Multiple Meanings in the EFL Lexicon

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Abstract

The extent of words with multiple meanings in English has important implications for the vocabulary learning load of EFL learners. The greater proportion of such words among the target vocabulary implies an increased learning load. The present study investigates the extent of multiple word meanings among the most frequent 9,000 words of the English language, which we refer here as the EFL lexicon. These include two subsets of vocabulary 'the high frequency vocabulary' covering the most frequent 3,000 words and 'the mid-frequency vocabulary', which covers the subsequent 6,000 words in the 4,001 -9,000 frequency range. The meanings of 225 words randomly sampled from nine word frequency lists based on the British National Corpus were checked using the Oxford Learner's Dictionaries website. The results indicated that 64% of the words in the entire sample had multiple meanings. The percentage was much higher among the high frequency vocabulary (95%) but dropped considerably (48%) in the mid-frequency vocabulary. The words had 2.49 meanings on average amounting to a learning load of over 22,000 meanings for the 9,000 words. The high frequency vocabulary had more meanings, 4 meanings per word, suggesting an even heavier load for lower proficiency learners for whom this vocabulary is a common first target. The extent of multiple meanings was greater in adjectives: there was a greater percentage of adjectives with multiple meanings (85%) and the number of meanings per word was also higher (2.93 meanings) warranting special pedagogic attention.

Keywords EFL; multiple meanings; frequency; word class

1. Introduction

Words with multiple meanings (i.e. polysemes and homonyms) have received little attention in the second language vocabulary research (Verspoor & Lowie, 2003; Crossley et. al., 2010 being exceptions) and in the teaching material to foreign language learners. Is this neglect negligible or should we pay more attention to this aspect of language in our teaching? The answer to this question depends on how widespread this phenomenon is in the vocabulary that we want to teach our learners. If it turns out that many of the words have multiple meanings, we, as language teachers and materials designers, can

feel more confident about incorporating them into our materials and teaching. The present study aims to investigate this question with respect to the 'EFL Lexicon', which is proposed below as the principal target vocabulary for EFL. The results of this analysis have implications for the vocabulary learning load of EFL learners as the presence of many words with multiple meanings in the EFL lexicon will increase the learning load which is already too heavy for most learners, in which case we need to find new ways to elevate the burden.

1.1. Words with multiple meanings

The term 'words with multiple meanings' is used here to refer to cases where a single word form is associated with at least two meanings. The presence of two meanings for a word form was taken as the minimum criterion for multiple meanings although words might have many more meanings (e.g. the highest number of meanings was 19 in the present data). This term covers two traditional concepts in lexical semantics homonymy and polysemy. In homonymy, the multiple meanings associated with the word form are not related to one another. The classical example of homonymy in English is the word *bank*. This word can be used to refer to a 'financial institution' as well as to 'the side of a river' as shown in the sentences below:

I went to the *bank* to withdraw money. ('financial institution')
We had a picnic on the river *bank*. ('side of a river')

For most native speakers of English, these two meanings are semantically unrelated. On the other hand, polysemy is "the association of two or more *related* senses with a single linguistic form" (Taylor, 1995, p. 99). In the following examples, the first sentence represents the main meaning sense of the word *head*, i.e. 'the body part' sense, and it is to this meaning which the other two meanings are related. The 'headache' sense in the second sentence is related to the 'body part' sense in a *container for content* relationship since *head* 'the body part' contains *head* 'the ache'. In the third sentence, the head of a department has a metaphorical similarity to the head of a person's body as both are in control of the structures of which they are a part.

She nodded her *head* in agreement. ('body part')
I woke up with a really bad *head* this morning. ('headache')
She resigned as *head* of department. ('the person in charge')

Homonymy is often regarded as an accidental phenomenon. Taylor (2003, p. 645) suggests that it may be more appropriate to think of homonymy, not as a single word having two or more unrelated senses, but as two or more unrelated words happening to share the same phonological form'. As such it is far less common than polysemy whereas polysemy is suggested to be 'endemic in natural languages' (Taylor, 2003, p. 637).

While it is widely agreed that multiple meanings, polysemy in particular, are widespread in English, we have little empirical evidence that this is the case. The paper by Britton (1978) is unique in that respect. This study revealed that of the 257 words randomly sampled from an unabridged English dictionary, 44% had more than one meaning. A further analysis of the most frequent 100 words in the Kuçera & Francis Word List (1967) revealed a much higher percentage: 93% of these words were reported to have more than one meaning (Britton, 1978). Neither count, however, is representative of the lexical challenges a language learner faces when dealing with English discourse. While the 257 word sample might be representative of the English language in general, it inevitably includes many infrequent words which L2 learners are unlikely to encounter in the language material they study. On the other hand, the 100-word list studied by Britton (1978) is quite inadequate in coverage. The majority of these words, 90% to be more specific, are function words. Function words are small in number and form only a fraction of the English lexicon (i.e. 320 words are listed in Nation 2001). Also, they are often treated as part of grammar learning and not vocabulary learning per se. The bulk of L2 vocabulary learning task involves content words (i.e. nouns, verbs, adjectives, and adverbs) which are relatively frequent in the language. The present study will investigate the multiplicity of meaning in the content words of the EFL lexicon. No distinction will be made, however, among polysemous and homonymous meanings.

1.2. Target vocabulary in EFL:The EFL lexicon

Target setting with respect to vocabulary in EFL involves some kind of delimitation of the vocabulary to be taught to the learners since the English lexicon is far too large for even native speakers to know in its entirety. The most used criterion for vocabulary selection and control in EFL materials has been frequency. More frequent words in the language are often regarded as more useful because learners encounter them more often in natural everyday discourse. Nevertheless, frequency is a continuous variable by which we can rank order all the words in the English language starting from the most frequent going to the least frequent, which is not much helpful by way of vocabulary selection. Clearly, we need to identify a cut-point along this continuum. Traditionally, this cut-point is set at 2,000 most frequent words and is known as *the General Service List* (West, 1953). The GSL vocabulary covers about 85% of words in written and spoken texts (Nation, 2006, p. 79), which means that a learner with receptive knowledge of these words will be able to understand at least 85 % of the words in an authentic general

English text. In a recent article, Schmitt & Schmitt (2014) proposed the extension of the high frequency vocabulary of English to include the most frequent 3,000 words instead of 2,000 words supporting their case with empirical evidence from second language acquisition and language use studies as well as from the widespread practices in EFL materials. The inclusion of the third thousand most frequent words within the high frequency vocabulary raises coverage figures to about 90%. Although this coverage figure will provide good grounding in reading comprehension, it is suggested as being not sufficient for 'adequate' and independent comprehension (Laufer & Ravenhorst-Kalovski, 2010). Independent comprehension requires knowledge of 8,000 words ('optimal threshold' vocabulary) providing 98% coverage of text while reading with guidance requires 4,000-5,000 words ('minimal threshold' vocabulary) with 95% coverage. Clearly, more than 3,000 words are needed for text comprehension. Schmitt & Schmitt (2014) propose '*mid-frequency vocabulary*' as the next vocabulary target after the high frequency vocabulary. The mid-frequency vocabulary covers the 6,000 words in the frequency range between 4,000 and 9,000 words and includes both the optimal and minimal threshold vocabulary suggested by Laufer & Ravenhorst-Kalovski (2010).

In the present study, these two sets of vocabulary, the high frequency and mid-frequency vocabularies, are subsumed under the title 'the EFL lexicon' to refer to the vocabulary covering the most frequent 9,000 words of English. The present study will shed light into the amount of lexico-semantic work that L2 learners have to undertake in learning the two sets of vocabulary to a comfortable standard. The learning load is hypothesized to be greater for high frequency vocabulary on the basis of Zipf's law-of-meaning distribution (1949), which posits a linear relation between frequency of words and the number of meanings they have with higher frequency words having a greater number of meanings and lower frequency words tending more towards a single meaning.

More specifically, we seek answers to the following research questions:

1. What percentage of high frequency content words and mid- frequency content words has multiple meanings in the EFL Lexicon?

2. How many meanings on average do high frequency content words and mid-frequency content words have in the EFL Lexicon?

3. Are there differences between the major word classes in the percentage of words with multiple meanings and the average number of meanings the words have?

2. The study

2.1. The sample

A total of 225 words were sampled randomly from the first 9 word frequency lists out of 20 based on the British National Corpus (BNC) from the Compleat Lexical Tutor website (http//www.lextutor.ca/list_learn/bnc/). The nine word lists include roughly 9,000 words

which are most frequent in the corpus and the sampling rate is 1 in 40. Direct comparison with Britton's (1978) study is not possible as the sampling rate is not reported in Britton. However, his sampling rate is likely to be quite low as he sampled from the first edition of an unabridged dictionary whose 3rd edition in 1992 is claimed to include over 350,000 entries (http//www.goodreads.com/book/show/835527). Given the fact that the two samples are similar in size (225 in the present study vs 257 in Britton, 1978), the present sample seems more representative of the lexicon from which it is drawn.

The BNC word lists used in the present study contained about 1,000 words each and ordered in frequency from the most frequent (1K list) to the least frequent (9K list). An equal number of words was sampled randomly from each of the nine lists. There were 25 words in the sample from each list, all of which were content words (i.e. nouns, verbs, adjectives, adverbs). Nouns were, by far, the largest category of words in the sample. There were more nouns (122) in the sample than the other three word classes combined (103). The number of adjectives and verbs were very close (46 and 54 respectively) and there were only 3 adverbs.

2.2. Analysis

The sampled words were checked in a monolingual English learners' dictionary to determine the number of meanings each word had. For this purpose, the online version of the Oxford Advanced Learner's Dictionary (OALD) on the Oxford Learner's Dictionaries website was consulted (http//www.oxfordlearnersdictionaries.com/). The word meanings are provided as a numbered list in the website dictionary and the number of the last meaning defined was noted as the number of meanings for the searched word. When the word belonged to more than one part of speech as in *sound* (noun) and *sound* (verb), the part of speech provided first by the dictionary was preferred (i.e. the noun in the case of *sound*). This has led to a more conservative count of multiple meanings as the word might also have multiple meanings in other parts of speech. The OALD does not use separate entries for homonyms when both meanings belong to the same word class and includes homonymous meanings together with the other polysemous meanings of the word in the same entry. In the present study, no distinction has been made, either, between polysemous and homonymous meanings of a word form, which were counted together in the word's total number of meanings.

3. Results and discussion

3.1. Extent of multiple meanings in the EFL lexicon

The extent of multiple meanings in the sample is given in Table 1. Overall, 64% of the sampled words (144 words out of 225) had multiple meanings. This percentage was

higher than the 44% found in Britton (1978). This difference might be the result of the difference in the size and make-up of the lexicons the samples in the two studies represent. Britton sampled from the whole of the English lexicon which consisted of several hundred thousand words whereas the present sample was drawn from a small subset of it comprising only 9,000 words. His sample is likely to have included a number of infrequent words while the present sample included only the most frequent 9 thousand. Given the afore-mentioned relation between frequency and number of meanings shown by Zipf, it is not surprising to have a higher proportion of words with multiple meanings in the present sample.

Table 1. Multiple meanings in the English lexicon

	Frequency Level (N= 25 in each K level)	Number of words with multiple meanings	% of words with multiple meanings	Mean number of meanings	Maximum number of meanings	Total number of meanings
High frequency	1K	25	100	5.24	19	131
	2K	24	.96	4.08	10	107
	3K	22	.88	2.76	8	69
High Total (N=75)	1K-3K	71	.95	4.03	19	307
Mid-frequency	4K	17	.68	2.44	6	61
	5K	17	.68	2.04	5	51
	6K	16	.64	1.88	4	47
	7K	11	.44	1.48	3	37
	8K	3	.12	1.16	3	29
	9K	8	.32	1.36	3	34
Mid total (N=75)	4K-9K	72	.48	1.72	6	259
All (N=225)	1K-9K	144	.64	2.49	19	566

When high frequency and mid-frequency vocabularies are studied separately there indeed seems to be a sharp difference between them in the extent of multiple meanings. Multiple meanings were more prevalent among the most frequent 3,000 words: 95% of these words had multiple meanings. This is very similar to 93% reported by Britton in his second investigation for the most frequent 100 words in English. In mid-frequency vocabulary this dropped to 48%, which is rather close to Britton's figure of 44%. Among the high frequency words, the extent of multiple meanings was very high in the first two levels. All words in the 1K sample and most words in the 2K (96%) had multiple meanings. In the mid-frequency set, the proportion of words with multiple meanings

dropped linearly as frequency decreased (from 68% in the 4K level to 12% and 32% in the 8K and 9K levels respectively). These results suggest that lower level learners will have to deal with multiple meanings more frequently than more advanced learners as it is the high frequency vocabulary which is often targeted at this level of proficiency.

3.2. Number of meanings

The words in the sample had more than 2 meanings each on average. This has important implications for the learning burden of L2 learners: the number of meanings to be learnt is over 2 times the number of words (566/225=2.49 times). While the number of words to be learnt is 9,000 the number of meanings that needs be learnt for these words is about 22,000 (2.49 meanings x 9,000 words= 22,410 meanings).

In the high-frequency vocab, words had 4 meanings on average and the total number of meanings to be learnt for the 3,000 words in this set are about 12,000 (4.03 meanings x 3,000 words). On the other hand, the mid-frequency words had near 2 meanings per word and the number of meanings to be learned is about 10,000 (1,72 meanings x 6,000 words). The mean number of meanings dropped linearly as frequency decreased form 5.24 in the 1K level to 1,16 for 8K and 1,36 for 9K suggesting that words were mostly monosemous (i.e. having a single meaning) in the latter. Again, this suggests that lower level learners have to learn more meanings for a smaller number of words than more proficient learners.

3.3. Word class

The distribution of words with multiple meanings across the three content word classes is given in Table 2 below. Adverbs were not displayed as there were only 3 adverbs in the sample, all of which were monosemous.

Table 2. Multiple meanings in content word classes

	Number	Number of words with multiple meanings	% of words with multiple meanings	Mean number of meanings	Maximum number of meanings	Total number of meanings
Adjectives	46	39	.85	2.93	19 (*open*)	135
Verbs	54	31	.57	2.59	18 (*see*)	140
Nouns	122	73	.60	2.36	10 (*credit*, *block*)	288

Nouns as a group had the highest number of meanings in the sample (288), which was more than the other two categories combined (275). The number of total meanings was

similar for adjectives and verbs (135 vs 140 respectively). These results mirror the relative distribution of the word categories in the sample there were more nouns in the sample than verbs and adjectives and therefore more noun meanings. This would suggest nouns are more important for teaching multiple meanings. However, the percentage figures indicated only about half of the nouns and verbs in the sample as having multiple meanings (60% and 57% respectively) whereas 85% of the adjectives had more than one meaning. Thus, although there were fewer number of adjectives in the sample, the average number of meanings per adjective was almost 3 (2.93) while this was much smaller in nouns (2.36) and verbs (2.59). Therefore, a greater focus on adjectives with multiple meanings in pedagogic materials might provide greater returns for effort.

A separate analysis was carried out on words which were semantically more loaded and which might, therefore, appear as more important as well as more troublesome for learners. An examination of words with more than 3 meanings in the data (cf. Table 3) revealed that most of these words were high frequency in adjectives and nouns (86% and 85 % respectively) while the percentage was lower for verbs (63%). These results suggest that adjectives need to be given special attention in the lower proficiency levels where high frequency vocabulary is targeted as there are fewer words to learn in this category but more meanings. Thus, by learning these adjectives learners will gain access to a greater number of meanings.

Table 3. Words with more than three meanings

	Number	Number of words in 1K-3K	% of words in 1K-3K
Adjectives	7	6	.86
Verbs	8	5	.63
Nouns	20	17	.85

4. Conclusion

The present study indicated that multiple meanings are widespread in the EFL lexicon. Overall, more than half of the sampled words had multiple meanings, indicating a far greater learning burden than believed previously. For the 9,000 words of the EFL Lexicon, the learners have to learn over 20,000 meanings. Lower proficiency learners seem to have a heavier learning burden as the majority of words in the high frequency vocabulary (i.e. the target vocabulary in lower proficiency levels) have multiple meanings and words in these frequency levels have a greater number of meanings (3 to 5 per word on average). Multiple meanings also seems to be a more important issue with adjectives as a greater proportion of sampled adjectives in the EFL Lexicon (85%) had multiple meanings than verbs and nouns.

The study had two important limitations. First, the sampling rate was somewhat low although it was remarkably higher in comparison to Britton (1978). The 1 in 40 sampling rate corresponded to 2.5% of the EFL Lexicon and future studies are advised to use higher sampling rates for greater reliability. Second, the number of meanings of the words in the sample was checked in only one dictionary. Sense identification and enumeration involve a certain degree of subjectivity and dictionaries often disagree about the sense distinctions they make. For instance, the 1K words, *list* and *street*, are monosemous according to the Longman Dictionary of Contemporary English (LDCE) whereas they have multiple meanings in Oxford Advanced Learners' Dictionary (OALD). Similarly, LDCE identifies 13 meanings for the adjective *open* while OALD indentifies 19. To eliminate this dictionary bias, future studies need to use more than one dictionary to check the number of meanings.

From the results of this study, it can be concluded that multiple word meanings are something important that learners have to deal with when learning English as a second or foreign language and need to be taken seriously by vocabulary researchers, material designers, teachers and learners alike. Although it is not practical to try to teach the complete set of meanings of all the words with multiple meanings, we nevertheless need to assist learners by teaching them strategies to deal with words with multiple meanings in language use.

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