WHIOCE PUBLISHING PTE. LTD.
PROVIDING FIRST-CLASS SCIENTIFIC INFORMATION FOR TOP SCHOLARS

2026 Volume 4, Issue 2
Contemporary Education Frontiers
ISSN (Online): 3029-1860 ISSN (Print): 3029-1879

A Review of the Influencing Factors of Incidental Vocabulary Acquisition in a Second Language

Xuanhui Song*
School of Foreign Languages, Qingdao University of Science and Technology, Qingdao 266000, Shandong, China

**Author to whom correspondence should be addressed.*

Abstract: As an important research topic in the field of second language vocabulary acquisition, incidental vocabulary acquisition (IVA) has attracted much attention over the past two decades. This paper systematically reviews the research progress in the past two decades from three dimensions: input factors, learner factors, task and processing factors. In terms of input factors, the paper focuses on the effects of input modality, glosses and captions, and exposure frequency on incidental vocabulary acquisition; learner factors center on the roles of second language proficiency and morphological awareness; task and processing factors focus on the effects of the involvement load hypothesis and task types.

It is found that incidental vocabulary acquisition is influenced by the interaction of multiple factors, among which input enhancement, learners' cognitive resources, the depth of processing induced by tasks. Future research can combine eye-tracking and electroencephalogram (EEG) techniques to further reveal the acquisition process, develop adaptive caption systems, and expand to the acquisition mechanisms of multi-word expressions (MWEs), so as to promote the further development of incidental vocabulary acquisition theories and teaching practice.

Keywords: incidental vocabulary acquisition; input factors; learner factors; task type; second language acquisition

Online publication: February 26, 2026

1. Introduction

The concept of incidental vocabulary acquisition was proposed by Nagy, Herman and Anderson in 1985. Incidental vocabulary acquisition refers to the phenomenon where learners incidentally acquire vocabulary knowledge while engaged in meaningful learning activities with their attention not focused on vocabulary learning[1]. From that time, this concept has received consistent attention from scholars around the world. Over the past two decades, domestic and foreign scholars have never stopped exploring the influencing factors of second language incidental vocabulary acquisition. Meanwhile, with the development of technology, research on the influencing factors of second language incidental vocabulary acquisition has become more comprehensive and in-depth. Studying its influencing factors is of great significance for optimizing teaching material design, improving teaching methods and enhancing learning efficiency.

Therefore, this paper intends to review and sort out studies on second language incidental vocabulary acquisition in the past two decades from three dimensions: input factors, learner factors, task and processing factors. And try to prospect

its development trends.

2. Influencing Factors of Second Language Incidental Vocabulary Acquisition and Discussion

By reviewing studies on second language incidental vocabulary acquisition in the past two decades, its influencing factors can be roughly divided into three categories: input factors, learner factors, and task and processing factors.

2.1. Input Factors

2.1.1. Input Modality

Differences in input modality directly affect learners' attention allocation and processing depth of second language vocabulary, thereby influencing the effect of incidental vocabulary acquisition. Studies over the past two decades have proved that modality is not a single variable, but interacts with factors such as gloss presentation, task requirements, and individual working memory capacity. They jointly shape the encoding quality and retention rate of vocabulary.

Gu Qiyi and Zang Chuanyun compared three input modalities: visual, auditory and audio-visual input to explore their effects on second language comprehension and incidental vocabulary acquisition[2]. The study found that both the visual group and the audio-visual group performed significantly better than the auditory group, with no significant difference between the visual and audio-visual groups. Liu Zhen compared the effects of three input modalities with glosses[3]: text, audio and video on learners' incidental vocabulary acquisition, and found that all three modalities significantly promoted the incidental acquisition of target words. The acquisition rate and retention of text input were higher than those of audio, while there was little difference between audio and video.

The consistency of the above findings may be explained as follows: on the one hand, the relative permanence of visual input allows learners to control the processing speed, perform operations such as re-reading and pausing, providing more abundant cognitive resources for guessing and processing unknown words. In contrast, speech is transient and places high demands on working memory. Once missed, it is difficult to retrieve. On the other hand, written words provide a more accurate and stable visual input for word form, which helps to establish a solid form-meaning connection. Auditory input may interfere with learners' processing of visual input to a certain extent, thus affecting the input effect.

2.1.2. Glosses and Subtitles

In recent years, multimodal input, especially audio-visual input, has received extensive attention. Early experiments mostly focused on vocabulary glosses in paper texts. For example, Zheng Dingming was the first to confirm that "Chinese + picture" hypermedia glosses provided the greatest benefits for incidental vocabulary acquisition[4]. Cao Jiaxue and Song Jiao found that"two-choice English glosses" yielded the highest scores in immediate tests[5], but the difference disappeared in delayed tests. Meng Chunguo and Chen Liping demonstrated, in a timed reading context, that marginal Chinese glosses not only improved reading comprehension but were also significantly superior to the non-gloss condition, with higher delayed retention rates[6].

With the popularization of multimedia environments, gloss forms have expanded from static to multimodal glosses. For instance, Liu Zhen's listening experiment showed that providing multimedia glosses before listening was most beneficial for listening comprehension[7], whereas presenting them during listening undermined performance due to attention distraction. Xin Caina and Wang Lu compared two audiovisual input modes, "audio-text-image" and "audio-text"[8]. They found that although the former had no advantage in immediate memory, it significantly promoted the retention of acquisition and was not moderated by output task types.

The following conclusions can be drawn from the above studies. First, Chinese glosses or subtitles are generally superior to English ones, but whether they inhibit the accuracy of form-meaning mapping remains to be verified. Second, when does redundant information shift from enhancement to interference? Existing studies lack sufficient measurement

of cognitive load. Third, most experiments show that the advantages of glosses or subtitles persist after two weeks, but whether the decay rate varies with gloss type or subtitle language requires long-term tracking in future research.

2.1.3. Exposure Frequency

Tekmen and Daloğlu, using Turkish learners at three proficiency levels as subjects, found that word frequency in text accounted for 29% of the variance in vocabulary gain, benefiting both high and low proficiency groups[9]. As research advanced, scholars began to investigate the minimum effective number of encounters. Zhu argued that previous experiments had underestimated the frequency effect due to insufficient reading volume and single test dimensions[10]. A subsequent empirical study[11], in which 20 pseudo-words were embedded 1-20 times respectively while 20 advanced Chinese postgraduates read two chapters of an English novel, revealed that word frequency had a significant positive correlation with form, part of speech, and meaning. With the greatest benefit for form recognition and the least for meaning recall, and 7 encounters were identified as the critical point for significant growth. Sánchez Gutiérrez et al. manipulated 1, 5, and 10 encounters in a classroom setting[12]. They found that more than 5 encounters improved both spelling and meaning recognition simultaneously, while typographical enhancement only benefited immediate form recognition and showed no interaction with frequency. The results indicated that repetition is more important than salience. Chen and Teng controlled the frequency of reading and listening encounters at 1, 3, and 5 times concurrently, confirming that both input types benefited significantly, with reading producing a larger total gain[13].

In summary, existing studies agree that exposure frequency has positive effects on incidental vocabulary acquisition, but varies with learner proficiency, test type, modality, etc. That needs to be verified in authentic classroom reading and multimodal input.

2.2. Learner Factors

2.2.1. Second Language Proficiency

Lei Lei compared three enhancement conditions: L1 glosses, L1 multiple-choice glosses, and natural reading[14]. She found that although language proficiency did not affect form-meaning connection memory, it had a significant main effect on the contextual application knowledge of vocabulary, indicating that learners with higher second language proficiency were better able to transfer vocabulary knowledge to actual use. Bao Gui and Wang Juanjuan found that the significant main effect of task type was not influenced by prior vocabulary size but was affected by time constraints, suggesting that second language proficiency may play an indirect role through the retention rather than the acquisition stage[15]. Chen Baoguo et al., using highly restrictive sentence contexts, found that the acquisition rate of highly proficient learners was significantly faster than that of less proficient learners[16]. The experiment conducted by Zhao et al. further pointed out that high-proficiency learners could benefit steadily from L2 glosses in both immediate and delayed tests, while low-proficiency learners only showed advantages in immediate tests[17].

Therefore, higher second language proficiency can not only increase the amount of vocabulary acquisition but also prolong the retention time of vocabulary learning effects. At the same time, it can alleviate the cognitive load caused by low-frequency words or complex glosses. However, the interaction between proficiency, task involvement, and modality selection still requires elaborate research designs to clarify the causal relationship.

2.2.2. Morphological Awareness

Tang Ming took 90 adult second language learners of Chinese as research subjects, systematically manipulated the two factors of high and low morphological awareness and mother tongue background[18]. He investigated the subjects' meaning inference of transparent, semi-transparent, and opaque unknown words in sentence and paragraph contexts. The results showed that the high morphological awareness group had significantly higher word-guessing accuracy than the low awareness group and relied less on random guessing. At the strategy level, the high awareness group tended to use the integrated "morpheme + context" strategy, while the low awareness group mostly used "mother tongue translation" or

random guessing.

This study extended morphological awareness from reading to the field of incidental vocabulary acquisition, filling the gap in previous literature that only focused on whole-word level factors. However, there is still a lack of longitudinal evidence revealing whether morphological awareness can be dynamically enhanced with the acquisition process, as well as its potential interaction with second language proficiency, word frequency, or gloss type.

2.3. Task and Processing Factors

2.3.1. Task Involvement Load

In 2001, Laufer and Hulstijn proposed the Involvement Load Hypothesis (ILH), which uses the weighted sum of need, search, and evaluation to predict task effectiveness: the higher the score, the better the vocabulary acquisition.

Huang compared six tasks with different weighted scores among Chinese adult learners and found that higher involvement load led to better performance in immediate tests, but the between-group differences disappeared in delayed tests[19]. This indicates that the advantage of high involvement mainly remains in short-term retrieval rather than being converted into long-term memory. Gao et al.further incorporated the time dimension into the experimental design, asking 256 middle school students to complete three tasks with increasing involvement load under time-limited and free-time conditions[20].

The results revealed a significant three-way interaction. Although involvement load can trigger deeper processing, whether the effect can be retained still depends on the coordination of time, frequency, individual strategies, etc.

2.3.2. Task Type

When involvement load is identical, different effects on incidental vocabulary acquisition may still arise from output orientation, depth of semantic chunking, or differences in affective interest.

Early studies mostly focused on the “receptive-productive” task distinction. For example, Kong Fanxia and Wang Xin, controlling for equal scores on the three factors, found that productive tasks led to significantly better vocabulary retention after two weeks than receptive tasks, suggesting that output mode is more crucial than the numerical value of involvement load[21]. Later, researchers began to further decompose the cognitive gradient within production. Ren Hulin and Liu Yaling asked three groups of freshmen to complete tasks with equivalent involvement load: sentence creation, essay writing, and Chinese-English matching translation. The results showed that essay writing involved a higher load than translation and sentence creation[22].

Meanwhile, non-cognitive factors have also been introduced into experiments. For example, Li Tianyi and Wang Qi manipulated both task difficulty and interest level in an audio-visual context[23]. They found that when language difficulty was controlled, higher interest led to better incidental vocabulary acquisition. If difficulty was uncontrolled, the effect of interest would be masked. This partly explains why some high-involvement tasks showed no advantage. When tasks are too difficult or boring, learners’ high involvement may only remain at the level of behavioral participation, while affective filtering rises, thus inhibiting deep processing.

3. Research Prospects for Second Language Incidental Vocabulary Acquisition

3.1. ERP and Eye-tracking: From Outcomes to Processes

Combine high temporal-resolution ERP and high spatial-resolution eye-tracking techniques to construct a dual-modal pathway at the second-millisecond level. Eye-tracking can first identify fixation locations, regression counts, and first-pass reading time, capturing learners’ attention allocation to target words in real time. ERP can then lock onto semantic integration components and verify whether fixations are followed by form-meaning activation.

3.2. Video Subtitles: From Single-modal to Adaptive Subtitles

In the future, video player plugins can be used to collect viewers' pause, rewind, and gaze behaviors in real time. Combined with a vocabulary difficulty model, an adaptive subtitle system can be developed. Specifically, when a target word first appears, it can be provided with L1 audio and spelling highlight. On its second occurrence, the prompt can be switched to L2 annotation. And on the third occurrence, annotations can be removed with only capitalization retained, so as to gradually reduce scaffolding.

3.3. Multi-word Expressions: From Single Words to Chunks

Future research can use corpora to automatically extract MWEs, implant high-fixedness but low-transparency items into input materials, and compare their acquisition curves with words of equivalent frequency. Meanwhile, word embedding techniques can be used to quantify the semantic association between MWEs and context, testing whether contextual congruence better predicts incidental acquisition than internal transparency.

Disclosure statement

The author declares no conflict of interest.

References

[1] Bao G, Wang J, 2013, Constraints of Prior Vocabulary Size and Time on the Effect of Tasks on Incidental L2 Vocabulary Acquisition. Modern Foreign Languages.

[2] Cao J, Song J, 2014, The Effects of Different Annotation Methods on Incidental Vocabulary Acquisition. Foreign Language Research.

[3] Gu Q, Zang C, 2011, The Effects of Input Modality on L2 Comprehension and Incidental Vocabulary Acquisition. Journal of PLA University of Foreign Languages, 3: 55-59.

[4] Gao M, Qian J, Rasool U, 2024, Effects of Task-Induced Involvement and Time on Task on Incidental L2 Vocabulary Acquisition. SAGE Open.

[5] Huang S, 2018, A Verification of Involvement Load Hypothesis on Chinese Adult English Learners. International Journal of English Linguistics, 8(5): 125-134.

[6] Kong F, Wang X, 2014, A Study on the Effects of Task Pattern and Type on Incidental Vocabulary Acquisition. Foreign Language World.

[7] Lei L, 2011, A Study on the Effects of Vocabulary Enhancement Conditions and Language Proficiency on Incidental Vocabulary Acquisition. Foreign Languages Research.

[8] Liu Z, 2015, An Empirical Study on the Application of Multimedia Annotations to English Listening Comprehension. Journal of Chengdu Normal University, 12: 43-47.

[9] Li T, Wang Q, 2020, The Effects of Task Difficulty and Interestingness on Incidental Vocabulary Acquisition from English Audio-visual Input. Modern Foreign Languages, 4: 516-528.

[10] Liu Z, 2023, A Study on the Effects of Input Media and Frequency on Incidental Vocabulary Acquisition. Foreign Language and Literature.

[11] Miao L, 2013, Studies on Incidental Second Language Vocabulary Acquisition in China: Status Quo and Development. Foreign Language World.

[12] Meng C, Chen L, 2015, The Effects of Unknown Word Annotations on Timed Reading Comprehension and Incidental Vocabulary Acquisition. Foreign Languages and Their Teaching.

[13] Nagy W, Herman P, Anderson R, 1985, Learning words from contexts. Reading Research Quarterly.

[14] Ren H, Liu Y, 2020, A Study on the Effects of Equal Investment Tasks on Incidental Vocabulary Acquisition. Foreign Languages in China.

[15] Schmidt RW, 1990, The role of consciousness in second language learning. Applied Linguistics, 11(2): 129-158.

[16] Tang M, 2024, The Effects of Morphological Awareness on Incidental Vocabulary Acquisition by L2 Chinese Learners. Journal of Huaqiao University.

[17] Xin C, Wang L, A Study on the Effects of Video Input Mode and Task Type on English.

[18] Xiaoning C, Feng T, 2017, Assessing the Effects of Word Exposure Frequency on Incidental Vocabulary Acquisition from Reading and Listening. Chinese Journal of Applied Linguistics.

[19] Zhao T, Ren J, 2019, Incidental L2 lexical acquisition in reading: the role of L2-gloss frequency and learner proficiency. The Language Learning Journal.

[20] Zhu Y, 2015, Revisiting Word Exposure Frequency and Incidental Vocabulary Acquisition. Theory and Practice in Language Studies.

[21] Zhu Y, Huang Y, 2021, Effect of Word Exposure Frequency on Chinese Advanced EFL Learners' Incidental Vocabulary Acquisition. Journal of Language Teaching and Research.