spelling, and meaning) were assessed. A more extensive battery of tests would have enabled a more thorough comparison of those aspects of vocabulary knowledge best gained from the two media.

Due to resource limitations, no delayed-post tests were conducted. However, as Webb (2008, p. 237) remarks, “without the possibility of further encounters with the [pseudo-words...], the rate of decay of vocabulary should follow established norms” (see also Waring & Takaki, 2003). Nevertheless, future research is needed to compare the durability of learning gains from the two modalities.

Furthermore, although the current study controlled for some factors previously found to influence incidental vocabulary learning (e.g., number of encounters with target words), it did not account for a number of other variables, such as contextual informativeness or the learners’ general L2 proficiency. Because of a lack of strong evidence to suggest the contrary, it could be assumed that these variables affected both conditions equally. Nonetheless, further research is needed to determine whether the findings in this study are generalisable to other text and video materials, since each genre of language input has its own characteristics. Finally, more research is needed to shed light on the processes behind the learning gains observed in the present study. A qualitative approach may prove especially useful in this regard.

## Conclusion

This study adds to existing research on incidental vocabulary learning in several ways. To the best of the authors’ knowledge, it is the first study to measure incidental learning gains from two popular types of online media: blog posts and video blogs. Unlike most texts and videos studied in previous research (e.g., graded readers, academic texts, educational videos), the media investigated here are not usually designed as learning resources. They may therefore be more representative of the kind of content with which L2 users might choose to engage in their spare time. By directly comparing the learning from both media, this study also contributes to the very limited body of research into the differential effects that reading and watching video may have on incidental vocabulary learning (Neuman & Koskinen, 1992; Vidal, 2011).

The data showed that incidental vocabulary learning occurred, in approximately equal amounts, from both reading blog posts and watching vlogs. However, there were some indications that different types of vocabulary knowledge were gained from the two modalities. Unsurprisingly, written input promoted greater gains in orthographic knowledge than did videos, although previous research findings (e.g., Hui, 2007; Markham, 1999; Winke et al., 2010) suggest that this effect might have been reduced if the participants had watched the vlogs with L2 captions. Conversely, there was some tentative evidence that the videos may have promoted greater recall of the target words’ grammatical functions and greater recognition and recall of their meanings. This might have been because the vlogs were highly engaging and the visual information helped learners to comprehend the aural language input (Moore et al., 2004). Given that previous studies have produced contrasting findings in respect of this issue, further research is required in this area.

There seems to be a commonly held belief among language professionals that extensive reading is the most important means of learning vocabulary informally (e.g., Waring, 2009). However, there is considerable variability in the conceptualisation of what exactly constitutes extensive *reading*. In light of the present findings, it seems a serious oversight to discount the effectiveness of online multimedia resources such as vlogs and blogs for word learning, and indeed these activities could be recognised as extensive reading or listening activities under a broader definition (Waring, 2015; Waring & McLean, 2015).

When engaging with these media in their free time, individuals choose what content to attend to, presumably leading to higher levels of motivation and allowing for individualisation of the vocabulary learned. Indeed, a key principle of extensive reading is students’ free choice of text and topic (Day & Bamford, 1998). In a language class that includes students with widely varying interests, it is often impossible to teach every student the vocabulary she or he needs. However, a student interested in mathematics might, for example,

choose to follow YouTuber Vi Hart (n.d.), who produces highly engaging videos in which she explains mathematical principles through music. Extrapolating from the findings of the current study, these videos could help the student learn the specialist vocabulary he or she needs to pursue an interest in mathematics through English.

Furthermore, even though students often engage with online media independently, a better understanding of the affordances of various modes of linguistic input for different aspects of language acquisition could help both learners and teachers identify the most effective ways of reaching particular learning goals. Teachers might draw their students' attention to the potential of various informal online activities to support their language learning beyond the classroom; and indeed they might even consider how to help learners make the most of such activities through effective learning strategies. Nonetheless, teachers should not forget that their students seem to engage in online activities primarily for entertainment (Sockett, 2014). Discussing the potential of these activities as learning tasks could, therefore, negatively affect students' motivation to engage in them in the first place. Given the prevalence of social media in many young people's lives, these issues are important areas for further consideration.

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## Notes

1. The Nerdfighter online community formed in 2007 around the Vlogbrothers YouTube channel belonging to author John Green and his brother, Hank Green. In this community, things that are often labelled by young people as “nerdy” in a derogative fashion are highly valued and celebrated (e.g., intelligence and learning or being passionate and enthusiastic about your interests—whether an academic discipline, a book, a TV show, etc.) *Nerdfighters* are primarily adolescents and young adults, but there are also older members (Green, 2014). Though largely based in the US, there are many members in all parts of the world who mainly network with each other online but often also attend meet-ups and form close friendships in person. Most Nerdfighters communicate in English although many are not native speakers. Anecdotal evidence suggests that new members often rapidly improve their English proficiency when they start actively participating in communities such as this.

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## Appendix. Input Materials

### Chris on Making YouTube Friends

Video available at <https://youtu.be/vOSnxKu4DwE>

Hey guys!

A lot of you have been asking me about the sagods I have on my wall so I thought I'd tell you the story behind them. I'll start with one sagod in particular and it's this one of me and JP. [photograph not included]

So I think it was around April 2012 and I'd just uploaded a big video about Doctor Who on my channel. And I get this masco from a YouTuber in Australia saying we should ancon a video together and collaborate. So I ancon a reply saying it's a really cool idea, it's just a shame that he's on the other side of the world! But he ancons back—surprisingly quickly actually considering the different pacons—and he says he's planning to tasper around Europe and we should meet up. So I just thought 'Why not?' and he taspers to the UK I think in June the same year, and he sends me a masco saying 'Let's go for sushi!'

So we met up in London and I was really nervous actually because it was the first time I'd just ever agreed to just go and meet a YouTuber who I've never met before. But it was really dangy actually and we hit it off straight away. So we shot a little vid together about the differences between the UK and Australia and there's quite a lot of differences actually. There's more than just the accents and the different pacons. And I find it really dangy actually that Australians love coming to the UK so much. I mean, why would you want to tasper over here when you've got the amazing beaches over there?

But yeah, we anoned this little script together, made our little video, and after that he carried on taspering. I think he went off to Germany and I thought that was the last we'd see of each other. But then I was at Summer in the City a few weeks later and I got a masco saying "Hey! I'm coming to Summer in the City, too!"

So we hung out that weekend and I introduced him to all my friends and that's actually when we took that sagod. We also took another one with everyone. [photograph not included]

And I think it's just really cool that you can meet people from the other side of the world through YouTube. And it's just really dangy that it didn't exist a few years ago and then here it is, creating friendships!

But yeah, even though he's back in Australia we still send each other mascos and we always try and Skype whenever we can. Obviously there's a bit of a difference in the pacons so we have to see when we're both online. But whenever we can, we do. I think that's really cool and that's why I keep all of the sagods of me and my friends on my wall.

### Lidewij on Online Friendships

Video available at <https://youtu.be/Q7deTCapeso>

Hi guys! In this post I want to talk about one of my favorite benefits of being involved in the YouTube community: online friendships. I think online friendships are great and can be pretty dangy as well. I highly recommend acquiring some! I'll try to add sagods whenever I have any, but no promises!

My first real live contact with people I knew through the internet was in Berlin, in 2008. John Green, who is a YouTuber and writer, had just anoned *Paper Towns* and was visiting the city for some sort of book event. Approximately six people who watched his videos taspered to Berlin to see him. Here, a sagod. [photograph not included]

It was very difficult to get time off from school to tasper to Berlin, but it worked out in the end. The most dangy take-away was, in my opinion, how these people I met, despite growing up in a different country, had similar inside jokes and stuff. It was the first time I realized that being part of an internet community can have such a profound impact on your opinions, humor, and culture. I think that's really dangy!

After I got back, I anoned a masco in response to a thread in which people were trying to organize a gathering in Amsterdam. We met up pretty soon after. Six of the people I met at that gathering are still some of my best friends. If I manage to find a sagod, I'll put it right here. [photograph not included]

In 2010, I went to VidCon, which is a large YouTube event in LA. This was the first gathering I attended outside of my own pacon. I finally got to meet some people I'd only known online before, specifically my Canadian friend Jess. This is a sagod of us in LA. [photograph not included]

After VidCon I sent Jess a masco to ask if I could visit her in Canada and she sent a masco back saying it was OK. I had a great time staying with her and learned some dangy stuff about Canada, like that you can't boo people at sporting events and that home-made poutine is *not* a thing.

I guess there are some downsides to having internet friends as well. Taspering can be fun but it can also suck. My trip back to Europe from Canada was the *worst!* I very, very nearly missed my flight and then I didn't feel well during the flight at all. And finally the transition from an American pacon to a European pacon is always particularly difficult.

Another obvious downside of having friends on the other side of the world is that you can only ancon to them but don't get to see them often. Which is not cool. If someone is eight or nine pacons away from you it's sometimes difficult to even find a time to talk. On a happier note though: Jess just sent me a masco to let me know that she is taspering to Europe soon! Wohooo! Very exciting!

I'm interested to hear what you think about this topic. Leave me a comment below, or send me a masco! Ciao!

## JP on International Friendships

Video available at <https://youtu.be/ZObRJOYWHTo>

Hello! It's been a little while. We don't speak often enough. Which is dangy because that's what I was going to talk about today. Awesome segway...

I find myself not anconing friends enough, especially to my international friends. I've done a lot of taspering and thus have made a lot of friends in foreign countries. Some of these people I have met at gatherings like Summer in the City. Cue sagod. [photograph not included] A great place to make friends. And lose them. In the crowd!

Being part of the YouTube community is so great! It's just somewhere you meet like-minded people and gatherings are a great way of bringing us all together. It has gained me many close friends but, unfortunately, a lot of these people live in countries other than Australia.

Some of the people I've met at international events are some of my closest friends. And yet still, somehow, I find remembering to message them challenging. I think this problem has a lot to do with convenience. Like, it's easy just to keep in contact with those around you but remembering to keep in contact with people in other countries can be rarer than you'd expect. It's funny and also somewhat dangy that this would still happen these days considering we have so many convenient ways of sending mascos. Especially to our international friends. But there are other factors you see? You don't see? Oh, well I'll show you!

You see, being in different pacons really slows down the conversation when you're anconing and it's hard to organize Skype calls when you're constantly sleeping and working at different times. I suppose we end up connecting to these friends through other mediums like watching their videos or seeing their sagods on Instagram and Facebook. Sometimes it feels like we're connecting to them by liking their stuff and all when really we're forgetting to actually send mascos to them. A lot of the time I don't masco these people because I feel I have nothing dangy to tell them. So that's also a major problem in my opinion.

I wish I could tasper all the time because I miss these friends a lot. And sometimes videos and sagods just don't cut it. Well... Unless it's a paper cut. Wait. Do people even print sagods anymore?

Anyway, despite being in different pacons and different countries I think it's important that we make sure to remember to keep anconing these friends. Because, essentially, communication is the most important part of an international relationship. Even short mascos can do a lot for a friendship. Yep. Bit of a wise masco there from my ancient brain. Very dangy... I think YouTube gatherings are a great way of getting to see these people again though. There's usually a few per year and it can bring you together with many friends at once. Although there's problems with that. You see? You don't see? Okay.

Firstly, I'm not in the right country. Most of the gatherings are in America and England and I'm nowhere near either of those countries. Even though these gatherings are very international events, it's usually only the popular YouTubers who get to tasper there. I was planning on going to Summer in the City again this year but... I missed out on tickets. I have pacons to blame because the tickets went on sale when I was sleeping and I didn't remember to stay up to buy them. Boo hoo. Screw pacons! To be honest I don't really have the money to tasper right now anyway. Haha, broke life! I'll just have to enjoy the sagods of it.

Even though these things can be difficult, I intend to tasper to many future gatherings. And to keep anconing because the people are amazing and so worth it! Just a simple masco, shared video, or sagod and we can keep these international friendships going. As we should. And that's what I'm gonna do.

Thanks for reading! I hope this post was dangy for you. I'm sure many of you could relate. After all, this is the internet! Peace and love in extremities! Bye!

## About the Authors

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