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Incidental collocation learning from reading-only, reading-while-listening, and reading aloud: The roles of input mode, test modality, and prior vocabulary knowledge

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Abstract

The present study examined incidental collocation learning from reading-only, reading-while-listening, reading aloud, and factors that affect learning (i.e., test modality, prior vocabulary knowledge, and type of collocation). One hundred Vietnamese learners of English as a foreign language (EFL) with pre-intermediate level of English proficiency were assigned to an experimental group and a control group. During three weeks, the participants in the experimental group read three texts embedded with 20 target verb-noun and adjective-noun collocations in three different reading modes in a counterbalanced fashion: reading-only, reading-while-listening, and reading aloud. Learning gains were measured at form recall level in a pretest and a delayed posttest using both written and oral test items that were also counterbalanced. The findings revealed that reading mode had a significant effect on incidental collocation learning. Both reading-while-listening and reading aloud led to more learning gains than reading-

only. Test modality did not have a significant effect on the results. In addition, learners' prior vocabulary knowledge significantly predicted the learning gains.

Keywords: incidental learning; collocations; reading-only; reading-while-listening; reading aloud

1. Introduction

Collocations, or words that commonly go together (e.g., *only child, happy ending*) (see Evert, 2009), are crucial for second/foreign language (L2) proficiency (e.g., Boers et al., 2006; Crossley et al., 2014; Vu & Peters, 2022a). They are, however, difficult for L2 learners (Laufer & Waldman, 2011; Nesselhauf, 2003), which might be attributed to their lack of salience in the input due to their high-frequency component words (Boers, 2020) or the inadequate attention paid to them in L2 classrooms and textbooks (Meunier, 2012; Vu & Michel, 2021; Vu & Peters, 2021). For these reasons, a significant amount of L2 research has examined the learning and teaching of collocations in recent decades (e.g., Dang et al., 2022; Jung & Lee 2024; Jung & Zhang 2024; Pellicer-Sánchez, 2017; Peters et al., 2023; Sonbul & Schmitt, 2013; Szudarski & Carter, 2016; Vu & Peters, 2022b, 2023; Webb & Chang, 2022; Webb et al., 2013).

Research has shown that collocations can be learned incidentally from meaningful input (e.g., reading, listening, viewing) (e.g., Dang et al., 2022; Peters et al., 2023; Vu & Peters, 2022b, 2023; Vu et al., 2023; Webb & Chang, 2022). Different modes of reading have been examined, but they were either silent reading (e.g., reading-only or reading with textual input enhancement) or reading with audio support (reading-while-listening). There is limited empirical evidence about the effect of reading aloud (also "loud reading" or "oral reading") on incidental L2 collocation learning, or learning while engaging in other meaningful activities (e.g., reading, listening, viewing) (Schmidt, 1994). Reading aloud requires vocalization that forces L2 learners to establish connections between the spoken and written forms of a word and can thus enhance its acquisition (Gibson, 2008). However, it remains unknown whether vocalization in reading texts aloud is effective for L2 collocation learning, especially in comparison with other modes of reading, such as reading-only or reading-while-listening. In addition, in earlier studies on incidental collocation learning involving reading-while-listening, learners were asked to write down target collocations as a measure of learning gains (i.e., written test) (e.g., Dang et al., 2022; Peters et al., 2023; Vu & Peters, 2022b, 2023; Vu et al., 2023; Webb & Chang, 2022) and did not produce the target items orally (i.e., spoken test). Therefore, whether

reading-while-listening affects learners' productive knowledge of the spoken forms of the target items remains unanswered. Also, contradictory findings have been reported regarding the learner-related factors (e.g., learners' prior vocabulary knowledge) and item-related factors (e.g., type of collocation) that affect incidental collocation learning (e.g., Dang et al., 2022; Puimège & Peters, 2019, 2020; Vilkaité, 2017; Vu & Peters, 2022b, 2023; Vu et al., 2023). Given these research gaps, the present study was conducted to examine the effects of reading-only, reading-while-listening, and reading aloud on incidental collocation learning. It also looked into the roles of test modality, prior vocabulary knowledge, and type of collocation in incidental collocation learning.

2. Literature review

2.1. The effect of input mode on incidental collocation learning

A growing number of studies have examined the effects of different modes of input on learning collocations (e.g., Dang et al., 2022; Pellicer-Sánchez, 2017; Sonbul & Schmitt 2013; Szudarski & Carter, 2016; Vu & Peters, 2022b, 2023; Webb & Chang, 2022). The results, however, remain inconclusive.

As for reading-only, several studies have found that collocations can be incidentally learned from this mode of input (e.g., Pellicer-Sánchez, 2017; Vilkaitė, 2017; Vu & Peters, 2022a; Webb & Chang, 2022). For instance, in Pellicer-Sánchez's (2017) classroom-based study, learners were exposed to target collocations in one modified story and their learning was assessed at both recognition and recall levels of form, meaning, and collocation aspects in interviews one week after the reading treatment. The findings showed that the rate of learning collocations incidentally was similar to that of form and meaning aspects, which indicates that reading-only is effective for learning collocations incidentally. The results were corroborated by many other studies, such as Dang et al. (2022), Vilkaitė (2017), Vu and Peters (2022b), and Webb and Chang (2022). However, Szudarski (2012) and Szudarski and Carter (2016) did not find a significant effect of reading-only on incidental collocation learning.

Apart from reading-only, research has also investigated the effect of reading-while-listening on incidental collocation learning (Dang et al., 2022; Peters et al., 2023; Vu & Peters, 2022b, 2023; Vu et al., 2023; Webb & Chang, 2022; Webb et al., 2013). Earlier research revealed that reading-while-listening was effective for learning collocations incidentally (Webb et al., 2013), more so than reading-only (Vu & Peters, 2022b; Webb & Chang, 2022) and listening-only (Webb & Chang, 2022). The combination of auditory and written input in reading-while-

listening may play complementary roles in helping learners recognize and acquire the collocations (Vu & Peters, 2022b, 2023). The auditory input in reading-while-listening might play a particularly significant role (Webb & Chang, 2022) since L2 learners can notice collocations thanks to their phonological features (e.g., pauses, rhythm, intonation, stress; Bybee, 2002; Lin, 2012).

With respect to reading texts aloud, it differs from reading-only and reading-while-listening in terms of vocalization or vocal production, which has been suggested to play a significant role in learning L2 words or phrases (e.g., Ellis & Beaton, 1993; Icht & Mama, 2022; Seibert, 1927). Reading aloud enables L2 learners to make and practice connections between graphemes and phonemes and can thus help them enhance word recognition, pronunciation, and acquisition (Gibson, 2008; Stanovich, 1991). Earlier research in experimental psychology has suggested *the production effect*, that is, vocalization leads to better long-term memory and retention of words, sentences, or even complex materials at both recognition and recall levels compared with silent reading (e.g., Conway & Gathercole, 1987; Gathercole & Conway, 1988; MacLeod et al., 2010; Ozubko et al., 2012). According to Ozubko et al. (2012), vocal production can provide a boost to memory that helps with rote memorization and facilitates deeper processing. Besides, reading aloud can effectively prevent mind wandering (Varao Sousa et al., 2013), which is common during reading and has a negative association with comprehension (D'Mello & Mills, 2021). For these reasons, it is reasonable to hypothesize that reading texts aloud can facilitate incidental collocation learning, but empirical research is needed to confirm this.

2.2. The role of test modality in measuring L2 vocabulary learning

Earlier research suggests that test modality might play a role in measuring incidental vocabulary learning from different modes of viewing (i.e., viewing with/without captions) (e.g., Markham, 1999; Mohd Jelani & Boers, 2018; Sydorenko, 2010; Winke et al., 2010). For instance, Mohd Jelani and Boers (2018) conducted a study to investigate incidental vocabulary learning from watching a video with and without L2 captions as well as evaluating the role of test modality. To that end, the authors administered a form recognition and a meaning recall test in which half of the test prompts were presented in writing, while the other half were presented aurally. In both written and aural prompt tests, learners had to indicate if the test items appeared in the video (form recognition) and then translate them from English into Malaysian (meaning recall). Learners saw the test items written on a piece of paper in the written prompt test, while they had to listen to the test items and write them down in the aural prompt test. The results revealed

that learners watching the captioned video showed significantly better gains in meaning recall than those watching the uncaptioned video, but this resulted from learners' superior performance on the written test items. The findings indicate that seeing the written form of a word in a captioned video can give students an advantage on written test items, but not on aural test items. This is in line with the transfer-appropriate processing principle (Morris et al., 1977), which suggests that memory performance is facilitated when the cognitive processes engaged in a study exposure match those engaged during a test exposure. In other words, task-test similarity might give learners an advantage.

Similarly, reading-while-listening differs from reading-only and reading aloud in terms of audio support; hence, one might wonder if reading-while-listening can give students an advantage in an oral prompt test compared with the other reading modes without audio support. However, in earlier studies on incidental collocation acquisition from reading-while-listening (e.g., Dang et al., 2022; Vu & Peters, 2022b, 2023; Vu et al., 2023; Webb & Chang, 2022; Webb et al., 2013), learners' productive knowledge of the spoken forms of the target collocations was not examined. As a result, it is still unclear whether significant learning gains can be found in the reading-while-listening mode if learners' productive knowledge of the spoken forms of target items is tested. In other words, the effect of test modality in studies on incidental collocation learning involving reading-while-listening remains hitherto unexplored.

2.3. The roles of prior vocabulary knowledge and type of collocation in incidental collocation learning

Incidental collocation learning from different modes of input might be affected by learner-related variables (e.g., prior vocabulary knowledge) and item-related factors (e.g., type of collocation), which has been explored in a number of recent studies (e.g., Dang et al., 2022; Vilkaité, 2017; Vu & Peters, 2022b, 2023; Vu et al., 2023). Nonetheless, the findings to date have been inconsistent.

With respect to learner-related factors, Webb and Chang (2015) is one of the few longitudinal studies that showed the significant positive role of prior vocabulary knowledge in incidental vocabulary learning, suggesting that better prior vocabulary knowledge could lead to more incidental vocabulary learning. Research has also suggested that learners' prior vocabulary knowledge has a significant effect on their chance of picking up collocations incidentally from reading (Peters et al., 2023; Vilkaité, 2017; Vu & Peters, 2022b, 2023; Vu et al., 2023). For example, Vu and Peters (2022b, 2023) and Vu et al. (2023) found that learners with more prior vocabulary knowledge learned more collocations from different modes of reading. Learners

with better prior vocabulary knowledge already know a wider range of words and, as a result, will grasp more of the text content; thus, they can spend more time noticing and processing unfamiliar collocations and subsequently learn them more easily while reading, which is similar to incidental learning of vocabulary in general (see Webb et al., 2023). Some other studies, however, have reported that prior vocabulary knowledge did not significantly contribute to incidental collocation learning (Dang et al., 2022; Toomer & Elgort, 2019). Toomer and Elgort (2019) examined both learners' prior vocabulary knowledge and self-reported knowledge of target collocations, but only the self-reported measure turned out to predict learning gains. Likewise, Dang et al. (2022) found no significant relationship between prior vocabulary knowledge and incidental collocation learning. As suggested by the authors, this was probably due to little variance among their participants' amounts of prior vocabulary knowledge.

Regarding the item-related factors, type of collocation can be a significant predictor of incidental collocation learning. Puimège and Peters (2019, 2020) reported that learners picked up adjective-noun collocations more easily than verb-noun collocations when exposed to audiovisual materials. Other studies have found that while L2 learners could produce adjective-noun collocations with high accuracy (Siyanova & Schmitt, 2008), they tend to have difficulty producing a number of correct verb-noun collocations (Laufer & Waldman, 2011; Nesselhauf, 2003). Nevertheless, Nguyen and Webb (2017) revealed no significant difference in Vietnamese EFL learners' knowledge of verb-noun and adjective-noun collocations. In addition, studies by Vu and Peters (2022b, 2023) and Vu et al. (2023) revealed no significant differences between these two collocation types across various input modes.

2.4. The present study

There are several research gaps that the present study aimed to fill. First, even though earlier research has examined the effects of different modes of input on incidental collocation learning (e.g., Dang et al., 2022; Vu & Peters, 2022b, 2023; Vu et al., 2023; Webb & Chang 2022), no studies have investigated whether reading aloud can be beneficial for L2 collocation acquisition, especially in comparison with other reading modes without vocal production. If vocalization can enhance the memorization of L2 single words or phrases (e.g., Ellis & Beaton, 1993; Icht & Mama, 2022; Seibert, 1927), reading aloud may also be effective for incidental collocation learning. Second, the effect of test modality has not been explored in earlier studies on incidental collocation learning involving reading-while-listening, leaving unanswered the question of whether reading-while-listening can improve learners' productive knowledge of the spoken forms of target items compared with other reading modes with no auditory support. Third, existing studies on the

effects of prior vocabulary knowledge and type of collocation on incidental collocation learning have yielded mixed results (e.g., Dang et al., 2022; Puimège & Peters, 2019, 2020; Vilkaité, 2017; Vu & Peters, 2022b, 2023; Vu et al., 2023). For those reasons, the present study sought to address the following research questions:

RQ1: To what extent does reading mode affect incidental collocation learning?
RQ2: To what extent does test modality predict incidental collocation learning from different reading modes?
RQ3: To what extent does prior vocabulary knowledge predict incidental collocation learning from different reading modes?
RQ4: To what extent does type of collocation predict incidental collocation learning from different reading modes?

3. Methodology

3.1. Participants

Four intact classes of 140 Vietnamese learners of English as a foreign language (EFL) who were first-year undergraduates majoring in business participated in the study. However, many participants were absent from some of the sessions, so their data were excluded. As a result, only the data of 100 participants (21 males, 79 females) were analyzed. Their level of English proficiency was pre-intermediate, which was determined by an internal placement test upon admission. The four classes were randomly assigned to either a no-treatment control group (one class, $N = 27$) or an experimental group (three classes, $N = 73$). Learners' prior vocabulary knowledge was evaluated with the updated *Vocabulary Levels Test* (Webb et al., 2017). Statistical analysis showed that the control group and the experimental group were comparable in their prior vocabulary knowledge (see Table 1); $t(98) = .69$, $p = .88$. A one-way ANOVA revealed that there were no significant differences among the three classes in the experimental group in terms of prior vocabulary knowledge ($F(2,72) = 0.65$, $p = .53$).

Table 1 Descriptive statistics of the updated Vocabulary Levels Test

Group	1000[a]	2000	3000	4000	5000	Total[b]
	M(SD)	*M(SD)*	*M(SD)*	*M(SD)*	*M(SD)*	*M(SD)*
	[95% CI]	[95% CI]	[95% CI]	[95% CI]	[95% CI]	[95% CI]
EG	29.38 (0.89)	25.69 (3.16)	21.48 (4.12)	15.11 (5.58)	12.36 (6.19)	104.01 (16.18)
	[29.18, 29.59]	[24.95, 26.42]	[20.52, 22.44]	[13.81, 16.41]	[10.91, 13.80]	[100.24, 107.79]
CG	29.41 (0.97)	25.96 (2.98)	21.74 (4.55)	15.67 (4.63)	11.78 (6.37)	104.56 (14.93)
	[29.02, 29.79]	[24.78, 27.14]	[19.94, 23.54]	[13.83, 17.50]	[9.26, 14.30]	[98.65, 110.46]

Note. [a] Max = 30. [b] Max = 150 ($N = 100$). EG = Experimental group ($N = 73$). CG = Control group ($N = 27$)

3.2. Reading materials

Since the present study involved three reading modes including reading aloud, efforts were made to select materials that were not only of appropriate lengths for the participants but also embedded with potential target collocations. Therefore, we used transcripts from TED talks (https://www.ted.com) because they not only serve as a popular platform to disseminate scientific knowledge to non-expert audiences (e.g., Scotto di Carlo, 2014) but also have become a potential source of material for L2 vocabulary learning (e.g., Coxhead & Walls, 2012; Mohd Jelani & Boers, 2018). We decided to use three talks titled "A powerful way to unleash your natural creativity" (coded as Material #1 in Tables 2 and 3, Harford, 2018), "The global food waste scandal" (coded as Material #2 in Tables 2 and 3, Stuart, 2012), and "What frogs in hot water can teach us about thinking again" (coded as Material #3 in Tables 2 and 3, Grant, 2021) (see Table 2 for the lengths and lexical profiles of the texts). Earlier research suggests that it requires knowledge of 8000-9000 word families plus proper nouns (e.g., people's names, countries) to reach 98% lexical coverage of TED talks (Coxhead & Walls, 2012). However, such a level of vocabulary knowledge might be too demanding for pre-intermediate students in the present study. Therefore, the texts from TED talks were modified to contain simpler language suitable for the participants' vocabulary knowledge. First, the lexical profiles of the original texts were checked with Lextutor (Cobb, n.d.). Then, one of the researchers attempted to replace words beyond 3000 most frequent word families with simpler synonymous vocabulary as well as cut down the number of words. The modified texts were checked by a male British native speaker and an experienced Vietnamese EFL teacher in terms of grammaticality, appropriacy, and naturalness.

Table 2 The lexical profiles of the modified input materials used in the present study

Material	Author (Year)	Tokens	Lexical profile [a]
A powerful way to unleash your natural creativity (Material #1)	Tim Harford (2019)	423	K1: 84.4% K2: 91.5% K3: 96.5%
The global food waste scandal (Material #2)	Tristram Stuart (2012)	411	K1: 88.6% K2: 94.9% K3: 98.1%
What frogs in hot water can teach us about thinking again (Material #3)	Adam Grant (2021)	467	K1: 88.2% K2: 96.3% K3: 99.1%

Note. [a] Lexical profile was computed with Lextutor (Cobb, n.d.). K1 = 1000 most frequent word families; K2 = 2000 most frequent word families; K3 = 3000 most frequent word families

For the reading-while-listening mode, the modified texts were recorded by a male British native speaker whose oral reading rates were about 150 words per

minute in order not to affect learners' comprehension (Griffiths, 1990). For the reading-only and reading aloud modes, the participants' reading times were strictly monitored on an individual basis by one of the researchers to ensure they would be close to those in the reading-while-listening mode for the purpose of comparability of three reading modes. Students in all modes read at their own pace and stopped only when they finished reading. The modified texts were piloted with a group of 28 Vietnamese EFL students with similar English proficiency to verify their suitability. Pilot participants judged the texts to be interesting and easy to understand.

3.3. Target collocations

After suitable materials had been selected, target collocations were extracted. Their mutual information (MI) scores were at least 3 (Hunston, 2002), as determined by The Corpus of Contemporary American English (Davies, 2008). To select target collocations used for the study, we administered a pilot form recall test on all collocations extracted from the texts to 28 pilot Vietnamese EFL learners. The final list of target collocations included 20 collocations (10 verb-noun collocations and 10 adjective-noun collocations) that were unknown to all pilot participants (see Table 3). All collocations occurred once in the texts.

Table 3 Target collocations used in the present study

Collocation	Material	Type	MI score
Unleash creativity	1	Verb-noun	12.49
Perform tasks	1	Verb-noun	11.25
Blur boundaries	1	Verb-noun	9.82
Make an addition	2	Verb-noun	5.16
Uncover a scandal	2	Verb-noun	9.00
Give a talk	3	Verb-noun	6.61
Shift focus	3	Verb-noun	9.81
Gain perspective	3	Verb-noun	10.90
Scale a mountain	3	Verb-noun	5.24
Overcome limitations	3	Verb-noun	10.28
Empirical evidence	1	Adjective-noun	11.65
Physical objects	1	Adjective-noun	7.85
Nutritional requirements	2	Adjective-noun	10.48
Stale bread	2	Adjective-noun	12.65
Terrestrial animal	2	Adjective-noun	6.96
Thoughtful feedback	3	Adjective-noun	7.37
Annual checkup	3	Adjective-noun	11.38
Invaluable advice	3	Adjective-noun	9.19
Lukewarm water	3	Adjective-noun	10.71
Rough draft	3	Adjective-noun	10.47

3.4. Tests on target collocations and reading comprehension

Incidental collocation learning was assessed in a form recall pretest and delayed posttest that required participants to translate the target collocations from Vietnamese into English. Form recall was chosen since collocations are often comprised of high-frequency and semantically transparent component words, and learners often have difficulties with the production of collocations (Laufer & Girsai, 2008; Peters et al., 2023; Vu & Peters, 2022b). To evaluate the effect of test modality, half of the target collocations were tested in writing (written test) and taken by half of each class, while the other half of the target collocations were tested orally (spoken test) and taken by the rest of each class. The order of the spoken and written tests was also counterbalanced to ensure that all items appeared in both spoken and written tests. As for the written test items, the participants could see the written forms of the target collocations in Vietnamese and they had to write English collocations. For the spoken test items, the participants had to say out loud the English collocations. In both test modalities, the first letter of each collocation was provided in writing as hints. The pretest and delayed posttest contained identical items and only differed in terms of the order of the items. Apart from 20 target collocations, the tests also included 20 distractors. An example from the form recall test follows:

> Translate the following adjective-noun collocation from Vietnamese into English:
> Mưa to: h_____ r_____
> [Answer: heavy rain]

To check students' comprehension of the texts, we administered a reading comprehension test after each reading session. Each comprehension test contained eight true/false/not given questions. The reliability of each comprehension test was acceptable (α = .76 for the comprehension test for Material #1; α = .83 for Material #2; α = .71 for Material #3). The reading comprehension tests showed that participants had adequate comprehension of the modified texts (see Table 4). Also, there were no significant differences among the three reading modes in terms of reading comprehension, as revealed by a one-way ANOVA ($F(2, 218) = 1.17$, $p = .31$).

Table 4 Reading comprehension scores of all reading modes in the experimental group (N = 73)

Mode	*M**	*SD*	95% CI	
			Lower	Upper
RO	6.55	0.76	6.37	6.72
RA	6.48	0.72	6.31	6.65
RWL	6.68	0.87	6.48	6.88

Note. * Max = 10; RO = reading-only; RWL = reading-while-listening; RA = reading aloud

3.5. Procedure

The whole experiment lasted 5 weeks (see Table 5). In week 1, all participants had to complete informed consent forms to allow their data to be collected and analyzed for research purposes. Then, all participants, both the control and treatment groups, took the updated *Vocabulary Levels Test* (Webb et al., 2017) as well as the written and spoken form recall pretest on target collocations. In each week from week 2 to 4, the three classes in the experimental group took weekly English lessons as well as read one of the selected materials in one of the three reading modes (reading-only, reading-while-listening, reading aloud) in the following counterbalanced order: reading-only, reading aloud, reading-while-listening (Experimental group 1, EG1); reading-while-listening, reading-only, reading aloud (EG2); reading aloud, reading-while-listening, reading-only (EG3) (both the input modes and reading materials were counterbalanced). In the reading-only mode, learners read a text in silence. In the reading-while-listening mode, learners read a text while listening to its audio version. In reading aloud, learners read a text out loud. To ensure time on task was similar across reading modes, participants performed reading in individual sessions in each reading mode so that their reading times could be monitored. Participants were instructed to focus on the content of the material and were not aware of a delayed posttest on collocations so that incidental learning could be evaluated. They were not allowed to use mobile phones or dictionaries during the experimental sessions. The control group took the same weekly English lessons as the experimental group, but they did not read any of the materials. In week 5, both the experimental group and the control group took the spoken and written form recall delayed posttest.

Table 5 Data collection procedure

Week	Procedure			
1	Updated Vocabulary Levels Test			
	Informed consent forms			
	Spoken and written pretest on collocations			
2	EG1:	EG2:	EG3:	CG: no reading
	RO material 1	RWL material 2	RA material 3	
3	EG1:	EG2:	EG3:	
	RA material 2	RO material 3	RWL material 1	
4	EG1:	EG2:	EG3:	
	RWL material 3	RA material 1	RO material 2	
5	Spoken and written delayed posttest on collocations			

Note. EG = experimental group; CG = control group; RO = reading-only; RWL = reading-while-listening; RA = reading aloud

3.6. Scoring and analyses

Each correct answer in the pretest and delayed posttest was coded as 1, while each incorrect one as 0. For the items to be marked as correct, the participants had to provide the correct spelling of the target collocations in the written test and the correct pronunciation of the target collocations in the spoken test. Two raters, one of the researchers and another experienced Vietnamese EFL teacher, independently marked all the answers in both the pretest and delayed posttest. The interrater agreement was high (κ = .91, z = 40.8, p < .001 for the pretest; κ = .97, z = 43.5, p < .001 for the delayed posttest). After independent marking, if there were disagreements in the marks, both raters discussed them with each other and reached a final decision.

There were a total of 2000 observations (100 participants x 20 target items) for both the experimental group (N = 1,460 observations) and the control group (N = 540 observations). To examine the effect of reading mode on incidental collocation learning, we only included items unknown in the pretest (N = 1,976 observations). As participants in the control group showed no significant gains from the pretest to the delayed posttest (t(539) = 1.42, p = 0.16, d = 0.03), their data were removed from subsequent analyses (see Kuhn & Johnson, 2013). After removing items that were already known in the pretest and excluding the control group's data, we analyzed 1446 observations from the experimental group.

Mixed-effects logistic regression analyses were implemented to address the research questions. As for the first research question, we built a model with random intercepts for items and participants as well as input mode as a predictor. For the second research question, we built a model with test modality, input mode, and a two-way interaction (test modality * input mode). To answer the third research question, we built a model with vocabulary score, input mode, and added a two-way interaction (vocabulary score * input mode). To reduce multicollinearity in the model, we centered learners' vocabulary scores around the grand mean. For the last research question, we built a model with type of collocation, input mode and a two-way interaction (type of collocation * input mode).

All analyses were performed in R (version 2022.02.3, R Core Team, 2022). Interrater reliability in the scoring was calculated using the irr package (version 0.84.1, Gamer et al., 2019). Mixed-effects logistic regression models were fitted with the glmer function (lme4 package, version 1.1.27; Bates et al., 2015). Residual diagnostics were carried out with DHARMA package (Hartig, 2022, version 0.4.5) to check model assumptions (i.e., uniformity, dispersion, and outliers). Marginal R^2 and conditional R^2 were derived with the MuMIn package (version 1.43.17, Bartoń, 2022), while post-hoc comparisons among input modes were computed using the emmeans package (version 1.5.0, Lenth, 2020).

4. Results

4.1. RQ1: To what extent does reading mode affect incidental collocation learning?

Descriptive statistics (see Table 6) showed that there were no learning gains in the control group. By contrast, each reading mode in the experimental group contributed to the learning of both spoken and written form recall of the target collocations, even though the average learning gains were not large. The reading-while-listening and reading aloud modes resulted in higher learning gains than the reading-only mode.

Table 6 Descriptive statistics for the form recall of collocations

Mode			Pretest* *M (SD)* [95% CI]			Delayed posttest* *M (SD)* [95% CI]
	Spoken test	Written test	Total average	Spoken test	Written test	Total average
Control	0.62 (0.65)	0.14 (0.54)	0.37 (0.63)	0.46 (0.66)	0.14 (0.54)	0.30 (0.61)
	[0.27, 0.97]	[-0.14, 0.42]	[0.25, 0.49]	[0.10, 0.82]	[-0.14, 0.42]	[0.18, 0.42]
RO	0.48 (0.44)	0.43 (0.35)	0.46 (0.40)	2.02 (0.85)	1.64 (0.88)	1.84 (0.86)
	[0.34, 0.62]	[0.29, 0.57]	[0.37, 0.55]	[1.75, 2.29]	[1.35, 1.93]	[1.64, 2.04]
RWL	0	0.15 (0.33)	0.08 (0.24)	2.46 (0.81)	3.06 (1.22)	2.78 (1.02)
		[0.04, 0.26]	[0.02, 0.14]	[2.19, 2.73]	[2.67, 3.45]	[2.55, 3.01]
RA	0.17 (0.23)	0	0.09 (0.17)	2.96 (0.83)	2.16 (0.89)	2.57 (0.87)
	[0.10, 0.24]		[0.05, 0.13]	[2.70, 3.24]	[1.87, 2.45]	[2.47, 2.67]

Note. *Max = 20. Control = Control group (*N* = 27). RO, RWL, RA = Experimental group (*N* = 73)

The mixed-effects logistic regression model (see Table 7), wherein the control group was removed, showed a significant effect of mode of reading on incidental collocation learning ($R^2_{marginal}$ = .02, $R^2_{conditional}$ = .28). Reading aloud resulted in significantly more incidental collocation learning than reading-only *(p* = .01). Reading-while-listening also led to more incidental collocation learning than reading-only (*p* = .002). Pairwise comparisons (see Table 8, *d* = 1.24) further revealed that there was no statistically significant difference between reading aloud and reading-while-listening (*p* = .87).

Table 7 Mixed-effects logistic regression model for the effect of reading mode on the form recall of target collocations

Fixed effects	*b*	*SE*	*z*	*p*	95% CI for *b*		*OR*
					Lower	Upper	
Intercept	-2.94	0.29	-10.23	<.001	-3.50	-2.38	0.05
Input mode (RA)	0.59	0.23	2.57	.01	0.14	1.04	1.80
Input mode (RWL)	0.69	0.22	3.09	.002	0.25	1.13	2.00
Random effects			Variance			*SD*	
Participants			0.44			0.66	
Target collocations			0.78			0.88	

Note. The reference category for input mode is reading-only

Table 8 Pairwise comparisons of reading aloud and reading-while-listening with Tukey correction $p < .05$

Contrast	*b*	*SE*	*z*	*p*
RA - RWL	-0.10	0.20	-0.51	.87

4.2. RQ2: To what extent does test modality predict incidental collocation learning from different reading modes?

The mixed effects logistic regression model (see Table 9, ($R^2_{marginal}$ = .02, $R^2_{conditional}$ = .28) showed that test modality did not have a significant main effect on incidental collocation learning (p = .67). Moreover, there were no significant interaction effects between test modality and reading mode (test modality x reading aloud: p = .74, test modality x reading-while-listening: p = .45), which indicates that the effect of reading mode on learning outcomes did not differ by test modality.

Table 9 Mixed-effects logistic regression model for the effect of test modality on the form recall of target collocations

Fixed effects	*b*	*SE*	*z*	*p*	95% CI for *b*		*OR*
					Lower	Upper	
Intercept	-2.86	0.34	-8.52	<.001	-3.52	-2.20	0.06
Test mode (Written)	-0.16	0.38	-0.43	.67	-0.90	0.58	0.85
Input mode (RA)	0.67	0.33	2.03	.04	0.02	1.31	1.95
Input mode (RWL)	0.50	0.34	1.48	.13	-0.16	1.16	1.65
Test mode (Written) x Input mode (RA)	-0.17	0.51	-0.34	.74	-1.19	0.83	
Test mode (Written) x Input mode (RWL)	0.39	0.51	0.77	.45	-0.61	1.38	
Random effects			Variance			*SD*	
Participants			0.42			0.65	
Target collocations			0.78			0.88	

Note. The reference category for test mode is spoken test and for input mode is reading-only

4.3. RQ3: To what extent does prior vocabulary knowledge predict incidental collocation learning from different reading modes?

The mixed effects logistic regression model (see Table 10, $R^2_{marginal}$ = .08, $R^2_{conditional}$ = .28) showed that prior vocabulary knowledge had a small but significant positive effect on incidental collocation learning (p = .003). However, there were no significant interactions between prior vocabulary knowledge and reading mode (vocabulary score x reading aloud: p = .91; vocabulary score x reading-while-listening: p =

.59), suggesting that the positive effects of reading aloud and reading-while-listening were consistent across different vocabulary levels.

Table 10 Mixed-effects logistic regression model for the effect of prior vocabulary knowledge on the form recall of target collocations

Fixed effects	*b*	*SE*	*z*	*p*	95% CI for *b*		*OR*
					Lower	Upper	
Intercept	-2.95	0.29	-10.24	<.001	-3.52	-2.39	0.05
Vocabulary score	0.03	0.01	2.95	.003	0.01	0.06	1.03
Input mode (RA)	0.61	0.25	2.47	.01	0.13	1.09	1.84
Input mode (RWL)	0.75	0.24	3.13	.002	0.28	1.22	2.12
Vocabulary score x Input mode (RA)	0.00	0.01	0.11	.91	-0.03	0.03	
Vocabulary score x Input mode (RWL)	-0.01	0.01	-0.54	.59	-0.04	0.02	
Random effects			Variance			*SD*	
Participants			0.12			0.34	
Target collocations			0.78			0.88	

Note. The reference category for input mode is reading-only

Table 11 Mixed-effects logistic regression model for the effect of type of collocation on the form recall of target collocations

Fixed effects	*b*	*SE*	*z*	*p*	95% CI for *b*		*OR*
					Lower	Upper	
Intercept	-2.47	0.33	-7.40	<.001	-3.13	-1.82	0.08
Type of collocation (V-N)	-0.89	0.49	-1.81	.07	-1.86	0.07	0.41
Input mode (RA)	0.79	0.28	2.82	.005	0.24	1.34	1.27
Input mode (RWL)	0.65	0.28	2.31	.02	0.10	1.20	1.10
Type of collocation (V-N) x Input mode (RA)	-0.64	0.49	-1.32	.19	-1.60	0.32	
Type of collocation (V-N) x Input mode (RWL)	0.09	0.46	0.22	.83	-0.80	1.00	
Random effects			Variance			*SD*	
Participants			0.44			0.67	
Target collocations			0.53			0.73	

Note. The reference category for type of collocation is adjective-noun collocations and for input mode is reading-only

4.4. RQ4: To what extent does type of collocation predict incidental collocation learning from different reading modes?

The mixed effects logistic regression model (see Table 11, R^2_{marginal} = .09, $R^2_{\text{conditional}}$ = .30) showed that type of collocation did not have a statistically significant main effect on incidental collocation learning (p = .07). There were no significant interactions

between type of collocation and reading mode (verb-noun collocations x reading aloud: p = .19; verb-noun collocations x reading-while-listening: p = .83), which suggests that the effects of each reading mode were consistent across different collocation types.

5. Discussion

The present study makes several contributions. Theoretically speaking, it presents one of the first attempts to investigate the effect of reading aloud on incidental collocation learning; therefore, it expands our understanding of this reading mode and can contribute to research into collocation learning from meaningful input (e.g., Dang et al., 2022; Vu & Peters, 2022b, 2023; Vu et al., 2023; Webb & Chang, 2022). The study also contributes to existing research on factors that may affect incidental collocation learning (i.e., prior vocabulary knowledge, type of collocation) (e.g., Dang et al. 2022; Puimège & Peters 2019, 2020; Vilkaité, 2017; Vu & Peters, 2022b, 2023; Vu et al., 2023). Methodologically, it is among the first studies involving reading-while-listening to examine the effect of test modality on incidental collocation learning, answering the question of whether reading-while-listening can give students an advantage in learning the spoken forms of the target collocations or not. Pedagogically, the study provides L2 learners and teachers with an insight into efficient input modes for incidental collocation learning.

5.1. RQ1: The effect of reading mode on incidental collocation learning

The findings revealed that reading mode had a significant effect on incidental collocation learning, which is in line with some earlier research (e.g., Vu & Peters, 2022a, 2023). While the control group had no learning gains, all three modes of reading improved their collocational knowledge, which indicates that all three reading modes are beneficial for incidental collocation learning and can thus be adopted in L2 classrooms. Even though the average learning gains were not large, they are still valuable for L2 learners' lexical development since larger amounts of exposure might have cumulative effects on vocabulary growth (e.g., Peters et al., 2023; Vu & Peters, 2022b, 2023; Vu et al., 2023; Webb, 2020; Webb & Chang, 2022). It should also be noted that we only tested learning in a form recall test, which is generally considered to be challenging (Laufer & Goldstein, 2004). There may have been more learning gains than what we tested in this study, such as, for example, learners' ability to recognize the form or meaning or to produce the meaning.

The superior effect of reading-while-listening on incidental collocation learning compared with reading-only is consistent with earlier studies (e.g., Vu & Peters, 2022b; Webb & Chang, 2022). It is plausible that this bimodal input might have helped enhance L2 learners' memory of the target collocations which were both seen and heard at the same time (Vu & Peters, 2022b, 2023; Vu et al., 2023). Another advantage of reading-while-listening might lie in the fact that the auditory input contains phonological cues that might facilitate learners' recognition and acquisition of collocations (Bybee, 2002; Lin, 2012).

The findings also showed a significant advantage of reading aloud over reading-only in terms of incidental collocation learning. In reading aloud, learners have to establish connections between the spoken form and the written form of the target collocations, which might enhance learners' recognition and acquisition of those items (e.g., Gibson, 2008; Stanovich, 1991). There might have been a production effect, that is, the vocalization in reading aloud might have played a role in helping learners process and memorize the target collocations, as found in studies on learning L2 words and phrases (e.g., Ellis & Beaton, 1993; Icht & Mama, 2022; Seibert 1927). Vocalization improves memory by forming a sensorimotor representation of a word in the learner's mind (Krishnan et al., 2017). In line with Icht and Mama (2022), it is hypothesized that vocalization in reading aloud helps the learner develop stronger form-meaning connections than reading-only since reading aloud involves three distinct encoding processes: visual (i.e., learners reading the written words), auditory (i.e., learners hearing the words they produce themselves), and motor (i.e., learners articulating the words). The more unique encoding processes there are, the better the memory (MacLeod et al., 2010). For these reasons, reading aloud can be an effective way of promoting L2 collocational knowledge. However, reading aloud did not result in higher learning gains than reading-while-listening in spite of learners' not vocalizing the collocations. What both of these reading modes have in common is that the input is bimodal, that is, a combination of written and auditory input. The findings suggest that bimodal input, be it reading-while-listening or reading aloud, is effective for incidental collocation learning.

5.2. RQ2, RQ3, and RQ4: The effects of test modality, prior vocabulary knowledge, and type of collocation on incidental collocation learning

Surprisingly, our findings showed that test modality did not have a significant effect on the learning gains. In other words, hearing the target collocations in the auditory input in the reading-while-listening mode did not give learners an advantage in a spoken prompt test compared with reading-only and reading aloud. This is different from Mohd Jelani and Boers' (2018) study which found a significant effect of test modality

on incidental vocabulary learning from watching a video with and without L2 captions. However, the present study differs from Mohd Jelani and Boers (2018) in that it did not include a listening-only mode. The three reading modes in the present study all included written input, which may explain why no differences were found.

In addition, the present study found a significant role of prior vocabulary knowledge in incidental collocation learning from different reading modes, which corroborates earlier research (e.g., Peters et al., 2023; Vilkaité, 2017; Vu & Peters, 2022b, 2023; Vu et al., 2023) but differs from Dang et al. (2022) and Toomer and Elgort (2019). Learners with larger vocabularies tended to acquire a greater number of collocations from the input than learners with more limited vocabularies. Having better prior vocabulary knowledge likely made it easier for learners to comprehend the meaning of the texts without struggling over individual words, freeing up mental resources to notice and internalize collocations in the input, which is often the case in incidental vocabulary learning (see Webb & Chang, 2015; Webb et al., 2023). Better prior vocabulary knowledge might also help learners recognize and connect the component words of the target collocations, making it easier to store these combinations as new lexical knowledge. Regarding type of collocation, we found no significant difference in the incidental learning of adjective-noun and verb-noun collocations, which is in agreement with Vu and Peters (2022b, 2023) and Vu et al. (2023) but differs from Puimège and Peters' (2019, 2020) studies on audiovisual input.

5.3. Pedagogical implications

The present study showed that reading mode had a significant effect on incidental collocation learning with reading-while-listening and reading aloud being more beneficial than reading-only. The study supports the adoption of reading-while-listening and reading aloud for fostering L2 collocation learning. L2 teachers can integrate reading-while-listening activities in class by having students read and listen to audiobook excerpts or teacher-recorded readings of target texts, followed by post-reading vocabulary-focused tasks, such as gap-filling or collocation matching exercises. In under-resourced contexts, teachers can provide recorded versions of class texts, or students can be encouraged to use free online resources with a combination of audio narration and visual text (e.g., YouTube) when available. For reading aloud, teachers may design paired or group reading tasks where learners take turns reading texts aloud to their peers. At home, learners can record themselves reading texts aloud or use some tools (e.g., text-to-speech) to practice the pronunciation while enhancing their exposure to collocations.

In addition, since the present study found that prior vocabulary knowledge significantly affected the chance of picking up collocations from reading, learners

with smaller vocabularies might benefit from more support, such as pre-teaching of key vocabulary (see Pellicer-Sánchez et al., 2021), use of glossaries, previewing activities, or graded readers that provide simplified input. These strategies can help make incidental collocation learning more effective for lower-proficiency learners with poor prior vocabulary knowledge.

5.4. Limitations

The present study has several limitations that should be noted. First of all, we only measured learners' ability to recall the form of the target collocations since producing collocations can be challenging for L2 learners (Laufer & Girsai, 2008). We did not examine other aspects of knowledge, such as form recognition or meaning recall, which future research could explore. Second, our pretest and delayed posttest included the first letter of each target collocation as a prompt. While this design choice reduced the chance of participants providing alternative collocates, it does not reflect how collocations are typically produced in real-life language use. Third, there was a delay between the reading sessions and the delayed posttest. Although such a delay is necessary to evaluate the long-term effects of different reading modes, it might have diminished the learning gains to some extent. Fourth, there are other factors that should be taken into consideration in future studies, such as phrasal frequency, the frequency of individual constituent words, and congruency (i.e., the availability of literal translation of the target items in the first language) since these factors might play a role in L2 collocation learning (e.g., Boers, 2020; Vu & Peters, 2022b, 2023; Vu et al., 2023; Webb & Chang, 2022). Fifth, to enable a fair comparison among three reading modes, we had a control over reading times across the three reading conditions. This might be different from authentic reading situations where reading-only can be slower and readers can go back and reread. Sixth, to avoid participants' additional exposure to the target collocations, we did not test learners' knowledge of the component words of the collocations. Given the vocabulary knowledge of the participants in the present study, they were likely familiar with many component words, which might have affected their ability to learn the target collocations to some extent. Future studies could investigate the effect of learners' knowledge of component words on their incidental collocation learning. Finally, it is worth noting that there was bias in the test format (i.e., the spoken test) used in the present study against the reading-only mode in which learners did not hear or produce the spoken forms of the target items.

6. Conclusion

The present study investigated the effect of input mode on incidental collocation learning as well as the roles of test modality, prior vocabulary knowledge, and type of collocation in predicting the learning gains. The findings revealed a significant effect of input mode on incidental collocation learning. Reading-while-listening and reading aloud were more effective for incidental collocation learning than reading-only. Future studies could further investigate how different input modes can be optimized to enhance incidental collocation learning in different contexts with various learner profiles. Future research might also explore whether the effects of different input modes are influenced by such factors as task design, duration, or technology use. Furthermore, learners with better prior vocabulary knowledge picked up more collocations than learners with less vocabulary knowledge. Future studies could continue investigating the interaction between input mode and individual characteristics (e.g., prior vocabulary knowledge or cognitive and affective traits) or explore strategies to support learners with poorer vocabulary knowledge in their incidental collocation learning from meaningful input.

References

Bartoń, K. (2022). *MuMIn: Multi-model inference* (version 1.46.0) [Computer software]. Retrieved from https://CRAN.R-project.org/package=MuMIn

Bates, D., Mächler, M., Bolker, B., & Walker, S. (2015). Fitting linear mixed-effects models using lme4. *Journal of Statistical Software, 67*(1), 1-48. https://doi.org/10.18637/jss.v067.i01

Boers, F. (2020). Factors affecting the learning of multiword items. In S. Webb (Ed.), *The Routledge handbook of vocabulary studies* (pp. 143-157). Routledge.

Boers, F., Eyckmans, J., Kappel, J., Stengers, H., & Demecheleer, M. (2006). Formulaic sequences and perceived oral proficiency: Putting a lexical approach to the test. *Language Teaching Research, 10*(3), 245-261. https://doi.org/10.1191/1362168806lr195

Bybee, J. (2002). Phonological evidence for exemplar storage of multiword sequences. *Studies in Second Language Acquisition, 24*(2), 215-221. https://doi.org/10.1017/S0272263102002061

Cobb, T. (n.d.). Web VP Classic v.4 [Computer Program]. https://www.lextutor.ca/vp/eng/

Conway, M. A., & Gathercole, S. E. (1987). Modality and long-term memory. *Journal of Memory and Language, 26*(3), 341-361. https://doi.org/10.1016/0749-596X(87)90118-5

Coxhead, A., & Walls, R. (2012). TED Talks, vocabulary, and listening for EAP. *TESOLANZ Journal, 20*(1), 55-67.

Crossley, S. A., Salsbury, T., & McNamara, D. S. (2014). Assessing lexical proficiency using analytic ratings: A case for collocation accuracy. *Applied Linguistics, 36*(5), 570-590. https://doi.org/10.1093/applin/amt056

Dang, T. N. Y., Lu, C., & Webb, S. (2022). Incidental learning of collocations in an academic lecture through different input modes. *Language Learning, 72*(3), 728-764. https://doi.org/10.1111/lang.12499

Davies, M. (2008). *The Corpus of Contemporary American English*. http://www.english-corpora.org/coca/

D'Mello, S. K., & Mills, C. S. (2021). Mind wandering during reading: An interdisciplinary and integrative review of psychological, computing, and intervention research and theory. *Language and Linguistics Compass, 15*(4), e12412. https://doi.org/10.1111/lnc3.12412

Ellis, N., & Beaton, A. (1993). Factors affecting the learning of foreign language vocabulary: Imagery keyword mediators and phonological short-term memory. *The Quarterly Journal of Experimental Psychology, 46*(3), 533-558. https://doi.org/10.1080/14640749308401062

Evert, S. (2009). Corpora and collocations. In A. Lüdeling & M. Kytö (Eds.), *Corpus linguistics: An international handbook* (Vol. 2, pp. 1212-1248). De Gruyter Mouton.

Gamer, M., J. Lemon and I. F. P. Singh (2019). *irr: Various coefficients of interrater reliability and agreement* (version 0.84.1) [Computer software]. https://CRAN.R-project.org/package=irr

Gathercole, S. E., & Conway, M. A. (1988). Exploring long-term modality effects: Vocalization leads to best retention. *Memory & Cognition, 16*(2), 110-119. https://doi.org/10.3758/BF03213478

Gibson, S. (2008). Reading aloud: A useful learning tool?. *ELT Journal, 62*(1), 29-36. https://doi.org/10.1093/elt/ccm075

Grant, A. (2021, April). *What frogs in hot water can teach us about thinking again* [Video]. TED Conferences. https://www.ted.com/talks/adam_grant_what_frogs_in_hot_water_can_teach_us_about_thinking_again

Griffiths, R. (1990). Speech rate and NNS comprehension: A preliminary study in time-benefit analysis. *Language Learning, 40*(3), 311-336. https://doi.org/10.1111/j.1467-1770.1990.tb00666.x

Harford, T. (2018, November). *A powerful way to unleash your natural creativity* [Video]. TED Conferences. https://www.ted.com/talks/tim_harford_a_powerful_way_to_unleash_your_natural_creativity

Hartig, F. (2022). DHARMa: *Residual diagnostics for hierarchical (multi-level/mixed) regression models* (version 0.4.5) [Computer software]. https://CRAN.R-project.org/package=DHARMa

Hunston, S. (2002). *Corpora in applied linguistics.* Cambridge University Press. https://doi.org/10.1017/CBO9781139524773

Icht, M., & Mama, Y. (2022). The effect of vocal production on vocabulary learning in a second language. *Language Teaching Research, 26*(1), 79-98. https://doi.org/10.1177/13621688198838

Jung, J., & Lee, M. (2024). Incidental collocational learning from reading-while-listening and the impact of synchronized textual enhancement. *International Review of Applied Linguistics in Language Teaching, 62*(4), 1935-1958. https://doi.org/10.1515/iral-2023-0029

Jung, J., & Zhang, W. (2024). The impact of text-audio synchronized enhancement on collocation learning from reading-while-listening: An extended replication of Jung and Lee (2023). *International Review of Applied Linguistics in Language Teaching*. Advance online publication. https://doi.org/10.1515/iral-2023-0232

Krishnan, S., Watkins, K. E., & Bishop, D. V. (2017). The effect of recall, reproduction, and restudy on word learning: A pre-registered study. *BMC Psychology, 5*(1), 1-14. https://doi.org/10.1186/s40359-017-0198-8

Kuhn, M. & Johnson, K. (2013). *Applied predictive modeling.* Springer. https://doi.org/10.1007/978-1-4614-6849-3

Laufer, B., & Girsai, N. (2008). Form-focused instruction in second language vocabulary learning: A case for contrastive analysis and translation. *Applied Linguistics, 29*(4), 694-716. https://doi.org/10.1093/applin/amn018

Laufer, B., & Goldstein, Z. (2004). Testing vocabulary knowledge: Size, strength, and computer adaptiveness. *Language Learning, 54*(3), 399-436. https://doi.org/10.1111/j.0023-8333.2004.00260.x

Laufer, B., & Waldman, T. (2011). Verb-noun collocations in second language writing: A corpus analysis of learners' English. *Language Learning, 61*(2), 647-672. https://doi.org/10.1111/j.1467-9922.2010.00621.x

Lenth, R. (2020). *emmeans: Estimated Marginal Means, aka Least-Squares Means* (version 1.5.0) [Computer software]. https://CRAN.R-project.org/package=emmeans

Lin, P. M. (2012). Sound evidence: The missing piece of the jigsaw in formulaic language research. *Applied Linguistics, 33*(3), 342-347. https://doi.org/10.1093/applin/ams017

MacLeod, C. M., Gopie, N., Hourihan, K. L., Neary, K. R., & Ozubko, J. D. (2010). The production effect: Delineation of a phenomenon. *Journal of Experimental Psychology: Learning, Memory, and Cognition, 36*(3), 671. https://doi.org/ 10.1037/a0018785

Markham, P. (1999). Captioned videotapes and second-language listening word recognition. *Foreign Language Annals, 32*(3), 321-328. https://doi.org/10.1111/j.1944-9720.1999.tb01344.x

Meunier, F. (2012). Formulaic language and language teaching. *Annual Review of Applied Linguistics, 32*, 111-129.

Mohd Jelani, N. A., & Boers, F. (2018). Examining incidental vocabulary acquisition from captioned video: Does test modality matter?. *ITL-International Journal of Applied Linguistics, 169*(1), 169-190. https://doi.org/10.1075/itl.00011.jel

Morris, C. D., Bransford, J. D., & Franks, J. J. (1977). Levels of processing versus transfer appropriate processing. *Journal of Verbal Learning and Verbal Behavior, 16*(5), 519-533. https://doi.org/10.1016/S0022-5371(77)80016-9

Nesselhauf, N. (2003). The use of collocations by advanced learners of English and some implications for teaching. *Applied Linguistics*, *24*, 223-242. https://doi.org/10.1093/applin/24.2.223

Nguyen, T. M. H., & Webb, S. (2017). Examining second language receptive knowledge of collocation and factors that affect learning. *Language Teaching Research, 21,* 298-320. https://doi.org/10.1177/1362168816639619

Ozubko, J. D., Hourihan, K. L., & MacLeod, C. M. (2012). Production benefits learning: The production effect endures and improves memory for text. *Memory, 20*(7), 717-727. https://doi.org/10.1080/09658211.2012.699070

Pellicer-Sánchez, A. (2017). Learning L2 collocations incidentally from reading. *Language Teaching Research, 21*(3), 381-402. https://doi.org/10.1177/1362168815618418

Pellicer-Sánchez, A., Conklin, K., & Vilkaitė-Lozdienė, L. (2021). The effect of pre-reading instruction on vocabulary learning: An investigation of L1 and L2 readers' eye movements. *Language Learning*, *71*(1), 162-203. https://doi.org/10.1111/lang.12430

Peters, E., Puimège, E., & Szudarski, P. (2023). Repetition and incidental learning of multiword units: A conceptual multisite replication study of Webb, Newton, and Chang (2013). *Language Learning*, *73*(4), 1211-1251. https://doi.org/10.1111/lang.12621

Puimège, E., & Peters, E. (2019). Learning L2 vocabulary from audiovisual input: An exploratory study into incidental learning of single words and formulaic sequences. *The Language Learning Journal, 47*(4), 424-438. https://doi.org/10.1080/09571736.2019.1638630

Puimège, E., & Peters, E. (2020). Learning formulaic sequences through viewing L2 television and factors that affect learning. *Studies in Second Language Acquisition, 42*(3), 525-549. https://doi.org/10.1017/S027226311900055X

R Core Team. (2022). *R: A language and environment for statistical computing* (version 2022.02.3) [Computer software]. R Foundation for Statistical Computing. https://www.R-project.org/

Schmidt, R. (1994). Deconstructing consciousness in search of useful definitions for applied linguistics. *AILA Review, 11*, 11-26.

Scotto di Carlo, G. (2014). The role of proximity in online popularizations: The case of TED talks. *Discourse Studies, 16*, 591-606. https://doi.org/10.1177/1461445614538565

Seibert, L. C. (1927). An experiment in learning French vocabulary. *Journal of Educational Psychology*, *18*(5), 294-309. https://doi.org/10.1037/h0074206

Siyanova, A., & Schmitt, N. (2008). L2 learner production and processing of collocation: A multi-study perspective. *Canadian Modern Language Review, 64*(3), 429-458. https://doi.org/10.3138/cmlr.64.3.429

Sonbul, S., & Schmitt, N. (2013). Explicit and implicit lexical knowledge: Acquisition of collocations under different input conditions. *Language Learning, 63*(1), 121-159. https://doi.org/10.1111/j.1467-9922.2012.00730.x

Stanovich, K. (1991). Changing models of reading and reading acquisition. In L. Rieberi & C. Perfetti (Eds.), *Learning to read: Basic research and its implications* (pp.19-32). Lawrence Erlbaum Associates.

Stuart, T. (2012, May). *The global food waste scandal* [Video]. TED Conferences. https://www.ted.com/talks/tristram_stuart_the_global_food_waste_scandal

Sydorenko, T. (2010). Modality of input and vocabulary acquisition. *Language Learning & Technology*, *14*, 50-73.

Szudarski, P. (2012). Effects of meaning-and form-focused instruction on the acquisition of verb-noun collocations in L2 English. *Journal of Second Language Teaching & Research, 1*(2), 3-37.

Szudarski, P., & Carter, R. (2016). The role of input flood and input enhancement in EFL learners' acquisition of collocations. *International Journal of Applied Linguistics, 26*(2), 245-265. https://doi.org/10.1111/ijal.12092

Toomer, M., & Elgort, I. (2019). The development of implicit and explicit knowledge of collocations: A conceptual replication and extension of Sonbul and Schmitt (2013). *Language Learning, 69*(2), 405-439. https://doi.org/10.1111/lang.12335

Varao Sousa, T. L., Carriere, J. S., & Smilek, D. (2013). The way we encounter reading material influences how frequently we mind wander. *Frontiers in Psychology, 4,* 892. https://doi.org/10.3389/fpsyg.2013.00892

Vilkaitė, L. (2017). Incidental acquisition of collocations in L2: Effects of adjacency and prior vocabulary knowledge. *ITL – International Journal of Applied Linguistics, 168*(2), 248-277. https://doi.org/10.1075/itl.17005.vil

Vu, D. V., & Michel, M. (2021). An exploratory study on the aspects of vocabulary knowledge addressed in EAP textbooks. *Dutch Journal of Applied Linguistics, 10*, 1-15. https://doi.org/10.51751/dujal9345

Vu, D. V., Noreillie, A. S., & Peters, E. (2023). Incidental collocation learning from reading-while-listening and captioned TV viewing and predictors of learning gains. *Language Teaching Research*. https://doi.org/10.1177/13621688221151048

Vu, D. V., & Peters, E. (2021). Vocabulary in English language learning, teaching, and testing in Vietnam: A review. *Education Sciences, 11*(9), 563. https://doi.org/10.3390/educsci11090563

Vu, D. V., & Peters, E. (2022a). The role of formulaic sequences in L2 speaking. In T. M. Derwing, M. J. Munro, & R. Thomson (Eds.), *The Routledge handbook of second language acquisition and speaking* (pp. 285-298). Routledge. https://doi.org/10.4324/9781003022497-25

Vu, D. V., & Peters, E. (2022b). Incidental learning of collocations from meaningful input: A longitudinal study into three reading modes and factors that affect learning. *Studies in Second Language Acquisition, 44*(3), 685-707. https://doi.org/10.1017/S0272263121000462

Vu, D. V., & Peters, E. (2023). A longitudinal study on the effect of mode of reading on incidental collocation learning and predictors of learning gains. *TESOL Quarterly, 57*(1), 5-32. https://doi.org/10.1002/tesq.3111

Webb, S. (2020). Incidental vocabulary learning. In S. Webb (Ed.), *The Routledge handbook of vocabulary studies* (pp. 225-239). Routledge.

Webb, S., & Chang, A. C. S. (2015). How does prior word knowledge affect vocabulary learning progress in an extensive reading program? *Studies in Second Language Acquisition, 37*, 651-675. https://doi.org/10.1017/S0272263114000606

Webb, S., & Chang, A. C. S. (2022). How does mode of input affect the incidental learning of collocations?. *Studies in Second Language Acquisition, 44*(1), 35-56. https://doi.org/10.1017/S0272263120000297

Webb, S., Newton, J., & Chang, A. (2013). Incidental learning of collocation. *Language Learning, 63*(1), 91-120. https://doi.org/10.1111/j.1467-9922.2012.00729.x

Webb, S., Sasao, Y., & Ballance, O. (2017). The updated Vocabulary Levels Test: Developing and validating two new forms of the VLT. *ITL – International Journal of Applied Linguistics, 168*(1), 33-69. https://doi.org/10.1075/itl.168.1.02web

Webb, S., Uchihara, T., & Yanagisawa, A. (2023). How effective is second language incidental vocabulary learning? A meta-analysis. *Language Teaching, 56*(2), 161-180. https://doi.org/10.1017/S0261444822000507

Winke, P., Gass, S., & Sydorenko, T. (2010). The effects of captioning videos used for foreign language listening activities. *Language Learning & Technology, 14*, 65-86.