

Second Language Vocabulary Attrition

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The forgetting of words is commonly experienced by learners of languages after the mother tongue. While loss of languages acquired in classrooms and in foreign and second language contexts has been a focus of research only recently (for an overview of this subfield of applied linguistics, second language attrition, see Bardovi-Harlig & Stringer, 2010), the loss of vocabulary has received greater attention than have other aspects of language, leading to interesting insights on factors which impede or promote lexical retention. While descriptive data-based studies have dominated this area of inquiry, theoretical frameworks suggest promising research directions for the future.

In language attrition research, second language (L2) lexical knowledge has been defined and investigated in various ways (for an early review see Weltens & Grendel, 1993). Thus, the variety of research methods and the complex nature of lexical knowledge need to be kept in mind in the interpretation and comparison of studies of vocabulary loss. For example, pioneering investigations of L2 vocabulary attrition in the Netherlands focused on the receptive knowledge of words, which has since been found to be more readily acquired and less prone to loss than productive knowledge. Although the attriters judged their lexical loss to have been considerable, little attrition was actually found in their receptive knowledge (Weltens, 1989). Thus, Weltens and Grendel (1993) suggested that future research should focus on the *production* of words. Subsequent studies have done so to a large extent as they investigated three main populations of language attriters: (a) college and high school students, (b) child returnees from residence abroad, and (c) returned LDS (Church of Jesus Christ of Latter-Day Saints) missionaries (Bardovi-Harlig & Stringer, 2010).

Linguistic and Extralinguistic Influences on Lexical Attrition

Evidence on the influence of language distance on lexical loss comes from paired-associate learning experiments. L2 cognate translations were learned and retained better than non-cognate translations by university students (Ellis & Beaton, 1993; De Groot & Keijzer, 2000). Thus, the assumption is that the more an L2 word resembles the corresponding word in the first language, the better it will be maintained. This idea is supported further in examinations of vocabulary attrition in natural contexts. For example, Weltens's (1989) study of the L2 French lexicon of Dutch students found high-frequency cognates were retained best while low-frequency non-cognates were most vulnerable to loss. In another adult population, LDS missionaries, the rates of both lexical learning and loss related significantly to the distance between the first language (L1) and the particular L2 learned (Hansen, 2011). Similarly, in a study of L2 English attrition and retention in university students two years after instruction ended, Xu (2010) found that Dutch learners (L1 related closely to English) maintained their vocabulary, while Chinese learners (L1 unrelated to English) experienced lexical attrition.

An early finding on word-length effects on retention was that longer words in L2 German were more difficult to learn and to retain than shorter words by L1 English university students (Ellis & Beaton, 1993). In a more unexpected finding in a study of L1 English missionaries who had learned German, Korean, or Chinese abroad, there was a significant

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effect of the length of the corresponding L1 words on L2 lexical retention (Hansen, Kim, Lee, & Lo, 2010). While L2 word length did relate significantly to retention, the relationship with L1 length was even stronger. In a longitudinal study of returned missionaries, Hansen (2011) found that words relearned by returned missionaries in 2010 differed in length between words they had forgotten before 2000 and words they had forgotten between 2000 and 2010 (earlier forgotten words tended to be longer). The difference did not reach the level of significance for the length of the forgotten L2 words themselves but was significant for length of the corresponding words in L1 English.

Evidence on frequency effects on word retention comes from Dutch and German students returned from study abroad in Spain who named high-frequency Spanish words faster and more correctly than medium- and low-frequency words in a picture-naming task (Mehotcheva, 2010). In a study of returned missionaries, a word's vulnerability to loss related significantly to the number of occurrences per 1,000 in L1 English but not to the frequency of the target word itself in the second language (Hansen, 2011). While frequency affects L2 vocabulary *acquisition* in L2 contexts because it determines exposure (Ellis & Beaton, 1993), in L2 vocabulary *attrition* evidence from the missionary studies suggests that, at least in an L1 context, a word's vulnerability to loss may be affected to a greater extent by frequency of the corresponding word in the mother tongue than by the frequency of the word in the L2.

Although concrete words have been found easier to learn than abstract words (Ellis & Beaton, 1993; De Groot & Keijzer, 2000), several recent studies of the L2 English of Arabic- or Farsi-speaking adults in the Middle East failed to find significant differences between them in vocabulary attrition; nor did they find differences in susceptibility to loss between general versus technical terms (for a review, see Abbasian & Khajavi, 2010).

The importance of age in child lexical attrition has been substantiated in numerous studies which report that the younger the child, the more rapid the word loss (for a review, see Tomiyama, 2009). For example, Cohen's (1989) investigation of the loss of productive vocabulary in Portuguese as a third language of two English-Hebrew bilingual children, aged 9 and 13, found that, after nine months of discontinued contact, the younger subject exhibited greater lexical loss in storytelling than the elder. Yoshitomi (1999) argued that, although not immediately apparent, L2 attrition starts as soon as children return home from a stay abroad.

Although rapid attrition of unused vocabulary is the rule for young children, adults may experience more favorable outcomes, influenced by the extent of their initial vocabulary attainment. For example, in Mehotcheva's (2010) study of returnees from study abroad in Spain, initial Spanish proficiency was the most reliable factor in predicting results on picture-naming scores later on. Similarly, in Xu's (2010) study of the English attrition of Chinese and Dutch university students, one of the main findings was the strong effect of initial L2 proficiency on subsequent retention. For adults who attain relatively high levels of proficiency, such as Dutch students who learn French at school (Weltens, 1989) and LDS missionaries (Russell, 1999), an initial plateau of a few years is reported during which loss is slight. For the returned missionaries this is followed by a more accelerated decline over several decades, which increases in middle age (Hansen, 2011). Learners who attain lower levels of proficiency, however, follow a different attrition path from that of the advanced learners, as in a study of 773 former students of Spanish who experienced significant lexical attrition during the first three to six years following instruction (Bahrck, 1984). Subsequently their knowledge remained level for several decades, with an accelerated decline in middle age.

With regard to affective variables, Weltens and Grendel (1993, p. 146) suggested that learner attitudes and motivation in lexical attrition may have a relatively weaker effect

than in lexical acquisition. To investigate this idea, a research design incorporating several affective variables was used in studies of both missionary vocabulary acquisition (Hansen, Lam, et al., 2012) and returned missionary vocabulary attrition (Hansen, Chong, et al., 2012). The results suggest that, while language-learning motivation has a relatively strong effect in acquisition, it has only marginal significance in the retention of words after return to the English milieu. With regard to attitudes toward the second language and culture, although a positive trend in the relationship with vocabulary knowledge is discernable in the learner data (attitude toward language and culture related significantly to learners' vocabulary score), none is found for the returnees (attitude did not relate significantly to attriters' score). In addition, although belief in a spiritual component in language learning relates significantly to missionary vocabulary acquisition, after return we see no relationship between this belief and subsequent maintenance of mission lexicon. Thus, an overall comparison of acquisition and attrition data of the missionary population supports Weltens and Grendel's (1993) conception of affect playing a relatively minor role in L2 vocabulary loss. Similarly, in a study of the L2 vocabulary retention of Dutch and German students who had learned Spanish in Spain, Mehotcheva (2010) found no firm support for the role of attitude and motivation. Furthermore, in a study of the effects of attitudes toward L2 English on its attrition, Xu (2010) found a modest effect in the lexical attrition of Chinese university students, but none for Dutch students, as pointed out in the earlier discussion of the influence of the distance between the L1 and L2 on vocabulary retention.

In summary, salient linguistic influences on L2 word retention are the distance between the learner's L1 and the L2 (words in related languages are easier to remember), L2 word length (shorter words are easier to remember), and L2 word frequency (more frequent words are easier to remember). However, in L1 contexts of loss, at least, there is evidence that the length and frequency of the corresponding L1 word may have an even stronger influence on retention (if the corresponding word in the L1 is shorter/more frequent, the L2 word will be easier to remember). Extralinguistic influences affecting lexical retention are age (older children retain words better) and vocabulary size (learners who learn more words retain a larger proportion of the words known). Little evidence is found, however, for the influence of affective factors such as motivation and attitudes in L2 lexical attrition.

Theoretical Explanations Applied in L2 Vocabulary Attrition Studies

Hypothesis-driven investigations are in the minority in language-attrition research to date, with most of the studies predominantly empirical and exploratory in nature. Among the few theories applied in studies of lexical loss, the dormant-language hypothesis holds that, even at the end point of attrition, where conscious knowledge is lost, vestiges of the language endure in the mind. In L2 vocabulary attrition research, this idea surfaces in relearning studies motivated by the savings paradigm from cognitive psychology. The savings approach is based on the premise that, for previously known words that can no longer be recalled or recognized, knowledge remains that can be activated in relearning. The hypothesis receives support in studies of the L2 vocabulary of children who had forgotten words learned abroad (Tomiyama, 2001), of adults who had forgotten words learned in childhood (De Bot & Stoessel, 2000), and of adults who had forgotten words learned as adults during residence abroad (Hansen, 2011).

The oldest theory applied in vocabulary attrition research is the regression hypothesis, which predicts that the path of attrition will be the reverse of the path of acquisition (for a review, see De Bot & Weltens, 1991). In a 12-year longitudinal study of the retention of Japanese particles by returned missionaries, Russell (1999) reported that the particles

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acquired most recently tended to be lost first, as predicted by regression theory. In cross-sectional missionary studies, having established rank-order scores for missionary vocabulary learning in each of six languages (Chinese, German, Japanese, Korean, Portuguese, and Spanish), Hansen (2011) found that words with higher rank order in the learning period tended also to have an advantage in the retention of these languages over 50 years. Similarly, in a study of the acquisition and attrition of Chinese and Japanese numeral classifiers by missionaries, accuracy comparisons between learners and attriters indicated that the counter words which are most accessible in learning tend to be retained longest, and those which are less accessible in learning are more susceptible to loss (Hansen & Chen, 2001).

Hansen and Chen (2001) also examined their Chinese and Japanese numeral classifier data in light of markedness theory. In L2 acquisition theory, hierarchies of markedness impose paths of least resistance (acquisition orders) in language learning. For classifiers, research on their occurrence and development in many languages has established an implicational scale of markedness which tended to be adhered to by the adult learners and attriters in both their learning and loss of counter words. That is, the least marked classifiers tended to appear earlier and to be retained longer.

Conclusion

There has been progress in our understanding of lexical attrition since Weltens and Grendel's (1993) conclusion that the effects of such variables as proficiency level, language distance, and attitude were unclear. While we have seen clarification of the influences of these and other factors in vocabulary loss since the early 1990s, still we are left with a shortage of theoretical explanations for the phenomenon. Furthermore, current trends in science are away from models which are based on linear and hierarchical assumptions such as those of markedness and regression theory.

The applications of the savings paradigm in vocabulary relearning studies attest to the continuing presence in memory of "forgotten" words. What appears to happen in the course of language attrition is a general reduction in the availability of lexical information. Through disuse, the language attriter may initially take longer to retrieve lexical elements. Over time the search for stored knowledge may increase in length and difficulty until the final stage of L2 vocabulary attrition when words are entirely inaccessible or, as we say, "forgotten."

A criticism of the previous approaches for explaining lexical attrition has been the failure to recognize the systematic and dynamic nature of vocabulary knowledge. In remedying this weakness, dynamic systems theory (DST) is suggested as a promising candidate to be used in accounting for language and language development (De Bot, Lowie, & Verspoor, 2005). However, the theory is challenging due to the complexity of interacting factors in the systems and lack of clarity about the methodology which could be applied. Another suggestion comes from Meara (2004) who states that real strides in theorizing about the L2 lexicon will occur only when vocabulary researchers take on board the radically new ways of looking at vocabulary that are emerging on the edges of computational linguistics. However, the potential interest in these ideas lies largely in experiments that have not yet been conducted.

SEE ALSO: Cognates; Second Language Word Difficulty; Vocabulary Acquisition in Bilinguals; Vocabulary Acquisition in Second Language Acquisition; Vocabulary Loss in the First Language

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Suggested Readings

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