Abstract

A central aspect of language that affects L2 fluency is vocabulary. We will survey research on the use of morphological awareness in vocabulary acquisition, showing that morphological awareness is important for decoding individual complex words and for extending vocabulary. Learning whole words, without analysis of their morphological structure, is less effective than learning the rules of English word formation. Skills of morphological analysis are important not just for English-speaking children learning higher levels of spoken and written English, but for older learners from various language backgrounds who are learning English as a second language.
1. Introduction

Students choosing to learn a second language (L2) do so with various goals in mind. Some students may be preparing for a vacation to a foreign country. Others may be preparing to work in a specialized job in a foreign country. Yet others have a loftier goal of becoming fluent. Goals related to the quality of oral production in a second language are indeed appropriate, as research has shown, for example, that non-native pronunciations can affect perceptions of grammaticality (Kennedy, forthcoming). That is, errors in grammar can be perceived where none exist, when the speaker is judged to have a non-native accent. However, before we can strive to be fluent, we must consider two questions: 1) What exactly does it mean to be fluent? 2) How do we improve fluency?

If we wish to improve the fluency of L2 speech, we must first understand precisely what it means to be fluent. What it means to be fluent is more complicated than it may first seem and we will start by unearthing the varying definitions of this term. We will consider which elements of speech are used to evaluate fluency. Through this exploration we will see that one central aspect of language that affects fluency is vocabulary. A major source of disfluency in L2 speech is a limited vocabulary. We will explore what vocabulary is and how it is acquired, with the goal of expanding learners’ vocabulary. We will then focus specifically on the use of morphological awareness in vocabulary acquisition and reading comprehension. We will define morphological awareness before exploring whether teaching morphological skills is a worthwhile endeavour. We will consider whether the learning of unanalyzed wholes versus the use of rules of English word formation is more effective. We will then explore not only whether students will use morphological skills to decipher new words, but also whether they will do so spontaneously. Next we will consider whether word frequency impacts the effectiveness of morphological awareness in learning new words. We will then tighten our scope as we explore whether a given context impacts the effectiveness of morphological skills in deciphering new words. Finally we consider the effectiveness of such skills for older students of varying native (L1) languages. Through this exploration we will uncover the value of morphological awareness to languages learners and, consequently, the value of teaching these skills.

2. What is fluency?

To determine how to improve a second language learner’s fluency, we must first know what it means to be fluent. Speakers are often said to be fluent when they are perceived as being able to use L2 effectively and easily. However, this apparently simple interpretation of fluency masks considerable complexity. One often-referenced article on fluency is that of Chambers (1997), where the author reports that while fluency is a commonly used term in many environments, both academic and non-academic, there is no one common definition of this term. Chambers states that defining what it means to be fluent is difficult in part due to the various environments in which the term is used. She argues that there are two different broad interpretations of the notion: fluency as a synonym for oral proficiency and fluency in a communicative language teaching perspective. Fluency is used as a synonym of oral proficiency in many ordinary, non-academic settings. Chambers states that in this non-technical sense there is no distinction drawn between overall linguistic proficiency (including such things as mastery of L2 grammar, breadth of vocabulary, degree of accent, etc.) and those specific aspects associated with oral production. However, from a communicative language teaching perspective fluency is often distinguished from accuracy. That is to say, from a communicative language teaching perspective, a speaker can be fluent even if he or she makes many grammatical mistakes and masters only the necessary vocabulary to interact in a given situation.

What contributes to the impression of fluency or disfluency? Chambers (1997, p. 541) says that the following
four elements appear to be important in determining fluency:

1. the frequency of pauses;
2. the length of run (the number of syllables between pauses);
3. the place of pauses in an utterance;
4. the transfer (or not) of pausing patterns from L1 to L2.

These four factors are not an end point though; Chambers herself admits that “the concept of fluency is confused, multi-layered and therefore needs to be defined even more specifically. It cannot be assumed that we all share the same definition of fluency. Otherwise the validity of the judgments made by assessors is seriously in question” (p. 543). Thus, we must consider which other elements play a role in fluency, or its absence.

Research by Hilton (2008, p. 154) determined that “number and length of pauses and other hesitations, their distribution, and the temporal rate at which words are produced” are important for determining fluency. She quantifies some of these features by referencing psycholinguistic research in spoken production (Goldman-Eisler, 1968; Kowal and O’Connell, 1980; Beattie, 1980; Good and Butterworth, 1980; Levelt, 1989) that “has established baseline figures for L1 fluency and disfluency: native-speakers produce from 130 to 200 words per minute (2–3 words per second), and about one-third of production time is spent pausing” (p. 154). Using these baselines, Hilton analyzed samples from Université de Savoie’s corpus of L2 speech productions in English, French, and Italian for disfluencies. This research was able to quantifiably establish that “L2 speakers hesitate longer and more frequently than fluent speakers” (p. 158).

Hilton next analyzed the hesitations in L2 speech in order to determine why the L2 speakers hesitate longer and more frequently. This analysis found that “problems with lexical retrieval apparently account for 78% of the disfluent clause-internal pauses” (p. 159). Simply put, lexical retrieval is a speaker’s ability to find the right word at the right time. One reason why speakers may not be able to find the word they need is due to a limited vocabulary. Among the L2 speakers analyzed, Hilton found that the most disfluent speakers had an average vocabulary of 2,800 words whereas the most fluent speakers had an average vocabulary much closer to 12,000 words. This fact, coupled with the analysis of disfluencies, seems to indicate a strong relationship between vocabulary size and fluency.

Vocabulary as a feature of fluency is interesting in that one would suppose it to be one of the more teachable factors. It is, for example, presumably easier to enrich one’s vocabulary than it is to teach prosody. This however may depend on exactly how vocabulary is acquired as well as an individual’s capacity for this process.

3. Vocabulary acquisition and morphological awareness

If our goal is to improve the vocabulary acquisition of L2 learners, then we must consider how words are learned\(^1\). Which processes are used? Barcroft (2004) says that word learning can be viewed as a continuum with incidental learning at one end and intentional learning at the other. Incidental vocabulary learning “refers to learners acquiring new words from context without intending to do so, such as picking up new words during free reading” (Barcroft 2004, p. 201); intentional vocabulary learning “refers to learners acquiring words while intending to do so, such as studying a list of new words or completing activities in a workbook for a set of target words” (Barcroft 2004, p. 201). There has been abundant research into both types of vocabulary learning, but the bottom line is that “in order for a word to be learned incidentally or intentionally, a learner must attain access to

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\(^1\) In discussing vocabulary acquisition, a caution is in order. Defining a word – the basic unit of a vocabulary – is complex and controversial. Plag (2003, pp. 4-9) discusses various problems in deciding what constitutes a word. For example, are compounds such as high-rise one or two words? On the basis of sounding the same, are be and bee one word or two in a vocabulary? Are derived words (those resulting from the an addition of an affix to a base) counted as separate words from their base? Plag (2003, p. 9) suggests that “these rather subtle ambiguities in our use of the term ‘word’ are easily tolerated and are often not even noticed, but...it is sometimes necessary to be more explicit about what exactly one talks about”. Nagy and Anderson (1984) point out that one’s definition of a word matters when trying to measure vocabulary size as discrepancies in how word is defined have lead to huge differences in vocabulary estimates.
the word’s form and meaning” (Barcroft 2004, p. 203). What is of particular present interest about this statement is the mention of word form. Plag (2003, pp. 9-10) discusses the fact that many words are made up of more than one morpheme and that knowing the word’s form often involves an understanding of its inner morphological structure. For example, beautiful [bjutɪfl] is composed of two morphemes: the stem beauty [bjuːti], which denotes a quality that pleases or delights the senses, and the suffix -ful [fʊl], which marks the word as an adjective and denotes having the quality specified in the stem” (p. 161).

This specific type of knowledge of a word’s inner structure is known as morphological awareness. According to Kuo and Anderson (2006), “Morphological awareness comprises primarily knowledge about the pairing of sound and meaning in a language and the word formation rules that guide the possible combination of morphemes. To return to the example of beautiful, learners who are morphologically aware understand the relationship between the base beauty and the suffix -ful, their individual meanings, and how they can be combined to form the word beautiful. They would further understand the parallels to other words ending in -ful, for example healthful, purposeful, graceful, etc. Bellomo (2009a) defines morphological analysis as “the process of breaking down morphologically complex words into their constituent morphemes (word meaning parts)” (p. 45). It further involves understanding the function of the component morphemes. To return to our example, the morphologically aware learner knows, if only subconsciously, that words ending in -ful are usually adjectives, and are generally interpreted as “full of X”, etc.

If knowledge of word form and meaning are important to vocabulary acquisition, then it seems logical that those who are more gifted with regard to morphological awareness are better equipped to grow their vocabulary. In their quest to determine how many different words there are in school English, Nagy and Anderson (1984) estimated that for every word a student learns, “there are an average of one to three additional related words that should also be understandable to the child, the exact number depending on how well the child is able to utilize context and morphology to induce meanings” (p. 304).

But is morphological awareness a matter of being gifted or can it, and should it, be taught? White, et al. (1989) sought to determine whether or not teaching the skills associated with morphological awareness was a worthwhile classroom endeavour. To answer this question, the team undertook two studies. The first addressed the characteristics and frequency of affixed words, to determine if morphological analysis is, a priori, a key that can unlock the meaning of complex words. To determine this, White et al. focused on root words as bases, and excluded complex bases from their first study. The target words were 782 words prefixed by un-, 401 words prefixed by re-, 313 words prefixed by in-/im-/ir-/il- meaning ‘not,’ and 216 words prefixed by dis-. A stratified random sample consisting of about 15 percent of the words from each prefix set, for a total of 257 prefixed words, was drawn from the 782 words. The non-affixed root (the base word with no prefixes or suffixes) was extracted, taking into consideration one to three familiar meanings for each root (with one meaning being marked as most familiar). The most familiar meaning of each root was compared to the meaning of the prefixed (derivational) form. The researchers found that, using either the first, second, or third most common meaning of a given root, the meanings of approximately 80 percent of the target complex words could be understood. The researchers found that the remaining 50 target forms could not be understood from any of the common meanings of the root (meaning that for these words, the whole was not equal to the sum of their parts and had to be learned as a monomorphemic word). In this phase of the research, which focused on the prefixed words themselves, White et al. (1989) further found that, with respect to frequency, “individual prefixed words are quite rare or infrequent—much too infrequent to learn on an individual basis. But because there are a great many of them, the need for morphological analysis arises often…” (p. 290).

In the second phase of their research, which involved third- and fourth-grade participants, White et al. (1989) turned their attention to the students themselves, in an attempt to estimate “the likelihood that students will have the knowledge to be able to analyze a word morphologically if it is analyzable” (p.286). In this phase, the team addressed the possibility that just because a word can be analyzed morphologically, does not mean that a student will have the skills to do so. The results showed that third grade students were able to use morphological analysis to determine the meaning of an unknown word only 12% of the time. However, they determined that fourth graders were able to successfully use this type of analysis 27% of the time, indicating that morphological awareness improves with age and experience. Ultimately, the researchers “support the practice of direct morphological instruction in Grades 4 and above, provided that the instruction is (a) based on knowledge of
participants were more capable of determining the meaning of complex words that had highly productive suffixes. And to deal with unanalyzable words” (p. 303). They conclude that, with the above caveats, teaching these skills is important.

There are different ways in which a word can be acquired, and it is not simply a matter of whether a word will be learned, but with what efficiency. Morphological awareness is not the only possible route to learning a morphologically complex word. For example, according to Freyd and Baron (1982), morphologically complex words “may be learned as unanalyzed wholes, or through use of the rules of English word formation” (p. 282). Which method, the learning of unanalyzed whole words, or learning via morphological analysis, is more effective? To address this question, Freyd and Baron sought to determine whether good word learners were more likely to engage in morphological analysis than poorer word learners. They executed their study using two groups of students. The first group was comprised of 32 advanced-level fifth graders and the second was comprised of 48 regular-level eighth graders. Due to the advanced level of the younger students, “the fifth graders were expected to have about the same overall vocabulary knowledge as the older but less able eighth graders. Because the fifth graders were younger [but advanced], they could be assumed to be faster learners of vocabulary” (p. 284). This assumption follows from the general observation that vocabulary size correlates with school success; thus, an advanced group of students, though younger and in a lower grade, is believed to acquire vocabulary more quickly than an older group with a similar vocabulary size. Both groups of participants completed two separate tests. The first was a vocabulary test half of which were simple words (those containing only one morpheme) and half of which were complex words (those containing more than one morpheme). The second test was a paired-associate learning test that measured the students’ ability to learn the meanings of nonsense words. For example, if told that the nonsense word skaf means “steal”, the test sought to determine if students would then recognize the derivationally related nonsense word skaffist to mean “thief”. Ultimately Freyd and Baron found that the fifth graders outperformed the eighth graders on both tests, indicating that the advanced younger learners were better at learning new words and better at exploiting morphological knowledge to deduce the meaning of complex words. The researchers concluded that students who analyze derived words as multiple morphemes, rather than as a sort of monomorphemic whole, are, indeed, better learners of vocabulary.

Inspired in part by the work of Freyd and Baron (1982), Wysocki and Jenkins (1987) also explored the role of morphological awareness on vocabulary acquisition. In addition to exploring whether students could use morphological knowledge to decipher new words, they also sought to determine if students would do so spontaneously. They tested fourth-, sixth-, and eighth-grade students to determine their ability to use context, morphological information, or a combination of the two to infer the meaning of new words. They found that strong context (where significant contextual information and detail is given to aid in the inference of word meaning; i.e. “Timmy was very sad when his grandmother passed away.”) helped all students, with contextual cues being a greater aid to older students. They also found that the sixth- and eighth-grade students outperformed the fourth-grade students in using morphological information to infer the meaning of words in weak context situations (where little detail is given; i.e. “All of the students were sad.”). Wysocki and Jenkins hypothesized that the older students may be more accustomed to inferring meaning through the analysis of stems and affixes as they may have received more instruction to do so in their more advanced classroom studies. The use of sentences where little or no context is given forced students to use morphological analysis, as it was the only tool available to them. The study thus showed that students would indeed undertake such as process on their own accord.

Studies dealing with the subject of morphological awareness and vocabulary acquisition often have to confront the issue of word frequency. Are students’ vocabulary advances due to morphological analysis or are they linked to word frequency? It stands to reason that students will master, faster and easier, the form and meaning of the words they meet more frequently. But is this the end of the story? Betram et al. (2000) is among the studies that have explored this issue. These researchers studied the role of morphological knowledge on children’s understanding of words, but they chose to expand on the work of Wysocki and Jenkins and others by exploring whether (and to what degree) the frequency of the target word impacted participants’ performance. Their study of native speakers of Finnish uncovered several interesting findings. First, results showed that participants were more capable of determining the meaning of complex words that had highly productive suffixes (suffixes that can still be used to create new words) rather than those with antiquated, or non-productive, suffixes. Second, the study found that students were better at determining the meaning of low-frequency
complex words than of low frequency monomorphemic words, as they could use the meanings of component morphemes in complex words to assist their understanding. Research also revealed that morphological analysis was at play even in the case of frequent complex words. This finding seems to indicate that even words that occur often may not be encoded as a single unit, but rather analyzed for their morphological components. In short, frequency does not eliminate the need for morphological analysis in the understanding of complex words.

Although numerous studies have found a link between morphological awareness and understanding newly encountered words, few studies have evaluated learners’ ability to produce new words using this knowledge. Production is, of course, an essential part of communication. A fairly recent article by McCutchen and Logan (2011) sought to examine the link between morphological awareness and students’ ability to produce new words in a given context. In this study, students were given a stem word and then a sentence with a blank space. They were tasked with providing a morphological derivation of the stem word to complete the sentence. The researchers found that the students’ abilities to produce correct derivational forms increases consistently with increased morphological awareness, which in turn increases with age and experience with written and spoken language. In line with other studies discussed, McCutchen and Logan (2011) concluded that, in addition to aiding language production, “strategic use of morphological analysis may help children acquire new vocabulary and support comprehension” (pp. 344-345).

Most studies relating morphological awareness to vocabulary acquisition have focused on elementary school-aged learners. This is logical since morphological awareness does improve to at least some extent, apparently spontaneously, with increased age and exposure to language. Still, some research has focused on older students. For example, a study by Bellomo (2009b) explored the usefulness of morphological analysis for college preparatory students. This study also compared performance based on students’ native languages with students being native speakers of English as well as several Latin-based (LB) and non-Latin-based (NLB) foreign languages. The author argues that knowing which strategies work best for learning vocabulary at this level is important as morphologically complex words are common in the university setting. The author found that, even in this older age group, students’ vocabulary scores grew after they received morphological analysis training, suggesting that it is essential that college preparatory reading courses ensure that students have these vital skills. The study also found that morphological analysis was valuable for growing the English vocabulary of all students, regardless of their native language.

4. Conclusion

Language learning is a time-consuming and complicated process composed of many individual skills and processes. Among these processes is vocabulary acquisition, an essential step in reaching the status of fluent speaker. Research in the field has shown the importance of morphological awareness to understanding words and building vocabulary; it has shown that that more successful word-learners use morphological analysis to understand and learn new words. It has also shown that, for the acquisition of new vocabulary in English, learners, regardless of age or native language, benefit from morphological awareness and morphological awareness training.

References


