Introduction
An important topic in vocabulary research is focused on why some words are more difficult to learn than other words and why some learners are better than others at learning new words. Research has looked to answer questions such as: Is it more difficult for Dutch-speaking learners of English to learn the word *dog* than the word *cat*? Is it easier to learn the more concrete word *house* than the more abstract word *health*? Is a word that occurs more than once in a text easier to learn? Is word learning affected by learners’ vocabulary size or working memory?

This chapter discusses factors that affect the learning of single words in a foreign language (FL). Those factors can be related to (1) word properties (*word-related factors*), (2) the use of words in context (*contextual factors*), or (3) individual learner differences (*learner-related factors*). Factors which affect learning multiword units are discussed in the following chapter.

Critical Issues and Topics

*Word-Related Factors That Affect the Learning of Single Words*

Twenty years ago, Batia Laufer (1997) published the chapter “What’s in a Word That Makes It Hard or Easy? Intra-Lexical Factors Affecting Vocabulary Acquisition”, in which she discussed the factors that could affect the learning difficulty of a word. Since the publication of that chapter, more studies have explicitly addressed the question of which word-related factors affect the learnability, processing, and use of words. Research in this area looks at the extent to which the learning of FL words is affected by orthographic, phonological, and/or semantic factors in the L1 or the L2.

*Cognates*

Cognates have traditionally been defined as words that are phonologically or orthographically, semantically and historically related across languages. In the field of second language acquisition, however, cognates are commonly defined as words with a high form and
meaning overlap regardless of the etymology. Such a definition allows for the inclusion of loanwords (Rogers, Webb, & Nakata, 2015). Genetically related languages, such as Germanic languages or Romance languages, share more cognates than non-genetically related languages. An example of a cotate item would be the Dutch word *huis*, the German word *Haus*, and the English word *house*. False cognates or false friends, on the other hand, have a high form overlap, but do not share the same meaning. An example would be the English word *actual* and the Dutch word *actueel* (*current* in English). A cognate is considered easier to learn than a noncognate because the word in the foreign language is similar in form and meaning to the word in the L1. A false cognate, however, is more difficult to learn, because learners may often assume that the L2 word carries the same meaning as the similar L1 form (Bensoussan & Laufer, 1984).

The majority of studies investigating the role of cognates in vocabulary learning have been carried out in psycholinguistic studies focusing on cross-linguistic effects on language processing (see Otwinowska, 2016; van Hell & Tanner, 2012). These studies, which have used a wide array of implicit and explicit measures, have shown facilitatory processing for cognates, meaning that cognates are read, recognized, or processed faster and with fewer errors than noncognates (e.g., Van Assche, Duyck, & Brysbaert, 2013).

A handful of studies have compared the learning of cognates and noncognates (de Groot & Keijzer, 2000; Lotto & de Groot, 1998; Rogers et al., 2015; Tonzar, Lotto, & Job, 2009). These studies, using paired-associate learning (PAL), in which learners had to learn a list of cognates and a list of noncognates, showed that form recall was better overall for cognates than for noncognates (de Groot & Keijzer, 2000; Lotto & de Groot, 1998; Rogers et al., 2015; Tonzar et al., 2009); meaning recall was higher for cognates than for noncognates (de Groot & Keijzer, 2000), and retrieval times were faster for cognates than for noncognates (de Groot & Keijzer, 2000; Lotto & de Groot, 1998). Findings also suggest that knowledge of cognates might be more durable than that of noncognates (Rogers et al., 2015). However, Tonzar et al.’s (2009) study indicated that the cognitive facilitation effect might level off with more exposure. In spite of the limited number of studies investigating the learnability of cognates and noncognates, the beneficial effect of cognates seems to be relatively uniform across age groups and languages.

The number of studies investigating the effect of cognateness on incidental vocabulary acquisition from different modes of input (written, aural, or audio-visual input) is very limited. Vidal (2003, 2011) studied the role of cognateness in incidental vocabulary learning through reading and listening to academic texts. She showed that in reading, as well as in listening, learners are more likely to learn words that are similar to words in their L1. At the same time, her findings indicated that the effect of cognates might be larger in spoken than in written texts. Vidal (2011) stated that cognates have a “clearer facilitative effect for listeners” than for readers (p. 246). In a study focusing on incidental vocabulary acquisition through viewing TV, Peters and Webb (2018) explored whether word learning would be mediated by cognateness. Their findings showed that the odds of picking up a cognate were higher than the odds of learning a noncognate, although the magnitude of the effect depended on the word knowledge aspect tested. Together, those three studies suggest that the beneficial effect of cognates holds for written, spoken, and audio-visual input, albeit with a larger impact in spoken modalities. Perhaps learners rely more on cognates when processing spoken input because they cannot go back to a previous word to derive its meaning as they can with written input.

Less is known about learners’ spontaneous use of cognates in speech or writing. One study investigating young ESL learners’ use of cognates in written production (Horst &
Collins, 2006) found a decrease in the number of cognates used over time (i.e., after 400 hours of instruction). The findings showed that learners relied more on cognate lower-frequency words than on noncognate high-frequency words (i.e., words belonging to the 1,000 most frequent words) at the beginning of a course, but that was no longer true at the end of the course. Likewise, Bardel and Lindqvist (2011) found that less advanced learners used a considerable number of low-frequency cognates. Finally, false cognates have been shown to be a frequent source of errors in FL production (Ringbom, 1982, as cited in Laufer, 1991).

It should also be pointed out here that a cognate facilitation effect has been attested in vocabulary tests (Cobb, 2000; Elgort, 2012; Lauffer & McLean, 2016; Puimège & Peters, 2019b; Willis & Ohashi, 2012). Generally, the number of correct responses for test items is higher for those that are cognates than noncognates. Cobb (2000) demonstrated that French-speaking test takers were able to answer English-French cognate test items correctly without having been exposed to those items in English before. Additionally, the cognate effect seems to be stronger for low-proficiency learners than high-proficiency learners (Lauffer & McLean, 2016) and for low-frequency-items compared to high-frequency items (Elgort, 2012). However, Lauffer and Levitzky-Aviad (2018) recently showed that the inclusion of cognates makes a negligible difference in test scores overall.

The studies reviewed above provide robust evidence for the facilitative effect of cognates on the processing and learning of new words, although its effect might be modulated by other factors, such as type of input and learners’ proficiency level.

Words That Are Similar in Form or Meaning

Words can have a similar form (spelling, sound), or meaning in the L1 or L2. Synforms are words that are similar in form, e.g., adopt/adapt, economic/economical, capable/capacious, or considerable/considerate. It was Laufer (1988, 1991) who first coined the term synform to refer to different types of form similarity, such as synphones (similar sounding words), syngraphs (script similarity) and synmorphs (similar morphological structure). Laufer (1991, 1997) distinguished between general synformic similarity and specific synformic similarity. The former refers to the characteristics shared by all synforms (e.g., the identical number of syllables of the words, the identical stress patterns and part of speech), whereas the latter was classified into ten types of synforms, each representing a different type of similarity between two words. Laufer argues that form similarity can cause problems in reading comprehension as well as in production. The most difficult synforms are those that only differ in their suffix (e.g., economic/economical, industrial/industrious) and in their vowels (e.g., adopt/adapt, proceed/precede). Laufer proposes that similar words should not be taught together because their similarity in form might lead to cross-association and prevent learners from establishing a strong form-meaning link. At the same time, synforms deserve explicit teaching time, because learners might not notice the formal differences between them. The distinction between similar words is thus best taught at a later stage after the words have been learned separately.

Another issue that should be addressed here is what Laufer (1997) calls deceptive transparency. She argued that English morphemes can be deceptive because words sometimes look as if they consist of meaningful morphemes, whereas the different parts of the word are not real morphemes. For instance, the verb retreat can be misinterpreted as treat again. Learners assume that the verb form consists of the prefix re- meaning again and of the verb treat meaning try to cure and thus fail to recognize the word retreat as an unfamiliar word. Similarly, the adjective consensual might be divided into the morphemes con- (with,
together) and sensual (related to feelings or physical pleasure) instead of being linked to the verb consent, from which it is derived.

The learning difficulty of a word is also determined by its pronounceability, i.e., similarity (or not) in spoken form. Foreign language learners are faced with FL phonemes that are not used in their L1, e.g., the English dental fricatives /θ/ and /ð/ for <th> are absent in Dutch. As a result, words such as thane, thank, and these will be harder to learn than words that accord with the phonotactic patterns in Dutch. Similarly, it might be difficult for Dutch-speaking learners of English to learn the difference in pronunciation between bed /bɛd/ and bad /bæd/, because the latter vowel sound is not used in Dutch. FL learners should thus recognize those phonemes that are not found in their L1, distinguish them from other phonemes, and learn how to pronounce them. Perhaps the most influential study in this area was by Ellis and Beaton (1993a) who found that the ease of productive learning (learning the L2 word form) is determined by the degree to which phonotactic patterns of the L2 words match those of the L1. The more the pronunciation of the L2 word is in line with the learner’s expectations of the phonotactic sequences in their L1, the easier the word will be to learn. In addition, phonological clustering (phonological similarity across L2 words) does not seem to hinder word learning (Wilcox & Medina, 2013), because the repetition of phonemes is argued to reduce learners’ cognitive load.

Words can also be similar to other L2 words in terms of meaning or be semantically related to other L2 words. Webb (2007b) found that it was easier to learn synonyms (words with approximately the same meaning) of known words than to learn new words without a known synonym. However, synonymy did not facilitate learning of all word knowledge aspects. Further, the facilitative effect of synonymy does not entail that semantically related words should be taught together at the same time. Research has shown that grouping new words in semantic clusters (e.g., oak, maple, birch) tends to hinder word learning (Tinkham, 1993; Waring, 1997; Wilcox & Medina, 2013) because of interference effects; the presentation of words that are too similar might result in competing memory traces (Higa, 1963). Yet, in a recent study, Nakata and Suzuki (2018) did not find support for the fact that semantically related words are more difficult to learn, although they did find more interference errors in the learning phase of the semantically related words.

Word Length

Word length has received less attention in vocabulary research. One well-known study that investigated word length was Ellis and Beaton (1993a), who found a negative correlation between word length (number of letters) and word learning, but more so in productive learning than in receptive learning. In a more recent study (Barclay, 2017), word length (number of letters) was shown to affect the extent as well as the speed of learning. However, word length only affected meaning recall and not meaning recognition. Barcroft and Rott (2010) found that after a learning session, learners were able to produce more two-syllable words than three-syllable words. However, looking at incidental vocabulary acquisition from audio-visual input, Puimège and Peters (2019a) found that longer words (number of syllables) are more likely to be learned (form recall) than shorter words. This might seem counterintuitive at first sight, but given that it is more difficult to segment spoken input than written input, longer words might be more salient and noticeable than shorter words or one-syllable words. Finally, Willis and Ohashi (2012) investigated which factors could explain Japanese learners’ knowledge of English words. To the best of our knowledge, this is the only study that operationalized word length in three ways: as the number of letters, syllables,
and phonemes. All three measures correlated negatively with word knowledge, meaning that test takers knew more short words than long words, but word length operationalized as the number of phonemes was the best predictor of the three.

One explanation why longer words might be more difficult is that they allow for more phonotactic and orthographic variation (Ellis & Beaton, 1993a). However, longer words can be morphologically transparent, making a word such as *interdisciplinary* not intrinsically more difficult than *bun*, as argued by Laufer (1997). A further complicating factor is that at least in English, frequent words tend to be short(er) words, making it difficult to separate the two variables. It is clear that more research in which word length is properly isolated is needed if we want to draw firm conclusions on the effect of word length in different learning settings, such as list learning or incidental vocabulary acquisition.

Part of Speech

There are a number of reasons why learning foreign language nouns, verbs, or adjectives might not be the same. One reason is that verbs appear in more different forms than nouns and adjectives because verbs can be marked for number (e.g., *is* – *are*), person (e.g., *walk* – *walks*), or tense (e.g., *walk* – *walked*, *sing* – *sang*). Secondly, nouns differ from verbs in lexical properties, such as hyponymy, concreteness, imageability, meaningfulness, and polysemy (Crossley, Subtirelu, & Salsbury, 2013). In general, nouns refer to entities and as such are more specific, concrete, imageable, meaningful, and unambiguous. Verbs, on the other hand, are inherently relational – barring some exceptions (*to rain*), and as a consequence are more abstract, polysemous, less imageable, less meaningful, and less concrete. To understand and learn the meaning of a verb, learners thus need to rely on contextual clues (syntagmatic relationship), indicating that verb meaning is probably established at the clause level. “To know the verb properly, the learner needs to know its collocations too” (Nissen & Henriksen, 2006, p. 402). Like verbs, adjectives are relational categories, which obtain their specific meaning from the noun they modify. Adjectives are “semantically underspecified if isolated” (Nissen & Henriksen, 2006, p. 402), making their learning potentially more difficult.

The research evidence for a part of speech effect on word learning, however, is limited. Ellis and Beaton (1993a) found that nouns are easier to learn than verbs regardless of the learning method (keyword, free learning, with or without imagery mediation), but they also found that nouns are more imageable than verbs. The facilitative effect of nouns could thus be an imageability effect (Ellis & Beaton, 1993b). In a study that controlled for concreteness of the target items, Barclay (2017) did not find an effect of part of speech, neither in the post-tests nor in the attrition of word knowledge, which could indicate that it is not part of speech, but concreteness or imageability that affects the learning ease of words.

Few studies have looked at the effect of part of speech on incidental vocabulary acquisition. In a study using a comic book, Horst and Meara (1999) found a clear learning advantage for nouns compared to verbs, adjectives, and adverbs, which may be explained by the visual support of the book illustrations in their reading treatment. They argue that the comic book functioned as a picture dictionary for many items. However, it seems reasonable to assume that the reported effect of word class might also stem from the items’ concreteness because concrete words in particular will benefit from visually supported input. Although it did not specifically target different grammatical classes, the case study by Pigada and Schmitt (2006) could be considered relevant because they reported the learning gains for nouns and verbs in an extensive reading experiment. Their findings showed better learning gains
for verbs where spelling and meaning recall were concerned, but not where grammatical knowledge was concerned (i.e., giving the article *le*/*la* for nouns and the correct preposition for verbs). Compared to verbs, nouns also needed more encounters for learning of meaning to occur. However, care should be taken not to overgeneralize these findings because only one learner participated in the case study. Van Zeeland and Schmitt (2013) showed that part of speech had an effect on incidental vocabulary acquisition through listening. Nouns were easier to learn than verbs and adjectives in the three tests used (form recognition, grammar recognition, and meaning recall).

Taken together, the evidence for a word class effect on the learnability of words is still inconclusive. This may in part be explained by the methodological differences between the studies, but also by other confounding variables, such as concreteness or imageability.

**Concreteness and Imageability**

Concreteness was already hinted at in the previous section as a potentially confounding variable with part of speech. In this chapter, we will not distinguish between concreteness and imageability because both variables are highly correlated (Crossley, Kyle, & Salsbury, 2016; de Groot, 2006). Concrete words (words referring to concrete entities) tend to be words that are easy to imagine, whereas abstract words (words referring to abstract entities) are words that are often difficult to imagine.

Concreteness has been investigated in intervention studies and corpus studies. Studies using paired-associate learning (PAL) have shown that concrete words are more readily recalled than abstract words (Ellis & Beaton, 1993b; Lawson & Hogben, 1998). de Groot and Keijzer (2000) extended these findings in a highly controlled list learning experiment focusing on the effect of concrete and abstract words on several measures: receptive as well as productive learning, reaction times, and forgetting. They found that concrete words were easier to learn than abstract words (i.e., they needed fewer retrievals or practice). Secondly, higher recall scores were revealed for concrete words than abstract words, both in terms of receptive and in terms of productive learning. Also, more forgetting occurred for abstract words than for concrete words. Finally, concrete words were retrieved faster than abstract words. This means that concreteness affected the speed of learning, the speed of processing and the breadth of learning. The facilitative effect of concreteness was corroborated in a later list learning study (de Groot, 2006).

Concrete words have also been shown to be easier to learn in incidental vocabulary learning studies. The facilitative effect of nouns in Horst and Meara’s (1999) study could be attributed to these words’ concreteness rather than their grammatical class. Comparing the effectiveness of sentence reading and writing, Pichette, de Serres, and Lafontaine (2012) found that concrete words were better recalled than abstract words in an immediate posttest, regardless of the treatment. However, in a delayed posttest, higher scores were only found for concrete words in the writing activity. Elgort and Warren (2014) demonstrated that concreteness also affected word learning (meaning recall) when learners had read several chapters from a nonfiction book. Additionally, concreteness had an effect on learners’ tacit lexical knowledge, as measured in a lexical decision task. In a large-scale study with young learners that explored incidental vocabulary learning from out-of-school exposure, Puimège and Peters (2019b) found that concreteness was a significant predictor of learning at the level of meaning recognition. Recently, three studies using aural input found a positive effect of concreteness on word learning and word use (Crossley et al., 2016; Puimège & Peters, 2019a; van Zeeland & Schmitt, 2013). Van Zeeland and Schmitt (2013), using four listening
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passages, found an advantage for concrete words over abstract words at three levels of word learning: form recognition, grammar recognition, and meaning recall. Similarly, Puimège and Peters (2019a) found a positive relationship between concreteness and incidental word learning from audio-visual input (form recall). Finally, analyzing naturalistic data, Crossley et al. (2016) argued that concreteness was an important predictor of lexical acquisition, which was measured as learners’ spontaneous use of words in speech. As learners progressed over time, they used fewer concrete words and more abstract words. Finally, changes in the use of concrete words also correlated with an increase in overall proficiency, indicating that concreteness could be considered an aspect of L2 lexical proficiency. Taken together, the studies reviewed here point to a learning advantage of concrete words over abstract words.

Polysemy and Homonymy

In addition to learning new words, FL learners are also faced with the challenge of learning new meanings of known word forms. Such word forms can be either polysemous words or homonyms. Polysemous words are words with multiple, related meanings, whereas homonyms are words with distinct, unrelated meanings. An example of the former would be mouth, which can refer to (1) the part of your face, (2) the entrance of a cave, (3) place where a river meets the ocean/sea, or (4) the top part of a bottle. Bank (river bank vs. money bank) would be an example of a homonym. High-frequency words tend to be more polysemous than low-frequency words (Crossley, Salsbury, & McNamara, 2010).

Research findings suggest that polysemous words might be difficult to learn. Saemen (1970, as cited in Nation, 2013) found that polysemy might be a difficulty-inducing factor in guessing the meaning from context. Learners had more difficulty guessing the meaning of a polysemous item when the real word was used than when a non-word was used because learners tended to adhere to the meaning(s) they were familiar with. Similarly, Bensoussan and Laufer (1984) showed that learners performed worse at guessing the meanings of polysemes than of other words because they applied “preconceived notions” instead of using the context to infer the meaning. Moreover, polysemy was the most frequent cause of incorrect guessing, which illustrates that learning a new meaning of a familiar word does not come automatically. To decrease the likelihood of incorrect guessing, learners could be offered the core meaning of unfamiliar polysemous words (Verspoor & Lowie, 2003) when they have to infer the figurative meaning. Verspoor and Lowie (2003) report that guessing the figurative meaning through knowledge of a core sense allows for more precise elaboration and hence, a stronger form-meaning link between the new, figurative meaning and the known word form.

Two longitudinal studies, albeit with different methodologies examined how polysemy is related to lexical development. Schmitt (1998) tested three participants’ lexical growth at regular intervals over the course of a year. The findings showed how difficult it is to make progress in knowledge of the meanings of a word. Despite considerable learning gains at the beginning, hardly any new meanings were learned during the 12 months of the study. This might be related to the difficulties learners experience in discovering more peripheral and figurative meanings of the words whose core meanings they already know. Crossley et al.’s (2010) findings seem to partially parallel those of Schmitt (1998). At the initial stages of learning, learners were able to use new, frequent and polysemous words in spoken interaction, but only in their core meanings. They did not produce multiple meanings of those words. It was only after four months that word meaning expansion in learners’ spontaneous speech could be noticed. Even though we do not know whether at the beginning learners knew the other meanings of the words analyzed, the study does show that learners first used
words’ core meanings before extending their use to new meanings for those words. This finding differs from Schmitt (1998), who did not find many gains in multiple word meanings over the course of one year. However, given the different methodologies used in the two studies (assessing vocabulary knowledge by means of vocabulary tests vs. analyzing learners’ use of words in spontaneous speech), care should be taken when directly comparing the findings of the two studies, as knowledge and use are different word knowledge aspects.

Conclusion
Twenty years after Laufer’s (1997) chapter on word difficulty, research has added to our understanding of word-related factors that affect the learning, processing, and use of words. Table 9.1 summarizes the main findings of the studies reviewed.

Contextual Factors That Affect the Learning of Single Words
The learning of single words can also be affected by the way words are used in context. For instance, the informativeness of the context in which a word is used has been found to positively affect word learning (Webb, 2008). A considerable amount of research has focused on the effect of multiple occurrences of words in input (frequency of occurrence). Additionally, research has explored how L2 frequency and to a lesser extent L1 frequency of words might facilitate or hinder word learning.

Frequency of Occurrence
There is robust evidence that repeated encounters with unknown words in written input, and in written input followed by vocabulary-focused activities contribute to vocabulary learning (Godfroid et al., 2018; Horst, Cobb, & Meara, 1998; Laufer & Rozovski-Roitblat, 2011; Pellicer-Sánchez & Schmitt, 2010; Peters, Hulstijn, Sercu, & Lutjeharms, 2009; Rott, 1999; Webb, 2007a). Most reading studies indicate that considerable learning gains can occur after eight to ten encounters. However, different aspects of knowledge might need different numbers of encounters. For example, Webb (2007a) found that to gain productive knowledge of words a greater number of encounters were needed than to gain receptive knowledge. Recent evidence from eye-tracking studies (Elgort, Brysbaert, Stevens, & Van Assche, 2018; Godfroid et al., 2018; Mohamed, 2018; Pellicer-Sánchez, 2016) has shown that repeated

| Table 9.1 Facilitative and difficulty-inducing factors for word learning, processing, and use |
|---------------------------------------------|---------------------------------------------|---------------------------------------------|
| Facilitative factors                         | Difficulty-inducing factors                 | Inconclusive                                |
| Cognates                                     | False cognates                             |                                              |
| Phonotactic regularity                       | No phonotactic regularity                   | Synformy                                    |
| Morphological transparency                   | Deceptive morphological transparency        |                                              |
| Concrete words                               | Abstract words                             |                                              |
| One form, one meaning                        | Polysemy/homonymy                          |                                              |

| Word length                                  | Part of speech                             |                                              |

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encounters also result in faster reading times of new words. In contrast to the findings of the aforementioned studies, Webb and Chang (2015a) did not find a relationship between frequency of occurrence and learning gains in an extensive reading-while-listening setting (13 weeks), possibly because of the larger time gap between learners’ encountering words in the input and the test.

Research investigating the effect of frequency in listening studies is far more limited. Vidal (2003) found that frequency of occurrence in spoken text predicted word learning, but other word-related factors explained more variance. In a follow-up study (Vidal, 2011), this finding was corroborated, but this time it was also revealed that the effect of frequency of occurrence was much smaller in listening compared to reading. Finally, van Zeeland and Schmitt (2013) showed that frequency of occurrence (3, 7, 11, or 15 occurrences) did not affect all aspects of word knowledge (form recognition, grammar, meaning recall) in the same way. Further, they only found a weak frequency effect in the immediate posttests.

The effect of frequency of occurrence has also been investigated in three TV viewing studies. In his longitudinal study, Rodgers and Webb (in press) found a small correlation between frequency and word learning when a tough test was used (multiple choice test with distractors sharing aspects of the form and meaning with the correct answer), but not in a sensitive test (a multiple choice test with distractors not semantically related to the correct answer). In a study comparing the effect of L1 subtitles and captions, Peters, Heynen, and Puimège (2016) found that frequency of occurrence contributed positively to the learning gains made through viewing a video clip, but its effect was related to learners’ prior vocabulary knowledge. Finally, the positive effect of frequency of occurrence on vocabulary learning from audio-visual input was also found in a study by Peters and Webb (2018).

Frequency of occurrence has also been addressed in deliberate vocabulary learning studies in which learners were given the opportunity to retrieve new words (Barcroft, 2007) or were asked to retrieve and use new words in vocabulary-focused activities during one learning session (Nakata, 2017; Peters, 2014). In line with the incidental vocabulary acquisition studies, frequency of occurrence (or retrieval) has been shown to facilitate vocabulary learning gains in the short term (Folse, 2006) as well as in the long term (Nakata, 2017; Peters, 2012, 2014). Both Nakata and Peters found that five retrievals resulted in significantly higher learning gains than one or three retrievals. The studies discussed here all focused on the effect of frequency of occurrence within one learning session. Although some research has looked at spacing or frequency of occurrence over time, research into the effect of spacing in deliberate vocabulary learning has yielded mixed findings. In a number of studies, Nakata and colleagues (Nakata, 2015; Nakata & Suzuki, 2018; Nakata & Webb, 2016) found that expanding spacing resulted in slightly higher learning gains than equal spacing, especially if the words are semantically unrelated. Yet, Schuetze (2015) only found an effect on short-term gains and more so for content words compared to function words. It seems that more research is warranted into how word features interact with spacing effects.

L1 Frequency

An underinvestigated factor that could affect the learning difficulty of a FL word is the frequency of the corresponding L1 word. De Groot and her colleagues investigated L1 frequency in a number of studies, all using paired-associate learning (de Groot, 2006; de Groot & Keijzer, 2000; Lotto & de Groot, 1998). They found that L1 frequency had a small effect on word learning, but its effect diminished with more retrieval practice (more learning occurrences). Further, it was shown that target words paired with infrequent L1 words
were more easily forgotten than target words paired with frequent words. The facilitative
effect of L1 frequency is explained in terms of concept familiarity, i.e., familiar concepts
will be encountered more frequently than less familiar concepts. As a result, these concepts
are more firmly entrenched in the mental lexicon, making it easier to link a new FL word
form to a familiar, well-stored concept. The influence of L1 frequency on learners’ use of
L2 words has not received much attention yet. An exception is Paquot’s (2017) corpus study
that showed how learners’ use of lexical bundles was influenced by the L1 frequency of the
lexical bundles. Learners preferred to use lexical bundles in English that had a frequent L1
equivalent. Whether this finding also holds for single words is still an open question.

L2 Frequency

Vocabulary researchers have placed great emphasis on word frequency in the language
(L2), as a model for vocabulary learning and vocabulary development. L2 frequency is
mostly operationalized as corpus-derived frequency, whereby corpus frequency is consid-
ered a proxy for learners’ exposure to L2 input. The frequency-based account of vocabu-
lar y learning holds that high-frequency words are normally learned before low-frequency
words (Ellis, 2002). Further, Puimège and Peters (2019b) showed that the relationship
between word knowledge and frequency became stronger with age. It seems that learners
get more sensitive to frequency patterns as they have more contact with English-language
input. The frequency-based pattern of acquisition is also the rationale behind the develop-
ment of frequency-based vocabulary tests, which sample items from different frequency
bands of 1,000 words. The two most well-known examples (for English) are probably
the Vocabulary Levels Test (Nation, 1990, Schmitt, Schmitt, & Clapham, 2001) and the
Vocabulary Size Test (Nation & Beglar, 2007). Such tests tend to show an implicational
scale in the test sections that correspond to different 1,000-word frequency bands, which
means that test takers commonly obtain lower scores on sections testing low-frequency
words than on sections targeting high-frequency words (see Batista & Horst, 2016, for a
French frequency-based test and Schmitt et al., 2001, for an English frequency-based test).
This implicational scale in test results is often seen as evidence for the frequency-based
model of vocabulary learning. Of course, deviations from this frequency pattern are possi-
ble in contexts where learners are rarely exposed to authentic FL input and where learners’
main source of input is the teacher and the textbook (Milton, 2007). Corpus analyses of
English textbooks have shown that textbooks contain a large proportion of low-frequency
words (Bardel et al., 2012; Milton & Vassiliu, 2000, as cited in Milton, 2007), which could
explain why some learners might know more words from a lower frequency band (e.g., the
5,000 most frequent words) than words from a higher frequency band (e.g., the 3,000 most
frequent words).

Corpus studies have also investigated whether a frequency pattern is attested in learners’
spontaneous use of words. The findings suggest that more proficient writers tend to use
fewer words from the first 1,000 words in English than less proficient writers (Laufer &
Nation, 1995). Further, the use of low-frequency words in writing texts is often considered
a feature of proficiency. For instance, FL learners’ essays that contain more low-frequency
words tend to receive higher scores than essays with more high-frequency words (Crossley,
Salsbury, McNamara, & Jarvis, 2011). However, a word of caution is in order here because
not using a word in writing or speech does not entail that learners do not know the word,
as productive vocabulary use has been shown to develop at a slower rate than productive
vocabulary knowledge (Laufer & Paribakht, 1998).
Learner-Related Factors That Affect the Learning of Single Words

Although several learner-related factors, such as learners’ topic familiarity or background knowledge (Pulido, 2004, 2007), inferencing skills (Hulstijn, 1993), or language aptitude (Li, 2016), have been investigated in relation to the learning of single words, this section will focus only on the role of learners’ prior vocabulary knowledge and working memory for reasons of space.

Learners’ Prior Vocabulary Knowledge

Learners with a larger vocabulary size tend to understand reading and listening texts better than learners with a smaller vocabulary size (Laufer & Ravenhorst-Kalovski, 2010; Noreille, Kestemont, Heylen, Desmet, & Peters, 2018; Stæhr, 2009; Schmitt, Jiang, & Grabe, 2011). Similarly, it has been shown that prior vocabulary knowledge also plays a role in incidental vocabulary acquisition from reading. Horst et al. (1998) revealed that there was a positive correlation between prior knowledge and learning gains, albeit not a strong one. Webb and Chang (2015b) carried out a longitudinal study which focused on vocabulary learning through extensive reading. They also found an effect of prior vocabulary knowledge on incidental vocabulary acquisition, as higher-level participants learned significantly more words than lower-level participants.

The role of prior vocabulary knowledge has been addressed in a limited number of TV viewing studies, but its effect seems to be less consistent than in reading studies. Studies on vocabulary learning from watching short subtitled (L1 or L2 subtitles) video clips (Montero Perez, Peters, Clarebout, & Desmet, 2014; Montero Perez, Peters, & Desmet, 2018; Peters et al., 2016; Puimège & Peters, 2019a) showed a positive correlation between prior vocabulary knowledge and vocabulary learning for most but not all word knowledge aspects. Using a full-length one-hour TV documentary, Peters and Webb (2018) found that learners with more prior vocabulary knowledge picked up more words incidentally at the level of meaning recall as well as at the level of meaning recognition. In contrast, Rodgers (2013) did not find that learners with greater vocabulary knowledge learned more words through extensive TV viewing than learners with less vocabulary knowledge.

Working Memory

Researchers have been interested in the relationship between learners’ working memory and vocabulary learning in order to explain why some learners are better than others at learning new words. Working memory entails storage (phonological short-term memory, or PSTM) as well as storage and manipulation of information (complex working memory, or WM). The former is commonly measured by non-word repetition or forward digit span tasks, whereas the latter is typically measured by a backward digit span, or a reading or listening span task (Kormos & Sáfár, 2008). One of the most well-known models of working memory is Baddeley’s (2003) model, which consists of the central executive, the audio-visual sketchpad, and the phonological loop. The latter in particular has been argued to be important for vocabulary learning (Juffs & Harrington, 2011). For instance, a strong relationship has been found between phonological short-term memory (non-word repetition) and L1 vocabulary knowledge (Gathercole, 2006).

Although most research into the role of PSTM and/or WM in L2 vocabulary point to a positive relationship between PSTM and/or WM on the one hand and vocabulary learning on
the other, it should be noted that data in these studies were collected in very different ways: in learners’ test performance (Kormos & Sáfár, 2008; Speciale, Ellis, & Bywater, 2004), in learners’ deliberate learning of new words (Elgort, Candry, Boutorwick, Eyckmans, & Brysbaert, 2016; Martin & Ellis, 2012), and in learners’ incidental learning of new words (Montero Perez, 2018). Second, different measures have been used to tap into PSTM and WM (e.g., a listening span task in Speciale, Ellis, & Bywater, 2004, a backward digit span task in Montero Perez, 2018) (see Juffs & Harrington, 2011, for an overview of different WM measures).

Even though there is generally a positive link with vocabulary learning, the effects of PSTM or WM might differ depending on the proficiency level of the learners, as was shown in the study by Kormos and Sáfár (2008), who found no link between PSTM and vocabulary use, as measured in a standardized test, in the case of beginners. Further, the effects of PSTM or WM might be different depending on the word knowledge aspect tested (comprehension or production of vocabulary) (Martin & Ellis, 2012; Speciale et al., 2004). In a study with intermediate and high-intermediate EFL learners, Elgort et al. (2016) found that learners with a larger WM (measured in an operation span task) did not only learn more words, but also had faster reaction times to newly learned words. A recent study by Montero Perez (2018) showed that WM (backward digit span task) is also related to French-as-a-foreign-language learners’ incidental learning of new words from audio-visual input. Yet, PSTM (forward digit span task) did not predict vocabulary learning. Despite the methodological differences, the findings emerging from these studies show that learners with a larger WM tend to learn more words.

**Future Directions**

Although there has been a considerable amount of research into the factors affecting the learning of single words and some findings seem quite robust (cognates, frequency, concreteness), the studies reviewed differ in their focus (learning, processing, use of single words), type of input under investigation (written, spoken, audio-visual), the learning conditions (incidental and deliberate learning [with or without context]), and word knowledge aspects tested (recall, recognition, spontaneous use, receptive, productive). So, some questions remain. Is productive learning of single words affected by the same factors as receptive learning, given that productive learning is considered more difficult than receptive learning (Nation, 2013). How does receptive vocabulary development differ from productive vocabulary development and (spontaneous) productive use? How can we better link the findings from intervention studies, which typically focus on a limited number of word knowledge aspects (e.g., meaning recall or recognition, form recall or recognition), with those from corpus studies, which analyze learners’ use of words in speech or writing? In addition, little is still known about how learners pick up vocabulary from inside the classroom (teacher talk and textbook) and from out-of-school exposure to FL input (computer games, internet, social media, chatting) (see Puimège & Peters, 2019b, for an exception). Further, vocabulary research has put great emphasis on frequency in explaining vocabulary learning and development, but the picture emerging from the studies reviewed is more complex and nuanced (see also Puimège & Peters, 2019b). So, is a frequency-based approach to vocabulary learning comprehensive and nuanced enough to account for the sheer complexity of factors that could play a role in the learning of single words? Finally, it should be pointed out that in the bulk of studies discussed in this chapter data were collected with university learners learning English, raising questions about the generalizability of at least some of the findings. What follows are some suggestions for further research.
The Learning of Single-Word Items

One avenue to pursue in future research seems to be a triangulation of methods. The use of different methodological approaches (intervention studies, processing studies, corpus studies) would allow us to study word learning from different perspectives and to gain a deeper understanding of word learning.

Second, relatively few longitudinal studies have been carried out to investigate the learning of single words. The fact that frequency of occurrence was found to foster vocabulary learning in one-off learning sessions but not in extensive reading or extensive viewing conditions indicates that we need more longitudinal research to obtain a full and nuanced picture of word learning.

Third, vocabulary learning can take place inside and outside the FL classroom. Our understanding of vocabulary learning would increase if we also investigated how different factors affect vocabulary learning from classroom-based input (textbooks, teacher talk, peer interaction) as well as from out-of-school exposure to the FL.

At a more theoretical level, it might be useful to study vocabulary learning within a framework that provides a more comprehensive account of word learning than frequency-based accounts. Such a theory could be a usage-based approach to language because it links frequency (tokens as well as type frequency) to other determinants of learning, such as form (salience), prototypicality, redundancy, and mechanisms of selective attention, blocking and overshadowing (Ellis, 2006; Ellis, Donnell, & Römer, 2015). Several researchers (Crossley et al., 2011, 2016; Paquot, 2017) have already pointed to the explanatory potential of usage-based accounts of language for vocabulary learning.

A final avenue to explore is how learner characteristics and the languages under investigation affect word learning. If we want to truly generalize findings about factors affecting the learning of single words, we need research into a wider variety of participant profiles (e.g., young learners, adolescents, low educated and low-literate learners) and into a wider variety of first and second/foreign languages.

Further Reading


Even though Laufer’s chapter was published more than 20 years ago, it is still very relevant because it nicely illustrates how word-related factors might affect the learning of new words.


Paul Nation’s all-encompassing book on vocabulary learning provides the reader with a comprehensive overview of vocabulary research and its pedagogic implications. By zooming in on, among others, what is involved in knowing a word and factors that relate to vocabulary learning from different modalities, the book shows which factors can affect the learning burden of words.


This book brings together research into the learning, processing, and use of cognates. It also highlights how cognate awareness can be used in the classroom.

Related Topics

The different aspects of vocabulary knowledge, factors affecting the learning of multiword items, processing single-word and multiword items, incidental vocabulary learning, intentional vocabulary learning
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References


