



Effects of L1 and L2 glosses on incidental vocabulary acquisition and lexical representations



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ABSTRACT

Despite much evidence for the positive effects of L1 and L2 glosses on incidental vocabulary acquisition, their relative effectiveness remains unsettled. Furthermore, how such glosses affect lexical representations remains unknown. To address these points, 180 native speakers of Korean (10th graders) were assigned to one of three groups to read an English story containing either L1 (Korean) or L2 (English) glosses, or the same story without glosses. Immediately and one week later, the three groups were instructed to recall the meanings of target words in their choice of L1 or L2. The target words consisted of two sets: a set of words occurring twice (F2 words) or four times (F4 words), respectively. The results showed that although the L1 and L2 groups did not differ in their short-term retention of the F2 and F4 words, the L1 group outperformed the L2 group in the long-term retention of F4 words, but not F2 words. Further, the L1 group recalled the meanings of novel word forms predominantly in the L1 (Korean), whereas the L2 group showed mixed results (approximately 75% in the L2 and 25% in the L1). These results suggest that lexical processing and storage mechanisms may vary significantly depending on the gloss type, resulting in both a quantitatively and qualitatively different impact on L2 lexical knowledge.

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1. Introduction

There is a wide consensus among second/foreign language (L2) acquisition researchers that L2 learners can acquire a large repertoire of vocabulary knowledge by engaging in reading activities such as extensive reading (e.g., Chun, Choi, & Kim, 2012; Nation & Wang, 1999; Waring & Takaki, 2003). This type of vocabulary learning has been termed “incidental vocabulary acquisition” because learners acquire unknown words unintentionally as a by-product of doing other activities such as reading for pleasure or for information (Choi, Kim, & Ryu, 2014; Huckin & Coady, 1999).

Extant evidence suggests, however, that reading per se may not be an efficient means of L2 vocabulary acquisition because there are a number of inherent constraints, including the following: limited attentional resources (Schmidt, 1993, 1994), language proficiency (Hazenbergh & Hulstijn, 1996), exposure to print materials (Jiang, 2000), reading proficiency (Levine & Reves, 1998), word density (Hu & Nation, 2000), strength of contextual clues (Nagy, Anderson, & Herman, 1987), and words that are false cognates, polysemous, or have a misleading morphological structure that may lead to erroneous guesses and possibly reinforce incorrect word meanings (Laufer, 1997).

For instance, some degree of cognitive effort should be allocated to establishing precise form–meaning connections for incidental vocabulary acquisition to take place (Schmidt, 1993, 1994). In other words, without learners' conscious coordination of meaning and form, reading

may not be an optimal condition for learning novel words. However, L2 learners are more likely to bypass such cognitive efforts because they must devote processing resources to extracting the overall message of the text (for a review, see Huckin & Coady, 1999; Nation & Coady, 1988). Therefore, although the visual forms of novel words may be registered during reading, they are not necessarily transferred into the memory system for further elaborate processing.

Given these constraints, it is imperative to identify optimal conditions for incidental vocabulary acquisition through reading. This study focuses on the role of glosses (in particular, on the relative efficacy of L1 and L2 glosses) in incidental vocabulary acquisition by L2 learners. In addition, it sheds light on lexical representations as a function of L1 and L2 glosses. Although lexical acquisition and representations are interrelated aspects of lexical development (Levitt, 1989), previous studies of glosses have focused on how they affect lexical acquisition. Therefore, the representation component of lexical development as a function of glosses remains uncertain.

1.1. Glosses and vocabulary acquisition

In second language acquisition (SLA) literature, “gloss” refers to a translation or explanation of technical or unfamiliar words in a written text by means of interlinear or marginal notes, as more salient input for L2 learners (Larsen-Freeman & Long, 1991; Schmidt, 1993, 1994). The role of glosses in incidental vocabulary acquisition has been a topic of heated debate for the last two decades (e.g., Cheng & Good, 2009; Huang, 2003; Hulstijn, Hollander, & Greidanus, 1996; Ko, 2012; Laufer

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& Hill, 2000; Laufer & Shmueli, 1997; Miyasako, 2002). Empirical findings to date have demonstrated favorable effects of textual and multimedia (i.e., pictorial) glosses on L2 learners' vocabulary knowledge.

For instance, Ko (2012) investigated the effects of L1 and L2 (English) glosses on vocabulary acquisition by Korean university students ($N = 90$). The participants in the L1 and L2 gloss conditions showed significantly higher vocabulary test scores than their counterparts in the no-gloss control condition on immediate and four-week delayed vocabulary tests. The L1 and L2 glosses were similarly effective in the two tests. Unlike these studies, Hulstijn et al. (1996) examined the cumulative effect of L1 glosses and frequency of input. Specifically, they used two sets of eight words that occurred either one (F1) or three (F3) times. The participants were 78 first-year undergraduate students in the Netherlands who were advanced learners of French. After reading a short story in French, they were tested on their recall of 16 target words. They remembered significantly more F3 words ($M = 2.6$) than F1 words ($M = 1.3$). Likewise, Rott (2007) reported that German words glossed four times (F4) were significantly more likely than those glossed once (F1) to be retained in long-term memory.

1.2. Gaps in the research base

Although the provision of glosses has been shown to enhance incidental vocabulary acquisition, the picture is less clear with regard to the relative efficacy of L1 and L2 glosses. Laufer and Shmueli (1997) demonstrated that L1 glosses were more effective than L2 (English) glosses in short- and long-term vocabulary retention, and Miyasako (2002) reported similar findings. By contrast, Laufer and Hill (2000) showed mixed findings. Other researchers found that L1 and L2 glosses were similarly effective (Jacobs, Dufon, & Hong, 1994; Ko, 2012; Yoshii, 2006).

What also remains unclear is whether the acquired lexical information varies depending on the type of gloss (i.e., L1 or L2 glosses). How orthographic lexical form and semantic information are represented in L2 learners' lexical entries is an important topic to explore (Jiang, 2000). Nevertheless, no previous studies of glosses have addressed this issue. Since semantic and orthographic lexical information constitute independent levels of representation (Caramazza, 1997), acquiring novel words requires strengthening the links between formal specifications (orthographic and phonological information) and semantic information. As illustrated in Fig. 1, it can be reasoned that L1 and L2 glosses may engender distinct form–meaning mappings at encoding and possibly later retrieval. For instance, when learners read a novel word such as *vexing* in the sentence “Rendering attention to these vexing questions is prudent and the right thing to do,” the presence of the L1 gloss ‘*싱까신*’ encourages them to create a direct mapping between the L2 word form and L1 gloss (i.e., *vexing*–*싱까신*). The L2 gloss ‘*annoying*’ may strengthen a direct link between the L2 word form and L2 gloss

(i.e., ‘*vexing*–*annoying*’). In other words, L2 glosses may foster direct connections between new words and the developing L2 lexical system. Investigating these possibilities is critical because the word form and meaning representation are closely associated with the kind of lexical information that will be retrieved and utilized for both receptive and productive language processes. Furthermore, given that little attention has been given to how lexical information is processed and represented in L2 learners' lexical entries (Jiang, 2000), the findings associated with the second goal may make an important contribution to SLA literature.

In addition to these gaps, previous studies appear to suffer from methodological limitations such as small sample size (e.g., Laufer & Hill, 2000) and exploration of short-term acquisition only (e.g., Hulstijn et al., 1996). Furthermore, prior studies have not held constant confounding variables such as partial word knowledge and working memory span (e.g., Ko, 2012; Laufer & Shmueli, 1997; Miyasako, 2002), which could explain the mixed findings.

1.3. The present study

The overall purpose of this study is to elucidate the relative efficacy of L1 and L2 glosses in incidental vocabulary acquisition. The specific research questions guiding this study are the following:

- 1) What is the relative efficacy of L1 and L2 glosses for short- and long-term incidental vocabulary acquisition, as measured by immediate and one-week delayed vocabulary tests? Do the effects of L1 and L2 glosses vary according to the frequency of input (two or four times) or retention phase (immediate or delayed vocabulary tests)?
- 2) How do L1 and L2 glosses affect form–meaning representation? In other words, do they generate different form–meaning mappings, and if so, to what degree?

The key constructs of these research questions include (a) L1 and L2 gloss, (b) frequency of input of the target words, (c) retention phase, and (d) incidental vocabulary acquisition. Defining these constructs is critical because their definitions differ across studies. First, the L1 gloss is defined as the L1 (Korean) translation equivalent, and the L2 gloss refers to the actual word that replaces the target pseudoword. Both L1 and L2 glosses were provided at the right margin of the experimental text. Second, “frequency of input” was manipulated by focusing on two sets of seven unknown words, with each word appearing either two or four times (F2 and F4 words, respectively) in the experimental text. Third, “retention phase” is determined by immediate and one-week delayed posttests. Finally, “incidental vocabulary acquisition” is defined as acquiring novel words during reading while focusing on comprehending a given text without any instructional intervention other than the provision of glosses.

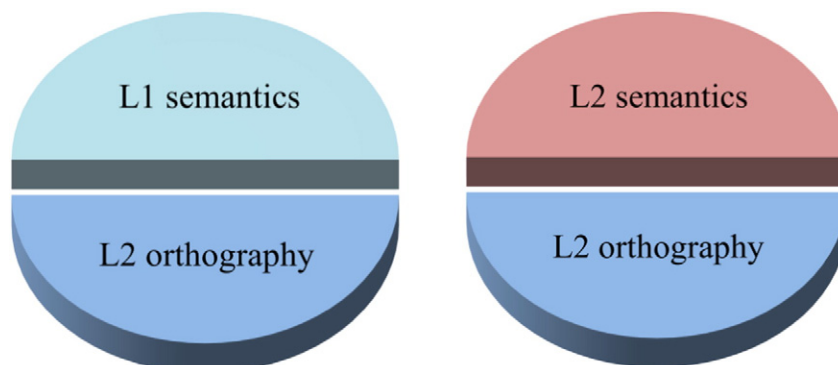


Fig. 1. Hypothesized lexical representations as a function of L1 (left) and L2 (right) glosses. L1 and L2 semantics in Fig. 1 refer to word meanings recalled in the L1 and in the L2, respectively.

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