

**English Phrasal Verbs:
Usage, Knowledge, Acquisition**

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Abstract

Formulaic language constitutes an essential part of English vocabulary and is necessary for performing a wide range of communicative functions, but knowledge and acquisition of formulaic sequences is typically found to be lacking and problematic for L2 learners. Whilst much research has been carried out on formulaic sequences such as idioms and collocations, comparatively little has been done on phrasal verbs which are nonetheless commonly perceived as one of the most challenging aspects of English vocabulary. This thesis attempts to contribute to filling this gap by exploring the usage, knowledge and acquisition of phrasal verbs by native and non-native speakers of English.

Study 1 explores the semantic frequencies of the 150 most frequently used phrasal verbs using the Corpus of Contemporary American English (COCA). Results show that, whilst the vast majority of these phrasal verbs are polysemous, only two meaning senses on average are enough to cover three-quarters of the occurrences of each of them. The most frequent meaning senses of all 150 phrasal verbs are listed in the PHrasal VERb pedagogical List (PHaVE List), in frequency ranking order along with frequency percentages. The list thus offers teachers and learners the possibility of prioritising these most frequent, and thus most important, meaning senses, thereby allowing for a more systematic approach to tackling phrasal verbs.

Study 2 explores L2 learners' knowledge of a sample of phrasal verbs and meaning senses on the PHaVE List at a form-recall level of mastery, and the effect of a number of factors on this knowledge. Results show that only about 40 % of meaning senses were known, with a 20 % chance that all the various meaning senses attached to a given phrasal verb would be known. A mixed-effect modelling analysis reveals a significant effect of two factors on scores: item frequency and learner engagement in leisure activities in the L2 such as reading and social networking. This is consistent with previous research showing the robust effect of frequency for L2 knowledge of individual words and formulaic sequences, and the benefits of reading for L2 language acquisition.

Study 3 investigates L2 learners' acquisition of novel phrasal verbs through

three intentional, word-focused learning activities: rote memorisation, textbook exercises, and guessing from context. Knowledge of the items was measured both immediately and one week after the teaching treatment at meaning-recall and meaning-recognition levels of mastery. Results show encouraging learning gains, similar to those found by previous research for individual words and idioms, with higher L2 proficiency and general vocabulary knowledge leading to significantly higher scores. A Friedman test reveals no significant difference in learning gains between the three activities.

Taken together, these studies provide empirical evidence for the gap in L2 learners' knowledge of phrasal verbs, but suggest that a restricted number of phrasal verbs and meaning senses can go a long way and be effectively learned using the same explicit activities commonly used for learning single words. Overall, they offer useful insights for learning and teaching English phrasal verbs in a more systematic and efficient manner.

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Declaration

I declare that the work presented here is my own and was conducted during my time as a PhD student at the University of Nottingham. Several parts of this thesis have been published in peer-reviewed journals:

The study outlined in Chapter 4 was published in *Language Teaching Research* (Garnier & Schmitt, 2015)

The study outlined in Chapter 5 was published in *System* (Garnier & Schmitt, 2016)

The chapters within this thesis represent adapted versions of the published papers. Only the published versions should be considered authoritative, and any citations or page references should be taken from the published versions.

Published manuscripts

Garnier, M. & Schmitt, N. (2015). The PHaVE List: A pedagogical list of phrasal verbs and their most frequent meaning senses. *Language Teaching Research*, 19(6), 645-666.

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Terminology and typographical conventions

The terms formulaic language, formulaic units/sequences and multi-word units/sequences are used interchangeably throughout this thesis. No technical distinction is made between these terms.

L1 refers to the native language for any speaker, and L2 refers to a learned non-native language. The terms native language and first language are also used interchangeably to refer to the L1, and the terms foreign language and second language are also used to refer to the L2.

Direct quotations are presented throughout in double quotation marks: “...”. Terms used in a semi-technical sense are presented in single quotation marks: ‘...’. Truncated parts of quotations are signalled by: [...].

Examples of sentences or individual/formulaic items are presented in italics, e.g. *bring up a suggestion*, with meanings provided where required in single quotation marks, e.g. ‘mention’.

Examples of unacceptable or ungrammatical phrases are presented in italics with an asterisk, e.g. **they came a problem across*.

“Some of these particles, *up* and *out* especially, do seem to have a magical and valuable power to enrich or distinguish a plebeian verb, and whenever they are employed to these ends we should be proud of them.”

Sir Alan Herbert

“I’m *cooled out*, man. I’ve seen so much cool, it’s just left me cold.”

David Bowie

“This is the kind of English *up with* which I will not *put*.”

Sir Winston Churchill

Chapter 1

Introduction

1.1. Setting out

In the preface to his *Dictionary of the English Language* (1755), the venerable Samuel Johnson wrote:

“There is another kind of composition more frequent in our language than perhaps in any other, from which arises to foreigners the greatest difficulty. We modify the signification of many verbs by a particle subjoined; as to come off, to escape by a fetch; to fall on, to attack; to fall off, to apostatize; to break off, to stop abruptly; to bear out, to justify; to fall in, to comply; to give over, to cease; to set off, to embellish; to set in, to begin a continual tenour; to set out, to begin a course or journey; to take off, to copy; with innumerable expressions of the same kind, of which some appear wildly irregular, being so far distant from the sense of the simple words, that no sagacity will be able to trace the steps by which they arrived at the present use.”

Some 250 years later, the mystique surrounding phrasal verbs is still very much alive (Gairns & Redman, 1986; Wyss, 2003) and felt by many learners of English as a Foreign or Second Language. The fact that phrasal verbs are some of the most challenging words of the English language for the average learner of English is

uncontroversial (Cowie, 1993), and many teachers will testify that the mere mention of the term *phrasal verbs* in the classroom is enough to prompt dislike and apprehension amongst students. Their syntactic peculiarity and semantic complexity make them particularly difficult to learn, in addition to them being perceived as an unnatural construction for some learners whose native languages lack such a structure. As if that was not enough, phrasal verbs are by definition composed of at least two orthographic words; this means that instead of recognising them as single semantic units, unaware learners may attempt to decode the meanings of their individual components, and therefore misinterpret them. In fact, a number of studies have observed an avoidance phenomenon in the use of phrasal verbs by learners of English (Dagut & Laufer, 1985; Hulstijn & Marchena, 1989; Laufer & Eliasson, 1993; Liao & Fukuya, 2004). They suggest that, although they know phrasal verbs, L2 learners may deliberately choose to avoid using them in favour of their one-word verb equivalents (see Johnson's quote for examples, albeit somewhat old-fashioned, of phrasal verb/one-word verb pairs).

Unfortunately, phrasal verbs happen to be an important feature of English vocabulary. While Biber, Johansson, Leech, Conrad, and Finegan (1999) estimate that phrasal verbs occur almost 2,000 times per million words in fiction and conversation, Liu (2011) finds that they occur almost three times as much, and Gardner and Davies (2007) estimate that learners will encounter on average one phrasal verb in every 150 words of English to which they are exposed. Furthermore, phrasal verbs may carry a large number of meanings and functions: Gardner and Davies' (2007) search of the British National Corpus showed that each of the 100 most frequent English phrasal verbs have between five and six meaning senses on average. These meaning senses may not be possible to be conveyed by a single word equivalent, or may carry connotations that their single word equivalent does not have (Cornell, 1985).

Siyanova and Schmitt (2007) argue that, because phrasal verbs are widely used in informal spoken discourse, failure to use them in such situations is likely to give away learners as non-natives. It is certainly true that, among the two following sentences, one sounds more native-like than the other:

I get up at 7am, set off for work at 8 and am ready to log on by 9.

I arise at 7am, commence my journey to work at 8 and am ready to begin the procedure of starting my computer by 9.

(BBC Learning English, 2016)

Using large numbers of phrasal verbs in normal speech is thus required “if one wishes to avoid the criticism of ‘talking like a book’” (Jowett, 1951: 156), which unfortunately is difficult to avoid for many learners whose exposure to English is largely derived precisely from books. The importance of phrasal verbs is now widely acknowledged in the English Language Teaching community (after many years of neglect; see McArthur, 1989), as evidenced by their special place in English language teaching materials. A large number of dictionaries (*Oxford Phrasal Verbs Dictionary*, *Cambridge Phrasal Verbs Dictionary*, *Collins COBUILD Phrasal Verbs Dictionary*, *MacMillan Phrasal Verbs Plus Dictionary*, *Longman Phrasal Verbs Dictionary*) and practice books (notably *English Phrasal Verbs in Use* Intermediate and Advanced; McCarthy & O’Dell, 2004, 2007) have been dedicated to them.

Since the field of Applied Linguistics began to devote increasing attention to the study of formulaic language and phraseology, culminating in the publication of seminal books and articles (Pawley & Syder, 1983; Nattinger & DeCarrico, 1992; Lewis, 1993; Kuiper, 1996; Moon, 1998; Cowie, 1998; Wray, 2002, 2008; Schmitt, 2004; Granger & Meunier, 2008; *Annual Review of Applied Linguistics*, 2012), vocabulary research studies have increasingly shifted their focus from single words to multi-word units. But while the most prominent of those, idioms and collocations, have been the object of much investigation from various perspectives (corpus linguistics, psycholinguistics, language acquisition and assessment, etc.), phrasal verbs have attracted comparatively little interest.

In sum, phrasal verbs are simultaneously difficult and important to master for non-native speakers of English, but their neglected status in formulaic language research means that relatively little is known as to their usage, knowledge, and acquisition by native speakers and L2 learners. This thesis aims to partially address this gap by shedding light on those issues.

1.2. Structure of the thesis

The next two chapters will provide a review of the literature relevant to the scope of study of this thesis. Chapter 2 will present a survey of the research carried out on formulaic language in general and on formulaic sequences other than phrasal verbs. It will begin by defining the concept of formulaic language and presenting the different types of formulaic sequences in turn. It will then argue for the significance of formulaic language in discourse and for communication purposes, before turning to discussing L2 learners' knowledge, use, and acquisition of formulaic sequences such as collocations, idioms and lexical bundles. Chapter 3 will focus exclusively on the literature pertaining to phrasal verbs, both in terms of usage in native discourse and of their use, knowledge and acquisition by L2 learners. Similarly to the previous chapter, it will begin by defining phrasal verbs, which as we will see is not as straightforward a task as may first appear.

Chapters 4, 5, and 6 present the three original studies I have carried out for this thesis, each involving their own research questions and methodologies but nevertheless clearly relating to one another. Each chapter begins by its own focused literature review to discuss issues that are specific to the particular investigation at play. For this reason, some reiteration of elements of the main literature review provided in Chapter 3 inevitably occurs. This is also the result of each chapter being intended as a stand-alone study, with only minimal amendments from published versions as required. Each of these chapters contains an introduction designed to situate them within the context of the broader thesis, and link them to the preceding chapter/study. A detailed account of the methodology employed to answer the research questions is provided after the literature review. Following the presentation and discussion of the results, I discuss the wider applications and implications of the results for pedagogy, reflecting the pedagogical stance of the thesis as a whole. Finally, each chapter ends with a critical assessment of the limitations of the study it contains, and suggestions for future research.

Chapter 4 presents a corpus analysis study exploring the semantic frequencies of the 150 most frequently used phrasal verbs in English, using the Corpus of

Contemporary American English (COCA) as reference, and describes the development of its end-product, a pedagogical list of the most frequent phrasal verbs and meaning senses named the PHaVE List. Chapter 5 presents a cross-sectional study investigating the knowledge of a sample of phrasal verb meaning senses on the PHaVE List by L2 learners, and the effect of a number of factors on this knowledge. Chapter 6 presents an acquisition study of novel phrasal verbs by L2 learners through intentional, word-focused learning activities. Finally, Chapter 7 ends the thesis by summarising the results and discussing their implications, and suggesting more general directions for future research.

Chapter 2

Formulaic language, Formulaic sequences

2.1. What is formulaic language?

One of the most challenging issues facing researchers working on formulaic language has long been to provide a clear definition of what formulaic language is. Over the years various definitions have emerged leading to considerable confusion, but one that has become widely cited in formulaic language research is that of Wray (2002) in her seminal book on the topic. Whilst investigating all the terms previously used to label this phenomenon, she found no fewer than 50, such as *chunks*, *collocations*, *conventionalised forms*, *formulaic speech*, *formulas*, *holophrases*, *multi-word units*, *prefabricated routines*, and *ready-made utterances*.

In reality, this variety stems from the different aspects of formulaicity being investigated. Some terms are used to emphasise the functional usage of formulaic language, such as *lexical phrases* (Nattinger & DeCarrico, 1992), while others such as *prefabricated utterances* or *chunks* emphasise the holistic processing entailed. The term *collocation* is used in a purely linguistic perspective to refer to the recurrent clusters extracted from a corpus through statistical measurements. For the purpose of this thesis and following Schmitt's (2010) recommendation, I will use the term *formulaic language* to refer to the overall phenomenon, and *formulaic sequence* to refer to the

individual items of formulaic language. Wray (2002: 9) thus defines a formulaic sequence as:

“A sequence, continuous or discontinuous, of words or other elements, which is, or appears to be, prefabricated: that is, stored and retrieved whole from memory at the time of use, rather than being subject to generation or analysis by the language grammar.”

This definition brings forward the two following notions: formulaic sequences vary in flexibility (they can be completely fixed, or can include gaps for various items to be inserted in them), and they seem to be stored and retrieved whole from memory instead of being analysed online (they are subject to holistic and not analytic processing). In this definition, Wray thus puts forward structural and psycholinguistic considerations, but does not address other important dimensions such as the frequency relationships between the individual components or their degree of semantic opacity.

Indeed, a third characteristic of formulaic sequences is that they vary in their degree of non-compositionality. This refers to the notion that the meaning of a formulaic sequence does not necessarily correspond to the sum of the meanings of its components. The most striking illustration of non-compositionality is the category of idioms (e.g. *under the weather*). For instance the sentence *Paul's a bit under the weather today* means that Paul is feeling unwell; the additional meanings of *under + the + weather* (i.e. the literal meaning of the sequence) do not make sense. However, despite the fact that idioms are the most obvious example of formulaic language and have thus attracted a great deal of research attention (Kuiper, Columbus & Schmitt, 2009), there are many other types of formulaic language.

2.2. Types of formulaic language

As we have just seen, formulaic language is a multi-faceted phenomenon which has been conceptualised in various ways in the literature. The following table presents the

most prominent types of formulaic sequences, along with their main characteristics and examples.

Table 1. Different types of formulaic sequences and their characteristics

Type of formulaic sequence	Main characteristic(s)	Example
Lexical phrases	Function-based sequences (Nattinger & DeCarrico, 1992)	<i>I see what you mean</i>
Lexical bundles	Building blocks extracted through a frequency criterion only (Biber, Johansson, Leech, Conrad & Finegan, 1999)	<i>I want you to</i>
Phrasal expressions	Very frequent multi-word units whose meanings are not transparent from their component words (Martinez & Schmitt, 2012)	<i>At least</i>
Idioms	Fixed, semantically opaque/metaphorical units (Moon, 1998)	<i>Kick the bucket</i>
Collocations	Two/three-word combinations that co-occur together (Sinclair, 1991)	<i>Strong coffee</i>
Phrasal verbs	Multi-word verbs functioning as syntactic and lexical units (Darwin & Gray, 1999)	<i>Go through</i>

It is worth pointing out that there can be a great deal of overlap between some of these categories; for instance many phrasal verbs are included in Martinez and Schmitt's PHRASE List (2012). Vilkaitė (2016) found that the categories of lexical bundles, idioms, collocations, and phrasal verbs taken together make up about 41 % of English discourse in the BNC Baby, with lexical bundles being by far the most common. I will

now turn to discussing each of the above-mentioned types of formulaic sequences in greater detail.

2.2.1. Lexical phrases

Nattinger and DeCarrico (1992) use the term *lexical phrase* in order to emphasise the relationship between formulaic sequences and functions in language. These lexical phrases act as functions because they are sequences that people typically use in a given situation and they serve to achieve a particular purpose within that situation. They are often described as speech acts such as complaining, apologising, making requests, or giving directions. For example, the sequence *I'm (very) sorry about/to hear (about)* is commonly used to express sympathy. In order to soften the blow of a statement which is somehow going to be unpleasant to hear, someone might say *I'm afraid (that) ...* (e.g. *I'm afraid the position has been taken by someone else*).

Lexical phrases may also serve as a tool for maintaining social interaction, for example when making comments about the weather (e.g. *Nice weather today*), agreeing with an interlocutor (e.g. *I see what you mean*), or giving positive feedback (e.g. *How interesting!*) (Schmitt & Carter, 2004). These highly institutionalised phrases are thus convenient daily tools to keep a conversation going. Although the examples given so far typically occur in spoken discourse, lexical phrases are also commonly used in written discourse, notably by serving as discourse markers. In such cases, their function is to signal “whether the information to follow is in contrast to, in addition to, or is an example of, information that has preceded” (Nattinger & DeCarrico, 1992: 60). Some typical examples include *on the other hand*, *for instance*, *contrary to*, etc.

2.2.2. Lexical bundles

Lexical bundles are defined as the most frequently occurring sequences of three or more words found in a given register (Biber et al., 1999), such as *on the other hand*, *in the case of the*, *it is likely to* in academic prose. They are identified strictly on the basis of

frequency, i.e. a bundle has to occur more than 20 times in a million words in a certain register in order to be qualified as such (Cortes, 2004), with no consideration given to functional criteria (as opposed to lexical phrases) or structural properties (they are arbitrary strings of words). Nevertheless, Biber et al. (1999) argue that they should be regarded as structural frames associated with communicative functions.

Firstly, they should be regarded as structural frames because they can easily be grouped into several basic structural types. For instance, Biber et al. (1999) found that most bundles used in conversation are of the type pronoun + verb + complement (e.g. *I want you to, take a look at, it's going to be*), whereas around 60 % of bundles in academic prose are parts of noun phrases or prepositional phrases (e.g. *in the case of, as a result of, on the basis of, on the other hand*). Secondly, their communicative functions have been highlighted by Biber, Conrad and Cortes (2003), who classified lexical bundles into four functional categories: referential bundles (time, place, or text markers such as *at the beginning of, the end of the, at the same time*), text organisers (expressions of contrast such as *on the other hand*, inference such as *as a result*, focus such as *it is important to*), stance bundles (to introduce statements of attitudes such as *I don't know why, are more likely to*), and interactional bundles (commonly used in conversation such as *thank you very much, I said to him*).

From a semantic point of view, many lexical bundles are non-idiomatic since their meanings are easily deduced from the meanings of their individual components (e.g. *as a result of, what do you mean*). However they are completely fixed: the bundles are extracted in one form only, the one that satisfied the established cut-off frequency criterion. For instance, *these results suggest that* is considered as a bundle in academic prose (in the field of biology), but *this result suggests that* is not (Cortes, 2004).

2.2.3. Phrasal expressions

The PHRASal Expressions List (PHRASE List) (Martinez & Schmitt, 2012) is a list of the 505 most frequent non-transparent multiword expressions in English. Its authors define a phrasal expression as “a fixed or semi-fixed sequence of two or more co-occurring but not necessarily contiguous words with a cohesive meaning or function

that is not easily discernible by decoding the individual words alone” (p. 304). Three core criteria were considered for the selection of the items: frequency (each phrasal expression occurs at least 787 times in the 100-million-word British National Corpus), meaningfulness (the phrasal expression has a clear meaning or function, for example *going to* is used to express future intent), and semantic opacity (the phrasal expression is semantically opaque). Taken together, these three criteria make the PHRASE List particularly valuable from a pedagogical standpoint.

2.2.4. Idioms

Idioms are perhaps the most salient category of formulaic language, because they are largely non-compositional and metaphorical (e.g. *push up daisies* means ‘be dead and buried’; *spill the beans* means ‘divulge a secret’) and are usually placed at the most fixed extreme in the fixedness continuum of formulaicity. However, Moon (1997: 53) argues that idioms may feature some variations, for example due to regional language varieties (e.g. *not touch someone/something with a bargepole* in British English versus *not touch someone/something with a ten foot pole* in American English), varying lexical component (e.g. *burn your boats/bridges*), unstable verbs (e.g. *show/declare/reveal your true colours*), truncation (e.g. *every cloud has a silver lining/silver lining*), and transformation (e.g. *break the ice/ice-breaker/ice-breaking*). Although they have attracted perhaps the greatest amount of research in formulaic language (Kuiper, Columbus & Schmitt, 2009), idioms represent only a small part of the phrasal lexicon of a language and native speakers. They may occur quite frequently as a type, but each individual one does not occur very often (Schmitt, 2010).

2.2.5. Collocations

The category of *collocations* is somehow the trickiest to define as collocations have traditionally been conceptualised in two different ways, but also because the term *collocations* has occasionally been used as the broad term for any string involving co-

occurring words. Broadly speaking, work on collocations mainly looks at the relationship between two-word pairs. They differ from other categories of formulaic language in the sense that they have more to do with tendencies than exclusiveness (in other words, with the preferred way of saying things). While idioms are typically characterised by their fixedness, collocations are characterised by their fluidness (Wray, 2002), although this degree of fluidness varies. There have been two traditional approaches to identifying and analysing collocations: the frequency-based approach (or Firthian or British school approach) and the phraseological (or Russian school) approach (Nesselhauf, 2004; Barfield & Gyllstad, 2009).

In the frequency approach, collocations are identified by means of using statistical measures of raw corpus frequency and strength of association, the two main measures of association being Hypothesis Testing (e.g. *t*-score) and Mutual Information. The Hypothesis Testing measure tests the null hypothesis that words appear together no more frequently than expected by chance alone, by calculating how many times word pairs are expected to occur in a corpus by chance considering the frequencies of the individual words. The Mutual Information measure already assumes some degree of association between two words and aims to quantify the strength of this association. A high Mutual Information score suggests that when one member of a word pair is encountered, it is highly probable that the other member is nearby. It can be thought of as a “measure of how much one word tells us about the other” (Manning & Schütze, 1999: 178). In summary, the crucial difference between these two association measures is that “MI tends to highlight word pairs which may have relatively low frequency, but which are relatively ‘exclusive’ to one another; hypothesis testing methods highlight items which may be less closely associated but which occur with relatively high frequency” (Schmitt, 2010: 130).

In the phraseological approach, which is more meaning-based, collocations are conceptualised in terms of their transparency and substitutability (Cowie, 1998). The main preoccupation for those working within this tradition is collocation typology (i.e. the decontextualized classification of collocations) (Barfield & Gyllstad, 2009). For example, if we analyse near synonyms such as *cut* and *slash*, we notice that they are constrained when they combine with other words (e.g. *cut one’s throat* is acceptable but

slash one's throat is not, while the opposite is true for *wrists*). Similarly, if we analyse verb collocates such as those of *drive*, we note that *drive a bus* is perfectly acceptable, but *drive a boat* is not. This approach is thus particularly relevant to examine collocational restrictions (to compare with equivalent collocations in the L1, for instance). However, it has a number of problems (Durrant, 2008), the most obvious being the requirement of human analysts to operationalise complex criteria (Nesselhauf, 2005). In addition, such analyses are inevitably limited in scope, and necessarily involve some degree of subjectivity. Finally, they carry the risk of neglecting less salient collocations which may be deemed unworthy of attention but are nonetheless formulaic.

It is easy to see how these shortcomings are overcome in the British frequency approach, which has clearly become the more influential due to the increasing availability of corpora and more and more powerful corpus-searching techniques. The extraction of strings is easily automated, does not always require human analysis, and extremely large samples of corpora can be investigated, thus increasing the chances of detecting collocations in a reliable way. This is what gave us a wider view of the extent and range of patterning in language.

2.2.6. Phrasal verbs

Phrasal verbs are word combinations which consist of a verb and a morphologically invariable particle, such as *look up*, *make out*, or *go through*. They are considered formulaic because they are composed of at least two orthographic units (many are composed of three, the verb and two particles, e.g. *make up for*) which act as a single lexical unit. Some phrasal verbs are fairly transparent in meaning (e.g. *stand up*), while others are non-compositional (e.g. *make up*). Their status of single semantic units is evidenced by the fact that they can often be replaced by a one-word verb equivalent, for instance *put off* by *postpone* and *turn up* by *arrive*. Many are polysemous in nature. For instance, the phrasal verb *bring up* will acquire radically different meanings depending on the context in which it is used (*bring up the tools from the basement* means ‘carry them up’; *bring up children* means ‘nurture’; *bring up a suggestion* means ‘mention’)

(Biber et al., 1999). Being the focus of this thesis, phrasal verbs and their various properties will be discussed at length in the next chapter (section 3.1).

2.3. The pervasiveness of formulaic language

The emergence of very large corpora has made it possible to analyse language as it is normally used in various contexts, both spoken and written. One of the major findings from these corpora is that formulaic sequences are ubiquitous in the language of native speakers of English (Cowie, 1998; Biber et al., 1999; Erman & Warren, 2000; McCarthy & Carter, 2002; Kuiper, 2004; Biber et al., 2004).

For example, Sorhus (1977) analysed a 131,536-word corpus of spontaneous Canadian speech and found that speakers used an item of formulaic language (termed *fixed expression*) once in every five words. In their descriptive grammar of spoken and written English, Biber et al. (1999) showed the wide distribution of lexical bundles in both speech and writing, making up 28 % of their conversation corpus and 20 % of their academic prose corpus. Erman and Warren (2000) calculated that formulaic sequences of various types constituted 58.6 % of the spoken English discourse and 52.3 % of the written discourse they analysed. In a study by Foster (2001), raters were asked to look for items of formulaic language in transcripts of unplanned native speech, and judged that 32.3 % of the speech was composed of formulaic sequences. As we can see, estimates of the proportion of formulaic language in authentic language use vary considerably. This reflects the different conceptualisations of formulaic sequences across researchers, but also the use of various procedures and criteria for measurement. Nevertheless, these studies suggest that formulaic sequences make up between one-third and one-half of native speaker discourse.

While it is feasible to estimate the proportion of formulaic sequences in discourse, it is obviously more difficult to measure how many formulaic sequences there are in English. Pawley and Syder (1983: 213) speculate that the number of “sentence-length expressions familiar to the ordinary, mature English speaker probably amounts, at least, to several hundreds of thousands.” In Sinclair’s (1991) famous

distinction between two structuring features of language, the *idiom principle* and the *open-choice principle* (the latter based on grammar and syntactic rules), he argues that the former is dominant. The emergence of specialised dictionaries of collocations and other phrasal items has made it evident that the number of formulaic sequences in the English language is considerable, and yet according to Moon (1997), even the largest dictionaries containing some 15,000 phrasal verbs, idioms and fixed phrases clearly underestimate the total number of multi-word items currently in use.

Finally, formulaic language has been found in a wide range of languages other than English such as French, Italian, Spanish, German, Russian, Swedish, Polish, Arabic, Hebrew, Turkish, Greek and Chinese (see Conklin & Schmitt, 2008).

2.4. Role of formulaic language for communication purposes

Formulaic language facilitates communication in two ways: productively, because speakers retrieve language that is ready-made and does not require syntactic analysis, but also receptively, because people will expect these typical turns of phrase or expressions and therefore will process them more quickly and easily than sequences of words generated creatively. This idea was first brought forward by Pawley and Syder (1983) and Kuiper and Haggo (1984), and tested by Kuiper (1996).

The use of formulaic sequences allows speakers to compensate for the limitations of their working memory. Working (or short-term) memory is used to generate language online through the combination of individual lexical items and syntactic rules, but it can potentially become overloaded. According to Pawley and Syder (1983), the largest unit of novel discourse that native speakers can process is a single clause of between eight and 10 words. As a consequence, if one is to produce speech at a fast rate (and indeed native speakers do, with an average rate of speech from 150 to 300 words per minute; De Bot, 1992), then another, more powerful resource must be used. As formulaic sequences are prefabricated and can be used ‘ready-made’ in language production, there is no need for online analysis to produce them, and so these sequences can be stored directly into long-term memory just as individual words.

This long-term memory, contrary to working memory, is abundant and infinite in nature. Therefore, formulaic sequences play a major role in situations such as auctioneering and sports announcing when one needs to speak under heavy time constraints (Schmitt & Carter, 2004). This psycholinguistic advantage of formulaic sequences over non-formulaic sequences has been extensively documented in the literature (see Conklin & Schmitt, 2012, for a review).

Not only is formulaic language ‘psychologically efficient’, but it also serves as an important tool for social interaction (Wray & Perkins, 2000). We have seen in 2.2 that certain types of formulaic sequences (lexical phrases and lexical bundles) are used to perform specific functions, whether in speech or in writing. In addition, idioms are often used to express a commonly believed truth or advice (e.g. *every cloud has a silver lining*: ‘difficult times always lead to better days’) or concepts (e.g. *in the red*: ‘short of money’). Formulaic sequences are typically used in day-to-day conversational routines (Coulmas, 1981) or small talk to facilitate social interaction (e.g. *terrible weather today* may be used to start a conversation in a casual manner). We may even speculate that the reason formulaic sequences are so pervasive is precisely because they fulfil so many functions in discourse. In addition to performing functions, formulaic sequences can feature semantic or collocational prosody (Stubbs, 2002; Sinclair, 2004) which serves as a means of showing one’s attitude or evaluation about a certain thing or situation. An example of collocational prosody is *bordered on ...* (e.g. *bordered on the pathological, bordered on apathy*) which has a negative evaluation, whereas *provide ...* (e.g. *provide information, provide services*) has a positive one.

Because formulaic sequences are often used to perform conversational routines and communicative functions, they are expected in discourse by the language community. Therefore, formulaic sequences are “something that novices have to learn to use in pragmatically and socio-culturally appropriate ways in order to participate in ordinary interaction and communities of practice” (Burdelski & Cook, 2012: 182). In a survey of formulaic language research within the field of pragmatics, Bardovi-Harlig (2012: 223) concludes that “using formulas for pragmatic functions not only follows tacit social agreements, but it also signals the membership of participants in particular speech communities.” For these reasons, building a wide repertoire of formulaic

sequences is helpful for L2 learners whose command of the English language needs to reach native level, and somewhat of a necessity for those immersed in an L2-speaking environment.

2.5. Knowledge and use of formulaic language by L2 learners

Given all the evidence for its significance and the many advantages associated with its use as outlined in the previous sections, there is no doubt that learners should acquire formulaic language if they wish to be genuinely proficient in English. The use of formulaic language can dramatically improve the overall impression of L2 learners' language production in spoken discourse (Boers, Eyckmans, Kappel, Stengers & Demecheleer, 2006), but also in written discourse. For instance, Ohlrogge (2009) found that higher marks were achieved by L2 learners as their use of formulaic sequences increased. Lewis (2008) found statistically significant relationships between usage of formulaic language in writing and proficiency in both receptive and productive skills. Bestgen and Granger (2014) found that the phraseological competence of L2 learners (measured as the quantity and quality of use of two-word sequences in a learner corpus of 171 essays) was positively correlated with L2 writing proficiency and text quality assessment. Keshavarz and Salimi (2007) found a significant positive relationship between the collocational competence of their 100 Iranian EFL learners and their performance on cloze tests used as an overall language proficiency measure. Knowledge of formulaic language has thus been empirically found to contribute to overall language proficiency.

It has occasionally been shown that second language learners have a good overall knowledge of formulaic sequences. Schmitt, Dörnyei, Adolphs and Durow (2004) found that postgraduate students at the beginning of their study at a British university correctly recognised an average of nearly 17 out of 20 formulaic sequences frequently found in academic writing on a multiple-choice test, and were able to produce an average of nearly 13 on a cloze-type test. Spöttl and McCarthy (2004) found

that their 14 multilingual learners managed to select the correct formulaic sequence within each of their enriched authentic contexts quite successfully. Of the 11 formulaic sequences measured, over 70 % of the participants selected correct answers on seven items, and over 90 % on two items. L2 learners have also occasionally been found to rely heavily on formulaic sequences in their speech, as evidenced by Oppenheim (2000) who found that the speech of her six non-native participants contained between 48 % and 80 % of recurrent sequences, with an overall mean of 66 %, but also Bolander (1989) with L2 learners of Swedish.

On the other hand, the bulk of studies investigating the use of formulaic sequences in learner corpora have shown less optimistic results. Nesselhauf (2003) found that almost one-quarter of the 213 English verb-noun collocations used by advanced learners, based on data from the German sub-corpus of the International Corpus of Learner English (ICLE) (Granger, Dagneaux & Meunier, 2002) were judged to be incorrect by native speakers. Up to nine different types of mistakes for the 56 misused collocations were identified, the most common being a wrong choice of verb (e.g. **make homework*). Altenberg and Granger (2001) found that advanced French and Swedish learners of English had considerable difficulty with verb-noun collocations based on the delexicalised use of the verb *make* (e.g. *make a decision*). Not only did they underuse such structures, but they also misused them, due to both intralexical and interlexical (i.e. L1 influence) factors. Other studies have found that learners tend to overuse a small number of formulaic sequences (Granger, Paquot & Rayson, 2006), which they consider safe and feel confident using (Granger, 1998; N. Ellis, 2012). Yet other researchers like De Cock (2000) found that some formulaic sequences were overused, others underused, and others misused by non-native speakers when compared to native usage.

A study by Ädel and Erman (2012) investigated the use of lexical bundles in advanced learner writing by L1 speakers of Swedish and compared it with native-speaker writing, both produced by undergraduate university students in linguistics. Their results showed that the native speakers used a much larger repertoire of lexical bundles, with as many as 130 types of lexical bundles not found in the learner writing, but also a much more varied repertoire. Similar findings were obtained by Fan (2009)

when comparing the use of collocations in native British writing and Hong-Kong ESL learners' writing. Huang (2015) found that although Chinese EFL learners in their third and fourth years of university English studies used a greater number and variety of lexical bundles than their first- and second-year counterparts, they failed to make significant progress in terms of accuracy of use. The Chinese EFL learners examined by Qi and Ding (2011), however, did show significant progress in their oral production of formulaic sequences between their first and third year of English study at university, in terms of accuracy as well as frequency and variation. However they still fell behind the native speakers in terms of frequency and accuracy of use.

A study by Durrant and Schmitt (2009) showed that although non-native speakers made significant use of collocations in their writing, they used fewer low-frequency collocations, underused collocations with high Mutual Information scores, and overused collocations with high *t*-scores in comparison to native norms. Finally, Laufer and Waldman (2011) investigated the use of verb-noun collocations in the writing of native speakers of Hebrew at three proficiency levels, and compared it with the native corpus of academic essays LOCNESS. Their results showed that learners at all three proficiency levels produced far fewer verb-noun collocations in their writing than native speakers, with the number of collocations produced increasing only at the advanced level, whilst (mostly interlingual) errors persisted even at the advanced level for about a third of the produced collocations. They thus concluded that collocations were problematic even for advanced learners of English.

Rather than comparing native and learner corpora in order to detect possible differences in the use of formulaic sequences between native and non-native speakers, some studies have sought to directly assess L2 learners' knowledge of specific (usually highly frequent) items. This was the case of Moreno-Jaén (2007), who found that her 62 Spanish university students showed rather limited knowledge of the 80 frequent adjective-noun collocations tested (46.1 % on the receptive test and 30.5 % on the productive test). More recently, Nguyen and Webb (2016) investigated Vietnamese EFL learners' receptive knowledge of verb-noun and adjective-noun collocations belonging to the first three 1,000 word frequency levels, and the effect of five factors (node word frequency, collocation frequency, Mutual Information score, congruency, and part of

speech) on this knowledge. Results showed that the 100 participants knew less than 50 % of each type of collocation overall, with knowledge significantly decreasing at each frequency level. Node word frequency was the strongest predictor of knowledge, with collocation frequency, Mutual Information scores and congruency also being significant factors. Incomplete collocational knowledge was also found by González Fernández and Schmitt (2015), whose 108 Spanish learners of English were tested on their productive knowledge of 50 collocations varying in frequency, *t*-score, and MI score. The participants produced a mean score of 56.6 % correct. Macis and Schmitt (2016b) tested the receptive knowledge of 30 figurative collocations by 107 Chilean university students of English. Results showed only limited knowledge, with a mean score of 33 % correct.

Unfortunately, there can be a strong tendency in some learners to overestimate their knowledge of formulaic language. Phongphio and Schmitt's (2006) study of 21 Thai undergraduates showed that although they were confident in their ability to recognise multi-word verbs when listening or reading, they only scored 55 % on a multiple-choice test, showing a very weak relationship between the self-rating scores and multiple-choice test scores. As we can expect, proficiency seems to play a role in the use of formulaic sequences. Levy (2003) compared two groups of participants in a university context, and found the more proficient group to be more likely to use bundles from the academic register, and the less proficient group more likely to use bundles from the conversational register. The former also used more syntactically complex bundles, less transparent in meaning than the weaker group, to structure discourse and for pragmatic purposes.

2.6. Acquisition of formulaic language by L2 learners

Traditionally, vocabulary instruction in the language classroom has tended to focus on individual words rather than multi-word sequences. Not only are individual words considered to be the basic lexical unit, but they are also convenient to teach and incorporate into materials (Schmitt, 2010). For this reason, non-native speakers who

learn a second language in a classroom environment are likely to conceptualise vocabulary as individual units rather than phrases, which in turn might hinder their capacity to learn and produce phrasal vocabulary.

Therefore, it has been suspected that they acquire language in an almost reverse pattern from children acquiring their first language: by acquiring separate words first and then learning how to combine them (Wray, 2002). It is generally thought that the process of extracting patterns which is typical of first language acquisition does not seem to be at work for L2 learners (although see Durrant & Schmitt, 2010, for empirical counter-evidence). As a consequence, non-native speakers fail to value “the one property of native-like input which is most characteristic of the idiomaticity to which the learner ultimately aspires: words do not go together, having first been apart, but, rather, belong together, and do not necessarily need separating” (Wray, 2002: 212). However Wray suggests that requiring learners to memorise formulaic sequences in order to produce more authentic language might simply be beyond learners’ capacity: the participant in her case study (2004) was unable to produce the Welsh formulaic sequences they had learned five and nine months ago verbatim, introducing errors suggesting that some linguistic analysis had taken place in the meantime. This would suggest that learners can have difficulty with refraining from analysing ready-made language which would be better left as such.

Quite surprisingly, Schmitt et al. (2004) found that vocabulary size (in terms of individual units) was not a strong predictor of a learner’s gains in formulaic sequences over time. Furthermore, factors such as language aptitude, attitudes and motivation, which have been shown to be important in Second Language Acquisition (Dörnyei, 2002), did not seem to correlate well with gains in formulaic language in their study. On the other hand, a case study by Dörnyei, Durow and Zahran (2004) investigating four successful and three less successful formulaic language learners found that the ability to integrate into the L2 environment and culture was a key factor in predicting the acquisition of formulaic sequences over a stay abroad. In fact, it was such a powerful factor that it could override other factors such as language aptitude and motivation.

This finding is similar to Wong-Fillmore’s (1976) study of the naturalistic L2 acquisition of elementary school children whose degree of integration to the L2

environment predicted the extent of use and creativity of use of formulaic sequences. Following up on the Dörnyei et al.'s study, Adolphs and Durow (2004) further analysed and compared the interview transcripts of one high-integration and one low-integration student, and found that the former made significantly more progress between the initial and final interview (seven months later) than the latter. Siyanova and Schmitt (2007) found that the amount of exposure to native-speaking environments did not have a significant effect on their participants' likelihood of using phrasal verbs instead of one-word verbs in their study. Kuiper, Columbus and Schmitt (2009) accounted for this contradiction by the fact that exposure in itself does not necessarily entail the high-quality exposure occurring in a socially integrated environment. Another factor which does seem to play a role in the acquisition of formulaic sequences is cross-linguistic influence. Meanings of formulaic sequences may be literally transferred across L1, L2, L3 and L4 (Spöttl & McCarthy, 2004), making their acquisition easier (see Peters, 2016, for recent evidence of the advantage of congruency for learning collocations, at least at form-recall level of mastery).

As formulaic sequences appear to be so difficult to master for many learners, there have been a number of studies seeking to explore the possible ways to facilitate their acquisition. Most of these studies have taken place in a classroom environment, examining the potential usefulness of various pedagogical treatments. As pointed out by Boers and Lindstromberg (2012), those can be broadly divided into three categories: drawing learners' attention to formulaic sequences as they are encountered (Jones & Haywood, 2004; Peters, 2012; Szudarski & Carter, 2016), encouraging the use of dictionaries and corpus tools (Chan & Liou, 2005; Laufer, 2011; Chen, 2016), and using techniques aimed at helping learners remember formulaic sequences (Boers, 2000; Liu, 2010; Durrant & Schmitt, 2010; Alali & Schmitt, 2012; Boers, Lindstromberg, & Eyckmans, 2012; Sonbul & Schmitt, 2013; Boers, Eyckmans & Lindstromberg, 2014; Boers, Demecheleer, Coxhead & Webb, 2014; Eyckmans, Boers & Lindstromberg, 2016; Stengers, Deconinck, Boers & Eyckmans, 2016).

Drawing learners' attention to formulaic sequences (either via instruction or textual input enhancement) has been shown to enhance awareness, and sometimes acquisition of the items. In a study comparing the acquisition of infrequent verb-noun

and adjective-noun collocations by Polish EFL learners via two kinds of instruction, input flood only and input flood plus input enhancement, Szudarski and Carter (2016) found that only the latter resulted in improved knowledge of the target items (at form-recall and form-recognition levels of mastery only). Input flood did not appear to significantly enhance the participants' knowledge on its own, no matter how many times the target collocations were encountered in the reading material. A study by Peters (2012) compared the effect of explicitly drawing learners' attention to formulaic sequences and single words in a text and typographic salience (bolding and underlining of the formulaic sequences and single words in the text), on her 28 EFL German learners' recall of the form of the target items. Only typographic salience was found to have an effect on the scores, and was particularly fruitful for learning formulaic sequences. Jones and Haywood (2004) highlighted formulaic sequences during a ten-week course for university pre-sessional students, and found that although the students' awareness of formulaic sequences improved significantly, the treatment did not increase the use of formulaic language in the student output. However they noticed an improvement in accuracy and appropriacy of use for a few students.

The use of dictionaries and corpus tools for acquiring formulaic sequences, on the other hand, has led to mixed results. Chan and Liou (2005) found that the use of web-based explicit instruction supplemented with a Chinese-English bilingual concordancer had a significant positive effect on their 32 EFL college students' learning of verb-noun collocations, with the students showing positive attitudes towards the tool. Chen (2016) investigated the effects of electronic dictionary use on the production and retention of 12 collocations by 52 non-native English majors at a Chinese university. Results showed that the dictionary significantly improved the participants' productive collocation knowledge, but this knowledge was deemed unsatisfactory (less than half of the items) and almost entirely vanished after one week. The number of lookups had no impact on collocation production or retention. Furthermore, the participants showed inadequate dictionary use skills. This was also found by Laufer (2011), whose 95 high school EFL learners sometimes had difficulty finding the right verbs of the target verb-noun collocations in the range of dictionaries they consulted. Furthermore, a delayed post-test administered one week after the treatment showed that most of the collocations

that the learners consulted in the dictionaries had been forgotten.

A larger number of studies have sought to assess the efficiency of techniques aimed at fostering L2 acquisition and retention of formulaic sequences (mainly collocations). Only a few will be reviewed here: those which present the double advantage of being recent and representative of the various techniques or treatments investigated. Sonbul and Schmitt (2013) explored the acquisition of collocations by advanced non-native speakers via three different conditions: enriched, enhanced, and decontextualized input. The gains were measured by two explicit tests (form recall and form recognition) and one implicit test (priming) of knowledge. Results showed that all three conditions led to durable learning on form recall and form recognition measures of knowledge, but that no condition facilitated implicit collocational priming effects. Boers, Demecheleer, Coxhead and Webb (2014) conducted four small-scale trials in which the efficiency of common textbook exercise formats (e.g. fill-in-the-blank and matching exercises) for acquiring verb-noun collocations was assessed. In line with their initial predictions, the exercise format which presented the collocations as intact wholes led to superior gains compared with the exercise requiring learners to match the two individual components. However, gains were relatively small in both conditions, as learners often substituted initially correct collocations by distracters encountered in the exercises. No exercise type was found to be significantly superior to the others.

Stengers, Deconinck, Boers and Eyckmans (2016) compared the effectiveness of a meaning-oriented mnemonic task coupled with a copy exercise (thus adding a focus on form) and the same mnemonic task coupled with an additional meaning-oriented task. Two groups of 21 students, each assigned to one of the two conditions, were assessed on their recall of 25 idioms both immediately and two weeks after the treatment via a gap-fill test. Results showed that the copy exercise condition did not lead to significantly better recall of the items, thus casting doubt on the effectiveness of copying words as a learning strategy. This was, according to the authors, due to the shallower level of processing involved in this task, compared with tasks involving repeated retrievals of items. Boers, Lindstromberg, and Eyckmans (2012) compared the acquisition of matched alliterative and non-alliterative word pairs by upper-intermediate to advanced learners of English, whose task was simply to write down the word pairs

dictated to them. An unannounced free recall test revealed significantly better recall of the alliterative stimuli, despite the fact that their attention had not been explicitly drawn to the sound patterns of the items. The positive effect of phonemic repetition on the memorability of word pairs has also been found in the case of assonance by Lindstromberg and Boers (2008).

A number of studies have shown the positive effect of repetition on the acquisition and retention of formulaic language. Durrant and Schmitt (2010) tested 84 non-native speakers of English (all postgraduate students at a British university) on their recall of 20 adjective-noun collocations after being exposed to them via three different conditions: single exposure, verbatim repetition, and varied repetition. Their results showed that both repetition conditions yielded superior levels of recall compared to the single exposure condition, with verbatim repetition being slightly more effective. Webb, Newton and Chang (2013) also found repetition to facilitate the acquisition of collocations via incidental learning. Their Taiwanese EFL students read and listened to one of four versions of a modified graded reader including different numbers of encounters (one, five, 10, and 15 encounters) of the 18 target collocations. An unannounced set of tests measuring receptive and productive knowledge of the form and meaning of the items showed that the number of encounters had a positive effect on learning, with sizeable learning gains obtained when learners encountered the collocations 15 times within the graded reader.

Finally, an important line of enquiry in acquisition studies of formulaic language is the effect of metaphor awareness and cognitive analysis on the learning of figurative sequences, making these sequences seem semantically motivated rather than arbitrary (Liu, 2010) and thus potentially enhancing their memorability. Results have generally proved positive (Boers, 2000; Boers, 2013), although as pointed out in the three afore-mentioned studies, such analysis is not suitable for all language learners and formulaic sequences.

Chapter 3

Zooming in: Phrasal verbs

3.1. What are phrasal verbs? Definition and characteristics

Similarly to formulaic language, phrasal verbs are a somewhat fuzzy lexical category, and the definition and classification of phrasal verbs is not a straightforward task. In fact, according to Darwin and Gray (1999), one of the main reasons for the lack of progress in the understanding of phrasal verbs pedagogy is that researchers themselves may disagree over what should or should not be admitted as a phrasal verb. In particular, the distinction between phrasal verbs (e.g. *look out*) and prepositional verbs (e.g. *look at*) can be a difficult one to make. Dictionaries of phrasal verbs often feature large numbers of prepositional verbs (Liu, 2011), thereby adding further confusion for students and teachers. Nevertheless, probably the most standard and clearly articulated definition of phrasal verbs can be quoted from Darwin and Gray (1999: 76-77) who largely based their own definition on Quirk, Greenbaum, Leech, and Svartvik (1985): “A phrasal verb consists of a verb proper and a morphologically invariable particle that function together as a single unit both lexically and syntactically.” Therefore, it is proposed that the phrasal verb should be defined in two parts.

The first is syntactic: a phrasal verb is a verb (what Bolinger (1971) calls the verb proper) followed by a particle which is morphologically invariable and functions

with the verb as a single grammatical unit. The phrasal verb thus works as a whole unit within the verb phrase. This is partly what differentiates genuine phrasal verbs from prepositional verbs. In the latter, the verb proper and the preposition work in isolation. If we consider the example of the prepositional verb *look at* in the sentence *she looked at her bag*, we can clearly see that the particle *at* acts as a preposition within the prepositional phrase *at her bag*. There is no grammatical unity between the verb proper and the particle; hence *look at* is not a phrasal verb. Some phrasal verbs require specific prepositions after the particle (e.g. *make up for*, *catch up with*); these are usually termed phrasal-prepositional verbs. The second part of the definition is lexical: phrasal verbs function as single lexical units. This characteristic is evidenced by the fact that many phrasal verbs can be replaced by a single word equivalent, and that the meaning of a phrasal verb is not only different from the meaning of the verb proper in isolation (e.g. *check in* ≠ *check*) (although this is debatable in the case of redundant particles such as *off* in *finish off*), but also different from the meaning of the verb proper combined with a different particle (e.g. *check in* ≠ *check out*).

As with other types of formulaic sequences, the extent to which the constituents of the phrasal verb give up their individual inherent meanings to form a whole idiosyncratic meaning is variable. To illustrate this, Celce-Murcia and Larsen-Freeman (1999) describe three semantic categories of phrasal verbs: literal, idiomatic, and aspectual. Literal phrasal verbs are those whose constituents appear to retain much of their individual meanings (e.g. *fall and down* in *the picture fell down from the wall*). Idiomatic phrasal verbs have constituents that appear to have lost their usual meanings, for instance *give* and *in* in *I didn't want to but I eventually gave in*. Aspectual phrasal verbs are somewhere in the middle in that their meanings are more transparent than those of idiomatic phrasal verbs but not as transparent as those of literal phrasal verbs. The verb proper can often be understood literally, whereas the particle contributes meanings about the verb's aspect. For instance, in the sentence *finish up your drink* the verb proper *finish* is used in its literal sense and the particle *up* emphasises the notion of completion. It should be noted that both Darwin and Gray (1999) and Biber et al. (1999), among others, consider literal verb + particle combinations (e.g. *come down*, *throw out*, *go in*) as free combinations rather than phrasal verbs, since their meanings

can be predicted from those of the individual components. Similarly to Celce-Murcia and Larsen-Freeman (1999), but also Gardner and Davies (2007) and Liu (2011), I prefer to classify these as phrasal verbs with a literal meaning. This is because they share most of the characteristics of their figurative counterparts, and as noted by Liu (2011: 664), “the application of [the] semantic criterion is not always straightforward and often involves some subjective judgments.” In addition, as argued by Sawyer (2000), considering such combinations as phrasal verbs may help students better understand their surface structure and in turn reduce their avoidance.

Interestingly, Darwin and Gray (1999) note that phrasal verbs share most of the characteristics of single-word verbs. For instance, from a grammatical point of view, phrasal verbs can be transitive (e.g. *I carried out an experiment*), intransitive (e.g. *she wants to break up*) and ergative (e.g. *the house burned down/he burned the house down*). Most transitive phrasal verbs form passives (e.g. *an experiment was carried out*) and action nominals (e.g. *the carrying out of experiments*). As noted by Biber et al. (1999), nearly all transitive phrasal verbs allow for particle movement (e.g. *I need to get my keys back*) whereas prepositional verbs never do (e.g. **she looked her bag at*). The separation of the verb proper and the particle constitutes the normal word order when the direct object is a pronoun (e.g. *please turn it on* ≠ **please turn on it*). Some transitive phrasal verbs, however, are inseparable (e.g. *they came across a problem* ≠ **they came a problem across*; Darwin & Gray, 1999: 72). In some others, particle movement may induce a change in meaning, as illustrated by the two following examples (Darwin & Gray, 1999: 72-73):

Why don't you run down the list? (‘review’) ≠ *Why don't you run the list down?* (‘find’)

I don't want to take on Jill (‘hire’) ≠ *I don't want to take Jill on* (‘challenge’)

From a phonological point of view, phrasal verbs and one-word verbs also seem to be similar: just like verbs in which the final syllable is often stressed, the final syllable in phrasal verbs (i.e. the particle) is usually emphasised (Celce-Murcia, Brinton & Goodwin, 1996). Prepositions, on the other hand, do not receive stress. One obvious difference between single-word verbs and phrasal verbs, however, is that phrasal verbs are composed of several elements and that these elements can be separable in the case

of transitive and ergative phrasal verbs; e.g. *take off your shoes/take your shoes off*. This flexibility in particle placement may cause great difficulty for learners.

There is a common perception that phrasal verbs can be replaced by one-word verb synonyms. While I suspect this is true for many phrasal verbs (e.g. *put off/postpone*), in some cases phrasal verbs can add nuances of meaning or connotations which render quite a different meaning from their so-called equivalents. Cornell (1985) outlined some examples, such as *come by* which has the connotation of difficulty or even of dishonesty (e.g. *I wonder how he came by that money*), *get round* which often suggests procrastination (e.g. *one day he'll get round to assembling those shelves*), or *tell off* which has a rather childish connotation and is scarcely used in serious contexts (e.g. **the officer told the soldiers off for neglecting their duties*). Therefore, phrasal verbs can be highly specific in meaning. This has also been noted by Pye (1996), who further argued that contrary to the popular belief that informality is a typical feature of phrasal verbs, they are very often the most neutral or normal way of expressing something, giving the examples of *break in* (e.g. *it looked like someone had broken in*), *put away* (e.g. *put your toys away*), and *fill up* (e.g. *fill it up with water*) as phrasal verbs that are “in no way marked in terms of formality” (p. 699). Rather than seeing phrasal verbs as informal alternatives to one-word verbs, it might be more accurate to consider one-word verbs as formal alternatives to phrasal verbs. Other examples given by Pye are *rise* instead of *get up*, or *extract* instead of *pull out* (for yet other examples as well as an entertaining read, see Jowett, 1951).

Another reason why many one-word equivalents are not true synonyms of phrasal verbs, according to Pye, is that phrasal verbs are “also inextricably linked to and restricted by their collocational environment or syntactic behaviour” (p. 700). For instance, the pair *circulate/put about* behave differently in corpora: whilst the verb *circulate* can be used intransitively often with the subjects *rumours*, *facts*, or *information*, the phrasal verb *put about* is a transitive verb often used with the object *it* (e.g. *someone's been putting it about that she's planning to leave*).

Now that we have a clearer idea of what a phrasal verb is, I will review some corpus studies that have investigated its use.

3.2. Phrasal verbs in discourse and corpora

Several attempts have been made to identify and classify phrasal verbs based on corpus findings, resulting notably in the *Longman Dictionary of Phrasal Verbs* (Courtney, 1983), the *Collins COBUILD Dictionary of Phrasal Verbs* (Sinclair & Moon, 1989), *NTC's Dictionary of Phrasal Verbs and Other Idiomatic Verbal Phrases* (Spears, 1993) and the *Cambridge International Dictionary of Phrasal Verbs* (Walter & Pye, 1997). These dictionaries identified a large number of English phrasal verbs, and provided descriptions of their meanings along with contextualised examples of their use. Although undoubtedly useful, one shortcoming of such extensive references, however, is that they did not provide any detailed information about frequency data which could potentially be useful for pedagogy and testing purposes (Gardner & Davies, 2007).

Alongside dictionaries, a number of corpus studies have sought to investigate frequency patterns of phrasal verb use in greater depth. The *Longman Grammar* by Biber et al. (1999) was the first notable step in this direction. Including all phrasal verbs with a frequency count of over 40 times per million words in at least one register of the Longman Spoken and Written English (LSWE) corpus, this work shed some new light on the frequency counts of phrasal verbs and their individual constituents. A list of 31 most frequent phrasal verbs was developed, including for instance *stand up*, *sit down*, *come on*, and *go off*. In terms of the individual constituents, five verbs were identified as the most productive in combining with adverbial particles to form phrasal verbs: *come* and *put* (each combining with 12 different particles), *get* (combining with 11 different particles), *go* (combining with 10 different particles), and *take* (combining with nine different particles). In the same way, six adverbial particles were identified as being the most frequent, namely *up*, *down*, *in*, *out*, *on*, and *off*.

Interestingly, phrasal verbs were classified in terms of their semantic domains, such as communication (e.g. *point out*), occurrence (e.g. *come off*), aspectual (e.g. *go on*), copular (e.g. *turn out*), mental (e.g. *find out*), and activity (e.g. *get up*), the latter accounting for 75 % of phrasal verb occurrences in the conversation and fiction registers of the LSWE corpus. Finally, the relative frequencies of the 31 most prolific phrasal verbs within each of four register types (conversation, fiction, news reportage,

and academic prose) were established. Based on their findings, Biber et al. estimated that phrasal verbs occur almost 2,000 times per million words in fiction and conversation. Given that literal phrasal verbs were excluded from their chosen definition (they were classified as free combinations instead; see 3.1), we may speculate that this number should actually be much higher. This was confirmed by Liu (2011) whose broader phrasal verb definition adopted in his study led to frequency rates in the two registers being almost three times that.

Following up on the work of Biber et al. (1999), Gardner and Davies (2007) conducted an exploratory corpus-based study of phrasal verbs in the British National Corpus (BNC). Seeking to validate and extend the list of most frequent phrasal verbs presented in the *Longman Grammar*, with a view to answering “the where-do-we-start question so often asked by English language learners, teachers, curriculum designers, and materials developers” (p. 353), they compiled a list of the 100 most frequent phrasal verb constructions in the 100-million-word corpus. They defined phrasal verbs as “all two-part verbs in the BNC consisting of a lexical verb proper [...] followed by an adverbial particle [...] that is either contiguous (adjacent) to that verb or non-contiguous (i.e. separated by one or more intervening words)” (p. 341). Only frequency criteria were considered in the making of their list. The study presents some interesting findings, which can be summarised as follows.

Firstly, the 16 preposition-particle forms investigated were identified as adverbial particles (i.e. as part of a phrasal verb construction) in 15.6 % of the cases where they appeared in the corpus. Given the sheer number of particle forms found in the corpus overall (656,641), the authors conclude that phrasal verbs are a major grammatical class. Based on these findings, they estimate that learners will encounter on average one phrasal verb in every 150 words of English they are exposed to (although this estimate is for the corpus as a whole, so large variations can be expected from one register type to the other, for instance between informal speech and academic texts). Secondly, around 5 % of all lexical verbs in the BNC were found in phrasal verb constructions (i.e. one in 20). Since 10,404,107 lexical verbs were tagged in the corpus (approximately one in every 9.6 words), this roughly confirms the above estimate that learners will encounter on average one phrasal verb in every 150 words ($9.6 \times 20 = 192$)

of English. The authors conclude that phrasal verbs, “as a grammatical class, have a higher overall frequency than the verb *are*, the determiners *this* or *his*, the negative *not*, the conjunction *but*, or the pronoun *they*” in the BNC (p. 347).

Thirdly, the top 20 lexical verbs found in phrasal verb constructions were found to account for 53.7 % of all phrasal verbs in the BNC, and in 24.2 % of cases where they appear in the corpus they function in phrasal verb constructions. The fact that many of these lexical verbs are among the most frequent verbs in the BNC is, according to the authors, further evidence of the pervasiveness of phrasal verbs in discourse. In addition, when considering cumulative frequency percentages, these 20 lexical verb lemmas combined with only eight particles (*out*, *up*, *on*, *back*, *down*, *in*, *over* and *off*), which equals 160 combinations, appear to account for half (50.4 %) of all phrasal verbs in the BNC. The combination possibilities between lexical verbs and adverbial particles seem to be largely idiosyncratic, which according to the authors means that learners should be aware of semantic constraints and understand which combinations are less likely to occur or do not occur at all.

Fourthly, only 25 phrasal verb lemmas were found to make up nearly one-third of all phrasal verb occurrences in the corpus, and 100 to make up more than one-half (51.4 %). This would suggest that the time invested in teaching the top 100 phrasal verbs in English is certainly worth it. Finally, based on a semantic analysis of the phrasal verb lemmas via WordNet, each of these top 100 phrasal verbs was estimated to have 5.6 different meaning senses on average, which means that the learning load involved in mastering them is in reality much greater than it may first appear. As argued by the authors, this considerable degree of polysemy in phrasal verbs is something of which L2 learners should certainly be made aware.

Gardner and Davies’ was the first large-scale corpus study of phrasal verbs, and the first serious attempt to compile a list of high-frequency phrasal verbs for pedagogical purposes. Nevertheless, it has a number of limitations. In particular, and as pointed out by the authors, no further analysis was carried out to investigate frequency across registers, nor across different varieties of English. The result is a frequency list providing little information about register distribution patterns and inevitably biased towards the British English language variety. Liu (2011) attempted to address these

shortcomings by investigating phrasal verb frequencies in the Corpus of Contemporary American English (COCA) (Davies, 2008) and comparing results against the BNC and the LSWE corpus, and by conducting a cross-register distribution analysis within the COCA.

Similarly to Gardner and Davies, Liu's results showed that a relatively small number of lexical verbs and adverbial particles formed the majority of phrasal verbs occurring in the corpora. The phrasal verbs' frequency rank order in the COCA appeared fairly similar to that of the BNC. Despite the fact that the BNC and COCA cover different time periods (from the 1980s to 1993 and 1990 to the present respectively), no truly large difference in phrasal verb use was found between the two corpora. This suggests that phrasal verb use has remained rather stable over the past decades, and according to Liu may remain so over the next ones. Nevertheless, he observed some usage differences between American English and British English. In particular, some phrasal verbs were found to occur significantly more often in American English and others significantly more often in British English (e.g. British people *fill in* a form, but American people *fill out* a document). But overall, the most commonly used phrasal verbs appeared rather similar across the two varieties.

Somewhat unsurprisingly, and as found by Biber et al. (1999), the register distribution analysis showed that phrasal verbs were much more common in fiction and spoken English than in magazines, newspapers or academic writing (more than four times as frequent). Some phrasal verbs appear to be fairly evenly distributed across registers (e.g. *make up*), and others very unevenly distributed (e.g. *look up*). On this point the author argues that although evenly distributed phrasal verbs are undoubtedly of high priority for learners, some unevenly distributed phrasal verbs may be of such crucial importance in one particular register that they should also be of high priority for learners who must focus on that register (e.g. *carry out* or *point out*, mostly found in academic writing, are of paramount importance for university students). This echoes Celce-Murcia and Larsen-Freeman's (1999) suggestion that some phrasal verbs are field-specific in nature.

Not only can phrasal verbs be variably distributed across registers, but so can their individual meaning senses. For instance, Liu examined *make up* which has at least

four meaning senses: ‘constitute’ (e.g. *make up the bulk of research in SLA*), ‘decide’ (e.g. *make up your mind*), ‘compensate for’ (e.g. *he had to make up for this bad performance*), and ‘invent’ (e.g. *she made up that story*). Although all four meaning senses were fairly evenly distributed in spoken English, one meaning sense (‘constitute’) accounted for 79 % of the occurrences of *make up* in the academic writing register. Furthermore, phrasal verbs may vary in terms of the tenses in which they are typically used. For example, whilst *turn out* is used in the past tense 50 % of the time, *go ahead* is mostly used in the present tense. Finally, Liu noted a few discrepancies in frequency results between the spoken register of the COCA and the spoken components of the BNC and the LSWE corpus. This may have been due, according to him, to the former consisting mostly of public speech media like radio or TV broadcasting, and the latter two consisting of more informal face-to-face conversations.

Some other studies have explored the use of phrasal verbs in more restricted domains of occurrence such as EU documents and business English (Trebits, 2009; Breeze, 2012). Because I am primarily interested in phrasal verb use in general English, however, they will not be reviewed here. I will now turn to discussing phrasal verb knowledge and (non-) use by L2 learners.

3.3. Knowledge, use, and avoidance by L2 learners

As we have seen, phrasal verbs have a number of characteristics which make them notoriously difficult to master for L2 learners. These have been clearly summarised by Siyanova and Schmitt (2007), among others. Firstly, phrasal verbs contain two or more orthographic words working together as syntactic and lexical units. Instead of recognising the phrasal verb as a single semantic unit, unaware learners may attempt to decode the meanings of the individual constituents and thereby misinterpret the global meaning. Such faulty analyses are especially likely to be problematic in the case of highly opaque, idiomatic phrasal verbs. Secondly, phrasal verbs are syntactically complex. In particular, there may be uncertainty among learners as to which phrasal verbs allow for particle movement and when, and which do not. As noted by Schmitt

and Redwood (2011: 174), not only do learners have to decide whether a phrasal verb is separable (e.g. *I stayed up late last night* ≠ **I stayed late up last night*), but also what can be included in between (pronoun, adverb, short or long noun phrase). For example, Schmitt and Redwood note that while *he gave all of his vast fortune away* is acceptable, the sentence **the rebels are putting a huge amount of resistance up* is not. Learners thus need to make informed decisions, which are often based on stylistic and syntactic conventions, prosody, context and intended meaning (Bolinger, 1971). Thirdly, while phrasal verbs are a common linguistic feature of several languages (specifically those of Germanic origin), they are absent from many other languages. As a result, they may be perceived as an unnatural construction for learners whose L1 lacks such a structure. Finally, many phrasal verbs are polysemous. This may cause added confusion as to their meanings, and most certainly adds to the learning load involved in acquiring them.

A number of studies have sought to quantify and compare the use of phrasal verbs in learner corpora as opposed to native corpora. Based on a comparison of the LOCNESS (a native corpus of academic essays) and the ICLE (a non-native corpus of essays from learners with various L1s), Waibel (2008) found that phrasal verbs occurred more frequently in the LOCNESS than in many sub-corpora of the ICLE, such as the French, Italian, Spanish and Russian sub-corpora. However, she found that other sub-corpora of ICLE (such as the Dutch and Polish sub-corpora) did not show a significant difference in phrasal verb occurrences from the numbers found in the LOCNESS. Surprisingly, the German sub-corpus included even more phrasal verbs than the native corpus. Waibel thus concluded that the use of phrasal verbs may be facilitated for learners whose L1 possesses the phrasal verb structure. More recently, Chen (2013) explored Chinese university students' use of phrasal verbs in comparison with American and British students. She compiled a corpus of 780 argumentative essays written by 130 English majors in their first three years of undergraduate studies at a Chinese university, and compared it with four native corpora of two English varieties (British and American English) and two genres (argumentative and academic writing). Based on their scores on a national English proficiency exam, the Chinese students were considered to be upper-intermediate EFL learners according to the author. A clear attempt was made at making the four native corpora as comparable to the Chinese

learner corpus as possible.

Overall, her results showed that the number of phrasal verbs used by the Chinese learners was significantly different from that of the American native speakers in both genres, and from that of the British speakers in the academic genre only (the Chinese learners actually used considerably more phrasal verbs in their academic prose than the natives). Although the Chinese language does not possess the phrasal verb structure, the Chinese students were thus able to produce many phrasal verbs in their essays. Waibel's (2008) contrary findings, according to Chen, may have been due to issues of general language proficiency. In no way, however, do Chen's results show that the Chinese students' knowledge of phrasal verbs reached a native level, for at least two reasons. Firstly, as acknowledged by the author herself, their frequent use of phrasal verbs may have been triggered by their highly frequent use of verbs in general. Secondly, the study does not provide information as to which phrasal verbs were used. It is possible that a small number of phrasal verb 'teddy bears' were overused, even across writers, thus giving a false impression of the extent of phrasal verb knowledge of these learners. The Chinese university students' use of phrasal verbs was quantitatively similar to the British students' in the argumentative genre but significantly inferior to the American students', suggesting that the amount of phrasal verb use may differ depending on the language variety. For this reason, Chen argues that the choice of native corpus to be compared with the learner corpus is crucial, and might yield more or less similarities between the two depending on the English variety of the corpus.

Siyanova and Schmitt (2007) explored and compared native and non-native use of multi-word verbs (which I will refer to as phrasal verbs here for the sake of consistency) and their one-word verb equivalents. They carried out a frequency analysis of 26 phrasal verbs and their one-word equivalents in the BNC and CANCODE (for native written and spoken English) on the one hand, and the ICLE (for non-native written English) on the other hand. Analysis of the native corpora showed that for almost 70 % of the verb pairs, the one-word verbs were more frequent than the phrasal verbs, both in written (BNC) and spoken discourse (CANCODE). This result is not too surprising, however, given the high frequency and versatility of most of the one-word

verbs in general English (e.g. *seem, meet, understand, wait*). The non-native corpus analysis showed that learners used phrasal verbs to a similar degree as native speakers in the BNC. However, they used the one-word verbs at a far greater rate than the native speakers: 15 of the 26 verbs were markedly more frequent in the ICLE than in the BNC. This trend was confirmed in the CANCODE/ICLE comparison (although as pointed out by the authors, it is ill-advised to compare written with spoken discourse).

These results suggest that one-word verbs are preferred over phrasal verbs by both native and non-native speakers of English, both in written and spoken discourse. However they were partially contradicted by one questionnaire administered to native speakers and advanced learners of English, in which they were asked to judge how likely they were to use the 26 phrasal verbs or their one-word verb counterparts in a contextualised situation. The analysis of the questionnaire responses showed that native speakers had a strong tendency to choose the phrasal verbs over the one-word verbs. The advanced learners were more likely to use one-word verbs than the natives, although they were also prone to choosing the phrasal verbs on occasion (only their preference was not as strong as that of the natives). The authors attributed this discrepancy between their corpus and questionnaire results to the highly informal tone of the questionnaire items, which may have prompted phrasal verb preference due to phrasal verbs being perceived as more informal than one-word verb equivalents.

Siyanova and Schmitt (2007) further argued that, due to the more informal nature of phrasal verbs, the choice between using phrasal verbs or one-word verbs has to do with considerations of register and appropriacy. The ability to discern which of the two will be expected in any given situation by the speech community, they contend, will make a positive difference in how native-like learners are perceived. Conversely, failure to use the correct option will almost inevitably give them away as non-natives. Although we would expect such instinct to develop as a result of long-term exposure to the language, the authors did not find a strong effect for the length of time spent in a native English-speaking environment on the likelihood of using phrasal verbs. They thus concluded that learners might need an extremely long period of time (at least more than 12 months) to become comfortable with phrasal verbs. An alternative conclusion, however, might be that the quality of exposure to the target language is a more relevant

predictor of phrasal verb use than length of exposure (for example, the amount of daily interaction with native speakers; see 2.6). Unfortunately, this information was not gathered from participants in the study.

Schmitt and Redwood (2011) investigated L2 learners' receptive and productive knowledge of highly frequent phrasal verbs in English and its relationship with frequency, exposure, and individual differences factors. Among the 60 phrasal verbs tested, the large majority (50) were taken from Gardner and Davies' (2007) list, and the rest were less frequent items selected from student course-books and grammar reference books. The participants were 68 students enrolled in private British language schools, among whom 23 had an intermediate level of proficiency and 45 had an upper-intermediate level. The receptive and productive measurement instruments were in a cloze test format: in the productive test, participants were asked to provide the missing phrasal verb in a sentence context, whereas in the receptive test they were required to select the correct phrasal verb among four options in order to complete a sentence.

Results showed that participants had good receptive knowledge (65.2 %) and fair productive knowledge (48.2 %) of the target phrasal verbs considering their intermediate level of English. Since frequency has long been acknowledged as an essential predictor of L2 vocabulary knowledge (i.e. the more frequent a word, the more likely it is to be known; Nation, 2013), the authors hypothesised that the same could be expected with phrasal verbs. They indeed found a significant positive relationship between their participants' receptive and productive scores and phrasal verb frequency rankings in the BNC complete, and written and spoken components analysed separately. The strength of the correlation was found to be higher for the productive scores than for the receptive scores. No major difference was found between the written component of the BNC and the spoken one in relation to both receptive and productive knowledge. Interestingly, similar correlations were found between phrasal verb knowledge and frequency rankings in the COCA in terms of productive mastery, but slightly higher in terms of receptive mastery.

The study thus showed a relationship between phrasal verb knowledge and frequency occurrence in corpora. However, this relationship was not strictly linear. Whilst some phrasal verbs at the lower end of the frequency range were better known

than more frequent phrasal verbs, some of the most frequent phrasal verbs in Gardner and Davies' list (e.g. *carry out* or *go in*) were known by less than half of the participants. This suggests that learners lacked exposure to these items in spite of their high frequency in the BNC. As pointed out by Schmitt and Redwood, however, it is doubtful whether the participants' exposure to phrasal verbs strictly matched phrasal verb frequency in the BNC and COCA. Many course-books traditionally used in the language classroom are not corpora-based, making the selection of items to be included relatively random (Koprowski, 2005). In addition, non-native language teachers may be relatively unaware of the most commonly used phrasal verbs themselves. Therefore, other factors than corpus frequency might predict EFL learners' phrasal verb knowledge.

Looking at individual differences factors, Schmitt and Redwood found that phrasal verb knowledge appeared to be related to overall language proficiency, as their upper-intermediate participants achieved globally higher scores than the intermediate-level students. No significant relationship was found concerning age and gender. In terms of language exposure, they found that both extensive reading and watching English language films or television was significantly correlated with phrasal verb knowledge, whereas listening to English language music or using social networking sites in English was not. The type of instruction and hours of classroom input that the participants had received prior to the test was not found to relate to their scores to a significant degree.

Because phrasal verbs are so difficult, some researchers have suggested that L2 learners deliberately avoid them. In fact, the bulk of studies on the theme of phrasal verb knowledge and use by L2 learners have involved the empirical observation of an avoidance phenomenon. In broad terms, avoidance can be defined as the conscious decision from learners not to use a particular L2 form, although that L2 form is known. A pioneer study by Dagut and Laufer (1985) looked at Israeli learners' use of English phrasal verbs, whose L1 (Hebrew) lacks such structure. They found that most of their participants avoided using phrasal verbs (especially figurative phrasal verbs), preferring one-word verbs instead. They concluded that this avoidance behaviour was due to structural differences between the L1 and L2. However, they did not account for the fact

that avoidance primarily concerned figurative phrasal verbs, and more importantly did not establish the participants' prior knowledge of the items. This means that the avoidance behaviour they assumed could simply have been the result of pure ignorance (Kamimoto, Shimura & Kellerman, 1992; Liao & Fukuya, 2004).

Addressing these two issues, Hulstijn and Marchena (1989) similarly observed avoidance behaviour in their Dutch participants, this time not as a category (the Dutch language has the phrasal verb structure) but rather for semantic reasons. The learners seemed to avoid semantically opaque phrasal verbs which already existed in their L1 and which they perceived could not be transferable to English, "preferring one-word verbs with general, multi-purpose meanings" (p. 241). Laufer and Eliasson (1993), conversely, found that similarity of meaning between idiomatic phrasal verbs in the L1-L2 was not a good predictor of avoidance for their Swedish participants, and neither was inherent complexity. Rather, since they did not notice any avoidance effect in their Swedish participants whose L1 has the phrasal verb structure, whereas Dagut and Laufer (1985) did with their Hebrew learners, they concluded that L1-L2 difference must be the best predictor of avoidance.

Liao and Fukuya's (2004) study of Chinese learners of English showed that intermediate learners produced phrasal verbs much less frequently than both advanced learners and native speakers. They hypothesised that structural differences in the L2 may be one reason explaining avoidance, although proficiency seems to have counteracted its effect. Based on their findings and those of the three afore-mentioned studies on phrasal verb avoidance, they conclude that L1-L2 structural differences and interlanguage development must be the two factors at play in phrasal verb avoidance. They argue that the former does not necessarily rule out the latter, and that they should be seen as two interacting factors. They also argue that one significant contributing factor to interlanguage development from avoidance to non-avoidance may be the amount of contact with the L2. An additional finding was that both intermediate and advanced learners used fewer figurative phrasal verbs than literal phrasal verbs, although the advanced learners' performance closely matched the native speakers'. This suggests that only the intermediate learners may have truly avoided figurative phrasal verbs, again probably due to their semantic complexity. Finally, of all three eliciting

tests (multiple-choice, recall, and translation) used in the study, only the translation test revealed a greater avoidance of figurative phrasal verbs over literal phrasal verbs; this result is consistent with Laufer and Eliasson (1993).

3.4. Acquisition, learning and teaching

As with formulaic language in general, relatively little is known about the best way (assuming there is any) to teach phrasal verbs. Definitions and characteristics have been discussed at length, the difficulties they present to learners have been widely acknowledged, frequency lists have been compiled (Gardner & Davies, 2007; Liu, 2011) so that we now know which phrasal verbs should be introduced in priority in the classroom, but there is now a clear need for more efficient and more systematic pedagogy (Darwin & Gray, 1999; White, 2012).

Since one major difficulty of phrasal verbs for L2 learners is the apparent semantic unpredictability or randomness of the particle element (Side, 1990; Sansome, 2000; Armstrong, 2004), one pedagogical approach addressing this issue has gained considerable research attention in recent years. The rationale behind the Conceptual Approach, as it is called, is that EFL/ESL learners can master phrasal verbs more efficiently if they engage in a semantic/cognitive analysis of these phrasal verbs, rather than in plain memorisation which may inhibit application of knowledge to new contexts (Van der Veer, 2000). Given the sheer number of phrasal verbs in English, and whilst new phrasal verbs are constantly being created (constituting “an explosion of lexical creativeness that surpasses anything else in our language” as Bolinger puts it, 1971: 11), the ability to draw generalisations and extend knowledge beyond already known phrasal verbs would indeed appear to be greatly beneficial.

The Conceptual Approach is drawn from the field of Cognitive Linguistics, and posits that the use of particles is motivated by underlying conceptual meanings. In this view, the figurative meanings of particles are considered to be metaphorical extensions of core (or prototypical) meanings (see Lindner, 1981, for a convincing demonstration with the particles *up* and *out*). For example, the particle *out* denotes the leaving of a

container (whether physical or metaphorical, such as a state/situation). This would suggest that, contrary to popular belief, there may be a great deal of systematicity in the phrasal verb construction. Spotlighting this systematicity, as argued by White (2012: 421), “may provide learners a means toward breaking through the opacity and idiomaticity of phrasal verbs.” It is worth pointing out, however, that the metaphorical element in phrasal verbs is not always confined to the particle. Morgan (1997: 354-355) shows that several possibilities of metaphoric extension can exist within a phrasal verb, taking the example of phrasal verbs with the particle *out*. They are reproduced in the following table.

Table 2. Possibilities of metaphoric extension with the particle *out* (Morgan, 1997: 354-355)

Combination	Example
Literal container and literal verb	<i>I took the mug out of the box</i>
Literal container and extended verb	<i>We fished out the ring</i> (from the bowl of potato chips)
Metaphorical container and literal verb	<i>We handed out the brochures</i>
Metaphorical container and extended verb	<i>We picked out a name for the baby</i>

In theory, conceptualising figurative meanings as extensions to core meanings could potentially allow learners “to incorporate the figurative sense into a semantic network more effectively and recall it later more easily” (Verspoor & Lowie, 2003: 569). In addition, proponents of the approach argue that it typically fosters deeper word processing which has been shown to promote better learning (Baddeley, 1990), as well as mental imagery which should lead to better retention (Clark & Pavio, 1991). The Conceptual Approach has been promoted by various researchers including Dirven (2001), Kurtyka (2001), and Rudzka-Ostyn (2003). The latter devised a self-learning textbook for use by intermediate and advanced learners of English based entirely on the approach, listing some 1,100 phrasal compounds used with 17 particles/prepositions. Although not referring explicitly to the Conceptual Approach, Celce-Murcia and

Larsen-Freeman (1999: 433) advise teachers to “guide ESL/EFL students through some ‘idiomatic’ phrasal verbs by analysing their component parts and then looking for a logical relationship within a specific context.”

A few studies have attempted to test the efficiency of the approach empirically. Kövecses and Szabó (1996) compared the presentation of phrasal verbs with corresponding orientational metaphors and with Hungarian translations in two classes of Hungarian learners of English. They found that the metaphor group outperformed the translation group on a gap-fill exercise which targeted both the taught phrasal verbs and novel ones. However the scale of the experiment was reportedly too limited for statistical analyses of significance. Boers (2000) compared the presentation of phrasal verbs classified by orientational metaphor and presentation of textbook explanations of the same phrasal verbs arranged alphabetically. Results showed that the L1 French participants performed rather equally on a cloze test containing novel phrasal verbs, but that the metaphor group performed better on the same test containing the previously taught phrasal verbs. This mixed result is, according to the author, due to the fact that many phrasal verbs “may turn out to be too opaque to lend themselves to straightforward imagery processing” (p. 562). This suggests that the Conceptual Approach may not be equally effective or even applicable for teaching all existing phrasal verbs in English.

Both Boers and Kövecses and Szabó studies involved very brief pedagogical treatments (15 and 10 minutes) which were deductive in their methodologies: the participants were given conceptual metaphors before being asked to apply the concepts to the gap-fills. White (2012) set out to explore a more inductive method in which learners tried to figure out the underlying conceptual metaphors of phrasal verb particles for themselves, arguing that such a method might facilitate attempts to make sense of other phrasal verbs they encounter outside the classroom. Participants engaged in a reading task in which unknown phrasal verbs were embedded, both before and after an instruction task, and were asked to guess their meanings according to the context. Although they made changes in how they explained phrasal verbs from the pre-instruction task to the post-instruction task, which according to the author reflected a positive reorientation that may help them over time, the difference in accuracy scores

between the two conditions was not significant.

A study by Yasuda (2010) sought to investigate the effect of metaphor awareness on phrasal verb acquisition by Japanese EFL learners. A control group were introduced to 21 phrasal verbs and their Japanese translations, and an experimental group were introduced to the same phrasal verbs also with their Japanese translations, but with additional explanations of how the orientational metaphors of the particles contributed to the overall phrasal verb meanings. Both groups were then given 10 minutes to memorise the phrasal verbs. The phrasal verbs were assumed to be already known by the participants, therefore no difference in results between the two groups on the first part of the following task was expected. This task consisted in filling in the missing particles of 30 phrasal verbs in a sentence context, and included 15 of the 21 phrasal verbs from the memorising task along with 15 novel phrasal verbs. Strangely, no pre-test on the 15 novel, supposedly unknown phrasal verbs was administered. Results showed that the two groups performed equally well on the 15 phrasal verbs they already knew (a hardly surprising finding), but that the experimental group significantly outperformed the control group on the 15 novel phrasal verbs. The author thus concluded that the Conceptual Approach can be successfully transferable when learners are confronted to novel phrasal verbs.

The study has a number of serious limitations, however, and although some of them are acknowledged, the results are still interpreted as evidence that the Conceptual Approach has a positive effect on the learning of phrasal verbs. Firstly, the memorisation task involved phrasal verbs which the participants already knew. Therefore it is unclear how much they engaged with it, given that the learning was already established. Secondly, the test partly required participants to fill in the missing particles for phrasal verbs they had not been exposed to in the memorisation task. It would have been more relevant to test learners only on those phrasal verbs introduced in the treatment if what is to be tested is the efficacy of the approach in learning phrasal verbs. Finally and most importantly, the test was administered immediately after the memorising task, and no delayed post-test was carried out. As Schmitt (2010) points out, it is not possible to interpret results involving only immediate post-tests as evidence of learning.

Another study investigating the efficacy of the Conceptual Approach on the acquisition and retention of phrasal verbs is Condon's (2008). Using an adaptation of Rudzka-Ostyn's (2003) method to teach the approach to a group of L1 French speakers, she found that those who were taught about the semantics of the particles performed significantly better in a post-test measuring elicited production of phrasal verbs than those who were simply given translations. Interestingly, the advantage of the former group significantly increased on the delayed post-test six weeks after, suggesting that the Conceptual Approach to teaching phrasal verbs can improve long-term retention. However the perceived advantages were not equally spread among the phrasal verbs. It seemed that in the case of more opaque phrasal verbs, the semantic contribution of particles towards the overall meanings was more difficult to establish. This points to a crucial limitation of the approach: the metaphorical element in the phrasal verb may be so tenuous that it becomes impossible to grasp, let alone to explain. Similarly to Boers (2000), the superior results of the Conceptual Approach condition did not extend to novel phrasal verbs.

A few studies have investigated the use of other pedagogical techniques or tasks for L2 acquisition of phrasal verbs. Birjandi, Alavi, and Najafi Karimi (2015) examined the relative effectiveness of three types of input (unenhanced, typographically enhanced, and lexically elaborated) on 35 Iranian EFL learners' acquisition of 30 phrasal verbs (10 per condition) over a four-week period. Results showed that the lexically elaborated condition led to the highest gains, followed by the typographically enhanced condition. Statistically significant differences in scores were observed between the lexically elaborated condition and the unenhanced condition only. A study by Nassaji and Tian (2010) compared the effectiveness of two types of output tasks (reconstruction cloze tasks and reconstruction editing tasks) on the learning of 16 phrasal verbs by 26 lower-intermediate ESL learners, and explored whether doing the tasks collaboratively led to greater gains than doing them individually. Results showed that collaborative tasks did not lead to significantly greater gains than individual tasks, but led to greater accuracy of task completion. However, the editing task did lead to significantly greater learning gains than the cloze task. The authors concluded that collaborative pair work is not necessarily more effective than individual work for

learning phrasal verbs (although the participants' collaborative skills were suspected to be weak), and explained the superiority of the editing task by the fact that it triggered more interaction and negotiation about the target items between learners.

To conclude, the teaching and acquisition of phrasal verbs has been subject to relatively little empirical research, the bulk of which has focused on testing the efficiency of the Conceptual Approach. As we have seen, these studies produced rather mixed findings and had a number of limitations, in addition to involving different methodologies and participants which makes the task of comparing them difficult. Therefore, it is impossible to this day to draw any solid conclusions as to the pedagogical merit of the approach for teaching phrasal verbs. Furthermore, not all phrasal verbs lend themselves equally well to a cognitive analysis of their particles. Ultimately, it might be that phrasal verbs, just like individual words and other formulaic sequences, are best taught using the same guiding principles that have been shown important for L2 vocabulary acquisition: namely, explicit focus on form and meaning, depth of engagement, and repeated exposure to the words (Nation, 2013).

Chapter 4

The PHaVE List: A pedagogical list of phrasal verbs

4.1. Introduction

The previous chapter has highlighted the importance of phrasal verbs in English and the various reasons which make phrasal verbs important to learn. The first reason is that they have been found to be very frequent in a number of corpus studies. For example, based on a corpus search of the BNC complete, Gardner and Davies (2007) estimate that learners will encounter on average one phrasal verb in every 150 words of English they are exposed to. Biber et al. (1999) estimate that phrasal verbs occur almost 2,000 times per million words in conversation and fiction, whilst Liu (2011), including literal phrasal verbs in his corpus frequency counts, finds that they occur nearly three times as much in these two registers. Furthermore, phrasal verbs may carry a large number of meanings and functions. Gardner and Davies (2007) found that each of the 100 most frequent phrasal verbs had 5.6 meaning senses on average. These meaning senses may not be possible to be conveyed by a single word equivalent, or may carry connotations that their single word equivalent does not have (Cornell, 1985). More importantly, using phrasal verbs is crucial to fluent English and sounding native-like. Because phrasal verbs are widely used in spoken informal discourse, failure to use them in such situations is likely to give away learners as non-natives (Siyanova & Schmitt, 2007).

However, phrasal verbs may be seen as an unnatural construction for some learners whose L1 lacks such a structure. Their syntactic peculiarity (some phrasal verbs allow for particle movement, others do not) and semantic complexity (some phrasal verbs have meanings that are highly idiomatic) make them particularly difficult to learn and prone to avoidance (Dagut & Laufer, 1985; Hulstijn & Marchena, 1989; Laufer & Eliasson, 1993; Liao & Fukuya, 2004). Finally, they are composed of two or more orthographic words, which means that instead of recognising them as single semantic units, unaware learners may attempt to decode the meanings of their individual components, and thus misinterpret them.

In short, phrasal verbs are both very important and very difficult to learn. This makes them all the more necessary to be included in the curriculum. However, as with individual words, the decision of which items to prioritise must be made. In vocabulary studies, this decision has largely been based on frequency criteria (Nation & Webb, 2011). Two corpus studies (Gardner & Davies, 2007; Liu, 2011) have already established lists of the most frequent phrasal verbs in English, thereby identifying the most useful items to be taught. However, no information other than phrasal verb frequency and ranking order was provided, which makes these two lists inadequate for teachers and learners. The lack of semantic information, especially in the case of polysemous items, means that teachers and learners are left to make their own judgements as to which meaning senses should be taught or learned.

As a consequence, and as both Gardner and Davies (2007) and Liu (2011) point out in their recommendations, research is needed to determine the most frequent meaning senses of these most frequent phrasal verbs. Just as priority should be given to the phrasal verbs that occur most frequently in language, priority should also be given to those meaning senses that occur most frequently for any individual phrasal verb. Therefore, the purpose of the study presented in this chapter (Study 1) is to compile a list of these most frequent meaning senses based on frequency of occurrence in a large representative corpus of English. The resulting product is the creation of a pedagogical list for use by teachers and learners (named the PHaVE List) which includes the top 150 phrasal verbs and meaning sense frequency information. In addition to reporting the

various steps involved in the development of the list, this chapter includes more qualitative considerations around the issue of polysemy in phrasal verbs.

4.2. Phrasal verb frequency lists

4.2.1. The rationale behind frequency lists

Now that the importance of multiword knowledge in developing L2 learners' proficiency has been widely acknowledged in the literature (Moon, 1997; Wray, 2002; Schmitt, 2004), one of the main problems faced by EFL/ESL teachers is to decide which multiword items should be included in a syllabus and taught to learners. A frequency criterion appears to be the most sensible parameter to consider in making this decision (Liu, 2011), and indeed is consistent with the idea that language teaching should reflect authentic language use. In addition, actual frequency of occurrence is a more reliable indicator of usefulness than pure intuition (Hunston, 2002; Schmitt, 2008).

Estimates of the number of phrasal verbs in English vary. For instance, according to McCarthy and O'Dell (2004), there are more than 5,000 phrasal verbs and related noun and adjective forms currently in use in English. According to Gardner and Davies (2007), there are a total of 12,508 phrasal verb lemmas in the BNC. Both are substantial figures, clearly indicating the need to establish frequency lists of phrasal verbs in order to help teachers make an informed choice in selecting them. This was pointed out as early as 1985 by Cornell, who speculated that without any attempt to select phrasal verbs for instruction, "their discovery may be uncomfortably similar, from the learner's point of view, to the opening of Pandora's box" (p. 277); hence the need for selection and gradation prior to teaching, "even at the risk of controversial inclusions and omissions." Before any attempt at a phrasal verb frequency list was made, teachers were left with little but their own intuition to select the few phrasal verbs to be dealt with in the classroom. However, as Darwin and Gray (1999: 67) point out, their intuitions of frequency/usefulness may not be correct, and "though having the best

intentions, [teachers] may be presenting the student with a list of terribly difficult phrasal verbs that have very little use in the world outside the classroom.” One corpus-based frequency study of English phrasal verbs was carried out by Biber et al. (1999; see 3.2). However, due to the limited number of phrasal verbs they addressed (31), it will not be discussed here. Instead, I will focus my attention on two more recent and comprehensive corpus-based frequency studies of phrasal verbs.

4.2.2. Gardner and Davies’ (2007) frequency list

Gardner and Davies (2007) carried out a BNC search consisting of queries to identify every instance where a lexical verb was followed by an adverbial particle, with varying degrees of adjacency between the two. The outcomes were lemmatised so that all inflectional forms of the same verb were counted together (e.g. *pick, picked, picking*). Interestingly, they found that the top 20 lexical verbs found in phrasal verb constructions (e.g. *go, look*) account for 53.7 % of all phrasal verbs in the BNC. Combined with only eight particles (*out, up, on, back, down, in, over, and off*), these 20 lexical verb lemmas account for half (50.4 %) of the phrasal verbs in the BNC. Finally, the researchers found that only 25 phrasal verb lemmas (e.g. *pick up, go on*) make up nearly one-third of all phrasal verb occurrences in the corpus, and 100 make up more than one-half (51.4 %). However, as noted by Liu (2011) and the authors themselves, their final frequency list has several shortcomings; among which the fact that it contains only phrasal verbs made up of the top 20 phrasal verb-producing lexical verbs, thus potentially discarding other highly frequent phrasal verbs, and that these phrasal verbs may not be so frequent in other varieties of English than British English, given that the BNC was used as the only data source.

4.2.3. Liu's (2011) frequency list

Liu examined all the phrasal verbs already included in Biber et al.'s (1999) and Gardner and Davies' (2007) lists. Interestingly, he noted a high degree of overlap between the two, with only four of Biber et al.'s 31 phrasal verbs not in Gardner and Davies' list of the top 100 phrasal verbs. In addition to searching the 104 combined phrasal verbs in the COCA, he queried the COCA and the BNC for the other most common phrasal verbs using four recent comprehensive phrasal verb dictionaries as a search guide. The total search was 8,847 phrasal verbs (5,933 extracted from the dictionaries, and 2,914 extracted as a by-product of his own query method). The threshold for inclusion in his frequency list was 10 tokens per million words, for the three following reasons. Firstly, 70 % of the 104 phrasal verbs on the Biber et al.'s and Gardner and Davies' combined list each have at least 10 tokens per million words. Secondly, a lower frequency threshold would have led to the inclusion of many more phrasal verbs. However as cautioned by Liu (2011: 667), a list of the most frequently used phrasal verbs should not be too long in order to remain "truly meaningful". Thirdly, the top 100 phrasal verbs identified by Gardner and Davies were reported by the authors as already accounting for more than half of all the phrasal verb occurrences in the BNC. This means that Liu's list could be expected to provide more than satisfactory coverage of phrasal verb occurrences in corpora using the same frequency threshold.

Out of the 8,847 searched phrasal verbs, only 152 made the final list: Biber et al.'s and Gardner and Davies' combined list, and an additional 48 phrasal verbs. Liu notes that whilst these 152 most frequent phrasal verbs comprise only 1.2 % of the total 12,508 phrasal verb lemmas in the BNC, they cover 63 % of the total 512,305 phrasal verb occurrences, which "helps demonstrate the representativeness and hence the usefulness of these most frequently used phrasal verbs" (p. 668). He also notes that the most common phrasal verbs appear rather similar between American and British English. Because he combined *look around* with *look round* and *turn around* with *turn round* (the different forms being a result of usage variation), the total number of phrasal verbs in Liu's list is not 152 but 150.

4.3. Phrasal verbs and polysemy

4.3.1. How polysemous are the most frequent phrasal verbs?

One particularly interesting finding emerging from Gardner and Davies' (2007) corpus study is that phrasal verbs are highly polysemous lexical items: each one of the top 100 phrasal verbs in their frequency list was estimated to have between 5 and 6 meanings senses on average. This means that in reality, the learning load of phrasal verbs is probably greater than for most other words and word combinations in English. Their 5.6 meaning sense average figure suggests that mastering the most frequent phrasal verbs in English does not entail learning 100 or 150 form-meaning links, but between 560 and 840. On close inspection, however, I found that this 5.6 meaning sense figure was questionable for two reasons. Firstly, WordNet, the lexical database used by Gardner and Davies to recognise distinctions between different meaning senses of the same word forms, seems to yield redundant meaning senses (i.e. what constitutes a single meaning sense comes up as two different entries). A quick search using only the two examples given by Gardner and Davies, *put out* and *work out*, is enough to illustrate this:

PUT OUT (the third and fifth meaning senses are evidently the same, and the seventh and eighth meaning senses are the same baseball sporting term)

1. [trouble](#), **put out**, [inconvenience](#), [disoblige](#), [discommode](#), [incommode](#), [bother](#) (to cause inconvenience or discomfort to) "*Sorry to trouble you, but...*"
2. **put out** (put out considerable effort) "*He put out the same for seven managers*"
3. [smother](#), **put out** (deprive of the oxygen necessary for combustion) "*smother fires*"
4. [exsert](#), [stretch out](#), **put out**, [extend](#), [hold out](#), [stretch forth](#) (thrust or extend out) "*He held out his hand*"; "*point a finger*"; "*extend a hand*"; "*the bee exerted its sting*"

5. [douse](#), **put out** (put out, as of a candle or a light) *"Douse the lights"*
6. **put out** (be sexually active) *"She is supposed to put out"*
7. **put out**, [retire](#) (cause to be out on a fielding play)
8. **put out** (retire) *"he was put out at third base on a long throw from left field"*
9. [publish](#), [bring out](#), **put out**, [issue](#), [release](#) (prepare and issue for public distribution or sale) *"publish a magazine or newspaper"*
10. [anesthetize](#), [anaesthetize](#), [anesthetise](#), [anaesthetise](#), [put under](#), **put out** (administer an anesthetic drug to) *"The patient must be anesthetized before the operation"; "anesthetize the gum before extracting the teeth"*

WORK OUT (the first and third meaning senses appear to be the same, as do the fourth and eighth, and the fifth and sixth)

1. **work out**, [work up](#) (come up with) *"His colleagues worked out his interesting idea"; "We worked up an ad for our client"*
2. **work out** (happen in a certain way, leading to, producing, or resulting in a certain outcome, often well) *"Things worked out in an interesting way"; "Not everything worked out in the end and we were disappointed"*
3. **work out** (work out in detail) *"elaborate a plan"*
4. [exercise](#), work out (do physical exercise) *"She works out in the gym every day"*
5. **work out** (be calculated) *"The fees work out to less than \$1,000"*
6. [calculate](#), [cipher](#), [cypher](#), [compute](#), **work out**, [reckon](#), [figure](#) (make a mathematical calculation or computation)

7. [solve](#), **work out**, [figure out](#), [puzzle out](#), [lick](#), [work](#) (find the solution to (a problem or question) or understand the meaning of) "*did you solve the problem?*"; "*Work out your problems with the boss*"; "*this unpleasant situation isn't going to work itself out*"; "*did you get it?*"; "*Did you get my meaning?*"; "*He could not work the math problem*"
8. [exercise](#), [work](#), **work out** (give a workout to) "*Some parents exercise their infants*"; "*My personal trainer works me hard*"; "*work one's muscles*"; "*this puzzle will exercise your mind*"

As we can see, the WordNet search yielded two redundant meaning senses for the phrasal verb *put out*, and three for *work out*. It is likely that the number of meaning senses attributed to some other phrasal verbs may also have been overestimated. Secondly, it is also possible that searching for phrasal verb meaning senses through the lexical database leads to the omission of some important meaning senses. For instance, my search of the phrasal verb *look up* yielded only one meaning sense ('seek information from'), ignoring the literal meaning sense of 'raising one's eyes' (e.g. *he looked up from his book*) and the figurative meaning sense of 'improving' (e.g. *things are looking up*). It is thus also likely that some meaning senses of some other phrasal verbs may similarly have been excluded.

Although the overestimation and underestimation effects may have counteracted each other, it is unclear to what extent they would affect Gardner and Davies' polysemy estimate if taken into account. Therefore, although WordNet may be used as a tool to discover the various meaning senses of a word or word combination, it certainly cannot be used as a reliable data source for phrasal verb meaning sense counts. This points to the limits of electronic databases; a manual corpus count, although very tedious and time-consuming, would no doubt provide a more accurate figure. However, to my knowledge, this 5.6 figure is the only estimate of the number of meaning senses of the most frequent phrasal verbs currently available in the literature. Another figure could potentially be obtained by counting the number of meaning sense entries of the most frequent phrasal verbs in dictionaries. However, such procedure may yield

inconsistent numbers as we will see later on. In any case, a quick search of either WordNet or a phrasal verb dictionary shows that the vast majority of highly frequent phrasal verbs are polysemous. I will now direct my attention to what has been argued as the main possible cause of such a phenomenon.

4.3.2. The root of polysemy

In the previous chapter (3.1), we have seen that phrasal verbs vary on a cline from being completely transparent in meaning to being completely opaque. Semantic classifications, categories and denominations of phrasal verbs tend to vary across researchers. For instance, Laufer and Eliasson (1993) distinguished between three types of phrasal verbs: semantically transparent (the meaning of the phrasal verb can be derived from the meaning of its two components), semi-transparent (the meaning of the phrasal verb becomes transparent when put into context), and figurative or semantically opaque (the meaning of the phrasal verb has become lexicalised). Celce-Murcia and Larsen-Freeman (1999) similarly distinguish between three types of phrasal verbs but use a different terminology: literal, aspectual, and idiomatic.

However, certain phrasal verbs can be ascribed to more than one category, thus rendering clear-cut distinctions irrelevant. This is due to the fact that many contemporary phrasal verbs possess a non-compositional meaning which has often been derived from a literal one, with the result being that the original literal meaning may continue to exist in conjunction with the newly-created opaque one, or disappear completely (Rodríguez-Puente, 2012). This process of semantic change through which a phrasal verb's literal meaning has become more opaque or idiomatic over time is mainly referred to as *idiomatisation* or *lexicalisation* in the literature (see Thim, 2012). According to Rodríguez-Puente (2012), the non-compositional meanings may be created through one or several successive process(es) of metaphorisation, leading to phrasal verbs that were originally literal becoming more and more opaque over time. For instance, her diachronic corpus study shows that *bring up* progressively developed from its literal meaning sense ('bring into a higher position') found in Middle English to

a more opaque meaning ('bring into a higher age'), and finally to its completely opaque meaning ('educate') found in Early Modern English.

It can be safely assumed that this process of idiomatisation accounts, at least to some degree, for the polysemous nature of phrasal verbs. It remains to be seen, however, to what extent it can readily be traced back for the most frequent meaning senses of the most frequent phrasal verbs in English.

4.3.3. Dealing with polysemous phrasal verbs

The notion that the different meaning senses of a phrasal verb may be a result of idiomatisation suggests that they are semantically related and not as random as they appear to be. Rather, the figurative meaning senses are metaphorical extensions of the literal meaning senses (also referred to as core meanings, or prototypes). This assumption is the basic tenet of the Conceptual Approach to teaching phrasal verbs, as we have seen in the previous chapter (3.4). The approach posits that all the meaning senses of a polysemous word are related, so that the meaning of the word can be seen as a large semantic network of related senses, with some being central (the core/literal/prototypical meaning referring to the cognitive domain of physical space) and others being more peripheral (abstract/figurative senses being "derived from concrete, spatial senses by means of generalization or specialization of meaning or by metonymic or metaphoric transfer"; Cuyckens & Radden, 2002: 13).

The following questions thus arise: how should polysemous phrasal verbs be introduced in the classroom? Should they systematically be presented as being made of one core meaning and one or more figurative extension(s)? Verspoor and Lowie (2003: 569) believe that approaching figurative meanings through connections to core meanings allows learners "to incorporate the figurative sense into a semantic network more effectively and recall it later more easily." Similarly, Brodzinski (2009) claims that, for pedagogical purposes, it is better to conceive the multiple meaning senses of phrasal verbs as core meanings and derived extensions. Gilquin (2008: 36) argues that such an approach "constitutes a neat way of presenting the different senses of a

polysemous word in relation to each other.”

However, as Perdek (2010) points out, some phrasal verbs may be perceived as having several core meanings. In addition, the cognitive links between the core and figurative meanings may be so intricate that they might be too challenging to grasp for the language learner, as argued by Shepherd (2009). Whilst teachers, native speakers or lexicographers may easily perceive and understand the links from the core meaning to the figurative one, there is no guarantee that students will. This observation is indeed very important and crucial as far as pedagogical discussions about the best way to present phrasal verbs are concerned; and indeed points to a limit of the Conceptual Approach which has been attracting a great deal of research attention over recent years (Kövecses & Szabó, 1996; Morgan, 1997; Boers, 2000; Dirven, 2001; Kurtyka, 2001; Rudzka-Ostyn, 2003; Yasuda, 2010; White, 2012; Boers, 2013). Shepherd (2009) nonetheless argues that the Conceptual Approach may potentially become useful after the phrasal verb has been learned, in helping learners remember it more effectively. Another limitation of using the Conceptual Approach for teaching phrasal verbs is that the connection between the different meaning senses itself may be rather tenuous (e.g. *put up a fence*; *put up a fight*; *put somebody up for the night*; Schmitt & Redwood, 2011: 174), thus making the approach irrelevant in such cases. White (2012) also notes that the relationship between the different meaning senses of a phrasal verb can be impossible to perceive.

In conclusion, it may be easier, more objective, and more straightforward to present the multiple meaning senses of a phrasal verb independently of each other, using a frequency criterion to select those which should be taught or learned in priority.

4.3.4. Polysemy in dictionaries

In light of the previous sub-section, the claim by Perdek (2010: 1390) that “dictionary compilers should aim at such presentation [...] as to guide the users towards working out the multiple meanings of phrasal verbs on their own by creating cognitive links in the entries or even offering spatial cognitive networks” seems questionable. It is fair to argue that dictionaries should primarily remain a tool whose purpose is to provide

learners with the information they need, which in most cases is the meaning of a word. Their primary purpose is to present exhaustive information, i.e. all the meaning senses associated with a particular form. In concrete terms, this means that dictionaries may contain quite a large number of entries for highly polysemous items such as the most frequent English phrasal verbs. As I discovered, this is especially the case in phrasal verb dictionaries. For instance, the phrasal verb *go on* has no fewer than 22 meaning sense entries in the *Collins COBUILD Phrasal Verbs Dictionary* (3rd ed., 2012: 166). They are listed in Table 3 below.

As can be seen from this telling example, the *Collins COBUILD Dictionary* covers a very large range of meaning senses, some of which seem to overlap to various degrees. The resulting effect, while comprehensive, seems to be counter-productive from a pedagogical perspective: learners may easily feel overwhelmed by the amount of information included within a single entry. They may struggle to find the information they need. Furthermore, there appears to be a clear lack of consistency in terms of what and how information is given between some of the most established English dictionaries. For instance, the phrasal verb *give out* has six meaning senses in the *Collins COBUILD*, the first being ‘if you give out a large number of things, you give them to a lot of people’; three meaning senses on Oxford Dictionaries online (British and World English varieties), the first being ‘be completely used up’; and one meaning sense on Cambridge Dictionaries online (British English variety), being ‘if a machine or part of your body gives out, it stops working’. This example illustrates the fact that not only do dictionaries differ in the number of meaning senses they present, but also in the order in which they present them.

Table 3. List of meaning sense entries for the phrasal verb *go on* (*Collins COBUILD Phrasal Verbs Dictionary* 3rd ed., 2012: 166)

No	Meaning sense entry
1	If you go on doing something, or go on with an activity, you continue to do it.
2	If something goes on throughout a period of time, it continues to happen or exist.
3	To go on means to happen.
4	If you go on to do something, you do it after you have finished something else.
5	If you go on , you continue to the next part of stage of something.
6	If you go on in a particular direction, you continue to travel or move in that direction.
7	If you go on , you go to another place, having visited a first place.
8	You say that land or a road goes on for a particular distance, when you are talking about how big or long it is.
9	If a period of time goes on , it passes.
10	If someone goes on , they continue talking.
11	If someone goes on , they continue talking to you about the same thing, often in an annoying way.
12	You say Go on to someone to encourage them to do something.
13	You say Go on to someone to show that you do not believe what they have said.
14	You say Go on to someone to agree to something they suggest.
15	If you go on something that you have noticed or heard, you base an opinion or judgment on it.
16	If a light, machine, or other device goes on , it begins operating.
17	If an object goes on , it fits onto or around another object.
18	If something, especially money, goes on something else, it is spent or used on that thing.
19	When an actor or actress goes on , they walk onto a stage.
20	If you go on a drug, you start taking it.
21	If you say that someone is going on a particular age, you mean that they are nearly that age.

Therefore, dictionaries (both paper and online versions) and lexical databases have the following shortcomings. Firstly, they may contain an overwhelming amount of information under each phrasal verb entry. Secondly, they may present overlapping meaning senses, thereby creating redundancy and confusion. Thirdly, they may exclude important meaning senses. Finally, they are not consistent in the way they present meaning senses, which makes it difficult for teachers and learners to decide which ones should be prioritised for teaching and learning. This suggests that whilst dictionaries and lexical databases may be good as reference sources, they are clearly inappropriate for pedagogical purposes. Teachers and learners need a more pedagogically-oriented source of reference that will be helpful to them in two ways: by containing a more condensed amount of information, and by providing the right type of information (i.e. the meaning senses that occur most frequently in language).

In conclusion, corpus-based frequency studies of phrasal verbs have found that a restricted number of phrasal verbs account for a large proportion of all phrasal verb occurrences in English. This is good news because it suggests that teaching and learning only these most frequent phrasal verbs, besides being more manageable than teaching and learning a more substantial number, is highly profitable. However, as dictionaries and lexical databases show, many of these most frequent phrasal verbs have multiple meaning senses. This is (at least partly) due to the fact that figurative meanings have progressively been derived from literal ones over time. Consequently, it has been argued that an efficient way of learning the various meaning senses of a phrasal verb is by considering the relationship between its core meaning sense and its metaphorical extensions. However this approach has several drawbacks, and I have argued that a more objective and straightforward approach may be simply to learn the most frequent meaning senses independently of each other. Whilst dictionaries and lexical databases appear to be inadequate tools as far as decisions of which meaning senses to teach/learn are concerned, the need for a pedagogical list of phrasal verbs, based on frequency criteria, is now evident. The following section will describe the methodology adopted to develop such a list.

4.4. The present study (Study 1)

4.4.1. Choosing the items

The phrasal verbs analysed in this study are those included in Liu's (2011) list of the 150 most frequently used phrasal verbs in American and British English, which is issued from what is to date the most recent corpus study investigating phrasal verb frequency. The list contains all the items previously identified by Biber et al. (1999) and Gardner and Davies (2007), with an additional 48 items extracted by Liu from the COCA. Liu (2011: 661) presents it as "a comprehensive list of the most common phrasal verbs in American and British English, one that complements those offered by the two previous studies with more necessary items and more detailed usage information." The list thus has the advantage of including items that have been identified and extracted by three different studies involving different procedures and corpora, which increases confidence that those items that made the final list are indeed the most frequent phrasal verbs in English. Two different English-language corpora (BNC and COCA) including various genres and registers were analysed by Liu, and thus two different English varieties, making the list as useful for learners of British English as for learners of American English.

It could be argued that, considering the huge number of phrasal verbs in English (see 4.2.1), including only 150 phrasal verbs is not enough and more items should be added. However, I decided to choose only those phrasal verbs for two reasons. The first is that, as seen in 4.2.3, these 150 most frequent phrasal verbs already cover 63 % of the total 512,305 phrasal verb occurrences in the BNC. This suggests that learning only these phrasal verbs is highly profitable. For the purpose of compiling his list, Liu searched a total of 8,847 phrasal verbs, which is a substantial number. Among those, only the final 150 had at least 10 tokens per million words in either the COCA or the BNC, which suggests that the rest may simply be too infrequent to be worth including in the list. The second reason is that the pedagogical dimension of the PHaVE List was paramount, and therefore one of my main goals was to make it as practical and usable for language learners and practitioners as it could be. For this reason, it should

not be too long. As Liu (2011) points out, this is a prerequisite for a frequency list to be truly meaningful. It is worth noting that the final PHaVE List contains 40 pages (see Appendix 1), which might already be considered at the limits of practicality.

4.4.2. Semantic information

After deciding which phrasal verbs should be included in the PHaVE List, the next step was to decide what kind of information should be provided for each. Since the process of learning a word usually starts with establishing its form-meaning link (Schmitt, 2010), the most obvious type of information I wanted to include was meaning. In addition, as Cornell (1985) interestingly points out, many phrasal verbs have no exact single word equivalent because they carry connotations that the single words do not have. I have thus sought to include these connotations in the definitions whenever applicable, since knowing a word is not only knowing its form-meaning relationship, but also being aware of its connotations and semantic restrictions (Nation, 2013).

One of the main reasons for creating the PHaVE List was to reduce the total number of meaning senses to be acquired to a manageable number based on frequency criteria. Therefore, a decision had to be made as to which meaning senses were frequent enough to be included in the list and which were not. Although this inevitably entailed that the meaning senses included in the list would not account for all phrasal verb occurrences in corpora and in day-to-day English usage, the premise was that they should account for a large majority of those occurrences. Conversely, those not included in the list should only represent a small fraction of the combined occurrences, making them unsuitable for inclusion is the sense that the effort undertaken to learn them would yield rather little benefit in comparison to learning their more frequent counterparts. Keeping this cost-benefit equilibrium in mind, some form of compromise had to be found between including enough meaning senses in the list for it to provide adequate coverage of phrasal verb occurrences, and keeping it concise enough for it to be manageable for practitioners. Enumerating five or six different meaning senses for each item would make the PHaVE List of little added value compared to dictionaries whose role is to provide learners with exhaustive information. Rather, the PHaVE List aims to

provide learners and teachers with only the most essential information that should be targeted for explicit teaching and learning.

In concrete terms, this need for compromise translated into having to decide on a coverage percentage that would determine inclusion or non-inclusion of meaning senses in the list. For instance, a corpus analysis of the phrasal verb *show up* yielded the following semantic distribution.

Table 4. Semantic distribution of the phrasal verb *show up*

Meaning sense	Definition	Frequency percentage
1	Make an appearance at a social or professional gathering	81
2	Become visible or noticeable	16.5
3	Expose or discredit as being bad or faulty	2.5

It appears that very little coverage is gained from the last two meaning senses in comparison to the first one, providing by itself an 81 % coverage figure. However, for the sake of consistency, a similar coverage threshold needed to be used for all the items. After careful examination of the data yielded by the corpus search, I settled upon a threshold of 75 % as optimal. Therefore, all the meaning senses included in the PHaVE List for each phrasal verb accounted for at least 75 % of all occurrences of this item in my corpus search. Although it could be argued that the remaining uncovered 25 % (one-fourth) is not a negligible proportion of the total, the underlying rationale of the PHaVE List to reduce meaning senses to a manageable number drove this decision. In numerous cases, the primary meaning sense did not reach 75 % coverage and thus needed to be complemented by other meaning senses.

In addition to this upper-end threshold, the need for a lower-end threshold became progressively evident as I collected the data. This was because many meaning senses represented such a small proportion of the total coverage that they were not

deemed to be worth including in the list. This lower threshold was set at 10 %; this means that all the meaning senses included in the PHaVE List accounted for at least 10 % of the phrasal verb's occurrence in my corpus search. Indeed, it seems sensible to consider that those meaning senses accounting for less than one-tenth of a phrasal verb's corpus occurrences are not worth prioritising for explicit attention. Therefore, if the 75 % threshold was not reached by the primary meaning sense, additional senses were included if they added at least 10 % coverage. This continued until the 75 % total coverage threshold was reached, or until meaning senses providing at least 10 % coverage were exhausted.

In order to give teachers and learners an idea of the relative importance of the meaning senses for each phrasal verb, the allocated meaning sense percentages were included next to each definition; e.g. Make an appearance at a social or professional gathering (81 %). This idea of including a frequency percentage number for each meaning sense was inspired by the General Service List (GSL) created by West (1953), a wordlist which has had a wide influence in the field of ESL/EFL teaching for many years. The GSL contained 2,000 headwords considered to be of greatest importance and usefulness for learners of English, listed alphabetically with brief definitions and example sentences. A frequency number was given for each headword, and a percentage number was given for each meaning sense, representing the relative frequency of that meaning sense in the total number of occurrences of the word. An example is shown below (West, 1953: 12).

AGREE, v.	672	(1)	(consent)	
			<i>He agreed to give it a trial</i>	
			<i>He was asked to do it, and he agreed</i>	20 %
		(2)	(concur in an opinion, be of one mind)	
			<i>He agreed that it should be given a trial</i>	
			<i>He agreed with Jones on (as to, about) the proposed new building; _in opposing the plan</i>	65 %

(3) (be in harmony)

Birds in their nests agree

The figures don't agree

13 %

Based on the pedagogical purpose of the list, each meaning sense definition reported in the PHaVE List was illustrated by an example sentence. Example sentences are widely used in English learners' dictionaries as they are believed to strongly facilitate comprehension of the definitions. They are also used in the GSL (see above example). They are usually considered very helpful because they "perform a useful backup to the explicit grammatical designation, in clarifying in real language data what is stated abstractly and generally" (Jackson, 1985: 58). I created each example sentence myself in order to avoid possible copyright issues that could arise from using extracts from the corpus. Nevertheless, many were modelled on sentences from various sources found on the internet as well as from the reference corpus itself, as the goal was to produce as natural and authentic sentences as possible. All example sentences were entered into the Vocabprofile section of the Compleat Lexical Tutor (Cobb, n.d.) in order to make sure that they did not contain highly infrequent words likely to be unknown to learners.

Finally, the ordering of the items was the same as the ordering used in Liu's list, i.e. by frequency order. This is because such an ordering allows users to instantly see which phrasal verbs are the most frequent among the list. Likewise, the ordering of each phrasal verb's meaning senses was based on frequency ranking. A list of items by alphabetical order (Appendix 2) and another by frequency order (Appendix 3) were created, allowing users to conveniently access the list via the way they choose.

4.4.3. Reference sources: Dictionaries and corpus

Prior to the corpus search, a preliminary list of the different meaning senses of all 150 phrasal verbs was made, using a wide range of well-known and established English dictionaries, one lexical database, and two phrasal verb textbooks. These were:

Cambridge Dictionaries online (British English, American English, Business English, and Learner's Dictionary), Oxford Dictionaries online (British and World English, US English), Oxford Advanced Learner's Dictionary online, Merriam-Webster Dictionary online, Collins Dictionaries online (British English, American English), MacMillan Dictionary online, *Collins COBUILD Phrasal Verbs Dictionary*, WordNet (version 3.1), and *English Phrasal Verbs in Use* (Intermediate and Advanced; McCarthy & O'Dell, 2004, 2007). Interestingly, the level of specificity at which these dictionaries distinguished between different meaning senses was shown to vary to a large extent. For instance, the phrasal verbs' dictionary (*Collins COBUILD*) tended to draw much more refined distinctions than general dictionaries, and thus to include many more entries under each phrasal verb. I thus attempted to make a synthesis of the information I found in all these references, and tried to reach a level of specificity for my own definitions that best captured the one adopted by the majority. The definitions in the PHaVE List were worded with the goal of encapsulating the various instances of meaning senses in the corpus as closely as possible. Due to the pedagogical dimension of the list, an effort was made to keep them relatively concise and simple. All in all, each definition on the list could be considered as a synthesis of the various definitions found in dictionaries, adjusted to corpus findings.

The corpus chosen as reference for the purposes of this study was the Corpus of Contemporary American English (COCA), described as follows on the COCA website homepage:

"The Corpus of Contemporary American English (COCA) is the largest freely-available corpus of English, and the only large and balanced corpus of American English. The corpus was created by Mark Davies of Brigham Young University, and it is used by tens of thousands of users every month (linguists, teachers, translators, and other researchers). COCA is also related to other large corpora that we have created. The corpus contains more than 450 million words of text and is equally divided among spoken, fiction, popular magazines, newspapers, and academic texts. It includes 20 million words each year from 1990-2012 and the corpus is also updated regularly (the most recent texts are from summer 2012). Because of its design, it is perhaps the only

corpus of English that is suitable for looking at current, ongoing changes in the language.” (April 2014)

The COCA thus offers the four following advantages: it is very large, it is balanced across several genres and discourse types, it is regularly updated, and it is freely accessible. Aside from the many qualities inherent to this corpus which make it particularly interesting for researchers to use, what made it an obvious choice over several other corpora is the fact that it is one of the corpora used by Liu (2011) to establish his list of the 150 most frequent English phrasal verbs, which is the frequency list used as reference in this study.

All five sections of the COCA (spoken, fiction, popular magazines, newspapers, academic texts) were considered and given equal weight in the process of calculating meaning sense frequency percentages. This was done so that the information given in the PHaVE List would be relevant to a wide range of learners and practitioners from various backgrounds, and with various interests and types of exposure to English. Similarly to the GSL by West (1953), the PHaVE List aims to be of general usefulness for people using English for a variety of reasons and through exposure to various media. Therefore, the reported frequency percentages should be able to reflect meaning sense frequencies from natural exposure to English through various sources. Although isolating the academic section could potentially have provided university students and lecturers with more precise and relevant information, the fact that phrasal verbs largely and predominantly occur outside academic texts (Biber et al., 1999; Liu, 2011) makes the creation of an academic meaning sense list of little value.

4.4.4. Corpus analysis procedure

As Liu (2011) rightly points out, querying for phrasal verbs in a corpus is a challenging task. The first step is to enter the lexical verb in square brackets in order to yield the tokens of the various forms of the verb (for instance, *make/makes/making/made* for the lemma *make*). In addition, if we take the example of the phrasal verb *go in*, simply entering the lexical verb lemma in the form of [verb] followed by its particle (i.e. [go]

in) can potentially generate tokens that are not actually phrasal verbs. For instance, the sentence *we went there in March* contains [go] + *in* but the combination does not work as a phrasal verb, since *in* works as a preposition in the time adverbial phrase *in March* but not as an adverbial particle of *go*. The simple procedure used to avoid such tokens is to enter the verb lemma in the form of [verb] in the WORD(S) box of the COCA interface, and then AVP.[RP*] in the COLLOCATES box underneath (so as to yield adverbial particles only, RP being the search code for adverbial particles in the COCA). Therefore, the search code for the phrasal verb *go in* was:

WORD(S)	[go]
COLLOCATES	in.[RP*]

Another issue to consider was the number of intervening words between the lexical verb and the adverbial particle. Since Gardner and Davies (2007) and Liu (2011) limited their search to phrasal verbs separated by two intervening words maximum (e.g. *turn the company around*), I decided to limit my own search to phrasal verbs separated by two intervening words maximum as well. As Gardner and Davies (2007) note, phrasal verbs separated by three or more intervening words are rare and a search for them will yield many false tokens. It is worth mentioning that in spite of these searching procedures, each phrasal verb query produced a small number of false tokens and errors, which were discarded from the analysis.

For each of the 150 phrasal verbs analysed in this study, a random sample of 100 concordance lines was examined. The randomised sample included concordance lines extracted from various genres and years, drawing from the entire corpus. As it can be rightly argued that a single sample of 100 concordance lines is not a large enough sample to allow for reliable meaning sense frequency percentages, a second random sample of 100 concordance lines was additionally analysed. Frequency percentages obtained in the first sample were compared to those obtained in the second sample. This enabled me to see how reliable the initial percentages were, and to obtain more representative final percentages by averaging the two. It was hoped that the two samples would produce very similar percentages so that I could be totally confident in my results.

Another step taken to increase confidence in the final percentages was the collection of inter-rater reliability data for a small sample of phrasal verbs. These were selected via a frequency ranking criterion: the 10th, 20th, 30th, 40th, and 50th most frequent phrasal verbs in Liu's list (2011). The items were concurrently searched and analysed by a 24-year-old educated native speaker of English, doing a PhD in Mathematics at the University of Nottingham at the time of data collection. Prior to his corpus search, I gave him instructions on how to use the COCA, what to query, and what information to look for. I deliberately gave him no instruction as to how meaning sense grouping should be made or how to differentiate between different meaning senses, so that he would not be influenced by my own judgement. After an initial trial, he indicated that he was very comfortable with the procedure. The latter was exactly the same as the one undertaken by myself: the same search codes were used, and two random samples of 100 concordance lines were analysed. Percentages were compared and similarity of judgements was assessed. The following table shows a comparison of our frequency percentages found for the 10 meaning senses of the five phrasal verbs.

Table 5. Frequency percentages obtained by the external rater and myself for the 10 meaning senses of the five phrasal verbs concurrently analysed

	Meaning sense									
	1	2	3	4	5	6	7	8	9	10
Author	98	88	67.5	11	67.5	24.5	42	28	25	-
External rater	99	89.5	67	14	64.5	26.5	26.5	18.5	17	17

As we can see, the frequency percentages obtained for the first six meaning senses are very close (within three percentage points). The discrepancy that can be observed between the external rater's and my own percentages for the last four meaning senses raises some interesting issues which will be discussed later on.

4.5. Results and discussion

4.5.1. Similarity between pairs of random samples

A close examination of the semantic frequency percentages obtained from the analysis of the two random samples of 100 concordance lines showed a consistently strong degree of similarity between them. The variance between percentages very seldom went beyond 10 percentage points, and in most cases was within five percentage points. In addition, the frequency ranking order of the meaning senses under each phrasal verb was almost always the same across the two samples. The rare exceptions when the ranking order was reversed occurred when the distribution differences between two meaning senses were very small. Overall, this consistency gave me confidence that the average frequency percentages included in the PHaVE List reflected a true picture of the phrasal verb meaning sense occurrences in the COCA. The frequency percentages obtained in the first and second random samples for all meaning senses in the PHaVE List can be found in Appendix 4. The difference between the two sets of percentages was 4.6 on average, with a standard deviation of 4.1. The mode (i.e. most common difference value) was 1 (*Min* = 0, *Max* = 18).

4.5.2. Semantic frequency distribution

Based on my upper- and lower-threshold criteria, the total number of meaning senses included in the PHaVE List was 288. Based on Gardner and Davies' (2007) polysemy estimate, acquiring all the meaning senses attached to the most frequent phrasal verbs is equivalent to learning between 560 (for the top 100) and 840 (for the top 150) form-meaning links. The number of meaning senses to be acquired based on the PHaVE List is thus far more manageable. Two meaning senses are listed under each phrasal verb on average ($288/150 = 1.9$). This suggests that an average of two meaning senses is enough to cover 75 % of the occurrences of the 150 most frequent phrasal verbs in the COCA. The average coverage percentage afforded by the included meaning senses for each

phrasal verb is 83.4 % (*Min* = 50.5, *Max* = 100).

Looking at meaning sense distribution patterns (i.e. how meaning sense percentages are distributed for individual phrasal verbs), two main observations can be made. Firstly, of the 150 phrasal verbs on the PHaVE List, 58 have one meaning sense listed, 52 have two, 34 have three, and six have four. This shows that most phrasal verbs have a relatively small number of key meaning senses. Secondly, among the phrasal verbs with two meaning senses on the list, the majority (38) have their most frequent meaning sense account for at least 50 % of the phrasal verb's occurrences in the COCA, with the second meaning sense usually providing a much smaller coverage. For those phrasal verbs, the primary meaning sense thus retains dominant importance. On the other hand, among the phrasal verbs with three and four meaning senses on the list, a more balanced distribution pattern can be observed.

4.5.3. Inter-rater reliability

The following table (Table 6) shows a comparison between the external rater's and my own meaning sense definitions and frequency percentages for each of the five phrasal verbs concurrently analysed. As far as the first four phrasal verbs are concerned (grow up, look up, stand up, and turn around), we can clearly see a very strong agreement between mine and the external rater's judgements. The definitions, although worded in a different manner, clearly conveyed the same meaning, and the same number of meaning senses was presented for each phrasal verb. For the two phrasal verbs with two meaning senses (stand up and turn around), the frequency ranking order was the same. The allocated percentages were strikingly similar, with the largest variance being three percentage points. Conversely, the fifth phrasal verb (move on) showed quite substantial disagreement in judgements. The number of meaning senses provided was different, as was the distribution pattern. After careful examination and discussion of the external rater's analysis, the conclusion was that our results showed greater agreement than originally assumed, for several reasons.

Table 6. Comparison between the external rater's and my meaning sense definitions and frequency percentages for the five phrasal verbs concurrently analysed

	Author	External rater
Grow up	1. Gradually advance in age and maturity (98 %)	1. Relating to a process of development or advancement in maturity (99 %)
Look up	1. Raise one's eyes (88 %)	1. Raise eyes/direct gaze upward (89.5 %)
Stand up	1. Rise to a standing position after sitting or lying down (67.5 %)	1. Literal (67 %)
	2. (<i>Stand up and...</i>) Dare say something that was previously kept secret (11 %)	2. (<i>Stand up and...</i>) Make public knowledge a privately held position (14 %)
Turn around	1. Move so as to face in the opposite direction (67.5 %)	1. Literal (rotate) (reverse direction) (64.5 %)
	2. Make something become better or more successful than it previously was (24.5 %)	2. Reverse decline/change direction for the better (26.5 %)
Move on	1. Start doing or discussing something new (job, activity, etc.) (42 %)	1. Redirect attention, change topic or change subject (26.5 %)
	2. Leave a place and go somewhere else (28 %)	2. Progress to next stage of a 'well defined' or 'universally recognisable' process (18.5 %)
	3. Forget about a difficult experience and move forward mentally/emotionally (25 %)	3. Recover from trauma or otherwise 'progress emotionally' (17 %)
	-	4. Change physical location (17 %)

Firstly, the external rater's meaning senses 1 and 2 were combined into a single meaning sense in my analysis (meaning sense 1). Their combined frequency percentage (45 %) is very close to that of the individual meaning sense (42 %). Secondly, one of the external rater's meaning senses was 'change partner, re-recruit' which accounted for 4.5 % of the phrasal verb occurrences in his analysis (not included in the table because it did not reach the 10 % threshold). This meaning sense was arguably very similar to

his third one ('recover from trauma or otherwise progress emotionally'). By grouping them, their combined frequency percentage (21.5 %) became closer to that of my corresponding meaning sense (25 % for 'forget about a difficult experience and move forward mentally/emotionally'). Finally, another meaning sense identified by the external rater (also not included in the table) was 'hurry up' as in *get a move on* (2.5 %). This was a false token since *move on* does not behave as a phrasal verb in this case and therefore should have been discarded. The overall impact of this error was minimal given the small frequency percentage, but this 2.5 % could nevertheless have contributed to obtaining more similar percentages. In light of these explanations, a revised table containing the external rater's adjusted frequency percentages is presented below.

Table 7. Adjusted frequency percentages obtained by the external rater and myself for the nine meaning senses of the five phrasal verbs concurrently analysed

	Meaning sense								
	1	2	3	4	5	6	7	8	9
Author	98	88	67.5	11	67.5	24.5	42	28	25
External rater	99	89.5	67	14	64.5	26.5	45	17	21.5

As we can see, the only remaining notable discrepancy in results is for meaning sense 8, which was my second most frequent meaning sense of *move on* ('leave a place and go somewhere else': 28 %) and the rater's fourth ('change physical location': 17 %). In spite of this, it is worth noting that both lists essentially contained the same meaning senses. This is good news since, bearing in mind the bigger picture, what really matters is that there is agreement in terms of what meaning senses should be presented in the list as the most important and frequent. In conclusion, the inter-rater reliability data

proved satisfactory and gave me further confidence that the PHaVE List contains faithful and reliable information, independently of subjective individual judgements.

4.5.4. Considerations about polysemy

The point made in 4.3.2 that clear-cut distinctions between literal and figurative phrasal verbs may be irrelevant was clearly illustrated in this study. A few instances of phrasal verbs which could be seen as both literal and figurative were *come out*, *come in*, *look out*, *take out*, *take off* and *put out* (see PHaVE List for more examples). Some items turned out to be very good illustrations of the literal/figurative continuum and of the semantic relationship between meaning senses which constitute the rationale behind the Conceptual Approach to teaching phrasal verbs. For instance, the core meaning sense of *bring out* ('take something or somebody out of a container or enclosed space') and the extended metaphorical meaning senses ('make somebody or something available for the public or an audience to see, know or buy' and 'make a particular detail, quality or feeling more noticeable than it usually is') are clearly semantically related. The phrasal verbs *throw out*, *fill in*, *bring down*, *clean up*, *look back*, *come in*, *move on*, *step back*, *hold back*, *sit back*, *move up*, and *settle down* are only a few other examples. It is interesting to note that, for some phrasal verbs, the literal meaning sense appears to be less frequent than the figurative one(s) (e.g. *set up*, *look back*, *take up*, *put out*, *lay out*). What is identified by linguists as the prototype or core meaning of a phrasal verb may actually be a rarer occurrence than its extended figurative counterpart(s).

The semantic relatedness between meaning senses is not, however, the only feature of the PHaVE List. Some of the most frequent meaning senses of individual phrasal verbs indeed seem so fundamentally different from one another that it is difficult to think of any kind of (even far-fetched) semantic link between them. Some examples, to give only a few, are found in meaning senses of *give out* ('give to each of a large number of people' and 'stop functioning properly'), *make up* ('form the whole of an amount' and 'compensate for'), *bring up* ('raise for discussion or consideration' and 'care/be responsible for a child until it becomes an adult') and *come off* ('become detached, unfastened or removed from a larger whole' and 'appear or seem to be a

particular way'). Fillmore and Atkins' (2000: 100) famous definition of polysemy comprises three elements: "the various senses of a polysemous word have a central origin, the links between these senses form a network, and understanding the 'inner' one contributes to understanding of the 'outer' one." If we consider these elements as the three requisite features of polysemy, it follows that the above-mentioned phrasal verbs do not strictly qualify as polysemous items. They should rather be seen as homonyms, since their different meaning senses do not all appear to be semantically related. Of the 92 phrasal verbs with two meaning senses or more in the PHaVE List, around 30 could arguably be seen as containing homonyms (i.e. semantically unrelated meaning senses). This is clearly not a negligible number.

The distinction between polysemy and homonymy in relation to phrasal verbs has, to my knowledge, never been discussed in previous research. Yet it has important implications. In terms of pedagogy, the upshot is that the relevance of the Conceptual Approach for teaching the most frequent English phrasal verbs may be limited (at least as far as meaning sense frequency is concerned). However, one limitation to bear in mind is the fact that the distinction between homonymy and polysemy may be subjective. What I would consider as homonyms might in fact be polysemes, whose semantic relatedness has become so blurred over time that it is now difficult to perceive. Nevertheless, the outcome is that it might in turn not be perceived by learners, which consequently still makes the Conceptual Approach inadequate.

4.5.5. The PHaVE List: A sample

The main result of this study, and indeed its end-product, is the PHaVE List itself. Therefore, I will now turn to discussing the following extracted sample.

20. LOOK UP

1. Raise one's eyes (88 %)

He **looked up** from his book and shook his head.

21. FIGURE OUT

1. Come to understand or determine STH (100 %)

Despite her efforts, she couldn't **figure out** what had happened.

22. SIT DOWN

1. Move from a standing position to a sitting position (100 %)

Please **sit down** and have a drink.

23. GET UP

1. Rise or cause to rise after lying in bed or sitting/kneeling (92 %)

She **got up** out of her chair and put on her shoes.

24. TAKE OUT

1. Remove STH/SB from somewhere (container or abstract whole) (50.5 %)

He tore open the envelope and **took out** a few bills.

2. Invite to a recreational place or social event (13.5 %)

You should **take** her **out** to this new Chinese restaurant.

3. Obtain an official document or service from an authority (12.5 %)

I had to **take out** a loan to cover all my expenses.

25. COME ON

1. Said to encourage SB to try harder, or do or say STH (50 %)

Come on, don't be shy and tell us your story.

2. Said to show SB disbelief or incredulity, disagreement, or anger (19.5 %)

Oh **come on**, you're just lying to me!

26. GO DOWN

1. Move down to a lower level or position (29 %)

After hitting the iceberg, the ship began to **go down**.

2. Decrease in value or amount (27 %)

I don't think prices will **go down**.

3. Go from one place to another, esp. one that is further south or underneath (18 %)

We **went down** to Australia last year.

27. SHOW UP

1. Make an appearance at a social or professional gathering (81 %)

She didn't **show up** at the meeting.

28. TAKE OFF

1. Remove STH (esp. piece of clothing or jewellery from one's body) (41 %)

I **took off** my shirt and went to bed.

2. Leave or depart, especially suddenly or hastily (28.5 %)

They jumped into the car and **took off**.

3. Leave the ground and become airborne (14 %)

The plane **took off** at 7am.

29. WORK OUT

1. Plan, devise or think about STH carefully or in detail (33 %)

We still need to **work out** the details of the procedure.

2. Exercise in order to improve health or strength (23 %)

He **works out** at the gym 5 times a week.

3. (+ *well/badly*) Happen or develop in a particular way (15 %)

Everything **worked out** well in the end.

4. Prove to be successful (12.5 %)

Despite our efforts, it just didn't **work out**.

30. STAND UP

1. Rise to a standing position after sitting or lying down (67.5 %)

He pushed away from the table and **stood up**.

2. (*Stand up and say STH*) Make public knowledge a privately held position (11 %)

Somebody's got to **stand up** and say what's wrong with this country.

We can see that the PHaVE List is presented in a clear and consistent format, with a clear ordering of the phrasal verbs and their different meaning senses. The frequency percentages are indicated next to each meaning sense definition. In some cases, connotations are included in the definitions (e.g. Leave or depart, esp. suddenly or hastily). In other cases, semantic preferences (e.g. Remove STH (esp. piece of clothing or jewellery from one's body)) or collocations (e.g. (+ *well/badly*) Happen or develop in a particular way) are included. Example sentences are provided under each definition in

order to help disambiguate them and provide an illustration of usage in context. The phrasal verbs contained in the example sentences are bolded and underlined in order to make them maximally noticeable. The phrasal verbs are presented with a varying number of meaning senses (from one to four), with a varying distribution pattern. Some have literal meaning senses only (*look up*, *sit down*, *get up*), others have figurative meaning senses only (*figure out*, *come on*, *show up*, *work out*), yet others have both (*take out*, *take off*, *go down*, *stand up*). Among the six phrasal verbs presented with two or more meaning senses, five include semantically related meaning senses (*take out*, *go down*, *take off*, *work out*, *stand up*), and three include semantically unrelated meaning senses (*come on*, *take off*, *work out*) (there are two overlaps because *take off* and *work out* contain both semantically related and unrelated meaning senses).

The phrasal verb *come on* is an interesting case because it illustrates the pragmatic dimension of some phrasal verbs in informal spoken discourse. It shows that phrasal verbs do not only carry meanings but may also have specific functions (in this case, to express impatience or encouragement). The second meaning sense of the phrasal verb *stand up* is also interesting because it shows that a phrasal verb can be part of a larger phrase or chunk (*stand up and say*) with a very specific meaning associated to it ('make public knowledge a privately held position'). In fact, this phrasal pattern ([phrasal verb] and do/say something) was found for three other phrasal verbs in the PHaVE List: *go out*, *come out* and *sit back*. Although they were frequent enough to be included in the list, these meaning senses were for the most part missing from dictionary entries and WordNet. This shows the benefit of using corpora for uncovering formulaic language patterns, especially colloquial ones.

4.5.6. The PHaVE List: Applications

Just like other existing vocabulary frequency lists, the PHaVE List has a number of practical applications for L2 learners and language practitioners. For EFL/ESL practitioners (teachers, syllabus designers, materials writers and test-makers), the PHaVE List provides a means of handling a difficult aspect of one of the most challenging features of the English language: the polysemy of phrasal verbs. Because

many phrasal verbs are polysemous and may have up to 10 or 15 meaning senses, it would simply be impossible to deal with all of them in the classroom or in textbooks. The list thus offers the possibility of prioritising their most frequent, and thus most important meaning senses, thereby allowing for a more systematic approach to teaching phrasal verbs. It is hoped that the PHaVE List will contribute to a more principled integration of phrasal verbs into language instruction and syllabi. In addition, the PHaVE List can provide useful information for testing and assessment purposes. There may be uncertainty with polysemous items about which meaning senses should be tested. The list presents meaning sense frequency percentages and ranking orders, allowing test-makers to make informed decisions as to which meaning senses should be targeted for testing (depending on the purpose of the test and test-takers' proficiency levels).

It is worth pointing out that in no way does the list imply that less frequent phrasal verbs and meaning senses should be discarded and are not worth learning. They are also worth knowing, but explicit attention should be given to them at later stages of L2 learning. It should also be said that the meaning senses of the phrasal verbs in the list vary in degrees of semantic transparency, and that teachers may want to take this into account in their cost-benefit analysis. The less transparent, more abstract senses of the listed phrasal verbs probably require more investment of teaching time than the more transparent, concrete senses. In other words, other factors than frequency and utility may inform pedagogical decisions as to where learners need help.

In order to provide learners and practitioners with a summary of the most essential information they want to know about the list, a PHaVE List Users' Manual (Appendix 5) was created alongside the list itself. Because I anticipated possible misunderstandings and misuses, the manual also serves as a means to establish what the PHaVE List is and what it is not, and how it might be used appropriately. The PHRASE List Users' Guide by Martinez and Schmitt (2012) was used as a model for this purpose.

4.5.7. Limitations and suggestions for future research

The PHaVE List has a number of limitations of which users should be aware. First, it was created with the sole purpose of providing a list of the most frequent meaning senses of the phrasal verbs it includes. No consideration was given to the meaning senses' varying degrees of semantic opacity. Some previous research has suggested that second language learners struggle more with figurative phrasal verbs than literal phrasal verbs (Liao & Fukuya, 2004), and it could be argued that completely transparent meaning senses (e.g. *go out of a building*) are indeed very easy to decode and learn, and thus perhaps not worth being given explicit attention or being included in the PHaVE List. It is worth bearing in mind that the PHaVE List serves as a meaning sense frequency indicator only, and that teachers and learners ultimately retain the power to decide what they want to pay explicit attention to. My purpose was solely to determine which meaning senses provide the greatest coverage for each individual phrasal verb in the reference corpus. On this note, it is worth remembering that I was not concerned in this study with their relative frequencies in the English language as a whole. Consequently, some meaning senses of the 10 most frequent phrasal verbs which were not frequent enough to be included in the PHaVE List may actually be more frequent overall than the most frequent meaning sense of the 145th most frequent phrasal verb.

Second, because the meaning sense frequency percentages were derived from a corpus, it is unlikely that they are 100 % reflective of all language use and individual L2 exposure. They are inherently an artefact of the various texts which the corpus contains. The PHaVE List is derived from the COCA, which has many advantages: it is very large, it is very recent and regularly updated, and it is balanced across several genres and discourse types. However, it is reflective of mostly American English. What has been found as the most common meaning sense for a particular phrasal verb may be different in other varieties of English such as British English, even though Liu (2011) found that there was not much difference in phrasal verb use between American and British English. Because it combines several sources (popular magazines, newspapers, academic texts, TV broadcasts, etc.), it may not reflect individual experiences and exposure types. For instance, someone using English for reading finance newspapers only may not find the list very reflective of their own exposure.

Third, the meaning sense frequency percentages should be seen as estimates, and not as fixed, exact absolutes. Using a different corpus, or making somewhat different judgements about how to group overlapping meaning senses, may have led to slightly different percentages. The issue raised in 4.5.3 about the subjectivity of meaning sense grouping deserves further elaboration. Any lexicographer is no doubt familiar with the difficulty of determining where one meaning sense ends and another begins. It was occasionally very difficult for me to draw boundaries between them, and to adopt a consistent method in doing so. I constantly tried to cluster meaning senses whenever possible, keeping in mind the purpose of the PHaVE List, i.e. to reduce the meaning senses to be taught/learned to a manageable number. However, I also had to bear in mind that the meaning sense definitions and categories should be as clear and precise as possible in order to be easily understood and used by a broad audience. It is my belief that I have managed to reach a good compromise between these two requirements, but it is fair to acknowledge the inevitable presence of some degree of subjectivity in the making of such a list. Nevertheless, the inter-reliability data proved satisfactory, and the meaning senses identified and their rank ordering can be used with confidence. Overall, users should remain aware of the fact that the PHaVE List aims to be of general service and usefulness. It is precisely for this reason, however, that it should prove useful to a wide range of EFL/ESL practitioners and students.

Possible avenues for future research are plenty. It is surprising to find how little research has been done relating to the polysemy of phrasal verbs. We know that many phrasal verbs are polysemous, but what is less known is whether the different meaning senses of a polysemous phrasal verb are most efficiently learned together or separately. The semantic relatedness of these various meaning senses may easily be seen, or conversely impossible to perceive; in the latter case, they should rather be labelled as homonyms. Are homonymous phrasal verbs more difficult to learn than polysemous phrasal verbs? Furthermore, the meaning sense frequency information included in the PHaVE List could not only be useful for determining the effect of frequency on meaning sense knowledge, but also on meaning sense processing by both native and non-native speakers. We would expect higher-frequency meaning senses to be

processed faster than less frequent ones for any given phrasal verb form, but some empirical evidence to support this assumption would be welcome.

Chapter 5

L2 knowledge of highly frequent polysemous phrasal verbs

5.1. Introduction

Chapter 3 has outlined the importance of phrasal verbs in English discourse and the various reasons why EFL/ESL learners should be familiar with at least the most useful among them. Phrasal verbs are very frequent (Biber et al., 1999; Gardner & Davies, 2007), both as a category as a whole and as individual items. As a result, they are expected in discourse by the English language community: they are crucial to fluent English and sounding native-like (Siyanova & Schmitt, 2007). As evidenced in Chapter 4, nearly all of the most frequent phrasal verbs as found in the BNC and COCA are also polysemous. This characteristic can potentially make phrasal verbs confusing for many L2 learners. This comes in addition to other inherent properties of phrasal verbs making them difficult to learn, such as their idiomaticity and syntactic unpredictability. The verb + particle construction itself may be unfamiliar to learners whose L1 lacks such structure. Thus, not only are phrasal verbs important to learn, but they are also challenging. As a result, they deserve to be introduced in the syllabus and should be targeted for explicit instruction.

The previous chapter (Study 1) built upon a thorough semantic analysis of the 150 most frequent English phrasal verbs to create a pedagogical list including semantic

frequency information, with the aim to provide learners and teachers with the information they need to learn or teach in priority when dealing with phrasal verbs. The meaning senses included in the list (288 in total) were found to be the most frequent of the most frequent phrasal verbs. Therefore, there is little doubt that knowing them is necessary for proficient language use, and that research is needed to gauge L2 knowledge of those items. Furthermore, no research to date has taken the polysemy feature into account when exploring L2 learner knowledge of phrasal verbs.

On the other hand, vocabulary research has begun to identify a number of factors which appear to affect the learning of both individual words and formulaic sequences, most notably word frequency, semantic opacity, and degree of involvement/exposure with the L2. Among the small number of studies investigating L2 knowledge of phrasal verbs, none has sought to assess the effect of these factors in a comprehensive way. The study presented in this chapter (Study 2) will address these gaps by investigating L2 learner knowledge of highly frequent polysemous phrasal verbs, and by exploring the factors which relate to the learning of their various meaning senses. It is worth noting that the effect of L1-L2 congruency, another factor which has been shown to affect the learning or processing of various formulaic sequences such as collocations and idioms by previous research (Nesselhauf, 2003, 2005; Yamashita & Jiang, 2010; Laufer & Waldman, 2011; Wolter & Gyllstad, 2011, 2013; Peters, 2016), could not be explored in the present study (see 5.7.5).

5.2. What is ‘knowledge’?

Most laymen conceptualise ‘knowledge’ of a word in a very straightforward manner: as the ability to map a word form (written and/or spoken) onto a meaning or concept (e.g. knowing that *cat* refers to a four-legged domestic animal that purrs and chases mice). However, one of the main tenets of vocabulary research is that vocabulary knowledge is a far richer and more complex construct than what many people make of it. As Schmitt (2010: 15) points out, “while it is true that the form-meaning link is the first and most essential lexical aspect which must be acquired, and may be adequate to allow

recognition, much more must be known about lexical items, particularly if they are to be used productively.” This statement taps into two crucial aspects of vocabulary knowledge research: the multi-faceted dimension of vocabulary knowledge, and the distinction between receptive (or passive) knowledge and productive (or active) knowledge. Those two aspects are encapsulated in Nation’s (2013: 49) famous description of the various knowledge components involved in knowing a word. These components are listed in Table 8 below (R = receptive knowledge, P = productive knowledge).

In reality, all these components of word knowledge are interrelated (Schmitt, 2014). What becomes obvious is that, from a practical pedagogical standpoint, it would be impossible for teachers to administer vocabulary tests addressing all these aspects individually in order to gauge knowledge of vocabulary items. The number of words being tested would inevitably be very limited due to time constraints. Furthermore, certain components of word knowledge (such as word frequency or register) are not straightforward to elicit and do not have accepted methods of measurement. Therefore, vocabulary researchers (and teachers) interested in assessing learners’ vocabulary knowledge have to make informed decisions based on which aspect(s) of vocabulary knowledge they want to measure for their own purposes, whilst carefully considering the limitations and implications of their choices (Schmitt, 2010).

Since the form-meaning link can be considered as the most essential component of word knowledge, it makes sense for teachers and researchers to focus on this particular aspect of word knowledge in their vocabulary tests. The next decision that needs to be made is whether receptive or productive mastery should be targeted. Receptive mastery generally precedes productive mastery, as it is possible to understand a word in a text or conversation without being able to produce it in speech or writing, but not vice-versa. Previous studies have shown that learners are normally able to demonstrate more receptive than productive knowledge of words, but the extent to which receptive and productive knowledge overlap is inconclusive (Melka, 1997; Laufer & Paribakht, 1998; Fan, 2000). This most likely stems from an unclear conceptualisation of receptive and productive knowledge.

Table 8. The various components of word knowledge (Nation, 2013: 49)

Form	Spoken	R	What does the word sound like?
		P	How is the word pronounced?
	Written	R	What does the word look like?
		P	How is the word written and spelled?
	Word parts	R	What parts are recognisable in this word?
		P	What word parts are needed to express the meaning?
Meaning	Form and meaning	R	What meaning does this word form signal?
		P	What word form can be used to express this meaning?
	Concept and referents	R	What is included in the concept?
		P	What items can the concept refer to?
	Associations	R	What other words does this make us think of?
		P	What other words could we use instead of this one?
Use	Grammatical functions	R	In what patterns does the word occur?
		P	In what patterns must we use this word?
	Collocations	R	What words or types of words occur with this one?
		P	What words or types of words must we use with this one?
	Constraints on use (register, frequency...)	R	Where, when, and how often would we expect to meet this word?
		P	Where, when, and how often can we use this word?

Building on the work of Laufer and Goldstein (2004) who attempted to categorize form-meaning knowledge, Schmitt (2010) advocates the use of the labels *form recall*, *form recognition*, *meaning recall*, and *meaning recognition* to make the receptive/productive construct more understandable. Form recall refers to the case when the meaning is given and the L2 form must be produced, whilst form recognition is when the meaning is given and the L2 form must be selected among a number of options. Meaning recall is when the form is given and the meaning must be produced whilst meaning recognition is when the form is given and the meaning must be selected among a number of options. Since vocabulary acquisition is an incremental process, learners gradually acquire greater and greater mastery of a word through multiple exposures to the word. Although the point at which a word switches from receptive to productive knowledge (or rather, the amount of exposure needed to reach this point) remains unclear, Schmitt (2010) speculates that words are essentially learned in two stages as far as form-meaning knowledge is concerned. Firstly, learners establish meaning recall: they can understand what the word means when listening or reading. Secondly, they establish form recall: they can use the word in a variety of spoken and written contexts.

Conversely, the two concepts of form recognition and meaning recognition have rather limited relevance in the real world. This is because they only come into play in reference look-up situations (for example when consulting a dictionary). They have no relevance in interpersonal communication, as people are not given a choice of form or meaning options when they read a book or listen to a radio programme. For such exposure, the form-meaning link should be established at meaning recall level at minimum. Therefore, as stated by Schmitt (2010: 88), “form recognition and meaning recognition levels of knowledge are useful in measuring the initial stages of vocabulary acquisition, but have limited utility in describing usage-based receptive and productive mastery.”

5.3. Exposure and frequency

In the present thesis, the notion of exposure is understood as both language exposure as a whole (for example through reading or watching films in the L2) which is synonymous with engagement in the L2, and item exposure which relates to the degree of frequency of a particular word or word combination in language. Usage-based theories of language posit that exposure/frequency is a key factor in language acquisition, and a large number of studies have yielded concrete empirical evidence to support this claim (see N. Ellis, 2002, for a review of studies showing frequency effects in language processing and discussion of how these relate to understandings of language acquisition more generally). Frequency has long been considered to be an essential predictor of L2 vocabulary knowledge, i.e. the more frequent a word, the more likely it is to be known (Schmitt, 2010), and it is widely acknowledged that learners generally acquire higher-frequency words in their L2 before lower-frequency ones (Nation & Waring, 1997; Leech, Rayson & Wilson, 2001; N. Ellis, 2002; Nation, 2013).

According to Nation and Waring (1997), there is no reason to believe that formulaic sequences such as collocations would not display such a relationship. Some previous research has provided empirical evidence of the effect of frequency on processing formulaic sequences such as collocations, binomials and lexical bundles, for both native and non-native speakers of English (Arnon & Snider, 2010; Siyanova-Chanturia, Conklin & Van Heuven, 2011; Wolter & Gyllstad, 2013; Hernández, Costa & Arnon, 2016). What is somewhat less known, however, is the extent to which the frequency effect can be observed for acquiring formulaic sequences, and especially phrasal verbs.

In reality, with the exception of tightly-controlled experiments where it is possible to either know or control for the number of word exposures any learner receives, there is no way of knowing how many times any specific word is encountered by learners in most learning contexts. Each and every learner's L2 environment is likely to be different: with more or less interaction with native speakers, more or less engagement with L2 media such as the TV, radio or newspapers/magazines, more or less classroom instruction, etc. The nature of the exposure is also likely to be different:

learners have different goals for learning English, different interests, favourite conversation topics, etc. Most EFL learners around the world get the large majority of their L2 exposure through classroom instruction, typically involving a teacher, course-book, and defined syllabus. These may be very different from one learner to the next (depending on their home country and purpose for learning English).

In order to overcome these issues and obtain reliable and universal measures of vocabulary frequency, corpora have thus typically been used as the primary indicator of frequency. Because they rely on computers which allow for fast and accurate counting, corpus counts are objective and quantifiable. Corpora typically include very large samples of data (e.g. 520 million words for the COCA as of September 2016) that can effectively be searched in a number of ways depending on the researcher's purpose. For this reason, they are currently the best tool for uncovering language patterns which would otherwise be difficult to intuit (Reppen & Simpson-Vlach, 2010). Corpora are also perceived as more reliable than individual judgement and intuitions of frequency: since everyone's exposure to language is different, then intuitions of frequency are likely to be different from person to person. On this note, previous research has shown disappointing correlations between corpus frequency figures and figures derived from intuition elicitation (Schmitt & Dunham, 1999; Alderson, 2007), occasionally with great variability across raters.

5.4. Corpus frequency and phrasal verb knowledge

To my knowledge, only two studies so far have empirically investigated the relationship between phrasal verb knowledge and corpus frequency: Schmitt and Redwood (2011) and Chen (2013). I have already reviewed both studies in Chapter 3 (3.3), but I will here focus on discussing their results concerning this relationship.

Schmitt and Redwood (2011) assessed the knowledge of 68 EFL/ESL students on 60 highly frequent phrasal verbs, at both receptive and productive levels of mastery. Results showed that the students were able to recognise most of the phrasal verbs (65.2 %) on a form-recognition test, and to produce about half of them (48.2 %) on a form-

recall test. The authors interpreted the results as evidence that participants had relatively good knowledge of the target items considering their intermediate level of English. The frequency of the phrasal verbs was measured in terms of their frequency rankings in the BNC (written, spoken, and complete) and in the COCA. Significant positive correlations were found between phrasal verb knowledge and phrasal verb frequency, on both receptive and productive measures of knowledge (receptive = .30 for the BNC complete, .36 for the COCA complete; productive = .45 for the BNC complete, .42 for the COCA complete). The strength of the correlation coefficients was thus deemed to be fairly strong for the productive test, and more moderate for the receptive test. For the BNC complete, frequency thus accounted for about 20 % of the variance in productive knowledge, and for 9 % of the variance in receptive knowledge. For the COCA complete, frequency accounted for around 18 % of the variance in productive knowledge, and for 13 % of the variance in receptive knowledge. The results were thus rather similar across the two corpora. The authors therefore concluded that phrasal verb frequency (as indicated by corpus data) did seem to account for the students' scores to a noticeable extent (especially productive scores), but that other factors than frequency must also have come into play. Interestingly, they found that phrasal verb frequencies derived from spoken discourse accounted for knowledge to roughly the same extent as phrasal verb frequencies derived from written discourse, concluding that "it is probably sufficient to use overall corpus frequency results when thinking about the likely acquisition of phrasal verbs, as there seems to be no real advantage to distinguishing between spoken and written frequencies" (p. 185).

In spite of its many informative findings, the Schmitt and Redwood study has a number of shortcomings. Firstly, as I have already mentioned, it is doubtful whether the participants' exposure to phrasal verbs strictly matched the phrasal verbs' frequency in the BNC. Although rather similar correlations were found with the COCA, the question of whether corpora provide a reliable picture of learners' L2 exposure still remains (but this is an inherent limitation of corpus-based knowledge studies). Secondly, phrasal verb frequency was taken as frequency rankings, which invariably give less precise measures of frequency than raw frequency counts. Thirdly, one crucial limitation is the fact that the polysemy feature was completely overlooked; in other words, frequency of

word form was taken as frequency of word meaning. As we have seen in the previous chapter, polysemy is a key feature of phrasal verbs (especially of the highly frequent variety). Since the phrasal verbs tested by Schmitt and Redwood were indeed highly frequent, we could speculate that each form found in the corpus (either BNC or COCA) most likely had two meanings associated to it at the very least. For example, the corpus frequencies of the phrasal verb *put off* most likely included the frequencies of the meaning ‘postpone, delay’ and of the meaning ‘cause distaste or dislike’. Therefore, we might suspect that the strength of the relationship between phrasal verb knowledge and frequency would have been different (possibly greater) had polysemy been taken into account.

The study by Chen (2013) provides further evidence of the relationship between phrasal verb frequency and learner knowledge. Significant positive correlations were found between the frequency rankings of the top 50 phrasal verbs in the BNC and COCA and their frequency rankings in her Chinese learners’ corpus. The strengths of the correlation coefficients were deemed to be moderate (.41 for the COCA and .34 for the BNC), with the r^2 variance thus being greater with the COCA (17.1 %) than with the BNC (11.9 %). According to Chen, this result clearly shows that “high frequency of occurrences does lead to the learning and eventual production of phrasal verbs by EFL learners” (p. 436). However, the study has the same limitations as those outlined above for Schmitt and Redwood’s: frequency rankings were used instead of frequency counts, and polysemy was dismissed.

5.5. Semantic opacity and phrasal verb knowledge

In Chapter 3 (3.1), we have seen that phrasal verbs can be literal (having meanings that are easily inferable from the meanings of their individual components), figurative (having meanings that cannot be derived from the meanings of their individual components), and very often both in the case of highly frequent polysemous phrasal verbs. Drawing on a semantic analysis of 54 items in the COCA, Macis and Schmitt (2016a) proposed a similar classification of collocations based on semantic opacity

criteria: literal collocations, figurative collocations, and duplex collocations (referring to polysemous collocations having both literal and figurative meanings). Literal collocations were found to be the most frequent by far (78 % of the total sample), followed by duplex collocations (18 %) and figurative collocations (4 %). Whilst the relative proportion of occurrence of each category of phrasal verbs is still unknown, we may speculate that ‘duplex phrasal verbs’ form a comparatively larger proportion of phrasal verbs as a whole, in light of the findings from Study 1.

We have also seen that although phrasal verbs are typically defined as single lexical units, the extent to which their constituents give up their individual inherent meanings to form a whole idiosyncratic meaning is variable. Therefore, the distinction between literal and figurative is not always clear-cut, and some phrasal verbs’ meanings may fall somewhere in the middle as is the case for aspectual phrasal verbs in Celce-Murcia and Larsen-Freeman’s (1999) classification. These linguistic considerations, although interesting from a descriptive point of view, do little in themselves to answer the following question: are literal meanings easier to learn, and thus better known, than figurative ones as far as phrasal verbs are concerned? An intuitive assumption is that, for any formulaic item, literal meanings should be better known than opaque ones since they can easily be inferred from their individual components. In the case of high-frequency phrasal verbs included in the PHaVE List, the two components (lexical verb and adverbial particle) typically occur very frequently as individual words. A brief scanning of the PHaVE List is enough to notice that nearly all lexical verbs (with the exception of six) are one-syllable verbs among the most commonly used in everyday English (e.g. *make, take, go*, etc.). As for adverbial particles, they are also very frequent (e.g. *up, down, in, out*).

Consequently, it would be logical to assume that the literal meaning senses of phrasal verbs in the PHaVE List (and in general) should be known by many learners of English, at least receptively, assuming they are not complete beginners. The PHRASE List compiled by Martinez and Schmitt (2012), which includes many phrasal verbs, was fundamentally based on this assumption. Among the core criteria used by the authors to determine inclusion or non-inclusion of phrasal expressions in their list was semantic opacity: all items present in the list were identified as semantically opaque, thus

potentially causing difficulty for L2 learners.

However, other factors might complicate the issue. For instance, Conklin and Schmitt (2008) found that figurative interpretations may be more frequent than their literal counterparts in some formulaic sequences. Similarly, for a large number of phrasal verbs in the PHaVE List, the most frequent meaning sense is figurative. Since frequency tends to be a major factor in predicting word acquisition (and to a lesser extent phrasal verb acquisition as we have seen in the previous section), the issue of whether the learning of phrasal verbs is more affected by frequency or semantic opacity has yet to be explored. In addition, other lexical characteristics have been identified by previous research as potentially affecting the way vocabulary is acquired and used. We may think of saliency (i.e. how noticeable or prominent a word or word combination is to L2 learners), but also of imageability (i.e. how easy it is to imagine a concept) and concreteness (i.e. the extent to which a word can be experienced by the senses). Schmitt (2010: 48) lists a number of other lexical characteristics potentially affecting acquisition, among which are the following:

- a word's collocations
- whether a word's meaning is largely driven by its phrasal patterning (semantic prosody)
- whether a word's meaning and usage is connected to particular extralingual cues (e.g. some spoken words can be tightly connected with specific gestures or body language)
- context availability (how easy it is to think of a sentence or phrase which a word can appear in).

As of yet, no study has sought to directly assess the effect of semantic opacity on phrasal verb knowledge. The few studies on the theme of phrasal verb avoidance have only indirectly addressed the issue, but showed inconclusive results. Dagut and Laufer (1985) found that most of their participants avoided using phrasal verbs, but especially figurative ones. Hulstijn and Marchena's (1989) participants seemed to avoid

idiomatic/semantically opaque phrasal verbs that already existed in their L1 and which they perceived could not be transferable to English. Conversely, Laufer and Eliasson (1993) found that this idiomatic meaning similarity was not a good predictor of avoidance for their Swedish participants. Liao and Fukuya (2004) found that both their intermediate and advanced participants used fewer figurative than literal phrasal verbs, although the advanced learners' performance closely matched the native speakers' which suggests that only the intermediate learners may have avoided figurative phrasal verbs. Of all three eliciting tests (multiple-choice, recall, and translation) used in their study, however, only the translation test revealed a greater avoidance of figurative phrasal verbs over literal phrasal verbs. In conclusion, these studies provide indirect evidence of the inhibiting effect of idiomaticity in the use of phrasal verbs, but do not offer any tangible measure of this effect, in itself and in comparison with other possible conflicting effects.

5.6. L2 exposure/engagement and phrasal verb knowledge

Another potentially important factor in acquiring phrasal verbs and vocabulary in general is the degree of communicative engagement with a second language. Communicative engagement refers to the process of taking part in activities where the L2 is used with a specific purpose of a social or leisurely nature. Spending time in a country where the L2 is spoken, for example, is commonly seen as the most effective way of learning a language; hence the wide popularity of summer camps in foreign countries or exchange programmes aimed at university language students. Other communicative activities that do not necessitate living abroad, and are commonly advocated by teachers and researchers alike, are reading books, watching films, listening to music, and using social media in the L2. Unlike textbooks or audio material specifically designed for language learners, books, films and songs typically feature authentic language that is meaningful (albeit fictional). Language learning materials and resources, on the other hand, have long been criticized for their use of unauthentic language that does not reflect real-life usage.

Although this criticism is becoming outdated, with more and more learning resources relying on the use of corpus data to inform the inclusion and treatment of vocabulary items, the fact remains that books, films and songs have the additional advantage of offering learners a glimpse into the L2 community culture, and of being more readily accessible. Because the main purpose of engaging in a reading, watching or listening activity is to learn about the world and/or experience adventures or emotions, the acquisition of new words is merely an added bonus. There is no deliberate effort involved to study and learn the encountered vocabulary, which is why these activities are commonly seen as more attractive pursuits than direct vocabulary study or classroom instruction. Communicative engagement with the L2 is thus widely perceived as desirable and enjoyable. In addition, since we may suspect that the language exposure gained from such activities is largely of the everyday/informal variety, it is likely that a large number of formulaic sequences (and phrasal verbs in particular, which are widely used in informal spoken discourse; Biber et al., 1999) will be repeatedly encountered and learned as a result. But how effective are they in reality?

Beyond looking at the relationship between corpus frequency and phrasal verb knowledge, Schmitt and Redwood (2011) also looked at the effect of their participants' exposure to English outside the classroom on their scores, focusing on four types of L2 communicative activities: reading books, watching films, listening to music and using social media. The students had to complete biodata questionnaires and indicate how many hours they spent engaging in each of the four activities per week, and were divided into three groups according to the amount of time spent (between zero and one hour, one to two/three hours, and more than two/three hours). One-way ANOVA analyses proved significant for both reading books and watching films, with post-hoc analyses showing a significant difference in phrasal verb knowledge (both receptive and productive) between those who read and watched films the least and those who read and watched films the most in English. The effect sizes were quite small (.12 for productive knowledge, .11 for receptive knowledge) and identical for both activities. Conversely, the differences in scores between students who listened to music and used social media the least and those who did the most were not significant. These results showed that the amount of time spent reading and watching films in the L2 did affect phrasal verb

knowledge, whereas listening to music in English or using English social networking sites extensively did not.

González Fernández and Schmitt (2015) measured the productive knowledge of 50 collocations by 108 Spanish learners of English and its relationship with various factors, including degree of engagement with the L2 via the same four leisure activities investigated by Schmitt and Redwood. Similarly to phrasal verb knowledge, the collocational knowledge of the students was found to be related to their amount of L2 engagement. Both reading and watching films were significant predictors (accounting for 37.2 % and 14.4 % of the variance in scores respectively), as well as social networking (10.9 %) which had been found irrelevant in the case of phrasal verb knowledge by Schmitt and Redwood. Conversely, listening to music was still not found to have an effect. Macis and Schmitt (2016b) tested 107 Chilean university students on their productive knowledge of 30 figurative collocations, and also examined the effects of various factors on this knowledge, including everyday engagement with the L2, using mixed-effects modelling analysis. Among the same four activities investigated by Schmitt and Redwood (2011) and González Fernández and Schmitt (2015), only reading was found to be a significant predictor of the collocational knowledge of these students. Taken together, these three studies thus suggest that using English for leisurely activities outside the classroom (especially reading) significantly contributes to better knowledge of formulaic sequences (phrasal verbs and collocations).

On the other hand, the effect of spending time in the L2 environment on phrasal verb (and formulaic language) knowledge is somewhat less clear. Siyanova and Schmitt (2007) explored whether longer exposure to L2 environments increased the likelihood of using phrasal verbs instead of their one-word verb equivalents by highly proficient non-native speakers. They found that the length of time spent in L2 environments did not have a strong effect on their participants' likelihood of using phrasal verbs, concluding that learners might need an extremely long period of time to become comfortable with them (at least far more than 12 months). In reality, their results are not too surprising: it is perfectly possible that their participants did not actually engage with the L2 whilst being abroad. They could have met friends from their home country and interacted solely with them in their L1, and equally they could

have engaged in leisure activities in their L1 outside university (watching films in their L1, and using social media to keep in touch with their family and friends from home). Therefore, a more relevant predictor of phrasal verb knowledge might have been the degree of socio-cultural adaptation of these learners (measured, for example, by how often they interacted with native speakers and the L2 culture as a whole).

The relationship between level of L2 socio-cultural adaptation and knowledge of formulaic language has been investigated by Adolphs and Durow (2004), whose two postgraduate participants (one qualified as a high-integration student and the other as a low-integration student) were interviewed over a period of seven months in order to track their usage of frequent formulaic sequences (derived from a native corpus). The high-integration student showed more marked increase in her use of the sequences than the low-integration student over time, leading the authors to assume a relationship between socio-cultural integration and the acquisition and usage of formulaic sequences. Dörnyei, Durow and Zahran (2004) also found socio-cultural adaptation to be a crucial factor in the learning of formulaic language, speculating that “the acquisition of a formulaic repertoire is a socially-loaded process that goes beyond mastering elements of the target language code as it also requires ‘tapping into’ the sociocultural reality of the L2 community and incorporating elements of it into the learners’ own language behavioural repertoire” (p. 87). This would suggest that the acquisition of formulaic sequences is a far more complex process than it seems.

In summary, previous research has showed that spending time in the L2 environment had a significant positive effect on formulaic language knowledge only in situations of high socio-cultural integration in the L2 community. Conversely, the relationship between L2 engagement in leisure activities and phrasal verb/collocational knowledge has consistently been found significant.

5.7. The present study (Study 2)

The above review of the literature shows that previous research into phrasal verb knowledge has not taken polysemy into account, and that it is unclear how frequency

(as indicated by corpus data) and semantic opacity concurrently affect phrasal verb learning. There is some evidence that personal leisure exposure relates to formulaic sequence learning, but this has been shown only with a small group (68) of intermediate/upper-intermediate English learners for phrasal verb learning (Schmitt & Redwood, 2011) and for the learning of collocations (González Fernández & Schmitt, 2015; Macis & Schmitt, 2016b). In order to better understand the knowledge and learning of phrasal verbs, the present study asks the following questions:

- 1) How good is L2 learners' knowledge of highly frequent phrasal verbs and their most frequent meaning senses?
- 2) What factors can be identified as the best predictors of phrasal verb knowledge (among linguistic factors such as frequency and semantic opacity, and exposure factors such as L2 instruction, L2 immersion and L2 engagement in leisure activities)?

5.7.1. Selection of target items

The previous chapter (Study 1) resulted in the creation of the PHaVE List, which presents the most frequent meaning senses of the most frequent English phrasal verbs. After the list was compiled, the next logical step was to design a study aimed at assessing L2 learners' knowledge of the various meaning senses it includes. As there are 288 in total, it was obvious that not all of them could be included in a test due to time restrictions, and that some selection should be made. Based on the test format (see 5.7.2), I was able to make estimations of the maximum number of items I could include in the test without it becoming too long (i.e. exceeding 50 minutes). I anticipated that participants would complete the test at a rate of around one phrasal verb (i.e. two-three meaning senses) per minute, and thus settled for a number of 50 phrasal verbs. I also anticipated that the piloting stage would identify problematic items which would eventually have to be removed from the test, and so 50 phrasal verbs seemed like an adequate number to start with.

In order to avoid bias in the process of selecting items, I assigned a number to each phrasal verb in the PHaVE List (corresponding to their original frequency ranking number in Liu's list, from 1 to 150) and used a random number generator. Each polysemous phrasal verb whose assigned number was generated by the software was included in the test, until 50 phrasal verbs (which turned out to equal 125 meaning senses) were selected. Those phrasal verbs were drawn from the whole PHaVE List and could thus be assumed to represent the complete range of corpus frequencies in the list, along with varying degrees of semantic opacity.

Corpus frequencies were extrapolated using the frequency percentages assigned to each meaning sense in the PHaVE List. For example, the phrasal verb form *turn up* occurred 7,518 times in the COCA. Since it is a polysemous phrasal verb, it is unclear from this number how many times each meaning sense occurred individually in the corpus. In order to estimate the frequency of each meaning sense (for example 'increase the volume or level of something', as in *turn up the radio*), I did a very basic calculation and multiplied the number of occurrences of the phrasal verb form (7,518) with the frequency percentage of the meaning sense (21.5 %). The meaning sense 'increase the volume of something' was thus estimated to occur around 1,616 times in the COCA. It is necessary to point out that these are estimates and not absolute figures. Nevertheless, we can be fairly confident in the frequency percentages obtained from Study 1. The reasons for choosing to use the COCA over other corpora for frequency information have already been highlighted in the previous chapter (4.4.3).

Semantic opacity (i.e. deciding whether an item was literal or figurative) was established by my own judgement, in conjunction with two educated native speakers of English. As seen in 3.1, semantic judgements are not always straightforward and may involve some degree of subjectivity. Therefore, comparing my judgements with those of native speakers, who were confident in their semantic knowledge of the items, was a necessary step towards a more objective assessment of the items' semantic opacity. The two external raters were thus provided with the full list of target phrasal verbs and their target meaning senses, and were asked to indicate next to each meaning sense whether they considered it literal (inserting the letter 'L' in the designated space) or figurative (inserting the letter 'F'). The task instructions included a short description of phrasal

verbs and their structural and semantic attributes, followed by an example of a polysemous phrasal verb, *come in*, with one literal meaning sense ('enter a place or area') and one figurative sense ('become involved in a situation'). They were written in clear and comprehensible language for non-linguistics specialists. The task was performed by the two raters independently. Before starting, the two raters indicated that they felt comfortable with the procedure and with the notions of phrasal verbs and literal/figurative language. The inter-rater reliability data proved satisfactory, with 85 % complete agreement between mine and the two external raters' judgements.

After pilot tests were conducted (see 5.7.3), 40 phrasal verbs among the 50 originally selected were included in the final test. They can be found in Appendix 6 in alphabetical order, with extrapolated meaning sense frequencies in decreasing order and semantic opacity category (L = literal, F = figurative). The definitions are taken from the PHaVE List.

5.7.2. Test format

As the choice of the test format was a crucial element of the study, I carefully considered a number of possible options prior to selecting one. As we have seen in 5.2, vocabulary knowledge is multi-dimensional, but the form-meaning link is undoubtedly the most essential lexical aspect which must be acquired when learning a word (Schmitt, 2010). Therefore, I decided to build a test that would assess the form-meaning knowledge of the phrasal verb items. Following Schmitt's (2010) terminology, the next step was to decide which of the four form-meaning constructs (form recall, form recognition, meaning recall, or meaning recognition) would be focused upon, or alternatively discarded.

Firstly, I decided to discard the form recognition and meaning recognition formats, for two reasons. The first is that due to the nature of these formats (i.e. requiring test-takers to select a form or a meaning among a number of options), they most likely induce guessing behaviours. This was evidenced by previous research pointing to the weakness of the multiple-choice question format. For example,

Kamimoto (2008) and Webb (2008) found that there was a 17 % chance of learners blind guessing correct responses in the multiple matching format of the Vocabulary Levels Test (VLT). Stewart and White (2011) carried out multiple guessing simulations on the VLT and found that candidates' scores are consistently inflated by 16-17 points on a 99-item VLT test "until over 60 % of words are known, at which point the score increase due to guessing gradually begins to diminish" (p. 378). More recently, Stewart (2014) advised that the multiple choice format should be avoided whenever possible, and replaced by a format requiring test-takers to write (not recognise) the meanings of the tested items. Gyllstad, Vilkaite and Schmitt (2015) explored the degree to which answers on a multiple choice test reflected demonstrable knowledge of the target words' meanings, and found a clear tendency for scores on the test to be proportionally higher than scores from an interview measure. The second reason why I chose to discard recognition formats is that they lack ecological validity: when they encounter unknown words in real life (when reading a book or interacting with a native speaker, for instance), people are not given a choice of form or meaning options. For this reason, recognition formats have limited utility in describing usage-based mastery (Schmitt, 2010).

Secondly, I decided to discard the meaning recall format, mainly for practicality reasons. Although this format has ecological validity (learners need to recall the meaning of words when reading), it inevitably involves subjective judgements when it comes to marking. This is because test-takers are not constrained and have the freedom to give more or less precise answers, which can make the task of deciding whether the item is known complicated. For example, if a test-taker answers 'to see' as the meaning of *make out*, and another writes 'to see with difficulty' which is a more precise and accurate answer, should we credit both test-takers with the same degree of knowledge? How confident can we be that the former has adequate knowledge of this meaning of *make out*? What level of precision is good enough? The range of measurement problems that the meaning recall format involves could easily be avoided by choosing the other recall format.

Therefore, the form recall format was deemed to be the best possible test format for the present study. This format is thought to overcome guessing issues, as it is

very difficult to produce a correct form if that form is unknown. It has ecological validity, as form recall is needed when producing language (either by writing or speaking). It allows for objective and straightforward marking, as test-takers are constrained in their answers, and answers are either correct or incorrect. Finally, form recall is considered to be the highest, most difficult level of word knowledge (Laufer & Goldstein, 2004). According to Schmitt (2010: 87), it can be considered to be the first step along the road to full productive mastery, which is the point where the item can be “confidently used in an appropriate manner in a variety of spoken and written contexts.” As I have already mentioned (see 5.2), words are essentially learned in two stages as far as form-meaning knowledge is concerned: learners first establish meaning recall and then establish form recall (Schmitt, 2010). Consequently, if test-takers demonstrate form recall knowledge, they can be assumed to possess all other types of form-meaning knowledge as well. This has been empirically shown by Laufer, Elder, Hill and Congdon (2004) and Laufer and Goldstein (2004) in two studies investigating the validity of the monolingual Computer Adaptive Test of Size and Strength (CATSS). This does not necessarily mean, however, that word knowledge aspects other than form-meaning are mastered.

The test materials started with an information sheet in which the purpose of the research was explained, followed by a consent form emphasising the voluntary nature of the participation and the confidentiality of both the answers and the personal data. The next sheets featured the productive phrasal verb test itself, starting with an introduction outlining instructions on how to complete it. Participants were informed that the same phrasal verb could be used for several sentences (as the target items were polysemous), and that they were allowed 30 minutes to complete the test. Because I wanted the instructions to be as clear as possible, they were written in the participants’ L1, Spanish. Similarly, the original English versions of the information sheet and consent form were translated into Spanish to ensure that all participants fully understood the purpose of the study and its confidential and voluntary nature. All Spanish translations were reviewed and approved by a native speaker of Spanish. The information sheet can be found in Appendices 7 (English version) and 8 (Spanish version), the consent form can be found in Appendices 9 (English version) and 10 (Spanish version), and the phrasal verb test

itself can be found in Appendices 11 (English version) and 12 (Spanish version). Only the Spanish versions were given to the participants.

In order to show participants where they should write their answers, three example sentences were included underneath instructions. The instrument for data collection was an off-line pen-and-paper productive test in a cloze format. Each clozed phrasal verb item was embedded in an English sentence, setting the context and serving as a semantic prompt. Two gaps were included, corresponding to each of the two words forming the phrasal verb (lexical verb and adverbial particle). In order to constrain the range of potential phrasal verbs elicited, the first letter of each of the two words was provided. At the end of each sentence, the meaning of the target phrasal verb was given in brackets, typed in bold in order to make it more noticeable. Below is an example of a sentence included in the test to elicit the phrasal verb *get off*.

You need to take the bus and g___ o___ at the third stop. (<i>leave the bus</i>)

Finally, since the test targeted polysemous phrasal verbs, I ensured that recurring phrasal verb forms were effectively spread out across the test in order to avoid priming and facilitation effects.

5.7.3. Test piloting with native and non-native speakers

In order to check its validity, the initial version of the phrasal verb test was piloted with both native and non-native speakers of English.

The pilot tests were first administered to 30 native speakers, all first-year BA students in English at the University of Nottingham. The aim was to check whether each phrasal verb form could be accurately provided with the help of the sentence contexts and given meanings, and also to get an idea of the time needed to complete the test. The students were initially allowed 50 minutes (one minute for each phrasal verb and their

two or three meaning senses), but I anticipated that most of them would finish the test in a much shorter amount of time. Consent forms were completed by all participants prior to taking the test. All participants were given the opportunity to ask questions prior to and after completing the test. As expected for native speakers of English, the results showed that correct answers were provided for the large majority of items, with scores ranging from 77 to 96 % ($M = 88$, $SD = 5$). Test-taking time was usually around 25 minutes. Analysis of item scores allowed me to identify some problematic items, which were either left blank or given a wrong answer by many students. A qualitative analysis of the data allowed me to identify the two main reasons why wrong answers were provided: either the students ignored the meanings provided in brackets at the end of sentences and thus interpreted the sentences in a wrong way, or they supplied perfectly adequate answers but not those expected. I will illustrate this point with the following example taken from the test:

We won't just s__ b__ and watch the situation getting worse and worse. (<i>take no action</i>)
--

The expected answer in this sentence was *sit back*, but many students answered *stand by*, which is correct from a semantic standpoint. In order to elicit *sit back* from more students, I decided to provide the second letter of the lexical verb within a subsequent version of the test (i.e. *we won't just si__ b__ and watch the situation getting worse and worse*), which proved to be a successful strategy. The same procedure was followed for another few items. Since the data analysis began as data collection was proceeding, I was able to progressively identify problematic items and adjust sentences accordingly. Hence several subsequent versions of the test were created and piloted, each including a small number of changes from the previous version (i.e. added letters to the gaps or sentence/meaning reformulation). At the end of the data collection, 10 phrasal verbs out of the original 50 remained problematic, and were therefore discarded from the final version to be piloted with non-native speakers. The feedback I received indicated that those phrasal verbs had meaning senses used in American English rather than British

English, which were therefore unfamiliar to these British participants (this was expected since the semantic frequency information obtained in Study 1 had been derived from the COCA). At the end of this first piloting stage, the test thus included 40 phrasal verbs (100 meaning senses), which were those correctly recalled by the very large majority of native speakers (92.3 % on average; $SD = 8.7$).

The second piloting stage consisted in administering the test to three non-native speakers of English. These were all PhD students in the English department of the University of Nottingham, and could thus be considered to be highly proficient speakers of English. They had three different L1s: French, German, and Arabic. The aim was the same as for the first set of pilot tests: to check whether the phrasal verbs included in the test could be correctly recalled from the sentence contexts and given meanings, and to get an idea of the time needed to complete the test. As with the native speakers, the students were allowed 50 minutes and the possibility of asking questions if they wished. This time however, I expected a greater variation in scores due to the fact that non-native speakers are more likely to differ in their vocabulary knowledge. Their scores were 48 % (L1 French), 62 % (L1 Arabic), and 97 % (L1 German). These results made me confident that the phrasal verbs could be correctly recalled when known by non-native speakers. After taking the test, all three participants indicated that they felt comfortable with the procedure, and that they did not notice any confusing or awkwardly-phrased items. Test-taking time ranged from 20 to 35 minutes including the review and signing of consent forms.

Following this, I decided that the test was adequate and ready to be administered to other non-native speakers of English, with a completion time allowance of 40 minutes in total (30 minutes for completing the test itself and 10 minutes for completing the consent form and reading the information sheet). Following the data collection, the test was revealed to contain items with excellent internal consistency, with a Cronbach's alpha internal consistency reliability coefficient of .95.

5.7.4. Questionnaire

In order to determine the effect of a number of subject-related factors on phrasal verb knowledge, a biodata questionnaire was included at the end of the test for each participant to complete. The rationale behind this questionnaire is that participants have different characteristics which inevitably affect lexical knowledge (Schmitt, 2010). It is thus useful to gather biodata information in order to account for score variation.

One factor that was of particular interest for the present study was everyday exposure to English via reading, listening to music/the radio, watching films/TV and using social media (e.g. Facebook, Twitter, MySpace, etc.). In today's world where mass communication permeates our lives, these activities have undeniably gained a prominent place among other types of leisure pastimes. In addition, such activities would appear to be particularly suitable for acquiring phrasal verbs, since phrasal verbs are most commonly found in informal discourse (Biber et al., 1999). The importance of everyday engagement with the L2 in vocabulary acquisition was also clearly evidenced in section 5.6. Therefore, participants were asked to indicate the number of hours they spent every week on each leisure activity. Several questions relating to previous L2 exposure in and outside classrooms (years spent studying English and months spent in English-speaking countries) were also included. Finally, participants were asked about their age and gender. The purpose of the questionnaire, and brief instructions on how to complete it, were presented before the questions (in the participants' L1 to maximise comprehension, as in the rest of the materials). At the end of the questionnaire, participants were thanked for their cooperation, and given my email address in case they were interested in knowing about their results. The initial inspiration for the design was the questionnaire made by González Fernández and Schmitt (2015) for their own Spanish participants. The questionnaire can be found in its English version in Appendix 13, and in Spanish (the version given to participants) in Appendix 14.

5.7.5. Participants

The participants were 128 Chilean students of English (36 males, 84 females, 8 unknown) from two Chilean universities: Universidad de Chile (87 students) and Universidad Chileno-Britanica de Cultura (41 students). Their age ranged from 18 to 44 years old ($M = 22.6$, $SD = 3.7$). At the time of the test, they were all following a mixed English-medium and Spanish-medium BA course in either TEFL (Teaching English as a Foreign Language) or English Language and Literature in their respective universities. In order to cope with the English-medium component, I initially presumed that they had a relatively high level of L2 proficiency. Unfortunately, this assumption could not be confirmed since I did not get access to their scores on standardized proficiency tests which they may have taken upon starting university. In an attempt to account for the effect of year of study on their scores, the students were recruited from their first to fourth year of study from each university in roughly equal numbers. In total, there were 27 students in their first year of study, 31 students in their second year, 40 students in their third year, and 30 students in their fourth (final) year.

All participants shared the same L1, Spanish. Consequently, score variation could not be attributable to the L1. The Spanish language, like other languages belonging to the Romance family, does not possess the phrasal verb structure. For this reason, the effect of L1-L2 congruency on phrasal verb acquisition could not be explored in the present study. As seen in 3.3, the lack of phrasal verbs in the L1 is not always a relevant factor in predicting L2 learners' avoidance behaviours, and may be confounded with proficiency. Because I assumed a relatively high level of proficiency from the participants, my predictions were that they would perform quite well on the test. Nonetheless, I suspected that the participants' L1 may have had some inhibiting effect in their acquisition and use of phrasal verbs in the past. Finally, since the participants were studying in Chile, I speculated that they were exposed to the same English variety (i.e. American English) as the one represented in the corpus which served to identify the meaning senses in the test (COCA). Since it is important to consider English variety issues when it comes to phrasal verb knowledge (Chen, 2013), this made me confident in the relevance of my test.

5.7.6. Test administration

The tests were administered in Chile, on the premises of the two universities, and under the supervision of at least one member of teaching staff. They were completed in pen-and-paper form. A time limit of 30 minutes was set to complete the test (with an additional 10 minutes to complete the questionnaire and consent form), as the piloting suggested that was an appropriate duration. The reason I decided to set a time limit was to limit guessing behaviours from participants, because all phrasal verbs were used for multiple meaning senses. Prior to taking the test, all participants were given explanations as to the aim of the study, the format of the test, its completion time, voluntary nature, and the confidentiality of the data. They were asked to read the instructions and encouraged to ask questions if they had any, after which they signed the enclosed consent forms and proceeded with the test-taking. The tests given in the Universidad Chileno-Britanica de Cultura were grouped by year of study and sent to me by post, whereas the tests given in the Universidad de Chile were scanned (grouped in different files for each year of study) and sent to me by email.

5.7.7. Data analysis

The maximum score for each test was 100, based on one point per correct meaning sense (both words, lexical verb and particle, had to be correct). Accurate spelling was not necessary for the item to be judged correct, as long as the intended answer was clear. Likewise, following Schmitt and Meara (1997), inflectional mistakes were not considered. In the exceptional cases where answers were illegible, they were discarded. When they were slightly difficult to read, I consulted an educated native speaker of English to confirm my initial impressions. Of all the tests I received, two had to be discarded as they seemed to be incomplete: the first few pages were completed and the rest was completely blank. This led me to think that the two participants had given up half-way through the task. Similarly, around 10 participants did not complete the questionnaire at the end. In such cases, I used the data available (i.e. the phrasal verb

test itself) for the first part of the analysis (the extent of phrasal verb knowledge by L2 learners), and discarded the tests for the second part (the effect of various factors on this knowledge). Finally, eight questionnaires had to be discarded despite being completed, due to implausible answers regarding the number of hours spent on various activities per week (i.e. more than 100 hours a week in total).

Once test scoring was completed, the data was imported into Excel spreadsheets and IBM SPSS (22.0) for analysis. In order to answer my second research question, I decided to use mixed-effects models because they allow for the inclusion of both subject and item as random effects in addition to fixed effects. This allowed me to account for individual differences in subjects as well as in items. It also eliminated the need for separate analyses with participants and items as random variables. The results were analysed using an omnibus linear mixed effects model with the lme4 package (version 1.1-10, Bates, Maechler, Bolker, Walker, Christensen, Singmann & Dai, 2014) in R (version 3.2.2, R Core Team, 2014).

5.8. Results and discussion

5.8.1. How good is L2 learners' knowledge of highly frequent polysemous phrasal verbs?

In order to answer this question, 128 Chilean university students were asked to take a productive test which assessed their form-recall knowledge of a sample of 40 phrasal verbs and their various meaning senses extracted from the PHaVE List. In order to be able to answer the second question (the effect of various factors on phrasal verb knowledge), I was hoping that participants would obtain a wide range of scores, and the results demonstrated that, indeed, that range was achieved. The following table presents the descriptive statistics of the scores the participants obtained on the test.

Table 9. Descriptive statistics of the participants' test scores (*Max* = 100)

	Min (%)	Max (%)	Mean (%)	SD
Test scores (<i>N</i> = 128)	4	93	40.6	18.5

As we can see, the mean of the scores was relatively modest (40.6, less than half of the items). The spread of correct answers ranged from 4 to 93 (i.e. 4 % to 93 % on the 100-item test). The vast majority of participants (*N* = 94) scored between 20 and 60 %. Around 12 % (*N* = 15) of the participants scored less than 20 %, whilst around 15 % (*N* = 19) scored more than 60 %. The following figure (Figure 1) illustrates the distribution of scores, with the number of participants on the y-axis and their corresponding scores on the x-axis (grouped in 5s). The figure indicates, for instance, that two participants scored between 0 and 5 %, and that one participant scored between 6 and 10 %. The figure displays a bell curve, but results are visibly skewed towards the lower half.

These findings thus support the claim that phrasal verbs are problematic for L2 learners (Laufer & Eliasson, 1993; Liao & Fukuya, 2004; Siyanova & Schmitt, 2007; Schmitt & Redwood, 2011). The mean score of the participants (40.6 %) is lower than the mean score obtained by Schmitt and Redwood's participants on their equivalent productive test of knowledge (48.2 %). However, Schmitt and Redwood tested only one meaning sense per phrasal verb, typically the most frequent. Similarly, if we only consider the participants' scores on the most frequent meaning sense of each phrasal verb, the mean score of my participants increases (44.5 %), but is still lower than Schmitt and Redwood's.

Finer-grained information can be obtained by looking at participants' knowledge of individual meaning senses. The following table (Table 10) illustrates knowledge of up to the fourth most frequent meaning sense of each target phrasal verb, indicated next to the meaning senses' assigned frequency percentages in the PHaVE List. The phrasal verbs are listed in alphabetical order, with those having four meaning

senses appearing first, those having three meaning senses appearing second, and those with two meaning senses appearing last. As can be seen from the bottom row, the mean scores were 44.5 % for the first most frequent meaning sense, 40.1 % for the second most frequent, 31.6 % for the third most frequent, and 44.3 % for the fourth most frequent.

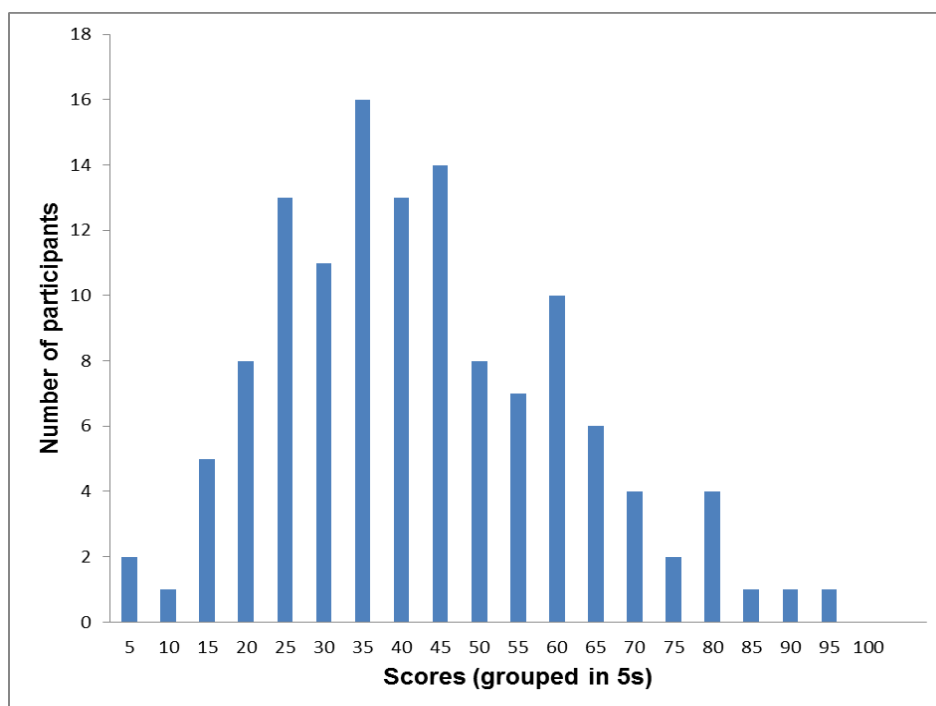


Figure 1. Distribution of participant scores (grouped in 5s)

Table 10. Knowledge of the various meaning senses of the 40 polysemous phrasal verb items, along with their frequency percentages in the PHaVE List

Phrasal verb	Frequency percentages of meaning senses (taken from the PHaVE List)				1 st most frequent meaning sense scores (%)	2 nd most frequent meaning sense scores (%)	3 rd most frequent meaning sense scores (%)	4 th most frequent meaning sense scores (%)
Break down	24	20	17.5	13.5	68	39	47.7	26.6
Come out	38	13.5	11.5	10	61	37.5	42.2	73.4
Hold back	23.5	21	17.5	16	35.2	39	51.6	32.8
Back up	26	21	20.5		31.2	48.4	36.7	
Break off	40	28	24		11.7	8.6	13.3	
Cut off	27	24.5	23.5		46.1	25.8	61	
Get down	26	22.5	17.5		18	51.6	28.1	
Get off	54	12.5	12		30.5	3.1	4.7	
Give out	40	33.5	11.5		25	36	7.8	
Go down	29	27	18		73.4	82.8	32.8	
Make out	60.5	11	10.5		10.9	17.2	28.9	
Put out	47	14	10		25	25.8	20.3	
Put up	23	19	18		69.5	56.2	63.3	
Set out	42.5	26.5	16		17.2	18.7	25	
Take in	24.5	17.5	10		64.8	28.9	22.7	
Take out	50.5	13.5	12.5		41.4	50.8	13.3	
Turn up	48	21.5	14		17.2	93	37.5	
Bring in	52	30.5			65.6	37.5		
Clean up	74	22			71.1	20.3		

Come along	72.5	20.5			24.2	32		
Come in	65	14			89.8	75		
Come on	50	19.5			93	79.7		
Get on	51	14.5			5.5	45.3		
Go up	47.5	20.5			57	56.2		
Hand over	58.5	41.5			7.8	6.2		
Keep up	46	32.5			49.2	79.7		
Look back	49.5	30			57.8	64.8		
Look out	50.5	25.5			71.9	53.9		
Move up	47	22.5			53.9	39.8		
Pay off	49	48.5			17.2	22.7		
Pull back	66.5	31			21.1	20.3		
Put in	50	26.5			78.9	43		
Put on	52	14.5			84.4	14.1		
Reach out	48.5	39.5			28.9	24.2		
Run out	49.5	34			57.8	51.6		
Sit back	66	34			52.3	71.9		
Stand out	60.5	38			30.5	10.9		
Take back	50	33.5			53.1	53.1		
Turn around	67.5	24.5			52.3	11.7		

Turn over	59.5	34			11.7	28.9		
AVERAGE	48	25	15.5	13	44.5	40.1	31.6	44.3

Therefore, it would appear that knowledge did not drop in parallel with frequency ranking, as the mean score of the fourth meaning sense was nearly as high as that of the first meaning sense. However, it is worth noting that only three phrasal verbs in the test had four different meaning senses attached to them, and therefore the results obtained on the fourth most frequent meaning senses may not have been as representative as the others. On closer inspection of the table, we can see that for most phrasal verbs, the knowledge bounced up and down among the meaning senses with no clear pattern. In some cases, knowledge dropped with frequency rank in an expected way (e.g. *take in*: 64.8 % $\searrow$ 28.9 % $\searrow$ 22.7 %; *put in*: 78.9 % $\searrow$ 43 %), but there were nearly as many cases where the opposite trend occurred (e.g. *make out*: 10.9 % $\nearrow$ 17.2 % $\nearrow$ 28.9 %; *sit back*: 52.3 % $\nearrow$ 71.9 %). Also, for the three phrasal verbs whose meaning sense frequency percentages were very close (within 5 %), the knowledge percentages were not close, but showed an inconsistent pattern (*cut off*: 46.1 % $\searrow$ 25.8 % $\nearrow$ 61 %; *put up*: 69.5 % $\searrow$ 56.2 % $\nearrow$ 63.3 %; *pay off*: 17.2 % $\nearrow$ 22.7 %). This somewhat unpredictable pattern was confirmed by a Spearman correlation analysis, which showed no significant relationship between the meaning senses' frequency percentages in the PHaVE List and knowledge ($r_s = .10$, $p = .32$).

Overall, we can see that the mean scores for each meaning sense were quite low, especially for the third most frequent meaning sense. This builds an even stronger case for the difficulty of phrasal verbs, especially if one thinks of a comprehensive knowledge of multiple phrasal verb meaning senses. Out of 384 possible cases (128 participants x three phrasal verbs), in only 72 (18.8 %) were all four meaning senses of the phrasal verbs *break down*, *come out*, or *hold back* known. For the phrasal verbs with three meaning senses, out of 1,792 cases (128 participants x 14 phrasal verbs), in only 202 (11.3 %) were all three meaning senses known. Even for phrasal verbs with only two meaning senses, both senses were known in only 859 (29.2 %) of the 2,944 cases (128 participants x 23 phrasal verbs). Overall, these results indicate that it makes little

sense to speak of phrasal verbs being known or unknown based on a single meaning sense. If one wishes to know whether learners know the multiple meaning senses, these need to be measured separately rather than just inferred from the score of a single (usually most frequent) meaning sense.

Whilst Schmitt and Redwood (2011) concluded that their participants showed relatively good knowledge of the phrasal verbs tested considering their intermediate level of English, my interpretation is that a mean score of 40.6 % (or 44.5 % for the first most frequent meaning senses) is rather weak considering that my participants were university students on BA TEFL/English Language and Literature courses. Although it was impossible for me to get a reliable estimate of their English proficiency, I anticipated higher scores on the whole due to their course of study. In addition, the tested items were the most frequent meaning senses of some of the most frequent phrasal verbs in English as identified by previous research (Gardner & Davies, 2007; Liu, 2011). As frequency is a crucial predictor of vocabulary knowledge, the high frequency of the items was expected to have a facilitative effect. So what are we to make of the results?

Firstly, it is important to remember that the test given to the participants measured their productive knowledge of phrasal verbs. Productive knowledge (or active knowledge) involves knowing a lexical item well enough to produce it when it is needed for communication purposes (Schmitt, 2010). It has been proved to be more difficult to reach than receptive knowledge (Nation, 2001; Laufer & Goldstein, 2004); therefore productive tests are inevitably more demanding than receptive tests. My test assessed phrasal verb knowledge at a form-recall level of mastery (as the meaning was given and the L2 form had to be produced), which is considered to be one of the most difficult test formats. This could have partially explained the scores, and using a receptive test would probably have yielded much higher scores. Schmitt and Redwood's participants scored higher on the receptive test than on the productive one, with a mean score of 65.2 %. Although the productive test was administered in the exact same format as in this study, their mean score was higher.

At this stage of the analysis, it is difficult to identify the causes and factors responsible for the scores. Nevertheless, it can already be observed that the participants

in the present study showed rather limited knowledge of highly frequent polysemous phrasal verbs, despite their presumably high level of English proficiency. In reality, such apparent discrepancy should not be so surprising: even though we would expect TEFL/English Language and Literature students to be familiar with frequent words and word combinations in English, the fact that phrasal verbs are frequently associated with informal spoken discourse means that their acquisition in academic contexts is not necessarily guaranteed.

5.8.2. What factors can be identified as the best predictors of phrasal verb knowledge?

After assessing the participants' productive knowledge of phrasal verbs, I wanted to assess the effect of a number of factors on this knowledge. Obviously, teaching input was expected to be a potential factor, but I had no way of quantifying the input my participants had been exposed to prior to the study. Instead, I sought to assess the impact of other factors which I divided into two categories: linguistic factors (item frequency and semantic opacity), and exposure (or subject-related) factors (L2 instruction, L2 immersion and L2 engagement in leisure activities).

As previously mentioned, mixed-effects modelling was chosen to gauge the effect of these variables on phrasal verb knowledge. Because I had multiple predictor variables (including several usage variables which were likely to correlate), I first checked for any significant correlations amongst them. Since none of the usage variables were significantly correlated, I proceeded with the mixed effects analysis including all variables as potentially important fixed effects. My model development procedure was conducted in the following way. First of all, I log transformed COCA frequency in order to reduce skewing, as the data had very wide ranges (from 347 to 19,765 occurrences). Because my independent variable (knowledge) was binary, I used a generalised linear model with binomial regression. An initial model was built including all my explanatory variables as predictors of knowledge: (log) COCA frequency, semantic opacity, year of BA study, years spent studying English, months

spent in English-speaking countries, hours spent reading per week, hours spent watching films/TV per week, hours spent listening to music/the radio per week and hours spent social networking per week, with participants and items as random variables. As expected, not all of the nine explanatory variables proved to be statistically significant.

I then proceeded by using a backwards stepwise procedure to eliminate variables that did not significantly contribute to the fit of the model. The process involved eliminating the variable with the lowest z-value and then refitting the model. This procedure continued until all insignificant variables were removed. Every time the model was refitted, it was compared to the previous one to confirm that including these variables did not significantly improve the overall model. The order of elimination of insignificant variables was the following: months spent in English-speaking countries, hours spent watching films/TV per week, years spent studying English, hours spent listening to music/the radio per week, year of BA study, and semantic opacity. At the end of the procedure, the final best-fit model included three variables as significant predictors of knowledge: (log) COCA frequency, hours spent reading per week, and hours spent social networking per week. A summary of the results can be found in the following table.

Table 11. Main fixed effects on phrasal verb knowledge as identified by mixed-effects modelling analysis

Predictor	Estimate	Std. error	z-value	p-value
(Intercept)	-7.60096	1.33389	-5.698	1.21e-08***
Log COCA frequency	0.86142	0.17134	5.028	4.97e-07 ***
Reading	0.02720	0.01146	2.373	0.0177 *
Social networking	0.02774	0.01263	2.197	0.0280 *

Significance values were estimated by the R package lmerTest (version 2.0–11; Kuznetsova, Brockhoff & Christensen, 2014): *** $p < .001$, ** $p < .01$, * $p < .05$

Finally, I wanted to check whether I could find any evidence of an interaction between the effects of log COCA frequency and semantic opacity. This is because literal meaning senses may have been significantly more frequent than figurative meaning senses, or vice-versa. I therefore constructed a final model which included the fixed effects listed in Table 11, plus an interaction effect of frequency and opacity. There was no evidence of such an interaction ($z = -.09, p = .93$), and explicit model comparison showed that inclusion of this interaction in the model did not significantly improve the fit ($\chi^2(2) = 3.12, p = .21$). To sum up, the omnibus analysis showed clear effects of COCA frequency, reading in the L2, and using social media in the L2 on phrasal verb knowledge. Conversely, no effect was found for semantic opacity, previous English language instruction, immersion in English-speaking countries, year of BA study, watching films in English or listening to music in English. .

5.8.3. Linguistic factors: Corpus frequency and semantic opacity

My test included 32 literal and 68 figurative meaning senses, with frequencies ranging from 347 to 19,765 occurrences in the COCA ($M = 2,991, SD = 2,801$). According to my results, corpus frequency was clearly a strong predictor of phrasal verb knowledge ($p < .001$). This suggests that, similarly to individual words, the importance of frequency as a predictor of L2 vocabulary knowledge also extends to phrasal verbs, and even to their individual meaning senses: the more frequent a phrasal verb meaning sense, the more likely it is to be known. This finding is congruent with Schmitt and Redwood (2011) and Chen (2013) who also deduced a positive relationship between corpus frequency and productive knowledge of phrasal verbs in their studies. Compared to those, the present study had the additional advantage of involving semantic frequency counts (as opposed to rank frequencies of phrasal verb forms), which means that my frequency figures were likely to be more reliable and precise. In addition, using mixed-effects modelling allowed me to identify predictors with confidence. In sum, whilst the effect of frequency on phrasal verb knowledge had been uncovered by previous studies, the fact that it was clearly demonstrated in the present study confirms its fundamental

importance.

Looking at individual comparisons of item scores with frequencies, a few interesting observations can be made. The least frequent meaning sense in the test was estimated to occur 347 times in the COCA, and was successfully recalled by only 10 out of 128 participants. The most frequent meaning sense was estimated to occur 19,765 times in the COCA, and was correctly recalled by 115 participants. In these two cases, it is fair to assume that frequency was the major factor at play. On the other hand, the item that was the least known by the participants (four out of 128) was estimated to occur 899 times in the COCA. There were two items that were the most widely known by the participants (119): one was estimated to occur 10,445 times, and the other 1,616 times only. At this stage, what made the latter item so widely known in spite of its modest frequency in the COCA is unclear. Two possible speculations could be made.

Firstly, as pointed out by Schmitt and Redwood, corpora may not provide a reliable picture of the kind of exposure EFL learners really get. The occasional discrepancy between phrasal verb frequencies and scores could reflect the lack of corpora-based resources in EFL classrooms, making the selection of phrasal verbs being taught relatively random. If classroom instruction is the only or main source of L2 exposure (as it is for many learners), such discrepancy should come as no surprise. Secondly, other factors than frequency may have come into play, which would explain why some phrasal verbs at the lower end of the frequency range were better known than more frequent phrasal verbs in both Schmitt and Redwood's (2011) and my study.

Schmitt and Redwood speculated that phrasal verbs must be idiosyncratic in terms of learning burden, with factors such as semantic opacity having crucial importance. However, semantic opacity had no significant effect on phrasal verb knowledge in the present study and was, in all likelihood, overridden by frequency. It is unclear why, but we could speculate that semantically transparent items tend to be less noticeable to learners, and as a result may fail to be acquired. It is interesting to note that the two meaning senses which were successfully recalled by the greatest number of participants (119 out of 128) were *turn up* as in *turn up the radio*, and *come on* as in *come on, you can do it*. We can see that both of these meaning senses are figurative and yet were very widely known.

In the case of *turn up*, we might suspect that many learners had been exposed to the item in the classroom (for example, when asking the teacher to increase the volume of an audio recording) or in songs. In the case of *come on*, it might be that learners find the item particularly salient due to its prosodic and extralingual cues (typically, an exclamative tone and a hand gesture). It is also a very frequent phrasal verb (as noted by Biber et al., 1999, who found it to be the most common by far in any of the LSWE corpus registers). In all cases, the effect of these few additional factors (prosody, saliency, context availability, phrasal patterning, etc.) remains unclear, and could usefully be investigated in future research.

5.8.4. Exposure factors: L2 instruction, L2 immersion and L2 engagement in leisure activities

As previously mentioned, I was unable to get access to my participants' scores on standardized proficiency tests which they may have taken upon entering university. The students were spread from their first to fourth year of BA study, and had spent four years studying general English on average ($Min = 1$, $Max = 16$, $SD = 3$) at the time of data collection. As we have seen, the final best-fit model included neither year of BA study nor years spent studying English as predictors of knowledge. This may initially seem surprising, as we would expect that more L2 instruction leads to more L2 vocabulary knowledge. In fact, we might suspect that the type of exposure students get from a general English course, or an academic BA TEFL/English course, does not necessarily feature the sort of everyday spoken discourse in which phrasal verbs can typically be found. Furthermore, multi-word combinations are typically neglected in classrooms in favour of single words, as vocabulary tends to be primarily conceived as individual words which also happen to be easier to manipulate. In spite of growing research interest in formulaic sequences, many teachers around the world are not aware of their importance and focus their teaching on single words only. Schmitt and Redwood (2011) also found that the type of instruction and hours of classroom input that their participants received did not have a significant effect on their scores.

Similarly, I found no effect of immersion in English-speaking countries on phrasal verb knowledge. My participants had spent one month abroad on average ($Min = 0$, $Max = 18$, $SD = 3$), which is arguably too little time to get the benefits of living in a country where the L2 is spoken. We may suspect that if participants had spent more time abroad overall, L2 immersion could have been a predictor of phrasal verb knowledge. This finding corroborates Siyanova and Schmitt (2007), who found that the length of time spent in L2 environments did not have a strong effect on their participants' likelihood of using phrasal verbs instead of one-word verbs. They concluded that learners might need an extremely long period of time to become comfortable with phrasal verbs (more than 12 months). However, as mentioned in 5.6, a more accurate predictor of formulaic language knowledge might be the degree of sociocultural adaptation to the L2 country, leading to a better quality of L2 exposure (Adolphs & Durow, 2004; Dörnyei et al., 2004).

Unlike L2 instruction and L2 immersion, the effect of L2 engagement in leisure activities on phrasal verb knowledge is clearly apparent from my results. In addition to corpus frequency, my final model included two predictors relating to everyday engagement: reading and social networking in English. This means that the more hours participants spent reading and social networking in English per week, the more phrasal verb knowledge they had. Conversely, watching films/TV and listening to music/the radio did not have any effect on phrasal verb knowledge. These results are congruent with Schmitt and Redwood (2011) and González Fernández and Schmitt (2015) in that reading was found to relate to phrasal verb/collocation knowledge whereas listening to music was not. But contrary to them, watching films or TV did not have any effect on knowledge in the present study, and contrary to Schmitt and Redwood, I found social networking to be a predictor of phrasal verb knowledge. My results are also partially congruent with Macis and Schmitt (2016b), whose final best-fit model of collocational knowledge predictors included reading among the four types of leisure activities.

Reading has long been identified as a strong facilitator of vocabulary knowledge in the case of single words (Horst, Cobb & Meara, 1998; Schmitt, 2010; Nation, 2013), and so it was not surprising to find it as a main predictor in my model. I

deliberately included a wide spectrum of reading material under the ‘reading’ umbrella in my questionnaire (books, magazines, newspapers and even websites), and therefore it is likely that those who reported spending many hours reading per week received a type of L2 exposure varying widely across genres, topics and registers. Such rich and varied exposure is typically conducive to acquiring a rich and diverse L2 vocabulary, among which are multi-word units such as phrasal verbs. As to the effect of social networking in the L2, we could explain its presence in the final model by the fact that, typically, using social media triggers the use of/exposure to informal spoken language and thus phrasal verbs. In addition, it is a type of exposure which makes language more engaging and personal, and thus perhaps even more conducive to learning.

Whilst watching films and TV is also conducive to varied and engaging exposure to everyday spoken language, the L2 input is often in aural mode only and the subtitles, if any, are perhaps more commonly used in the L1. The lack of visual input (i.e. not being able to visualise the written form of words) may seriously impair learning and retention of L2 vocabulary (Nation, 2013). The same speculation could be made regarding listening to music, which in addition to being in aural mode, does not usually require much attention or concentration. This means that a great deal of unknown vocabulary might be left unnoticed as a result. Also, it is often hard to make out the words in songs, even for native speakers. Nevertheless, watching TV and films has been shown to facilitate the learning of English vocabulary by previous research (Lin, 2014; Lin & Siyanova, 2014) and thus should not be discarded as completely ineffective for learning phrasal verbs, even though it did not significantly predict participants’ scores in this study.

5.8.5. Implications for teaching

The results of this study emphasise the importance of teaching phrasal verbs, as even the most frequent phrasal verbs and their most frequent meaning senses were shown to present difficulties for my participants. This was in spite of their pursuing academic studies involving (at least partially) the use of their L2. I have accounted for this

apparent discrepancy by the fact that phrasal verbs are commonly perceived as informal vocabulary and are typically neglected in the language classroom. However, because learners need them to produce (and understand) language that is fluent and idiomatic, their acquisition cannot be left to incidental learning alone which is far less effective than explicit teaching (Nation, 2013). A number of reasons make phrasal verbs particularly challenging for learners, and the fact that they are multi-word combinations means that learners may fail to identify them as single lexical units. Broadly speaking, EFL practitioners need to become aware of the importance of multi-word units in the English language, and fundamentally alter the way they perceive vocabulary (i.e. as single words only).

Unfortunately, there are so many phrasal verbs in English that it would be impossible to teach them all. The PHaVE List was created with the goal of suggesting where to start for teachers wanting to teach phrasal verbs to their students, as vocabulary selection is the first step towards implementing a teaching syllabus. An interesting finding of the study is that we should not necessarily assume that literal meanings are better known than figurative meanings. When deciding which phrasal verbs to teach, it might be a good idea to consider the influence of other characteristics such as saliency or imageability on learnability, and focus the teaching on less salient or imageable meaning senses. Frequency should also be acknowledged as a crucial factor: a very frequent figurative meaning sense may be better known than an infrequent literal one.

Although the best way of teaching phrasal verbs is unknown, there is no reason to think that the few basic principles applying to single words and other formulaic sequences do not also apply to them. For example, repetition and recycling are considered to be crucial in order to learn new vocabulary (Nation, 2013). In order to teach vocabulary effectively, teachers should seek to maximise their learners' exposure to vocabulary items. The importance of maximising exposure cannot be stressed enough. Because classroom time is limited, however, other forms of exposure should be promoted. For example, learners should be strongly encouraged to engage in activities such as reading, watching films and social networking in English as these have repeatedly been shown to be effective in acquiring formulaic sequences (collocations

and phrasal verbs). Finally, some techniques commonly used to teach single words have been shown to be effective in the teaching of idioms as well by previous research (Alali & Schmitt, 2012). Until more research is carried out on the effectiveness of various phrasal verb teaching techniques, we could speculate that these could potentially be just as effective for acquiring phrasal verbs.

5.8.6. Limitations and suggestions for future research

Similarly to the first, the second study in this thesis has a number of limitations which should be acknowledged. Firstly, the amount of L2 engagement of the participants was assessed via self-report questionnaires only. It is unclear how reliable their answers were, as participants may either underestimate or overestimate the number of hours they spend engaging in a particular activity. Although implausible answers were discarded from the analysis, some answers may still not have reflected a true picture of reality. The effect of various leisure activities on phrasal verb knowledge could have been slightly underestimated or overestimated as a result.

Secondly, the phrasal verb semantic frequencies were extrapolated from the COCA using the meaning sense frequency percentages of the PHaVE List. Although we can be fairly confident in these percentages, extrapolation is likely to involve more imprecise figures than manual counts. This could have had a slight impact on the assessment of corpus frequency as a factor on phrasal verb knowledge. Nevertheless, the effect of frequency was clearly detected in this study. Thirdly, the 128 L2 participants were a fairly homogeneous group: all Chilean university students on BA courses in TEFL/English Language and Literature, of similar ages, with the same L1 (Spanish), with many having never spent time in an English-speaking country. For this reason, it is difficult to generalise the results to a wide population of EFL learners. Unfortunately, I was unable to assess the effect of proficiency on participant scores, which could be expected to have played a significant role in phrasal verb acquisition. Additionally, factors such as length of L2 exposure, age of onset of acquisition, L1-L2 similarity, or different scripts between the L1 and L2 (e.g. Chinese vs English) may be

expected to play a significant role.

Future research looking at L2 phrasal verb knowledge will thus be needed in order to assess the robustness of my results. More diverse samples of L2 populations should be involved, as well as a more diverse range of items such as less frequent phrasal verb meaning senses. Investigating the effect of L2 proficiency (as indicated by participant scores on standardised proficiency tests such as the IELTS English test or the TOEFL) on phrasal verb knowledge would also be desirable. To the extent that item saliency and imageability can be quantified, it could also be interesting to examine the impact of various intralexical factors on phrasal verb meaning sense knowledge. The effect of phrasal verb repetition (for example in the L2 classroom) on knowledge would also need to be assessed and compared with its effect on single words. There are reasons to believe that the number of times a phrasal verb is repeated in a classroom is more relevant to predicting L2 acquisition than the number of times it occurs in a corpus like the COCA. Finally, the effect of reading or watching films on vocabulary acquisition has been extensively documented, but not as much on phrasal verb acquisition. Additional evidence of the positive relationship between such activities and phrasal verb knowledge should perhaps be found in order to convince learners to engage more with them every day.

Chapter 6

L2 acquisition of phrasal verbs via explicit/intentional learning

6.1. Introduction

The previous chapter (Study 2) was an investigation into the phrasal verb knowledge of 128 Chilean university students and the contributing effects of a number of factors on this knowledge. The results showed that the students knew around 40 % of the most frequent meaning senses of the most frequent phrasal verbs in English, with only about a 20 % chance that all the various meaning senses of each target phrasal verb would be known. The common assertion that phrasal verbs are a problematic feature of English vocabulary was thus given concrete evidence. Whilst factors such as corpus frequency and L2 engagement in leisure activities were shown to have an effect on phrasal verb knowledge, other factors such as L2 instruction and year of BA study did not seem to matter. Although this may initially seem surprising, my interpretation was that phrasal verbs are typically neglected in the language classroom in favour of single words or other formulaic sequences which may appear less informal. However, as we have seen in Chapter 3, phrasal verbs are very important and useful words in English due to their high frequency of occurrence, especially in everyday spoken discourse. This means that L2 learners need them to produce language that is fluent and idiomatic, and thus could greatly benefit from a systematic, explicit approach to learning phrasal verbs. This is ideally achieved in instructed contexts. But because teaching time is limited, the first

step in teaching/learning phrasal verbs is to decide which items should be taught or learned in priority. The PHaVE List was created to address this need.

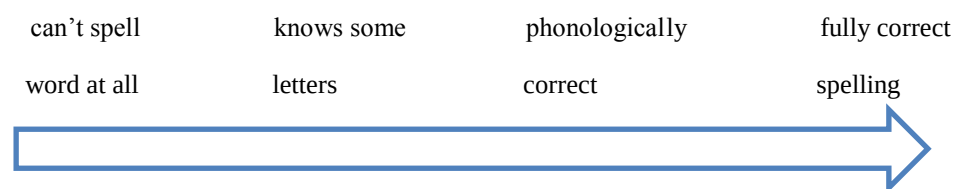
The remaining question is thus the following: how can phrasal verbs best be taught? A survey of the literature shows that research into phrasal verb acquisition is relatively scarce, whilst much more has been done to investigate the acquisition of other types of formulaic sequences such as collocations (see 2.6). As seen in Chapter 3, the bulk of phrasal verb acquisition studies have mainly been concerned with investigating the effectiveness of the Conceptual Approach in teaching phrasal verbs, an approach which has been derived from the field of Cognitive Linguistics and has recently gained increased research attention (Boers, 2000; Condon, 2008; Yasuda, 2010; White, 2012). The findings, however, have so far been mixed and inconclusive. From a practical standpoint, teachers and learners looking for a quick and efficient way of teaching/learning phrasal verbs might be deterred from using the Conceptual Approach, which requires familiarisation with the theory underlying it and more time to implement than more straightforward learning methods. Furthermore, Chapter 4 (Study 1) has shown that the semantic relatedness between meaning senses could not be readily observed for all phrasal verbs in the PHaVE List, making the Conceptual Approach of little use for teaching such items (4.5.4). Instead, more ‘traditional’ learning and memorisation activities may be more appropriate. The purpose of the present and final study (Study 3) is thus to investigate and compare the effectiveness of different explicit learning activities for L2 acquisition of phrasal verbs.

6.2. How is L2 vocabulary acquired?

One of the most important insights gained from vocabulary research over the years is that vocabulary acquisition is an incremental process. We have seen in the previous chapter (5.2) that complete mastery of a word entails a number of components of word knowledge. Those components are typically acquired simultaneously, but at different rates (Schmitt, personal communication). For example, the most basic aspect of word knowledge, the form-meaning link, is acquired faster than collocational or connotation

knowledge. Although the field still lacks a convincing and comprehensive theory of vocabulary acquisition, Schmitt (2000) provided a possible account of how the acquisition of the different types of word knowledge occurs. On the first encounter with a word, the learner picks up some sense of the word's form and meaning. Depending on whether the exposure was visual or aural, the learner will get an idea of either the word's spelling or pronunciation. With further encounters, the knowledge of the form-meaning link will be strengthened, and if the word is polysemous, more meaning senses will be discovered. However, Schmitt argues, it is only at a relatively advanced stage of the acquisition process that the L2 learner is likely to develop intuitions about the word's frequency, constraints on use, or collocational behaviour. This is because those aspects require a very large number of exposures to be accurately determined.

Not only are the components of word knowledge acquired at different rates, but each of them is mastered to greater or lesser degrees at any point in time. Henriksen (1999) proposed that, for any aspect of word knowledge, learners can have knowledge ranging from zero to partial to precise. This suggests that word knowledge should be seen as a continuum rather than a dichotomy between known and unknown. The following is an illustration of what the continuum might look like for the spelling component of word knowledge (Schmitt, 2000: 118).



Evidence for these partial/precise degrees of knowledge and sequential knowledge types of acquisition was found by Schmitt (1998), who followed advanced L2 university students and their knowledge development of 11 words over an academic year in terms of spelling, meaning senses, grammatical behaviour, and associations. Whilst the students quickly gained mastery of the words' spellings, mastery of their derivational forms or meaning senses was gained later on, and often only partially (for example, they

normally knew the core meaning sense, but almost never all of the possible senses). The association knowledge developed gradually and slowly, indicating that the words were gradually becoming better integrated into the students' mental lexicons.

Another important dimension in word acquisition research is the long-standing distinction between receptive and productive mastery. It is generally assumed that words are first learned receptively (i.e. can be understood in speech or writing) and then become known productively (i.e. can be used in speech or writing), although the path of development from receptive and productive mastery is relatively unknown and has been an object of speculation by several researchers. For example, whilst Melka (1997) argues that they should be seen as poles of a continuum, Meara (1990, 1997) suspects the existence of a threshold effect, i.e. that words are known receptively until they reach a point where they become known productively. The fact that receptive mastery is easier and precedes productive mastery is less controversial and has been shown empirically by a number of studies (see 5.2), but the difference between the two may be less than commonly assumed. For example, Melka (1997) found a study estimating that 92 % of receptive vocabulary is known productively, but according to Takala (1984) the figure may be even higher. Waring (1998) argued that indications of receptive knowledge and productive knowledge depend on how difficult the measures are for each: if a relatively demanding receptive measure is used in parallel with an easy productive measure, then the gap between the two will be much smaller than in the other way around.

In addition to being a complicated and gradual process, vocabulary acquisition is also not linear. In other words, some forgetting of learned words is likely to occur. According to Schmitt (2000: 129), partial vocabulary knowledge should be viewed as being in a state of flux, "with both learning and forgetting occurring until the word is mastered and fixed in memory." This natural process of forgetting, also called attrition, can be observed for both long-term and short-term learning. In the case of short-term learning, most forgetting occurs shortly after the end of the learning session. After that major loss, the rate of attrition decreases (Nation, 2001, 2013). In terms of pedagogical implications, this means that teachers/learners should review the newly learned words shortly after their first encounter, and then gradually less frequently; this is the principle

of expanding rehearsal (Pimsleur, 1967; Baddeley, 1990). Researchers have thus long argued for the need to include a recycling component in any vocabulary teaching syllabus.

6.3. Approaches to vocabulary teaching

Broadly speaking, there are two main approaches for acquiring L2 vocabulary: intentional (or explicit) and incidental (or implicit). Intentional learning focuses attention directly on the words to be learned: the novel vocabulary is noticed, and the learner deliberately attends to it. In incidental learning, on the other hand, the new vocabulary is acquired without the L2 learners being aware of it. The learning occurs as a by-product of the activity in which they are taking part (e.g. reading a book). It is uncontroversial that intentional learning gives the greatest chance for acquiring a word, and its advantage over incidental learning has been clearly demonstrated by previous research (Laufer, 2003; Lin & Hirsh, 2012). However, it is time-consuming and laborious, and thus not suitable for acquiring all the words that are needed for proficient language use. The enjoyment gained from reading books or watching films makes incidental learning a much more appealing process, but the lack of focused attention means that it is a slow one, as more word exposures are needed as a consequence. Furthermore, the language input is unpredictable, and may not provide the necessary amount of recycling and repetition required for successful and durable word acquisition (see 6.2). Therefore, the consensus is that both incidental and intentional learning are necessary, and should be seen as complementary approaches to L2 vocabulary learning (Hulstijn, 2001). For acquiring highly frequent and thus useful words in a fast and efficient manner (such as the 2,000 most frequently occurring words in English; Read, 2004), intentional learning is better, whilst more infrequent words may be left to incidental learning.

This view has been endorsed by Nation (2001, 2013), who further argued for the place of systematic, language-focused instruction as an essential part of a language course. Nation (2002) defined language-focused instruction as learners directing their

attention to language items not for producing or comprehending a particular message, but for gaining knowledge about the item as a part of the language system. Therefore, it can be seen as the opposite of more popular communicative approaches to language teaching, which are thought to help students achieve greater fluency through gaining wide and varied exposure to the words in context. In a similar vein, Laufer (2005, 2010) argued that form-focused instruction is indispensable for L2 lexical acquisition, and that word-focused instruction is more effective for L2 vocabulary learning than incidental word acquisition from input. Her extensive survey of the literature on the subject (2003) clearly showed that word-focused tasks (with or without reading) resulted in consistently greater gains in word knowledge compared to reading alone. Following R. Ellis (2001), she identified two types of word-focused instruction: Focus on Form which requires learners to attend to words in order to perform authentic communicative tasks (such as looking up unknown words in a dictionary during an authentic reading task), and Focus on Forms which requires learners to practise discrete lexical items in non-communicative, non-authentic language tasks (such as completing textbook exercises or learning word pairs). The latter (Focus on Forms) has repeatedly been shown to lead to superior vocabulary learning gains in comparison with reading, whether combined or not with Focus on Form instruction, by previous research (Paribakht & Wesche, 1996; Zimmerman, 1997; Laufer, 2006; Peters, 2006; Agustín Llach, 2009; Peters, Hulstijn, Sercu & Lutjeharms, 2009; Amiryousefi & Kassaian, 2010; Sonbul & Schmitt, 2010).

Finally, not only do some kinds of words appear more suitable to either intentional or incidental learning, but some kinds of word knowledge also seem to be more responsive to either approach. As seen in the previous section, the different knowledge components of a word are typically acquired at different rates. For example, it will typically take L2 learners a long time to develop reliable intuitions of a word's frequency and collocational behaviour, since they will need to be exposed to the word numerous times in varied contexts. This makes incidental learning the more suitable approach for such knowledge aspects. Similarly, mastery of word form might best be gained incidentally since, as argued by N. Ellis (1997), orthography and phonology have regularities to which learners become progressively attuned as a result of gaining proficiency in the target language (e.g. an English word may begin with the consonant

cluster *sk* as in *skip*, but not with the consonant cluster *ks*). Mastery of word meaning, on the other hand, is according to N. Ellis more amenable to explicit learning, particularly by means of guessing a word's meaning from context, using imagery, and connecting meanings to forms.

6.4. The Involvement Load Hypothesis: Empirical evidence

We have seen that explicit, language-focused instruction allows for more efficient word acquisition as it involves direct focus on the words to be learned. But how should words be focused on, and what amount of focus is adequate? An important line of enquiry in vocabulary acquisition studies has revolved around the Involvement Load Hypothesis developed by Hulstijn and Laufer (2001), which contends that retention of words is contingent upon the amount of task-induced involvement. In other words, the chances of acquiring a word are dependent on how much learners engage with the words via the type of task used to learn them. The Involvement Load Hypothesis has been derived from the depth of processing hypothesis in the field of psychology, which states that the more one manipulates, thinks about, and uses mental information, the more likely it is that this information will be retained (Craik & Lockhart, 1972; Craik & Tulving, 1975).

Hulstijn and Laufer (2001) have conceptualised involvement load as consisting of three components: need (N), search (S), and evaluation (E). The need component refers to the drive to comply with the task requirements related to the unknown words. It is the motivational, non-cognitive dimension of involvement. Depending on whether it is self-imposed by the learner or imposed from the outside, it can be strong or moderately strong. The two other components, search and evaluation, are the two cognitive dimensions of involvement closely dependent on attention to the form of the vocabulary items. Search refers to the attempt to find the meaning of an unknown L2 word, whilst evaluation is the process involving a decision about the meaning of the unknown word (typically, a comparison of its meaning with those of other words) or its proper use in a specific context. All three components are quantifiable in terms of prominence. If a component is absent (-), it gains a score of zero. If it is moderately

present (+), it gains a score of one. If it is strongly present (++), it gains a score of two. The upshot is that the higher the scores of need, search, and evaluation for any given learning activity, the greater the involvement load induced by it. It is worth noting that the Involvement Load Hypothesis has been the focus of a large number of studies. For the present literature review, I have prioritised those which I deemed the most carefully executed, and whose findings are most relevant to the research questions addressed in this study.

The pioneer Involvement Load Hypothesis study by Hulstijn and Laufer (2001) compared the relative effectiveness of three incidental vocabulary learning tasks in Dutch and Israeli EFL settings: reading only (+N, -S, -E = 1), reading followed by fill-in exercises (+N, -S, +E = 2), and composition writing (+N, -S, ++E = 3). Whilst the writing task was superior to the other two in both settings, thus supporting the validity of the Involvement Load Hypothesis, the reading plus fill-in task was superior to the reading task in the Israeli setting only. In a study by Keating (2008), 79 beginning learners of Spanish completed one of three vocabulary learning tasks that varied in the amount of involvement load they induced: reading comprehension (no effort), reading comprehension plus fill-in task (moderate effort), and sentence writing (strong effort). Participants were tested on their receptive and productive knowledge of the target words on an immediate and a delayed post-test two weeks later. Results showed that, as expected from the Involvement Load Hypothesis, retention was highest in the sentence writing task, lower in the reading plus fill-in task, and lowest in the reading comprehension task. Kim (2008) attempted to test the validity of the Involvement Load Hypothesis by conducting two experiments involving adult ESL learners at two different proficiency levels (undergraduate university students and students in an intensive English programme). Whilst results of the first experiment showed that a higher level of learner involvement during a task promoted significantly more initial vocabulary learning and better retention of the new words, the second experiment showed that tasks with identical involvement loads (+N, -S, ++E) were equally effective. The effect of English proficiency level on initial learning and retention of vocabulary was not found to be significant.

The above studies thus provide at least partial evidence for the Involvement

Load Hypothesis, suggesting that the degree of success in acquiring new words can be predicted by the type of task in which the words are introduced and practised. However, some other studies have led to different results, suggesting that involvement load may not be the only factor at play in predicting the effectiveness of a given vocabulary learning activity.

6.5. Beyond involvement load: Other parameters for effective word acquisition

A study by Bao (2015) investigated the effect of sentence-context task type on EFL learners' productive and receptive knowledge of 18 target words. Each of their five classes of Chinese university students was randomly assigned to one of five tasks for learning the words through sentence reading exercises. With the exception of the control task which induced no involvement load, all four word-focused output tasks induced the same or different involvement loads. The definition, combining and translation tasks induced an involvement load index of 2 (+N, -S, +E), whereas the writing task induced an involvement load index of 3 (+N, -S, ++E). Results showed that, whilst all the output tasks were more effective than the control task on both receptive and productive measures of knowledge, their relative effectiveness did not always mirror their relative degrees of involvement load.

For receptive vocabulary knowledge, the definition task was found to be superior to the other three tasks. Although the translation and writing task groups showed no significant difference in scores, the writing task group performed significantly better than the combining task group. For productive knowledge, the definition, translation and writing task groups showed no significant difference, but all significantly outscored the combining task group. Whilst the definition task provided learners with a strong contextual clue, the combining task provided learners with incomplete sentence fragments which the author suspects might have weakened the contextual clueing. Thus, according to Bao, the differences in quality of contextual

clueing might have explained the superiority of the definition task on the receptive knowledge measure, and conversely, the inferior performance of the combining task group on the productive knowledge measure. Additionally, because the definition task was the only task requiring repeated evaluation and comparison between the different target words (and thus multiple encounters with them), he concluded that a word exposure frequency effect might also have played a part in his study.

Folse (2006) examined the effect of the type of written exercise on L2 vocabulary retention of 154 ESL university students, with proficiency levels ranging from lower-intermediate ($N = 50$) to upper-intermediate ($N = 51$) and advanced ($N = 53$). The target vocabulary was learned under three 'type of written exercise' conditions: one fill-in-the-blank exercise, three fill-in-the-blank exercises, and one original sentence writing exercise (the latter involving a higher level of involvement load than the first two). Results showed that mean scores for the three exercise types were significantly different from each other, with words practised under the three fill-in-the-blank exercises condition retained better than those practised under either of the other two exercise conditions. This suggests that, rather than the depth of processing required to complete the exercise task, a more important factor for predicting its effectiveness might be the number of retrievals of the target word required. As pointed out by the author, this finding is in line with the psycholinguistic and educational psychology research on rehearsal (Baddeley, 1990) and distributed practice (Atkins & Baddeley, 1998).

This would appear as rather good news for teachers, as it would suggest that simple, rather superficial exercises requiring little time to design and implement can be very effective for acquiring new vocabulary, so long as they provide multiple encounters to the new words. In a similar vein, Lee and Hirsh (2012) found that three sets of multiple-choice question exercises led to greater vocabulary gains for their 131 EFL secondary school students than one original sentence writing task on an immediate post-test adapted from the Vocabulary Knowledge Scale (Paribakht & Wesche, 1993). The authors concluded that, similar to Folse's (2006) study, the number of word retrievals generated by a task is a more relevant predictor of vocabulary acquisition than the amount of involvement load induced by it. However, the differences in gains across

task types were not statistically significant on the delayed post-test two weeks later.

These findings, however, have been challenged by Laufer and Rozovski-Roitblat (2015). In this study, the authors examined how learning new words was affected by three task type conditions (reading only, reading with a dictionary, and reading coupled with word-focused exercises), three number of encounters conditions (two-three, six-seven, and 18-21), and the combined effect of the two factors. Their 185 EFL learners were divided into three groups (one group in each task condition) and exposed to 30 target words via three 'number of encounters' conditions (10 words in each condition) during 11 weeks. They were tested on four degrees of knowledge of the target words via unannounced delayed post-tests two weeks later: form recall, meaning recall, form recognition and meaning recognition.

The authors found that the 'reading coupled with word-focused exercises' task yielded the best scores, regardless of the type of word knowledge assessed and number of encounters with the target words. For example, only two-three exposures to words in the word-focused activities led to greater gains than 18-21 exposures to words in the reading-only condition for all four degrees of word knowledge. They also yielded better results than six-seven exposures to words in the 'reading with dictionary' condition for three degrees of knowledge. They thus concluded that the type of task used for presenting and practising new words must be a more relevant factor in predicting vocabulary acquisition than the number of exposures to the words; i.e. that what learners do with the word may be more important than how many times they encounter it.

Finally, Khoii and Sharififar (2013) investigated the effects of two intentional learning strategies, rote memorisation and semantic mapping, on L2 vocabulary acquisition. Rote memorisation refers to the process by which new words are committed to memory through sheer repetition, whereas semantic mapping is a visual strategy involving the drawing of a diagram displaying words related to one another (drawing on students' background knowledge or schema). A total of 38 intermediate EFL learners were divided into two experimental groups, each using one of the two strategies for word learning. A multiple-choice vocabulary post-test given to both groups after the four-month treatment period showed no statistically significant differences in their

mean scores. Whereas the rote memorisation task induced a lower level of processing and involvement load (+N, -S, -E = 1) than semantic mapping (+N, ++S, +E = 4), it was shown as equally effective in promoting vocabulary acquisition in their study. They concluded that, despite the criticism targeted at rote memorisation as a vocabulary acquisition task, it can be just as useful as other strategies which, although popular, may require more time and energy to implement.

Furthermore, as pointed out by the authors, the rote memorisation technique is still practised in the classroom by many language teachers, in spite of it being perceived as outdated and old-fashioned in the context of current L2 language programmes by the research community (Read, 2004). Although contextualised vocabulary learning is more authentic and tends to be perceived as more effective than learning words in lists, it may not be so when tested empirically. As argued by Khoii and Sharififar, one possible explanation for the effectiveness of list learning could be that it is not necessarily shallow, and may involve a wide range of powerful mnemonic techniques (Laufer, 2010) enabling the acquisition of new vocabulary in the shortest possible amount of time. Consequently, they advised that “the value of rote memorization of word lists through repetition in vocabulary learning should be revisited and perhaps given a more substantial place in foreign language settings where access to L2 input is far too limited in out-of-class contexts” (p. 208).

6.6. The present study (Study 3)

The above review of the literature has shown that L2 vocabulary acquisition is a complex and multi-faceted process, but that for fast and efficient learning of basic word knowledge components such as the form-meaning link, intentional, word-focused learning activities are best. Whilst the relative efficiency of these activities may depend on the degree of involvement load they induce, the research shows that it is not always the case. Notably, repeated exposures to the items might be a more relevant parameter. In addition, simple memorisation techniques may in fact lead to more effective acquisition. However, the bulk of the research has been concerned with the acquisition

of single words, and it is unclear to what extent the findings apply to multi-word units such as phrasal verbs. Therefore, the present study will look at L2 acquisition of phrasal verbs through three intentional, word-focused learning methods among the most commonly used by teachers and learners, involving various amounts of involvement load and word exposures: rote learning (+N, -S, -E = 1), textbook exercises (+N, -S, ++E = 3) and guessing from context (+N, +S, +E = 3). The two following questions will be answered:

- 1) Can phrasal verbs be effectively taught and learned using intentional/explicit, word-focused learning tasks?
- 2) Does the type of explicit learning task make a significant difference in short-term and longer-term learning gains? In particular, can the involvement load and repeated retrieval of items induced predict their success?

6.6.1. Selection of target items

The previous study investigated the productive knowledge of 128 university students on a sample of the most frequent phrasal verbs and meaning senses in English, and the several factors affecting this knowledge. Since the present study aimed to compare the acquisition of unknown phrasal verbs through different learning conditions, the two main criteria for selecting the items were that they should be likely to be unknown to the participants, and that they should all present a similar level of learning difficulty so I could be confident that a potentially significant score variation was attributable to the learning condition rather than to the items. The length of the treatment was to be one hour (including the teaching, testing and flushing activities), so I estimated that the maximum number of items I could introduce to the students without them being overwhelmed by the learning load was around 20. I also anticipated that participants would complete the tests at a rate of around two items per minute, so that 20 items tested at two levels of word knowledge would approximate a 20-minute testing time which seemed a reasonable target.

In order to make sure that all target phrasal verbs were equally difficult to learn, I decided to control for a number of their formal and semantic properties. Laufer (1997) identified a number of intralexical factors that affect the learning of individual words based on previous research, the main ones being pronounceability, orthography, length, morphology, synformy, part of speech, abstractness, specificity and register restriction, idiomaticity, and multiplicity of meaning. Not all of these were relevant in the case of phrasal verbs, so I decided to choose only a few which were deemed likely to have an effect on ease of learning in my study. These were: number of syllables (I selected two-syllable phrasal verbs only), number of letters of the verb component (four letters only), frequency of the verb component (the verb should not be among the most common phrasal verb-producing verbs or featuring in the PHaVE List), particle type (the phrasal verbs should contain particles among the following only: *up*, *down*, *in*, *out*, *on*, *off*, equally distributed across the three learning conditions), and degree of semantic opacity (the phrasal verbs should all have a figurative meaning).

With these criteria in mind, I chose to consult the *Collins COBUILD Phrasal Verbs Dictionary* (3rd ed., 2012) for my search, as it includes over 4,000 phrasal verbs extracted from a regularly updated corpus of over 4.5 billion words taken from authentic sources. This ensured that the selected phrasal verbs would be reflective of contemporary language use. I arrived at a list of more than 100 items, which I trimmed down by almost half by discarding items reported as having an informal or very informal register. The final list of items to be included in the treatment was established after the participants were given a pre-test (see 6.6.4) and featured 18 phrasal verbs, which can be found in alphabetical order along with their definitions in the table below. The definitions were between four and 11 words long (six words long on average) and were adapted from the *Collins COBUILD Phrasal Verbs Dictionary* (2012) in order to ensure they would contain no unknown words to my L2 participants.

Table 12. Final list of 18 target phrasal verbs included in the treatment in alphabetical order

Phrasal verb	Definition
Blot out	Try not to think about something
Boil down	Keep only the most important part of something
Crop up	Happen or appear suddenly
Dust off	Start using something again after a long time
Harp on	Keep talking about something in an annoying way
Hash out	Discuss and agree the details of something
Haul in	Force someone to go somewhere
Mark off	Make someone different from someone else
Muck in	Help someone with a task
Nail down	Manage to describe or identify something
Palm off	Give or sell something in order to get rid of it
Plod on	Continue doing something without interest
Rack up	Get a large number or amount of something
Reel in	Attract someone to make them do something
Roll out	Make something available to the public
Slap down	Disagree with or criticise someone
Spur on	Encourage someone to do something
Vamp up	Make something look more attractive

6.6.2. Teaching materials

Once the target items were selected, the next step was the design of the teaching materials that would be given to the participants during the main treatment session. Because of time restrictions, I had to make sure that the three explicit word-focused tasks would not take too much time to complete (i.e. 10 minutes maximum for each).

For the rote learning activity, the participants were given a list of six phrasal verbs (in bold) and their definitions to memorise. The following is an example of one phrasal verb on the list:

Crop up: Happen or appear suddenly

For the textbook exercise activity, the participants were given another list of six phrasal verbs (also in bold) and their definitions which they had to use to complete a series of exercises, thus ensuring multiple retrievals of the given phrasal verbs. After consulting a number of English learning resources (textbooks and websites), I settled on three standard vocabulary exercises which seemed to be the most commonly used: a matching exercise (in which students had to match the beginning of a sentence with its ending), a fill-in-the-blanks exercise (in which they were asked to insert the missing phrasal verb in each sentence as appropriate) and a write-your-own-sentence exercise (in which they had to produce a sentence using each phrasal verb). The following are examples of the matching and fill-in-the-blanks exercises for one phrasal verb on the list (*spur on*):

It was his ambition ————— that spurred him on

We would never have finished our project if the teacher hadn't us

The exercises were presented in ascending order of difficulty, i.e. the matching exercise first, followed by the fill-in-the-blanks exercise, ending with the write-your-own-sentence exercise. The first two exercises included six sentences each (one per target phrasal verb), which I devised using high-frequency words only (i.e. words belonging to

the first 2,000 and 3,000 frequency bands and the Academic Word List; Coxhead, 2000) and ensuring that enough context was provided so the choice of which phrasal verb to use was immediately obvious.

For the third learning activity, guessing from context, the participants were asked to read six independent paragraphs of text and to guess the meaning of the phrasal verb embedded in each. Similarly to the textbook exercise task, each passage was written using words belonging to the 2,000 and 3,000 frequency bands or the Academic Word List in order to maximise comprehension. All target phrasal verbs were bolded and underlined within each passage in order to make them more salient. The following is an example of one reading paragraph for the phrasal verb *dust off*:

When I was a teenager I had two favourite hobbies: listening to music and playing tennis. I was good at tennis, but since I started my job I've been a very busy man. But now I think it's time to **dust off** that racket and get back on the court!

The passages were very short (around 50 words each) due to time restrictions, which means that the participants had to read 300 words (50 x six passages) in total. Given that proficient readers have been found to read between 200 and 300 words per minute for most types of text (Carrell & Grabe, 2002), I was confident that 10 minutes would be more than enough time for the participants to read the passages and guess the meanings of the embedded phrasal verbs.

The complete teaching materials can be found in Appendix 17. They were reviewed and approved by an educated native speaker of English prior to administration. An alternative version was created, in which the order of the rote learning activity and the guessing from context activity was swapped. This was done in order to control for a possible fatigue effect on the part of participants. The 18 target items were spread across the three conditions as shown in the following table. Care was taken to avoid orthographic and phonological similarities between the phrasal verbs in each condition so as to avoid possible cross-association effects.

Table 13. Distribution of target phrasal verbs across the three learning conditions

Condition 1	Condition 2	Condition 3
Rote learning	Textbook exercises	Guessing from context
Plod on	Haul in	Harp on
Crop up	Boil down	Reel in
Muck in	Mark off	Dust off
Slap down	Rack up	Nail down
Hash out	Spur on	Vamp up
Palm off	Roll out	Blot out

6.6.3. Test format

Since the treatment involved teaching the form-meaning knowledge aspect of the target phrasal verbs, a choice of test format had to be made between the four possible form-meaning constructs (form recall, form recognition, meaning recall, meaning recognition; Schmitt, 2010). Although including all four would have allowed for the finest-grained insight into the participants' learning gains, only two could be administered due to time constraints. Since a key notion in vocabulary acquisition research is that learning a word is a slow, incremental process, I decided to select one recall format and one recognition format in order to tap into word knowledge at different levels of sensitivity. Despite the fact that recognition formats typically induce guessing behaviours and lack ecological validity (see 5.7.2), they are useful for detecting small, initial amounts of learning gains which are typically left unnoticed by recall test formats.

The choice between using a form recall/recognition format or a meaning recall/recognition one was made based on the nature and anticipated level of difficulty

of the treatment. Because it involved learning 18 multi-word units in a short space of time, with possible cross-association risks due to formal similarities between them, I expected it to be quite challenging even for advanced learners of English. As we have seen in the previous chapter (5.2), form recall is generally considered to be the highest, most difficult level of word knowledge, and learners typically establish meaning recall first (Schmitt, 2010). Similarly, form recognition (where the meaning is given and the form has to be selected among a number of options) may be a marginally more demanding test format than meaning recognition (where the form is given and the meaning should be selected among a number of options) (Laufer, Elder, Hill & Congdon, 2004; Laufer & Goldstein, 2004). Therefore, meaning recall and meaning recognition were deemed to be the more suitable constructs to test in order to match the level of the students.

The ordering of the phrasal verbs was the same on both test formats and followed an ‘item from condition 1 - item from condition 2 - item from condition 3’ pattern. On the meaning recall test, participants were instructed to give as clear and precise definitions as possible (using their own words if they wished) so as to reduce the possibility of obtaining partial or vague answers, which is a risk commonly associated with meaning recall formats (see 5.7.2). An example of the meaning recall test for the phrasal verb *crop up* is shown below:

Phrasal verb	Meaning/definition
1) Crop up	

In order to curb potential guessing attempts on the meaning recognition test, an ‘I don’t know’ option was included for each item, which participants were asked to circle if they did not know its meaning. The three distractors were definitions corresponding to other phrasal verbs learned under the same condition. The following is an example for the phrasal verb *crop up*:

Crop up

- a. Continue doing something without interest or enthusiasm
- b. Discuss and agree the details of something
- c. Help someone with a task
- d. Happen or appear suddenly
- e. I don't know

The correct answer is d., and the three distractors (a. b. and c.) are the definitions of *plod on*, *hash out*, and *muck in* which are other phrasal verbs appearing in the rote learning task. All phrasal verb definitions appeared four times in total (once as the correct answer and three times as distractors).

The complete testing materials can be found in Appendix 19. In order to assess the participants' longer-term retention of the target phrasal verbs, they were administered again one week after the teaching session.

6.6.4. Pre-tests and teaching/testing treatment piloting

Since L2 learners commonly find phrasal verbs challenging, and the previous chapter (Study 2) showed that even presumably advanced learners struggle with the most frequent phrasal verbs and their most frequent meaning senses, I expected that very few of these lower-frequency phrasal verbs would be known by participants in this study. Nevertheless, as advised by Schmitt (2010), it is always safe to check the degree of pre-existing knowledge by pre-testing the participant group, so we can be sure that the tested items are known as a result of the treatment and not of previous exposure. The pre-test given to all participants included a total of 30 phrasal verbs among those pre-selected in the *Collins COBUILD Dictionary* (see 6.6.1) and was presented in a meaning recognition format. Because meaning recognition is the first/easiest level of word knowledge, I could be confident that the items which were given incorrect answers were truly unknown by the participants. Similarly to the final version, the pre-

test included an 'I don't know' option in order to limit guessing attempts. The correct definition for each item was accompanied by three other definitions used as distractors, used only once across the test.

The pre-test was administered to all participants one week before the teaching treatment. Participants were asked to indicate their L1 and level of English along with their names on the first page. The analysis of the results showed that most of the phrasal verbs were unknown, but that some guessing occurred. Among the 18 phrasal verbs that were eventually selected, seven were known by one participant, four were known by two participants, and two were known by three participants. Although actual knowledge of the items could not be verified, these 21 cases were discarded in the data analysis stage.

In order to check for the feasibility and practicality of the teaching and testing treatments, the final materials were administered to two educated native speakers and one educated non-native speaker of English. This was done in order to check that the instructions and sentence contexts were clear, and that everything could be completed within the allocated time limit. The feedback was positive, and the materials were completed within 30 minutes by all three test-takers. This made me confident that the non-native participants would be able to complete them within an hour with ease.

6.6.5. Participants

The participants were 30 non-native speakers of English, recruited from three different educational institutions in the UK: the University of Nottingham ($N = 20$) and two international language schools in Cambridge, the Central Language School and Regent Cambridge ($N = 10$). Their age ranged between early twenties and late thirties, and they had a range of different L1s (15 Chinese, four Spanish, three Portuguese, three Arabic, two French, one Ukrainian, one Vietnamese, and one Japanese). They had different backgrounds and L2 learning experiences, and different motivations for following their course of study. The students from the University of Nottingham were either on their third year of undergraduate studies on a BA in English course or on a MA course in Applied Linguistics and English Language Teaching. Due to the high English language

entry requirements for students applying for such courses (IELTS 7.0 or equivalent), I expected a level of proficiency that could be qualified as advanced for those 20 students, who indeed reported having a C1-C2 proficiency level on the CEFR (Common European Framework of Reference for Languages). The students from the two international language schools in Cambridge were enrolled in either intensive or part-time English courses, with ambitions ranging from experiencing the British culture to entering a British university or getting job promotions in their home countries. Although I could observe some differences in their level of communicative ability, I assumed that their level of proficiency could broadly be labelled as intermediate. This was confirmed by their reporting of B1-B2 proficiency levels on the CEFR.

6.6.6. Test administration

The research design was a standard T1 (Test 1/pre-test) - Treatment - T2 (Test 2/immediate post-test) - T3 (Test 3/delayed post-test), administered over two weeks. At the onset of the teaching session, all participants were given an information sheet in which the purpose of the research was explained, followed by a consent form emphasising the voluntary nature of the participation and the confidentiality of the data (see Appendices 15 and 16). They were made aware that they would be introduced to some phrasal verbs and tested on their subsequent learning gains. The international language school students started with the rote learning task, followed by the textbook exercise task and the guessing from context task, whereas the University of Nottingham students did the guessing from context task first and the rote learning task last. A completion time allowance of 10 minutes was given for both the textbook exercise and guessing from context tasks. Each was followed by oral corrective feedback in order to check that all participants got the correct answers and guessed meanings successfully. The rote learning task was done in a shorter space of time (five minutes), as 10 minutes was found to be too long at the piloting stage.

After all three tasks were completed and before administering the immediate meaning recall and meaning recognition post-tests (all in pen-and-paper form), all participants were given the 2,000 and 5,000 levels of the Vocabulary Levels Test

(Schmitt, Schmitt & Clapham, 2001; see Appendix 18) to complete in 10 minutes. As well as allowing me to get a good picture of my participants' level of vocabulary knowledge, the administration of the VLT served as a flushing activity between the teaching and testing stages, taking the participants' focus on the newly acquired phrasal verbs away for a short amount of time before the testing started. The choice of the VLT over other well-known vocabulary tests was made for two reasons: it is a long-established test that is very widely used and with considerable validity evidence to support it (Read, 1988; Beglar & Hunt, 1999; Schmitt et al., 2001), and it produces a profile of knowledge at various frequency levels corresponding to key goals in vocabulary learning (such as the ability to engage in daily conversation and to read authentic texts).

The meaning recall and meaning recognition tests were completed in approximately 20 minutes. Once the participants had completed the meaning recall test, they were asked not to go back to it and to proceed with the meaning recognition test. After the tests were collected, the participants were thanked for their cooperation and encouraged to ask any questions they had. They were also reminded to take part in the following week's session, but not told what the session would involve. All teaching and testing sessions were administered on the premises of the University of Nottingham and the two international language schools in Cambridge.

6.6.7. Data analysis

The maximum total score on both meaning recall and meaning recognition tests was 18, based on one point per correct phrasal verb. For the meaning recall test, an answer was judged correct if the participant provided an accurate definition of the phrasal verb meaning. In the vast majority of cases, participants provided clear and precise answers as they were instructed to do. In the few cases where answers were deemed vague or ambiguous, an educated native speaker of English was consulted. These answers were then marked as correct only if he judged them to be acceptable. Accurate spelling or grammar was not necessary for the answer to be judged correct, as long as the intended

meaning was clear. Once test scoring was completed, the data was imported into Excel spreadsheets and IBM SPSS (22.0) for analysis.

6.7. Results and discussion

6.7.1. Can phrasal verbs be effectively taught and learned using intentional/explicit, word-focused learning tasks?

Previous research has shown that intentional, word-focused learning was the most efficient way of acquiring novel vocabulary as far as the form-meaning link was concerned. However, the bulk of the research has until now mostly involved the learning of single words, whilst it is widely known that formulaic sequences, and phrasal verbs in particular, are more difficult to acquire for L2 learners. Therefore, one of the two main research questions underlying this study was whether unknown phrasal verbs could effectively be acquired and retained through using the same intentional, word-focused tasks which have proved conducive to efficient acquisition and retention of individual words in past research.

In order to answer this question, 20 non-native university students and 10 non-native international language school students were taught 18 phrasal verbs under three intentional, word-focused learning conditions: rote memorisation, textbook exercises, and guessing from context. Their short- and longer-term acquisition of the target items was measured by immediate and delayed post-tests in a meaning-recall and meaning-recognition format. The following table presents the descriptive statistics of the immediate and delayed scores they obtained on the two test formats.

Table 14. Descriptive statistics of the participants' learning gains (*Max* = 18)

	Min	Max	Mean	SD
Meaning recall immediate post-test	1	18	10.7	4.7
Meaning recognition immediate post-test	5	18	13.8	3.5
Meaning recall delayed post-test	0	15	4.6	3.6
Meaning recognition delayed post-test	3	18	9.2	3.7

As we can see, the mean scores are relatively high considering the short length of the treatment. On the immediate post-tests, the meaning of more than half of the items (10.7) was successfully recalled and was recognised for more than two-thirds (13.8). On the delayed post-tests, the meaning of one-quarter (4.6) was successfully recalled and was recognised in about half (9.2) of the items. The figure below illustrates average learning gains as measured on the meaning recall and recognition tests (immediate and delayed).

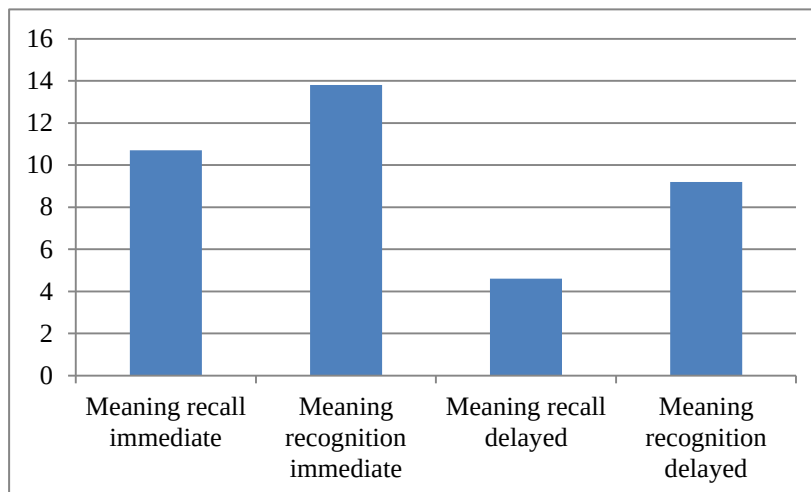


Figure 2. Average learning gains as measured on the meaning recall and recognition tests (immediate and delayed)

A number of observations can be made from these results. First, the average scores were lower on the meaning recall tests than on the meaning recognition tests for both immediate and delayed conditions. This was predictable since producing the meaning/definition of a word is more demanding than selecting its definition among a number of possible options, and requires a higher level of word knowledge. Second, the scores were higher on the immediate post-tests than on the delayed post-tests, suggesting that some items were forgotten between the two testing sessions. As seen in 6.2, this attrition phenomenon is a natural fact of learning and occurs even in cases when words are relatively well entrenched in memory, and so it is not surprising that it should have occurred in the present study. Interestingly, we can see from the figure that the gap between the meaning recall and meaning recognition scores is wider on the delayed post-tests, suggesting a higher attrition rate for meaning recall knowledge than for meaning recognition knowledge. This visual impression was confirmed by manual calculations. Mean attrition rates are shown in the table below.

Table 15. Mean attrition rates of meaning recall and meaning recognition knowledge

	Meaning recall	Meaning recognition
Attrition rate	57 %	33.7 %

More than half of the phrasal verbs whose meaning had been successfully recalled on the immediate post-test were forgotten on the delayed post-test, whereas one-third of the phrasal verbs whose meaning had been successfully recognised on the immediate post-

test were forgotten on the delayed post-test. These results seem to support what previous studies into word attrition have shown: that more advanced knowledge is more likely to be lost than more superficial knowledge (Cohen, 1989; Olshtain, 1989; although see Schmitt, 1998, for contrary results). The attrition rates in the present study are also quite high, and lend further support to the importance of recycling and reviewing newly learnt vocabulary shortly after the teaching session. In the case of explicit teaching, this means that recycling has to be consciously incorporated into the syllabus (Schmitt, 2000).

One study by Alali and Schmitt (2012) investigated and compared different conditions for L2 learning of individual words and multi-word units. Their participants, 35 EFL Arabic students having previously studied English for between six and seven years, were taught 30 idioms and 30 single words over the course of 12 one-hour class sessions (six used for teaching and six used for administering delayed post-tests 12 days after). The teaching sessions involved five stages: teaching the items with their Arabic translations (with one minute spent for each item), followed by a non-related distracter task, a review treatment varying between three methods (no review, oral review, and written review of the items), another distracter task to flush the students' memory of the items, and an immediate post-test measuring the students' knowledge of the target words and idioms, using all four form-meaning knowledge constructs. Although the teaching methods and time spent on the items were different from those used in the present study, the overall treatment was broadly similar for the items taught under the no review condition, and thus a direct comparison of results is relevant. The following table presents the learning gains of Alali and Schmitt's participants on their meaning recall and recognition measures of knowledge (immediate and delayed) for both single words and idioms (no review condition), along with my participants' phrasal verb learning gains on the same tests, expressed in percentage figures.

Table 16. Comparison of learning gains in single words, idioms (Alali & Schmitt, 2012) and phrasal verbs (present study) on meaning recall and recognition measures of knowledge (immediate and delayed)

	Meaning recall immediate	Meaning recognition immediate	Meaning recall delayed	Meaning recognition delayed
Single words	59 %	100 %	21 %	99 %
Idioms	45 %	99 %	8 %	98 %
Phrasal verbs	59.4 %	76.8 %	25.6 %	50.9 %

In terms of meaning recall measures of knowledge, we can see that the learning gains obtained for phrasal verbs in the present study were very close to those obtained for individual words in Alali and Schmitt's study, and much higher than those obtained for idioms. This is true on both immediate and delayed post-tests. In terms of meaning recognition however, the learning gains for phrasal verbs differ quite dramatically from those obtained for single words and idioms, especially on the delayed post-test where they are much lower. One possible explanation for this discrepancy in results may reside in the type of distractors used on my meaning recognition test, which were definitions of other phrasal verbs taught in the same class and under the same learning condition as the target item. This means that some degree of cross-association might have occurred. The distractors used by Alali and Schmitt, on the other hand, were L1 translations of other words or idioms that were not part of the treatment, which may have made elimination strategies easier. However, if we consider that only recall formats are useful in describing usage-based mastery (Schmitt, 2010), then my results are very encouraging and show that phrasal verbs can be effectively learned in the classroom context just like individual words, and perhaps even better than other types of formulaic sequences.

Since the participants came from two different types of educational institutions

(international language schools and a university) and had two different English proficiency levels (intermediate and advanced), they were expected to perform differently on the tests. This was based on the assumption that higher-proficiency students have a greater language learning experience than lower-proficiency students, and are thus better equipped to learn new words. The two following tables present the descriptive statistics of the learning gains achieved by each group of students.

Table 17. Descriptive statistics of the international language school students' (intermediate group) learning gains (*Max* = 18)

	Min	Max	Mean	SD
Meaning recall immediate post-test	1	11	6.4	4
Meaning recognition immediate post-test	5	16	10.8	3.7
Meaning recall delayed post-test	0	4	2.4	1.4
Meaning recognition delayed post-test	3	9	6.1	2.2

Table 18. Descriptive statistics of the University of Nottingham students' (advanced group) learning gains (*Max* = 18)

	Min	Max	Mean	SD
Meaning recall immediate post-test	3	18	12.9	3.5
Meaning recognition immediate post-test	11	18	15.4	2.2
Meaning recall delayed post-test	0	15	5.7	3.9
Meaning recognition delayed post-test	5	18	10.7	3.3

As we can see, the advanced group of students obtained consistently higher scores than the intermediate group on both meaning recall and meaning recognition tests (immediate and delayed). With the exception of the immediate meaning recognition

post-test, their average scores are in fact twice as high. In order to see whether the differences in scores between the two groups were significant, a series of Mann-Whitney *U* tests (the non-parametric equivalent to independent samples *t*-tests) were conducted. The results showed significant differences in learning gains as measured on all four tests of word knowledge. The advanced group of students scored significantly higher than the intermediate group on immediate meaning recall ($U = 181, z = 3.58, p = .00, r = .65$), immediate meaning recognition ($U = 174, z = 3.28, p = .00, r = .60$), delayed meaning recall ($U = 154.50, z = 2.41, p = .02, r = .44$), and delayed meaning recognition ($U = 179, z = 3.50, p = .00, r = .64$) tests. The effect sizes are large (.60 or above in three out of four tests; Plonsky & Oswald, 2014).

This suggests that, as predicted, higher proficiency relates to greater learning of phrasal verbs. In reality, it is unclear whether this finding could be attributed to the greater word learning experience and task familiarisation of the higher-proficiency students, or perhaps to their higher familiarisation with the phrasal verb structure in general. Schmitt and Redwood (2011: 188) remark that “very few course-books below intermediate level have any explicit or implicit reference to phrasal verbs, and whilst there may be valid pedagogic reasons for this, it does mean that phrasal verb acquisition may lag behind other areas of language at lower proficiency levels”. We could thus speculate that some proficiency threshold may need to be reached in order to “get the hang of phrasal verbs” (Dörnyei, personal communication). Such hypothesis unfortunately could not be tested in the present study, but would undoubtedly deserve research attention in future.

In addition to differences in learning gains, I looked for possible differences in attrition rates between the two groups of students. The following table shows the two groups’ mean attrition rates of meaning recall and meaning recognition knowledge.

Table 19. Mean attrition rates of meaning recall and meaning recognition knowledge by the intermediate and advanced groups of students

	Meaning recall	Meaning recognition
Intermediate students	62.5 %	43.5 %
Advanced students	55.6 %	30.3 %

Again, Mann-Whitney *U* tests were conducted in order to detect potentially significant differences between the groups. Results showed no significant differences in attrition rates both in meaning recall ($U = 101$, $z = .04$, $p = 1$, $r = .01$) and meaning recognition knowledge ($U = 61.50$, $z = -1.70$, $p = .09$, $r = -.31$). These results suggest that attrition of phrasal verb knowledge did not significantly relate to proficiency level in this study. Previous evidence of such phenomenon, however, was found by Hansen, Umeda and McKinney (2002), whose learners with larger vocabulary sizes were found to retain significantly more residual knowledge of their vocabulary.

In order to determine the relationship between vocabulary knowledge and phrasal verb learning in the present study, all participants were given the 2,000 and 5,000 levels of the Vocabulary Levels Test prior to the immediate post-tests. Their scores on each frequency band are presented in the following table. Overall, we can see that the participants had a very high level of mastery of the 2,000 level, with a mean score of 28 out of 30 and a low standard deviation figure suggesting little variation amongst them. Since they had an intermediate to advanced level of proficiency, and were following language classes or university courses in the UK, it is not surprising that they were already familiar with the most commonly used words in the English language. As expected, the 5,000 level proved more difficult, with a mean score of 20 out of 30 and a wider score disparity for both intermediate and advanced students. In summary, participants demonstrated good knowledge of general high-frequency vocabulary, but incomplete knowledge of mid-frequency vocabulary. This was the case even for the university students following BA or MA courses in English at the time of data collection.

Table 20. Participants' scores on the 2,000 and 5,000 levels of the Vocabulary Levels Test (*Max* = 30)

	Min	Max	Mean	SD
Intermediate students 2K	23	29	26.5	2
Advanced students 2K	24	30	28.8	1.6
Total 2K	23	30	28	2
Intermediate students 5K	5	28	18.2	7.4
Advanced students 5K	11	30	21.5	5.3
Total 5K	5	30	20.4	6.2

Pearson correlations were conducted between participants' VLT scores on the 5,000 frequency band and their scores on the meaning recall and recognition tests (immediate and delayed). The results are shown in the following table.

Table 21. Pearson correlation coefficients between participants' VLT scores (5K level) and scores on meaning recall and meaning recognition tests (immediate and delayed)

	Meaning recall immediate post- test	Meaning recognition immediate post- test	Meaning recall delayed post-test	Meaning recognition delayed post-test
VLT 5K	.28	.20	.54**	.25

**. Correlation is significant at the 0.01 level (2-tailed)

A significant positive relationship was thus found between the participants' VLT scores on the 5,000 frequency band and their scores on the delayed meaning recall post-test (r

= .54, $p < .01$). This suggests that participants with higher vocabulary sizes recalled significantly more phrasal verbs on the delayed meaning recall post-test than those with lower VLT scores. In other words, the higher the vocabulary knowledge, the higher longer-term acquisition of phrasal verbs at the meaning recall level of mastery. Conversely, no significant relationship was found between VLT scores on the 5,000 frequency band and scores on meaning recognition post-tests and on the immediate meaning recall post-test. This may be explained by the fact that meaning recognition measures of knowledge typically induce guessing behaviours from participants, and that immediate post-test measures do not reflect a true picture of actual learning. If phrasal verb learning is connected to proficiency (see above), then it is not surprising that VLT scores should be connected to the best, most valid measure of learning (delayed meaning recall).

In summary, my results proved encouraging and compared favourably to those obtained by Alali and Schmitt (2012) on the meaning recall measures of knowledge. This suggests that phrasal verbs can indeed be effectively taught and learned using intentional/explicit, word-focused learning tasks, and just as effectively as single words and idioms. However, the high attrition rates observed (especially at meaning recall level of knowledge) lend further evidence to the importance of repetition and recycling for acquiring new vocabulary. Higher proficiency and vocabulary knowledge were found to relate to higher learning gains of phrasal verbs, but did not lead to significantly less attrition. I will now turn to answering the second research question.

6.7.2. Does the type of explicit learning task (and the involvement load and item exposure induced) make a significant difference in short-term and longer-term learning gains?

Previous research has identified a number of effective techniques for teaching new vocabulary, and come to the conclusion that some seem to be better than others for acquiring certain types of word knowledge (see 6.3). In particular, word-focused learning tasks inducing a high level of engagement with words seem to be particularly conducive to short- and long-term acquisition of form-meaning links. In addition,

intentional learning activities involving multiple retrievals of the new vocabulary, or the use of memorisation techniques to commit the newly learned words to memory, have also proved to be effective. The relative contribution of these different parameters to the success of a learning task has been investigated by some previous studies (see 6.4 and 6.5).

Unfortunately, these studies have mainly been concerned with the acquisition of individual words, and it is unclear to what extent the findings apply to phrasal verbs. Whilst the importance of phrasal verbs has been firmly established throughout this thesis, and evidence shown that the most frequent amongst them were lacking in the vocabulary repertoire of presumably advanced L2 learners of English, a key question is how can phrasal verbs best be taught and learned, and what methods lead to optimal learning and retention. Therefore, the second main research question underlying the present study was whether the type of explicit/intentional task (and the involvement load and item exposure thereby induced) made a difference in short-term and longer-term phrasal verb learning gains by L2 learners on meaning recall and meaning recognition measures of knowledge.

In order to answer this question, 30 participants were taught 18 phrasal verbs under three different conditions (i.e. six phrasal verbs per condition): rote memorisation, textbook exercises, and guessing from context. In order to detect a possible effect of involvement load, the tasks had various involvement load indexes (one for rote learning and three for textbook exercises and guessing from context). With an identical involvement load index (albeit differently distributed), the textbook exercise and guessing from context tasks differed in terms of the number of retrievals of the target items they required. Whilst the textbook exercises involved multiple exposures to the target phrasal verbs, the guessing from context task presented the items once only in a sequential manner. Finally, the inclusion of the rote learning task allowed me to see whether the use of memorisation techniques was able to compensate for a lower involvement load index and shorter amount of time spent on task. Table 22 and Figure 3 show the mean learning gains achieved by participants as measured on the meaning recall and recognition tests (immediate and delayed) by treatment condition (*Max* = 6).

Table 22. Descriptive statistics of participant scores on the meaning recall and recognition tests (immediate and delayed) by treatment condition (*Max* = 6)

Treatment condition	Meaning recall immediate post-test		Meaning recognition immediate post-test		Meaning recall delayed post-test		Meaning recognition delayed post-test	
	M	SD	M	SD	M	SD	M	SD
Rote learning	3.8	1.9	4.6	1.5	1.4	1.4	2.9	1.6
Textbook exercises	3.2	2.2	4.5	1.7	1.6	1.6	3.4	2
Guessing from context	3.1	1.9	4.1	1.6	1.5	1.6	2.8	1.7

In order to identify potentially significant differences in gains between the three learning conditions, I conducted a Friedman test which is the non-parametric alternative to the one-way ANOVA with repeated measures. As seen in the following table, no statistically significant differences in learning gains were found across conditions.

Table 23. Friedman test statistics for effect of learning condition on meaning recall and recognition test scores (immediate and delayed)

	Chi-square (χ^2)	Asymp. Sig. (<i>p</i>)
Meaning recall immediate	3.88	.14
Meaning recognition immediate	2.44	.30
Meaning recall delayed	.48	.79
Meaning recognition delayed	2.14	.34

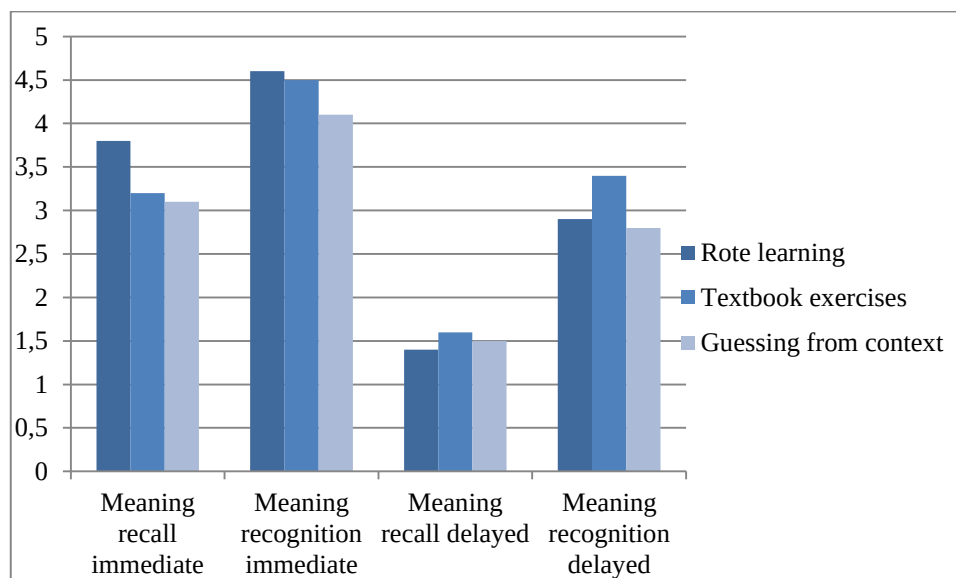


Figure 3. Mean learning gains on the meaning recall and recognition tests (immediate and delayed) by treatment condition

These results thus show that the type of explicit, word-focused task used for acquiring phrasal verbs (rote memorisation, textbook exercises, or guessing from context) did not make a statistically significant difference in the participants' learning gains in this study, both short- and longer-term, and for both meaning recall and meaning recognition measures of knowledge. This suggests that, contrary to findings by previous research in relation to individual word acquisition, such parameters as the degree of involvement load and item exposure did not seem to contribute to task effectiveness in the present study. One possible explanation for this may be that, although different, the three activities had the common trait of involving explicit, intentional learning (contrary to some previous studies). It is very likely that the inclusion of an activity involving purely incidental learning (e.g. reading a book) would have produced significantly different results.

Since the rote memorisation task proved just as effective as the two other tasks which induced a higher involvement load, we may conclude that the Involvement Load Hypothesis did not prove to be a relevant parameter in this study. In other words, it

seems that what learners did with the phrasal verbs did not make a difference in how likely they were to acquire and retain them. Furthermore, the textbook exercise activity which involved multiple encounters and comparisons between the target phrasal verbs did not lead to significantly more learning and retention. This means that contrary to findings by Folse (2006) and Bao (2015), systematic evaluation and comparison of items did not lead to greater learning gains in this study.

Overall, the results thus confirm that involvement load is not the only factor at play in predicting the effectiveness of a given learning activity. Along with Khoii and Sharififar (2013), I conclude that simple strategies such as rote memorisation can be just as efficient for acquiring phrasal verbs as more elaborate and time-consuming explicit learning tasks. In fact, considering the time spent on each task in my treatment (five minutes for rote learning versus 10 minutes for textbook exercises and guessing from context, with additional corrective feedback provided at the end), rote memorisation may be seen as more effective in terms of time efficiency.

6.7.3. Implications for teaching

As pointed out by Khoii and Sharififar (2013: 207), “convictions are strong among many language professionals that contextualized vocabulary learning is more effective than learning words in lists.” However, if L2 learners aim to learn a given set of vocabulary items quickly and efficiently, rote memorisation of word lists may be their best option. This is especially true for students whose home educational system strongly values memorisation as a means of learning new vocabulary. For example, Khoii and Sharififar’s Iranian students were probably very familiar with the rote memorisation strategy, as the dominant educational system in Iran tends to be memorisation-oriented. We may suspect that participants in the present study, half of whom were Chinese, were similarly highly proficient in the use of memorisation strategies for learning new words. This may have contributed to the effectiveness of the rote learning activity to some extent.

Similarly to Khoii and Sharififar, we may tentatively conclude that the choice of vocabulary learning activities incorporated in the classroom should be made in

accordance with the learners and their environment. This is especially true since students' learning preferences are typically shaped by deeply held thoughts, beliefs and perceptions, and so if learners favour specific learning activities and strategies, they are likely to be more proficient at doing or using them and thus gain more from them (Amiryousefi, 2015). Finally, although the use of contextualisation did not seem to promote better learning of phrasal verb form-meaning links in my study, contextualised learning is useful for acquiring more advanced aspects of word knowledge such as collocational behaviour or constraints on use (see 6.3).

What this study clearly showed is that phrasal verbs can indeed be efficiently learned via intentional, word-focused learning activities. In spite of the intrinsic difficulty of phrasal verbs, and the short length of the teaching treatment, very encouraging learning gains were achieved both short- and longer-term (25 % of the target items in the longer-term). These were comparable to those found by previous research for the explicit teaching of single words and idioms (Alali & Schmitt, 2012). Nevertheless, the high attrition rates observed bring further evidence to the importance of reviewing newly learned vocabulary items shortly after the initial learning session, which participants in this study did not do. Just as recycling should be a key component of any vocabulary teaching syllabus (Nation, 2013), it is as crucially important for acquiring phrasal verbs. The significantly greater learning gains achieved by higher-proficiency students with bigger vocabulary sizes may suggest that acquiring phrasal verbs becomes easier as L2 proficiency and general vocabulary knowledge increase. In their endeavour to learn the numerous phrasal verbs and meaning senses included in the PHaVE List, L2 learners may thus greatly benefit from explicit/intentional, word-focused activities of the type investigated in this study, at least in the first instance.

6.7.4. Limitations and suggestions for future research

The present study has the following limitations. First, the teaching treatment was very short (one session of 30 minutes) due to practical constraints. As a consequence, the pace was quite fast and each activity had a completion time limit of 10 minutes or less, which may not reflect a true picture of authentic classroom learning. Previous

classroom-based acquisition studies have typically involved much longer treatment periods, often spanning across several weeks or months (e.g. Alali & Schmitt, 2012). It is thus unclear whether a longer treatment period would have led to different results.

Second, the time allocated for each task was unequal (five minutes for the rote learning task versus 10 minutes for the textbook exercise and guessing from context tasks, both followed by oral corrective feedback), which means that time spent on task may have been a confounding factor in the results. Finally, the group of participants was relatively small ($N = 30$) and unequally divided between intermediate ($N = 10$) and advanced ($N = 20$) levels of L2 proficiency. Although proficiency and vocabulary size were found to be significantly related to greater learning gains in this study, the relationship could potentially have been more strongly and reliably established had the number of subjects in each group been higher.

Due to the paucity of studies looking at L2 acquisition of phrasal verbs, possible avenues for future research are many. In order to assess the robustness of my results, bigger and more diverse samples of L2 populations should be involved and tested on a wider range of phrasal verbs, ideally over the course of several teaching sessions, and at different levels of form-meaning mastery. This study was among the first to assess and compare the relative efficiency of different intentional word-focused tasks for learning phrasal verbs. Although results showed no statistically significant effect for the type of task (and degree of involvement load and item retrieval induced) on short-term and longer-term learning gains, future studies overcoming its limitations may lead to different conclusions. Additionally, they could examine the effectiveness of other word-focused methods, or more implicit methods and their effect on more advanced aspects of word knowledge (such as the ability to produce phrasal verbs in speech or in an essay). Finally, since exposure has been shown to be such a crucial factor in L2 vocabulary acquisition, studies looking at the effect of number of repetitions on phrasal verb acquisition (in both incidental and intentional learning conditions) would be very welcome.

Chapter 7

Wrapping up: General discussion and conclusion

7.1. Summary of main findings

7.1.1. The PHaVE List: A pedagogical list of phrasal verbs (Study 1)

The first study presented in this thesis (Chapter 4) was a corpus-based semantic frequency analysis of the top 150 phrasal verbs in English (Liu, 2011), and resulted in the creation of a pedagogical list of phrasal verbs (the PHaVE List) for EFL/ESL learners and teachers. Results showed that the vast majority of these most frequent phrasal verbs are polysemous, and that an average of two meaning senses account for at least 75 % of the occurrences of each phrasal verb in the Corpus of Contemporary American English (COCA). This suggests that although phrasal verbs may have a lot of meaning senses, only a restricted number of these is usually enough to cover the majority of their occurrences. This is good news for both learners and teachers, as it makes the task of systematically acquiring these items seem less overwhelming. Whilst extending Gardner and Davies' (2007) polysemy estimate to the top 150 phrasal verbs leads to a daunting figure of 840 form-meaning links, the PHaVE List contains only 288 meaning senses. This much reduced number makes the list the ideal starting-point for teaching/learning the most essential meaning senses of these challenging vocabulary

items.

The notion that phrasal verbs are highly polysemous multi-word units is not a new finding, but this study shows just how pervasive polysemy is among the most frequent phrasal verbs in English. Although it is not a new finding, and as Gardner and Davies (2007) have previously pointed out, it is surprising to find empirical studies on phrasal verbs making no distinction between frequency of word form and frequency of word meaning. A more original finding, on the other hand, is that a good proportion (about one-third) of the 150 most frequent phrasal verbs have highly frequent meaning senses that do not appear semantically related, which makes them best defined as homonyms rather than polysemes following Fillmore and Atkins' (2000) strict definition of polysemy. I have argued that this distinction between polysemy and homonymy may have important implications for teaching and testing phrasal verbs. For instance, the ever-popular, Cognitive-Linguistics based Conceptual Approach would be clearly unsuitable for teaching semantically unrelated meaning senses. The list of phrasal verbs and meaning senses included in the PHaVE List might thus best be acquired using more mainstream, traditional learning methods which have proved effective for the acquisition of single words and other formulaic sequences in previous research. A discussion of a sample of the PHaVE List was provided in 4.5.5, and of its practical applications in 4.5.6 (also found in Appendix 5).

7.1.2. L2 knowledge of highly frequent polysemous phrasal verbs (Study 2)

The second study presented in this thesis (Chapter 5) looked at 128 L2 learners' knowledge of a sample of the most frequent phrasal verbs and meaning senses in the PHaVE List. It aimed to explore two main issues: the extent to which they were known, and the effect of various factors on this knowledge.

Phrasal verbs are important for language use, but are widely considered challenging. So how much do learners know? It depends to some extent on how phrasal verb knowledge is measured. Previous studies have typically tested only one meaning sense (the most common one) but still found incomplete knowledge, for

example 48 % by Schmitt and Redwood (2011) at a form recall level of mastery. But when multiple meaning senses were tested in this study (taking into account the polysemous nature of phrasal verbs), the results were even lower. The participants knew only about 40 % of phrasal verb meaning senses on average. Moreover, there was only about a 20 % chance that all the various tested meaning senses of each target phrasal verb would be known. These were rather modest results considering that these learners were students on BA English/TEFL courses in a partial English-medium academic environment, lending further support to the common assertion that phrasal verbs are a problematic feature of English vocabulary for L2 learners (including presumably advanced ones). However, it is important to note that the participants were tested at a relatively high level of mastery (form recall), and that administering a receptive test of phrasal verb knowledge would probably have yielded much higher scores. The few PhD students in English at the University of Nottingham who took the test in the piloting stage were found to have very different results, ranging from very high to below average. Since the test targeted 100 meaning senses taken from the PHaVE List, which itself includes 288 in total, the learners' knowledge of the items on the test can be considered to be representative of their knowledge of the list as a whole. Consequently, studying the PHaVE List could be beneficial not only to beginners, but also to intermediate and advanced learners of English.

Which factors had a significant effect on L2 learners' knowledge of phrasal verbs? There was no evidence that literal meaning senses were better known than figurative ones, so somewhat surprisingly, semantic opacity did not seem to matter. This might be explained by the fact that semantically transparent phrasal verbs are less noticeable to learners, and therefore fail to be acquired. But more importantly, the effect of semantic opacity was in all likelihood overridden by the effect of frequency, as corpus frequency was clearly identified as a predictor of phrasal verb knowledge in this study. This finding is consistent with previous research showing the robust effects of frequency on knowledge of both individual words and formulaic sequences. Among exposure-related factors, years of L2 instruction, L2 immersion, and year of BA study did not have any demonstrable effect on knowledge. However, L2 engagement in leisure activities clearly did: both reading and social networking in English seemed to

have significantly promoted the acquisition of phrasal verbs by participants. This is good news as it suggests that it is possible to learn a lot outside the classroom, via daily activities that are engaging and enjoyable for students. This study suggests that L2 learners should be encouraged to spend more time doing such activities in order to increase their knowledge of phrasal verbs. However, if one wishes to quickly and efficiently improve phrasal verb knowledge in a systematic manner, they might need to combine implicit learning activities with explicit learning, and in the case of teachers, to give more attention to phrasal verbs in instructed contexts.

7.1.3. L2 acquisition of phrasal verbs via explicit/intentional learning (Study 3)

The third and last study presented in this thesis (Chapter 6) looked at L2 learners' acquisition of novel phrasal verbs via explicit/intentional word-focused learning. It aimed to explore two main issues: whether phrasal verbs can be effectively learned using the same explicit methods commonly adopted for learning single words, and whether the type of learning task (and relative involvement load and item exposure induced) makes a significant difference in short-term and longer-term acquisition of those phrasal verbs.

Because they are formulaic, multi-word units of language, phrasal verbs are widely considered challenging and more difficult to acquire than individual words. So what did the results show? On the immediate post-tests, the 30 L2 participants successfully recalled the meanings of more than half of the 18 target items, and recognised the meanings of more than two-thirds. On the delayed post-tests one week after, one-quarter were successfully recalled and half were recognised. These learning gains were very similar to those found by Alali and Schmitt (2012) for individual words, and much higher than those obtained for idioms (no review condition) on meaning recall measures of knowledge. Since they found much higher learning gains for idioms and single words in their two review conditions, we could expect that more learning would similarly have occurred had the phrasal verbs been systematically reviewed during the treatment. This is encouraging as it suggests that phrasal verbs can

be learned in the classroom just as effectively as single words and idioms.

In fact, this is especially true for students with higher L2 proficiency and vocabulary knowledge. The advanced group of students achieved significantly higher learning gains than the intermediate group as measured on both meaning recall and meaning recognition tests (immediate and delayed), and a significant positive relationship was found between their VLT scores (5K band) and scores on the delayed meaning recall post-test. This suggests that explicit learning of phrasal verbs may be more fruitful (and thus perhaps more suitable?) for students having already reached a certain level of mastery of the English language. As expected, some attrition was observed on the delayed post-tests, with mean attrition rates of 57 % for meaning recall knowledge and 34 % for meaning recognition knowledge. This confirms some previous research findings showing that word knowledge is more prone to attrition at an advanced level of word mastery. But more importantly, it reasserts the crucial importance of repetition and recycling for durable word acquisition. If teachers aim to teach phrasal verbs in a systematic and effective way, they should thus ensure that learners gain multiple exposures to the items in the course of at least several weeks, since a single encounter is unlikely to lead to long-term learning.

Although some previous research has shown that the type of learning task can make a difference when it comes to single word or formulaic sequence learning, my results showed that it was not the case for phrasal verbs. The three explicit word-focused tasks under investigation (rote memorisation, textbook exercises, and guessing from context) led to very similar learning and retention on both meaning recall and meaning recognition measures. A Friedman test analysis showed no statistically significant differences between the three sets of scores. This suggests that, when it comes to intentional learning of the form-meaning link, the type of task performed (and the degree of involvement load and item retrieval induced) may not be a relevant (or at least a strong) factor in predicting L2 acquisition of phrasal verbs. The use of simple memorisation techniques, despite a low involvement load index, can be just as effective for this purpose. If time is taken into account, they may even be considered more effective. Ultimately, if the learners' goal is the fast and systematic acquisition of the form-meaning links of phrasal verb meaning senses in the PHaVE List, the only two

imperatives might be: 1) the use of effective cognitive strategies with which they have developed familiarity and competence at using, and 2) regular repetition and reviewing of the items.

7.2. Phrasal verbs as polysemous items

One of the main aims of this thesis was to show that highly frequent phrasal verbs (those compiled by recent corpus studies such as Gardner & Davies, 2007, and Liu, 2011) are widely polysemous. This means that, instead of distinguishing between literal and figurative phrasal verbs (Laufer & Eliasson, 1993; Biber et al., 1999; Celce-Murcia & Larsen-Freeman, 1999), researchers and teachers should distinguish between literal and figurative meaning senses. The review of the literature provided in Chapters 2 and 3 has revealed the lack of research on phrasal verbs as opposed to other formulaic sequences (such as idioms and collocations), partly due to the fact that phrasal verbs have traditionally been seen as informal elements of language. As a consequence, the issue of polysemy in phrasal verbs has scarcely been explored. As Macis and Schmitt (2016a) have shown, polysemy is not only a feature of phrasal verbs, but also of other types of formulaic sequences such as collocations.

To my knowledge, the only investigation of the polysemous aspect of phrasal verbs in previous research was that of Gardner and Davies' (2007), who ran a quick semantic analysis of the 100 most frequent phrasal verbs they compiled. By counting the number of meaning sense entries for each of these phrasal verbs in the lexical database WordNet, they found that they had between five and six meaning senses on average. This was an important finding, as it gave a quantitative measure of the extent of the polysemous nature of phrasal verbs. Nevertheless, only a thorough corpus-based, manual semantic analysis of these top phrasal verbs could reveal which of these numerous meaning senses were the most useful for pedagogical purposes, and could allow making adequate recommendations about which meaning senses should be prioritised for explicit learning and teaching. This motivated me to choose this particular topic for my PhD, and to conduct follow-up studies based on my findings.

The three studies presented in this thesis have been carried out in an attempt to gain a better understanding of the nature of phrasal verbs, considering the fact that they are a very important part of everyday English discourse (Biber et al., 1999; Gardner & Davies, 2007; Liu, 2011), and therefore crucial for successful language comprehension and use (Siyanova & Schmitt, 2007). Additionally, phrasal verbs have been shown to cause difficulty for second language learners, leading to an avoidance behaviour which has been observed by a number of studies (Dagut & Laufer, 1985; Hulstijn & Marchena, 1989; Laufer & Eliasson, 1993; Liao & Fukuya, 2004). Study 1 showed that the top 150 phrasal verbs in English are very largely polysemous, for the most part having both literal and figurative meaning senses (semantically related or not), and that two meaning senses on average were enough to cover three-quarters of their occurrence in the COCA. Study 2 revealed that learners had incomplete knowledge of these most frequent meaning senses, whilst Study 3 showed that these meanings can potentially be efficiently acquired via the use of explicit learning activities. Taken together, these results not only provide evidence of the need to pay more explicit attention to phrasal verbs (in both research and teaching environments), but also offer insights into the factors promoting their knowledge, and into possible ways to facilitate their acquisition.

7.3. Frequency effects in phrasal verb acquisition

As seen in 5.3, usage-based theories of language claim that frequency is a key factor in language acquisition (N. Ellis, 2002). Frequency has long been recognised as an essential predictor of L2 vocabulary knowledge, which means that the more frequent a word, the more likely it is to be known. This has been found empirically by a number of studies, both for single words (Nation & Waring, 1997; Leech, Rayson & Wilson, 2001; N. Ellis, 2002; Nation, 2013) and formulaic sequences such as collocations, binomials and lexical bundles in terms of ease of processing (Arnon & Snider, 2010; Siyanova-Chanturia, Conklin & Van Heuven, 2011; Wolter & Gyllstad, 2013; Hernández, Costa & Arnon, 2016). In two studies investigating the collocational knowledge of second language learners of English (L1: Spanish), González Fernández and Schmitt (2015)

and Macis and Schmitt (2016b) identified frequency as a significant predictor of knowledge.

Until now, only two studies had explored the effect of frequency on phrasal verb knowledge (Schmitt & Redwood, 2011; Chen, 2013). Among all the possible factors affecting the participants' scores, frequency by itself managed to account for about 20 % of the variance in the productive knowledge of Schmitt and Redwood's participants, and around 17 % of that of Chen's participants. This clearly shows the important part played by frequency in phrasal verb acquisition. By exploring this phenomenon further in Study 2, I have provided additional evidence of the key role played by frequency in the phrasal verb knowledge of second language learners. My mixed-effects modelling analysis clearly identified frequency as a significant predictor, in fact the best among the three statistically significant factors (item frequency, engagement in L2 reading, engagement in L2 social networking). This means that, as predicted by Nation and Waring (1997), frequency effects in vocabulary acquisition are not only found for single words but also for formulaic sequences.

So what are we to make of this? We may conclude that if highly frequent items are more likely to be known than infrequent ones, then classroom instruction should focus on teaching these less frequent phrasal verbs which are less likely to be found in the learners' L2 input. After all, if the meaning senses included in the PHaVE List will be repeatedly encountered by learners anyway, why should teachers waste precious classroom time on studying them? This has been pointed out to me by one anonymous journal reviewer of my study. This is a sound argument, but it assumes that learners get L2 exposure outside the classroom environment from which they will be able to acquire words. Unfortunately, I do not believe this is the case for many learners of English as a foreign language. Many consider English as a mere compulsory school subject, and do not spontaneously engage in activities involving the use of their L2 in their leisure time. The presumably advanced learners who took part in my phrasal verb knowledge test demonstrated incomplete knowledge (40 % of the items, with a 20 % chance that the various meaning senses attached to a single phrasal verb would be known). Therefore, teaching the most frequent and useful words in English should be the number one

priority in the language classroom; this includes, of course, the various meaning senses included in the PHaVE List.

7.4. Semantic opacity: Relevant or not in the case of phrasal verbs?

The issue of semantic opacity effects in the L2 has mainly been explored in relation to idioms in the psycholinguistic domain. A number of studies (e.g. Ciéslicka, 2006; Conklin & Schmitt, 2008; Tabossi, Fanari & Wolf, 2008; Siyanova-Chanturia et al., 2011) have investigated whether idioms are processed faster in their literal interpretation than in their standard figurative meaning (e.g. the literal meaning of *kick the bucket* vs the figurative meaning ‘to die’). So far, the results have been ambivalent. Some studies showed a processing advantage for idioms used in their figurative sense over the same sequence of words used literally, whilst others showed an advantage for the literal interpretations. Because figurative idioms are typically stored as wholes in long-term memory, they should logically be faster to retrieve from the mental lexicon than the same sequence of words produced as a result of analytical processing. It has been suggested by Conklin and Schmitt (2008) that such a phenomenon may also be the result of a frequency effect: for some formulaic sequences, figurative interpretations are actually more frequent than their literal counterparts. As I have discussed in 5.5, this would suggest a possible conflict between semantic opacity and frequency effects, in that idiomatic meanings may be better known because they are more frequent. However, second language learners may not be aware of these idioms, and therefore process the literal interpretations much faster (Wray, 2002; Fitzpatrick & Wray, 2006; Martinez & Murphy, 2011).

Similarly, we would intuitively assume that for any given sequence, the literal meaning should be better known as it is easier to decode. Prior to analysing my results from Study 2, I expected literal meaning senses on the PHaVE List to be widely known by participants. They were indeed composed of highly frequent words in the English language: one-syllable verbs amongst the most commonly used (e.g. *take, make, put*) and one adverbial particle also highly frequent (e.g. *up, down, in, out*). The fact that

semantic opacity did not appear to be a significant predictor of phrasal verb knowledge in this study was probably one of the most surprising findings of my thesis.

At the time of introducing the PHaVE List to other researchers at academic conferences, I was asked why I had chosen to include such easy items as *come out* or *get in* (a building), as these would undoubtedly not deserve explicit teaching. Study 2 showed that contrary to preconceived notions, literal meaning senses are not necessarily better known than figurative meaning senses. This means that not only do they deserve their place in the PHaVE List, but also in explicit activities in the classroom. Teaching literal meaning senses is important, and may serve as a useful starting point before teaching the figurative meaning senses (especially in the case of related senses, as advocated by the Conceptual Approach).

7.5. Reading for incidental acquisition of phrasal verbs

Research has consistently shown that reading facilitates vocabulary knowledge (e.g. Horst et al., 1998), and that reading allows second language learners not only to acquire large numbers of new words, but also to strengthen their knowledge of previously acquired words. Results of my mixed-effects modelling analysis in Study 2 showed that reading also facilitates the acquisition of the most frequent meaning senses of the top 150 phrasal verbs. The more hours per week the participants spent engaging in reading activities, the higher scores they achieved, i.e. the greater phrasal verb knowledge they had. This is congruent with findings from other studies focusing on other types of formulaic sequences such as collocations (González Fernández & Schmitt, 2015; Macis & Schmitt, 2016b), and with another study investigating the phrasal verb knowledge of intermediate second language learners of English (Schmitt & Redwood, 2011). In the latter, the amount of time spent reading by the participants was highly correlated with knowledge and was in fact the strongest factor among all those investigated. Therefore, my results suggest that reading outside the language classroom facilitates the acquisition of highly frequent phrasal verbs and meaning senses, and add to the converging evidence that it benefits the learning of formulaic language more generally.

Since reading has so consistently been shown to facilitate formulaic language learning, I believe that ELT practitioners (teachers and material designers) would do well to incorporate a reading element into their materials and syllabi as far as possible. Because instruction time is limited, extensive reading (i.e. reading a wide range of texts for enjoyment) has long been recommended as a means of maximising learners' exposure to their L2 outside the classroom (Nation, 2001, 2013). In fact, Nation (2001: 155) claims that "the use of reading and other input sources may be the only practical options for out of class language development for some learners." This is especially true in the case of EFL contexts, and thus for the vast majority of English language learners around the world.

The reasons which make extensive reading such an attractive activity for developing vocabulary knowledge are many. Firstly, it is considered a pedagogically efficient pursuit since vocabulary acquisition occurs alongside the practice of a crucial L2 skill (Huckin & Coady, 1999). Better reading skills in turn contribute to higher learner autonomy. As I have mentioned in 6.3, engaging in a reading activity can be very pleasurable and motivating, much more so than the decontextualized study of words. It provides learners with the opportunity to meet words in their context of use, knowledge of use being one of the three main dimensions of word knowledge as we remember from Nation's (2013: 49) table of word knowledge components presented in Table 8 (5.2). Reading increases sight vocabulary (i.e. the stock of words that learners instantly recognise without having to decode them) (Nagy, Herman & Anderson, 1985; Nation & Coady, 1988; Coady, 1997) and can result in substantial vocabulary gains (Macis, under review).

The results obtained from Study 2 provide further empirical evidence of the benefits of reading, and I believe, justify the need to implement an extensive reading component in language learning programmes as advocated by Nation. In light of the above, it seems that extensive reading should be an indispensable component of a well thought-out language learning syllabus. This is especially relevant for vocabulary acquisition, which as we have seen in 6.2 is an incremental process requiring varied and multiple exposures to words in order to achieve complete mastery. Extensive reading can, therefore, be a very effective method for accelerating this process. It should be

remembered that extensive reading is not confined to book/newspaper/magazine reading, and also includes reading via internet sources and digital devices (e-books, news websites, online forums, social media, etc.). Everyday engagement with social media in the L2 (e.g. Facebook, Twitter, MySpace) also seems to facilitate phrasal verb acquisition as found in Study 2, and the acquisition of collocations as found by González Fernández and Schmitt (2015).

7.6. Explicit learning and teaching of phrasal verbs

What Study 3 has shown is that independently of the type of activity in which learners engage, intentional (or explicit) approaches can be very effective for acquiring phrasal verbs. On the other hand, studies on incidental acquisition of vocabulary (single words or formulaic sequences) have shown more modest gains, concluding that intentional learning must be a more efficient approach (see 6.3). Although incidental learning activities present a lot of advantages (as discussed above), there is no doubt that faster, more efficient acquisition is only possible via the direct study of the new vocabulary. Schmitt (2010) argues that the more engaged the method of instruction, the higher the learning gains. According to him, virtually anything that leads to more exposure, attention, manipulation or time spent on lexical items adds to their learning.

Following the general consensus in vocabulary research, I believe that both approaches are useful for acquiring phrasal verbs. It has long been recognised that the vast number of single words and formulaic sequences in English cannot possibly be all learned intentionally by second language learners. Similarly, the daunting number of phrasal verbs (see 4.2.1) makes it simply impossible to teach them all in a classroom context. Based on the lists compiled by Gardner and Davies (2007) and Liu (2011), the top 150 phrasal verbs have now been identified. Since these were found to be the most frequent in language, taking into account different discourse modes, genres, and varieties of English, they can be considered as the most useful among all phrasal verbs. They are thus worthy of teaching time, in the sense that the time and effort spent teaching them will be rewarded by the very high probability that these phrasal verbs

will be encountered by learners in a variety of discourse contexts.

I therefore believe that the PHaVE List, which compiles the most frequent meaning senses of the top 150 phrasal verbs, should be introduced to learners via an explicit approach involving the direct study of these meaning senses. As I have mentioned in 6.7.3, the choice of the type of vocabulary activity used to this aim should be made in accordance with the learners and their environment. Foreign language learners in countries such as Iran or China may favour list learning and rote memorisation activities, whilst other learners may be more accustomed to (and proficient at) more communicative activities involving group discussions and using the meaning senses in context.

7.7. Directions for future research

I began this thesis with the intention of learning more about phrasal verbs, a structure which, as a native speaker of French, had eluded me for many years. On first arriving in the UK after more than 10 years of formal English language instruction in my home country, I found even the most basic level of interaction with native speakers to be quite challenging. The impression of sounding too formal, stilted, or like a book has certainly been very familiar to me, and I found that increasing my repertoire of formulaic sequences such as phrasal verbs made an important contribution towards a more fluent, context-appropriate speech. Based on my own experience, I assumed that other EFL learners could benefit from directing their attention to these items and from more research dedicated to them in the field. The profusion of avenues to explore and questions to answer initially seemed daunting, and the three studies I have conducted for this thesis have given way to even more. I have already pointed to some suggestions for future research at the end of Chapters 4, 5 and 6. But there are two main lines of enquiry which, in my view, are the most pressing and interesting to pursue in future research about phrasal verbs. Both would certainly provide further evidence of their importance.

The first is the relationship between phrasal verb knowledge and general

language proficiency. This relationship should be understood in a broad sense, and going in both directions: how much (and why) does phrasal verb knowledge increase proficiency, and how much (and why) does language proficiency help with phrasal verb acquisition? We know that the increased use of formulaic sequences in the speech and writing of non-native speakers of English can dramatically improve the overall impression of their fluency and proficiency, and lead to higher marks in their coursework. Increased usage of formulaic language has also been found to correlate positively with proficiency in both receptive and productive skills. Would this also be the case with increased usage of phrasal verbs? Concrete empirical evidence for the benefits of using phrasal verbs would perhaps be needed in order to convince reluctant L2 speakers that they are actually worth learning. In Study 3, we have seen that higher L2 proficiency relates to greater learning gains, but is proficiency also connected to phrasal verb knowledge? More specifically, can we identify a proficiency threshold where L2 learners feel more comfortable ‘handling’ these items, and begin acquiring them faster and more easily? My intuition is that it is likely that this threshold exists, and empirical evidence would have obvious pedagogical implications. Widely recognised and validated measures of English proficiency already exist, but a properly validated test of phrasal verb knowledge (of the kind of COLLEX and COLLMATCH for collocations, for example; Gyllstad, 2009) would be needed in order to assess the relationship between proficiency and phrasal verb knowledge in a reliable way.

The second line of enquiry would be to test the widely held belief among language practitioners and researchers that phrasal verbs are simply informal alternatives to one-word verbs of Latin origin. This assumption is, in my opinion, the main culprit for the neglect of phrasal verbs in language classrooms and vocabulary/formulaic language research. By searching and observing the usage patterns of a large representative sample of phrasal verbs in a corpus along with their corresponding one-word verbs, and consulting native speakers for their judgements, we might very well find that not only do many phrasal verbs have a neutral register, but also that they cannot be replaced by a single word without leading to at least a slight alteration in meaning. This is one of the reasons why I find phrasal verbs interesting: the fact that they can be very economical items of language, conveying very precise ideas

and even personal stances on particular situations in only two words. On a similar note, contrastive analysis between English and a non-Germanic language without the phrasal verb structure might show that many phrasal verb meanings can only be rendered via the use of circumlocution in the other language.

7.8. Concluding remarks

Throughout this thesis, I have argued that phrasal verbs have until now not received the attention they deserve, whether in the language classroom or in the literature. The work presented here has explored the usage and knowledge of highly frequent polysemous phrasal verbs, and acquisition of novel phrasal verbs via explicit learning, and will hopefully inspire future research on similar topics. Although I have highlighted some points of departure, there is a great deal more left to explore. But perhaps the most needed step forward is to alter mainstream perceptions of phrasal verbs as monosemous, essentially informal alternatives to one-word verbs, as I have argued above. Not only are phrasal verbs widely polysemous, but they also have their own idiosyncratic properties such as specific connotations and collocational preferences, just the same as individual words do. This suggests that using phrasal verbs may be the result of lexical decisions based on more than just formality/informality, which may partly explain their overall significance in the English language. Once the importance of phrasal verbs amid other formulaic sequences such as idioms or collocations has been firmly established, many studies investigating their usage, acquisition and processing by native and non-native speakers should follow. Until then, the studies presented in this thesis have provided evidence for the gap in L2 learners' knowledge of the most frequent phrasal verbs, whilst showing that a restricted number of phrasal verbs and meaning senses can go a long way and be effectively learned using the same explicit activities commonly adopted for learning single words.

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Appendix 1: The PHaVE List (Study 1)

1. GO ON

2. Happen, take place (64.5 %)

There is a debate **going on** right now between the two parties.

3. (+ To) Proceed to do or tackle STH after doing STH else (13 %)

Does anyone have any questions before I **go on** to the next chapter?

2. PICK UP

1. Get or take SB/STH from a place (70.5 %)

Can you **pick up** some food on the way home from work please?

3. COME BACK

1. Return to a place or a conversation topic (96.5 %)

She **came back** to the kitchen with a bottle of fancy wine.

4. COME UP

1. (+ with) Bring forth or produce (34 %)

She instantly **came up** with a solution to the problem.

2. (*Be coming up*) Be happening soon (esp. be broadcast soon) (27.5 %)

Coming up after the news, our cooking program will feature cheese.

5. GO BACK

1. Return to a place, time, situation, activity, conversation topic (90 %)

He washed the dishes and **went back** to his room.

6. FIND OUT

1. Discover STH; obtain knowledge of STH (100 %)

We need to **find out** who did this to her.

7. COME OUT

1. Leave a place (room, building, container) or appear from it (38 %)

She went into the bank and **came out** with some money.

2. Become known or revealed after being kept secret (13.5 %)

The news **came out** that he was leaving the team.

3. (*Come out and do STH*) Make public knowledge a privately held position (11.5 %)

People need to **come out** and say what they think about it.

4. Become available or released to the public (film, record, book) (10 %)

Their new album is **coming out** next month.

8. GO OUT

1. Leave a room, building, car, or one's home to go to a social event (56.5 %)

We should **go out** for dinner sometime.

2. (*Go out and do STH*) Used as an intensifier, to highlight the active nature of what is being done (19.5 %)

Do you think he'll **go out** and buy the whole company?

9. POINT OUT

1. Direct attention toward STH (fact, idea, information) (89 %)

Experts have **pointed out** that eating too much sugar is extremely unhealthy.

10. GROW UP

1. Gradually advance in age and maturity (98 %)

Seeing my kids **growing up** is such a lovely thing.

11. SET UP

1. Establish or create STH; arrange for STH to happen or exist (64.5 %)

An advisory committee is being **set up**.

2. Place STH in a particular spot or position (16.5 %)

We need to **set up** a few more chairs so everyone can sit down.

12. TURN OUT

1. Prove or be discovered to happen or be (91 %)

Her suspicion **turned out** to be justified.

13. GET OUT

1. Leave a container (vehicle, room, building) or make SB/STH leave a container (75.5 %)

These prisoners have no hope of ever getting out of jail.

14. COME IN

1. Enter a place or area (room, building) (65 %)

She opened the door and he came in.

2. Become involved in a situation (14 %)

We need experts to come in and give us advice.

15. TAKE ON

1. Undertake or handle (role, task, responsibility, problem, issue) (42 %)

Nobody was willing to take on such an awful job.

2. Acquire or assume as one's own (quality, meaning, colour, shape) (41.5 %)

The story takes on a whole new meaning when you read it again.

16. GIVE UP

1. Stop doing or having STH; abandon (activity, belief, possession) (80.5 %)

She had to give up smoking when she got pregnant.

17. MAKE UP

1. Form the whole of an amount or entity (42.5 %)

Hispanics make up more than 15% of the U.S. population.

2. (+ *for*) Compensate for STH lacking, lost or missed (18.5 %)

Some solution has to be found to **make up** for such losses.

3. (*Make up one's mind*) Make a decision (15.5 %)

You should **make up** your mind about who you will vote for.

18. END UP

1. Finally do STH or be in a particular place, state, or situation after doing STH or as a consequence of it, esp. unexpectedly (100 %)

She **ended up** having to sell her car after her accident.

19. GET BACK

1. Return to a place, position, state, activity, conversation topic (78.5 %)

She **got back** to London last Monday.

20. LOOK UP

1. Raise one's eyes (88 %)

He **looked up** from his book and shook his head.

21. FIGURE OUT

1. Come to understand or determine STH (100 %)

Despite her efforts, she couldn't **figure out** what had happened.

22. SIT DOWN

1. Move from a standing position to a sitting position (100 %)

Please **sit down** and have a drink.

23. GET UP

1. Rise or cause to rise after lying in bed or sitting/kneeling (92 %)

She **got up** out of her chair and put on her shoes.

24. TAKE OUT

1. Remove STH/SB from somewhere (container or abstract whole) (50.5 %)

He tore open the envelope and **took out** a few bills.

2. Invite to a recreational place or social event (13.5 %)

You should **take** her **out** to this new Chinese restaurant.

3. Obtain an official document or service from an authority (12.5 %)

I had to **take out** a loan to cover all my expenses.

25. COME ON

1. Said to encourage SB to try harder, or do or say STH (50 %)

Come on, don't be shy and tell us your story.

2. Said to show SB disbelief, disagreement, or anger (19.5 %)

Oh **come on**, you're just lying to me!

26. GO DOWN

1. Move down to a lower level or position (29 %)

After hitting the iceberg, the ship began to **go down**.

2. Decrease in value or amount (27 %)

I don't think prices will **go down**.

3. Go from one place to another, esp. one that is further south or underneath (18 %)

We **went down** to Australia last year.

27. SHOW UP

1. Make an appearance at a social or professional gathering (81 %)

She didn't **show up** at the meeting.

28. TAKE OFF

1. Remove STH (esp. piece of clothing or jewellery from one's body) (41 %)

I **took off** my shirt and went to bed.

2. Leave a place, especially suddenly (28.5 %)

They jumped into the car and **took off**.

3. Leave the ground and rise into the air (14 %)

The plane **took off** at 7am.

29. WORK OUT

1. Plan, devise or think about STH carefully or in detail (33 %)

We still need to **work out** the details of the procedure.

2. Exercise in order to improve health or strength (23 %)

He **works out** at the gym five times a week.

3. (+ *well/badly*) Happen or develop in a particular way (15 %)

Everything **worked out** well in the end.

4. Prove to be successful (12.5 %)

Despite our efforts, it just didn't **work out**.

30. STAND UP

1. Rise to a standing position after sitting or lying down (67.5 %)

He pushed away from the table and **stood up**.

2. (*Stand up and say STH*) Make public knowledge a privately held position (11 %)

Somebody's got to **stand up** and say what's wrong with this country.

31. COME DOWN

1. Move from a higher spatial location to a lower one; fall/land onto the ground (32.5 %)

Come down from the roof or you will hurt yourself.

2. (+ *to*) Reduce itself to one particular thing that is the most important or essential matter (20.5 %)

What it all **comes down** to is that the rules have not been respected.

3. Become lower in amount or value (11 %)

Interest rates are currently **coming down**.

32. GO AHEAD

1. Proceed with a course of action without further hesitation (99 %)

Go ahead and ask me your question!

33. GO UP

1. Become higher in value; increase (47.5 %)

Oil prices have **gone up** last year.

2. Move upward, or from a lower spatial location to a higher one (20.5 %)

He could see a few hands **go up** in the audience.

34. LOOK BACK

1. Think of STH again; reconsider STH past (49.5 %)

Looking back on those days, we had a very happy life.

2. Look at STH/SB again after having momentarily looked elsewhere (30 %)

He closed the dictionary and **looked back** to his notes.

35. WAKE UP

1. Become (or make SB become) conscious again after being asleep (92 %)

I was so tired that I **woke up** at 10 this morning.

36. CARRY OUT

1. Perform or complete (task, activity, study, experiment, attack, duties, etc) (63.5 %)

The experiment was **carried out** by a well-known academic.

2. Put into execution; implement (plan, idea, wishes, orders, views, etc) (34 %)

Economic reform will soon be **carried out**.

37. TAKE OVER

1. Gain control, management, or possession of STH/SB (task, job, political party, organisation) (96.5 %)

After her father died, she **took over** the company.

38. HOLD UP

1. Hold STH in a high position (e.g. above one's waist or head), so it can be seen or reached (54 %)

The professor **held up** the picture so everyone could see it.

2. Remain strong or in a fairly good condition after a bad period or the wear of time (person, business, device) (14 %)

These are really old shoes but they're **holding up** quite well.

3. Delay or prevent the progression of STH/SB (11.5 %)

We were **held up** by heavy traffic.

39. PULL OUT

1. Take STH/SB out of a container, thing or place (75 %)

He reached in his pocket and **pulled out** a gun.

40. TURN AROUND

1. Move so as to face in the opposite direction (67.5 %)

She **turned around** and walked out the door.

2. Make STH become better or more successful than it previously was (economy, business) (24.5 %)

People have stopped believing the President could **turn around** the economy.

41. TAKE UP

1. Use a particular amount of space, time or effort (25.5 %)

The rewriting of the document **took up** a whole afternoon.

2. Discuss or deal with (issue, idea, matter) (17.5 %)

The Senate will **take up** the issue tomorrow.

3. Start doing a particular job or activity, esp. for pleasure (10.5 %)

He **took up** gardening last year.

4. Grasp an object, often moving it from a lower to a higher position (10 %)

I have to **take up** the carpet before I start Hoovering.

42. LOOK DOWN

1. Lower one's eyes to see what is below (92 %)

She **looked down** at the ground to see what she stepped on.

43. PUT UP

1. Display or attach STH (e.g. to a wall) so it can be seen (23 %)

They **put up** a few posters on the wall.

2. (+ *with*) Be willing to accept STH unpleasant or not desirable; tolerate (19 %)

I won't **put up** with your bad behaviour for much longer.

3. Build or place STH somewhere (18 %)

They're **putting up** a new fence after the previous one fell apart.

44. BRING BACK

1. Make STH/SB return to a place, state, situation, or conversation topic (52.5 %)

This will **bring back** war into the country.

2. Bring STH one has taken from a place they come from (22.5 %)

This is the hat he **brought back** from South America.

45. BRING UP

1. Raise for discussion or consideration (59.5 %)

I didn't think he would **bring up** the subject.

2. Care for/be responsible for a child until it becomes an adult (17.5 %)

She **brought up** her children under very difficult circumstances.

46. LOOK OUT

1. Look outside, or at the horizon (50.5 %)

She liked to go by the window and **look out** at the garden.

2. Take care of SB and make sure they are well; protect SB's interests (25.5 %)

We **look out** for each other as if we were family.

47. BRING IN

1. Bring STH to a place or situation (52 %)

I **brought in** my laptop computer today because my office computer is broken.

2. Ask SB to do a particular job or task (30.5 %)

He had been **brought in** to save the company.

48. OPEN UP

1. Make STH become available or possible, less limited (42.5 %)

This **opened up** opportunities he would never have imagined.

2. Open STH (door, gate, book, bag) (27.5 %)

She **opened up** the bag and grabbed some documents.

49. CHECK OUT

1. Have a look at; examine STH/SB (esp. to get more information or make a judgement) (97 %)

Check out our website for more information.

50. MOVE ON

1. Start doing or discussing STH new (job, activity, conversation topic) (42 %)

Let's **move on** to our next topic.

2. Change physical location (spot, room, country) (28 %)

She lived in New York, then London, and finally **moved on** to Rome.

3. Forget about a difficult experience and move forward mentally/emotionally (25 %)

He's had a difficult year but he's now ready to **move on**.

51. PUT OUT

1. Make STH known or accessible to the public (information, products) (47 %)

Police have **put out** a warning about thieves in the area.

2. Stop STH from burning or shining (14 %)

The fire has finally been **put out**.

3. Place STH somewhere in order for it to be seen or used (10 %)

I've **put out** some glasses and a bottle of wine.

52. LOOK AROUND

1. Examine a place or one's surroundings so as to view what it might contain or look for a particular thing (100 %)

They entered the shop and **looked around** but nobody was there.

53. CATCH UP

1. (*Be/Get caught up*) Become involved in STH which prevents SB from making progress or moving forward (26 %)

He is very busy and always **caught up** in his work.

2. Reach SB that is ahead by walking, running, or driving faster (18 %)

She was running so fast that it was impossible to **catch up** with her.

3. Reach the same level or standard as SB who is more advanced (14 %)

They made considerable improvements, which makes it hard for us to **catch up**.

54. GO IN

1. Enter (place, area, room, building) (90 %)

This restaurant looks really nice; let's **go in** and have lunch.

55. BREAK DOWN

1. Stop working or functioning; fail or collapse (vehicle, device, relationship, negotiations) (24 %)

Our car **broke down** yesterday.

2. Divide or separate into categories or smaller components so as to make it easier to understand or deal with (20 %)

Let's **break down** the task into three easy steps.

3. Lose control of one's emotions and yield to tears or distress (17.5 %)

He **broke down** at his son's funeral.

4. Undergo chemical decomposition; separate into different substances (13.5 %)

Digestion **breaks down** food into small molecules.

56. GET OFF

1. Go away from, leave (train, bus, aircraft, lift) (54 %)

You need to take the bus and **get off** at the third stop.

2. (*Get off to a ... start*) Begin something in a certain way (12.5 %)

The team has **got off** to a good start this season.

3. Manage to avoid serious trouble or consequences (esp. legal punishment) (12 %)

It's not right that he could commit such a crime and **get off** so easily.

57. KEEP UP

1. Move, progress or increase at the same rate or pace as SB/STH (46 %)

Workers' income has not **kept up** with inflation.

2. Make STH continue (32.5 %)

This is amazing; keep up the good work!

58. PUT DOWN

1. Place STH/SB on the floor or on a flat surface (62 %)

She put down her glass and left the bar.

59. REACH OUT

1. Stretch an arm in order to hold, touch, or get STH that is within short distance (48.5 %)

She reached out for the empty jar on the table.

2. Make an effort to address or communicate with SB, so as to help them or involve them in STH (39.5 %)

The government's efforts to reach out to right-wing voters have paid off.

60. GO OFF

1. Go somewhere, esp. for a particular purpose (44.5 %)

He decided to go off to college.

2. Emit a loud noise or sudden light as a signal or warning (22 %)

Let's hope the alarm doesn't go off.

3. Explode (bomb) or be fired (gun) (14 %)

They could hear bombs going off at a distance.

61. CUT OFF

1. Remove a part of STH by cutting it (27 %)

Take the carrots and **cut** the ends **off**.

2. Interrupt SB as they are speaking (24.5 %)

The teacher **cut off** the student in the middle of her sentence.

3. End the provision of STH, or be deprived of a provision (supply, money) (23.5 %)

The government decided to **cut off** food supplies.

62. TURN BACK

1. Turn around so as to face the opposite direction (51.5 %)

Before leaving through the door, he **turned back** to kiss her goodbye.

2. Go back (or make SB/STH go back) in the direction SB/STH has come from (25.5 %)

When the storm hit, we had to **turn back**.

63. PULL UP

1. Stop or cause a vehicle to stop (47 %)

A van **pulled up** in front of them.

2. Move STH/SB from a lower position to a higher one; lift from the ground (35.5 %)

She **pulled up** her scarf to cover her cold face.

64. SET OUT

1. Start doing or working on STH, esp. with a particular goal in mind (42.5 %)

I **set out** to discover the truth behind the story.

2. Start a journey (26.5 %)

We **set out** for San Francisco on the following day.

3. Explain or present STH clearly, esp. officially and in writing (16 %)

The official recommendations were **set out** in the document.

65. CLEAN UP

1. Get rid of dirt, mess, pollution, or chemical substances in a place or area (74 %)

Make sure you **clean up** your mess because I won't do it for you.

2. Make STH free from dangerous, unacceptable or controversial activities or contents (22 %)

He was asked to **clean up** his bad language during his interview.

66. SHUT DOWN

1. Stop (or make STH stop) working or operating (machine, computer, business, premise, strategy) (94 %)

You should **shut down** your computer at night to save electricity.

67. TURN OVER

1. Surrender possession or control to SB/STH (esp. in authority) (59.5 %)

The policeman **turned over** the criminal to the jail guard.

2. Change position so that the other side is facing towards the outside or the top, or another direction (34 %)

Put the chicken on the grill and **turn** it **over** a few times.

68. SLOW DOWN

1. Move, proceed or progress at a slower pace (vehicle, economy) (88.5 %)

Economic growth has dramatically **slowed down**.

69. WIND UP

1. End up in a particular situation, condition or place, esp. an unpleasant one (87 %)

They **wound up** having to pay off his debts.

70. TURN UP

1. Yield; be (or make STH be) found, discovered, or noticed (48 %)

The search **turned up** solid evidence against him.

2. Increase the volume or level of STH (21.5 %)

I really like this song; could you **turn up** the radio?

3. Arrive or make an appearance somewhere (14 %)

He **turned up** to the meeting half an hour late.

71. LINE UP

1. Form or make SB/STH form into a line (also figurative) (75 %)

Dozens of taxis were **lined up** at the entrance.

72. TAKE BACK

1. Take STH/SB to a place, or time period (fig.), they were in before (50 %)

After dinner, he **took** her **back** to her house.

2. Regain possession or control over STH (33.5 %)

The politician's ultimate goal is to **take back** the Senate.

73. LAY OUT

1. Describe or explain STH clearly or in detail, esp. officially and in writing (46 %)

The whole strategy was **laid out** in detail in a twenty-page document.

2. Spread STH out on a flat surface, so it can be seen or used (35 %)

He **laid out** the plates on the table.

74. GO OVER

1. Move towards a place or person, esp. by crossing an area (room, city, country) (63 %)

She **went over** to the window so she could watch the scene.

2. Examine or discuss each part of STH in detail in order to understand or remember it better, or make sure it is correct (20 %)

We need to **go over** the list once again.

75. HANG UP

1. Finish a conversation on the telephone by putting the receiver down or switching the phone off (76.5 %)

He **hung up** the phone without letting her answer his question.

76. GO THROUGH

1. Experience STH difficult or unpleasant (61 %)

You have to understand the tough situation she **went through** before judging her.

2. Be officially accepted or approved (10 %)

I hope the tax cut **goes through** next year.

77. HOLD ON

1. Refuse to let go of STH (57 %)

He **held on** to his job until the very last day.

2. Wait for a short time (35.5 %)

I'll be quick, please **hold on** for one minute.

78. PAY OFF

1. Pay the complete amount of STH (49 %)

It will take a dozen years for him to **pay off** his debts.

2. Pay back the effort spent in doing STH by becoming profitable or effective (48.5 %)

All the hard work will **pay off** in the end.

79. HOLD OUT

1. Move one's hand or an object in one's hand forward or towards SB, in order to grab or give STH (61 %)

He took the keys and **held** them **out** to her.

2. Hold STH as likely to happen or succeed (hope, possibility, prospect, promise) (15 %)

We don't **hold out** much hope of finding the murderer.

80. BREAK UP

1. End or cause to end or fail (esp. relationship) (59 %)

Their marriage **broke up** in 2007.

2. Divide into smaller parts or components (34.5 %)

The USSR **broke up** into more than 10 countries.

81. BRING OUT

1. Make a particular detail, quality or feeling more noticeable than it usually is (36 %)

This haircut **brings out** the natural curl in your hair.

2. Make SB or STH available for the public or an audience to see, know or buy (33 %)

The band was about to **bring out** their new album.

3. Take STH/SB out of a container or enclosed space (27 %)

They **brought out** another plate from the kitchen.

82. PULL BACK

1. Move backwards or make SB/STH move backwards (66.5 %)

She **pulled back** the hair from her face.

2. Withdraw or retreat from an activity or location, esp. military (31 %)

The army was forced to **pull back** due to bad weather.

83. HANG ON

1. Wait for a short time (41.5 %)

Please **hang on** for a minute, I'll be quick.

2. Refuse to let go of STH (35.5 %)

He **hung on** to his job until the very last day.

84. BUILD UP

1. Increase or cause STH to increase, accumulate, or strengthen, especially progressively (76 %)

Tension was **building up** among competitors.

85. THROW OUT

1. Refuse to accept or consider (esp. by people of authority) (29 %)

The president attempted to have the death penalty **thrown out**.

2. Put STH in a rubbish bin (25.5 %)

He **threw out** a dozen empty boxes that were piled up in the room.

3. Make SB leave a place, activity or organization, esp. forcibly and unexpectedly (21 %)

Several students were caught cheating and subsequently **thrown out** of school.

86. HANG OUT

1. Spend time relaxing or enjoying oneself (84 %)

I don't like to **hang out** with people I work with.

87. PUT ON

1. Put a piece of clothing or jewellery onto one's body (52 %)

You should **put on** your gloves, it's really cold outside.

2. Present or stage (play, show, competition) (14.5 %)

They **put on** such an incredible show last night!

88. GET DOWN

1. (+ to) Begin to pay serious attention to STH (26 %)

We should **get down** to discussing those issues as soon as possible.

2. Lower one's body as by kneeling, sitting or lying (22.5 %)

Get down on your knees so you can get a better view.

3. Come down from STH; descend (car, horse, tree) (17.5 %)

He loves climbing trees but finds it hard to **get down**.

89. COME OVER

1. Come to a place or area (spot, room, town, country), esp. towards SB or to join SB (95 %)

Could you **come over** and give me a hand with this?

90. MOVE IN

1. Settle into a new house or place (62.5 %)

He liked the house so much that he decided to **move in** immediately.

2. Go towards SB/STH, esp. to attack or take control of them (34 %)

The assault was led by Lieutenant Jones, moving in from behind the hill.

91. START OUT

1. Start a life, existence, profession, or course of action in a particular way or by doing a particular thing (95 %)

She started out as a shop assistant and gradually climbed the employment ladder.

92. CALL OUT

1. Speak or utter loudly (79 %)

He could hear a voice call out his name.

93. SIT UP

1. Rise from a lying to a sitting position (93.5 %)

The sudden noise made her sit up in her bed and listen.

94. TURN DOWN

1. Refuse or dismiss (request, offer, opportunity) (82.5 %)

This is an opportunity you would be foolish to turn down.

95. BACK UP

1. Move or drive backwards a short way (26 %)

He got into his car and backed up out of the alley.

2. Take action in order to support STH or make it happen (21 %)

Politicians often fail to **back up** their words with actions.

3. Establish as valid or genuine (20.5 %)

You have to **back up** your accusations with solid evidence.

96. PUT BACK

1. Move STH/SB to a place, position, or state they were in before (85.5 %)

Could you **put** the milk **back** in the fridge please?

97. SEND OUT

1. Mail, send or distribute to a number of people (57 %)

Hundreds of copies were **sent out** to the local population.

2. Send SB to a place for a particular purpose (32.5 %)

Military troops were **sent out** to secure the region.

98. GET IN

1. Go (or make STH/SB go) inside a place (car, house, room) (65.5 %)

The new security lock prevents thieves from **getting in**.

2. (+ on) Get involved in an exciting or profitable activity/opportunity (12.5 %)

You should **get in** on the act!

99. BLOW UP

1. Explode or destroy STH with a bomb, or cause to be exploded or destroyed (75.5 %)

Several attempts were made at **blowing up** official buildings.

100. CARRY ON

1. Continue to do or be involved with STH, or make STH continue (especially despite difficulty) (66 %)

I would like to **carry on** working after I retire.

2. Engage or take part in (15 %)

His illness makes it difficult for him to **carry on** conversations.

101. SET OFF

1. Start on a trip or journey (30.5 %)

We will finish packing and **set off** in the morning.

2. Cause a device to explode, or a signal to start, esp. by accident (27.5 %)

He accidentally **set off** my car alarm.

3. Make STH happen or emerge, esp. without intending to (25.5 %)

Employees started to protest, **setting off** a dispute over workers' rights.

102. KEEP ON

1. Continue doing STH without stopping, or repeatedly (92.5 %)

She wiped tears off her cheeks but **kept on** crying.

103. RUN OUT

1. (+ of) Use STH (or become used) completely so that nothing is left (49.5 %)

We've **run out** of biscuits.

2. Leave suddenly, as if in a hurry (34 %)

After the argument, she **ran out** into the garden and screamed.

104. MAKE OUT

1. See or hear with difficulty (60.5 %)

I could barely **make out** his face in the dark.

2. Represent as being a particular way, esp. falsely (11 %)

He was innocent, but the media **made** him **out** to be a criminal.

3. (*Make it out*) Deal with a difficult situation successfully (10.5 %)

We were lucky to **make** it **out** of the war alive.

105. SHUT UP

1. Stop (or make SB/STH stop) talking or making a noise (97 %)

Just sit down and **shut up**!

106. TURN OFF

1. Stop a piece of equipment working temporarily or a supply flowing by turning a tap, pressing a button, or moving a switch (69.5 %)

People were asked to **turn off** their phones.

2. Cause to feel intense dislike (20.5 %)

His speech **turned off** left-wing voters.

107. BRING ABOUT

1. Cause to happen or emerge, esp. STH positive (100 %)

This decision will **bring about** change in the political sphere.

108. STEP BACK

1. Move back by lifting one's foot and putting it down backwards (72 %)

He **stepped back** when the big man threatened him.

2. Stop being involved in STH so as to consider it more carefully/objectively (22.5 %)

We need to **step back** and take a broader perspective on the past events.

109. LAY DOWN

1. Put STH away or down on a surface, esp. because one has stopped using it (31 %)

I **laid down** my book and stood up.

2. Lie flat on a surface, usually to rest (28 %)

He **laid** the child **down** on the bed and wished her good night.

3. Lay the foundations of; establish or create (17 %)

The principles of good conduct were **laid down** decades ago.

110. BRING DOWN

1. Cause SB/STH to move downward or fall to the ground (32.5 %)

The rocket attack **brought down** the airliner.

2. Reduce the level, rate, or amount of STH (26 %)

The company's expenses need to be **brought down**.

3. Cause SB/STH in a position of power (government, president, system, organisation) to lose its power/status (25 %)

They helped **bring down** one of the most corrupt dictatorships in history.

111. STAND OUT

1. Distinguish oneself/itself by being better, more significant or more impressive than other people/things (60.5 %)

Excellent product quality is what made the brand **stand out** from its competitors.

2. Be easily seen or noticeable (38 %)

Flashing lights make planes **stand out** at night.

112. COME ALONG

1. Appear or arrive; come into existence (72.5 %)

Such an opportunity **comes along** only once in a lifetime.

2. Go somewhere with SB (20.5 %)

We're going to the cinema tonight; you should **come along** with us!

113. PLAY OUT

1. Happen or develop; be enacted or performed (79.5 %)

The way these negotiations **play out** will have important consequences.

114. BREAK OUT

1. Start suddenly, esp. STH undesirable and unpleasant (69.5 %)

Riots **broke out** that night.

115. GO AROUND

1. Go from one place/person to another; circulate (76 %)

There is a rumour **going around** that she is pregnant.

116. WALK OUT

1. Leave a place or event, especially suddenly or angrily (81.5 %)

She **walked out** of the meeting feeling irritated by her colleagues.

117. GET THROUGH

1. (+ to) Succeed in reaching a physical destination or stage (27 %)

The food supplies never **got through** to the local population.

2. Be successfully communicated or understood (22.5 %)

He needed to speak slowly and clearly so his message would **get through** to the audience.

3. Succeed in contacting SB on the telephone (20.5 %)

I cannot seem to **get through** to the customer service department.

4. Overcome STH, esp. difficult or unpleasant (14.5 %)

He gave me useful advice, which helped me **get through** this difficult situation.

118. HOLD BACK

1. Decide not to do or say STH (23.5 %)

They should not **hold back** from joining us if they want to.

2. Prevent SB/STH from reaching their full potential (21 %)

You cannot let a few unmotivated pupils **hold back** the rest of the group.

3. Prevent SB/STH from going somewhere (17.5 %)

Security guards tried to **hold back** the crowd.

4. Contain an unwanted physical manifestation (tears, laughter, sigh, sneeze) (16 %)

She was **holding back** the laughter with great effort.

119. WRITE DOWN

1. Record information on paper (98 %)

You should **write down** his contact details in case you want to get in touch.

120. MOVE BACK

1. Return to a place one has lived in before (75 %)

We **moved back** to New York last year.

121. FILL OUT

1. Complete a form or official document (81.5 %)

We had to **fill out** a dozen forms in total.

122. SIT BACK

2. Rest in a comfortable position against the back of a seat (66 %)

She **sat back** in her chair and turned on the TV.

3. (*Sit back and do STH*) Deliberately take no action/remain passive about STH (34 %)

We won't just **sit back** and watch the situation getting worse and worse.

123. RULE OUT

1. Exclude STH as a possibility, plausible cause or explanation (93.5 %)

They **ruled out** the possibility of a mass murder.

124. MOVE UP

1. Move to a better position; advance to a higher level/rank (47 %)

She **moved up** from secretary to senior manager in just a few years.

2. Move upward, from a lower spatial location to a higher one (22.5 %)

She put her hand on his shoulder and **moved** it **up** along the back of his neck.

125. PICK OUT

1. Choose SB/STH among a number of alternatives (71.5 %)

She **picked out** the best-looking dress she could find.

2. Detect/be noticed among a group of things or people (19 %)

My mum could easily be **picked out** in the picture.

126. TAKE DOWN

1. Remove STH that was previously put up or put in place (38.5 %)

After the exhibition, they **took** the paintings **down**.

2. Destroy, kill, or disable (27.5 %)

The terrorists tried to **take down** the President's plane.

3. Take SB to a place, esp. further south or at a lower level (18 %)

My dad decided to **take** us **down** to Florida.

127. GET ON

1. (+ with) Continue doing STH after stopping (51 %)

We might as well **get on** with it if we want to finish on time.

2. Get on board some form of public transportation (train, bus, plane, elevator) (14.5 %)

He **got on** the bus to go to school.

128. GIVE BACK

1. Return STH to its original owner/provider (100 %)

It's nice to be able to **give back** to the community.

129. HAND OVER

1. Give STH to SB by holding it in one's hand and offering it to them (58.5 %)

She turned around to **hand over** her keys to her husband.

2. Surrender control or responsibility for STH/SB to SB else, esp. officially (41.5 %)

The government isn't willing to **hand over** power to local authorities.

130. SUM UP

1. Express or represent the most important/representative facts, ideas, or characteristics of SB/STH, especially in a brief manner (97 %)

He **summed up** the whole discussion in just a few minutes.

131. MOVE OUT

1. Leave one's place of residence permanently (94.5 %)

Our neighbour is going to **move out** next month.

132. COME OFF

1. Become detached or removed from a larger whole (34 %)

The button is **coming off** my shirt.

2. Appear or seem to be a particular way (24.5 %)

He was tired and not prepared, and so **came off** poorly in the interview.

3. Be finished with STH; have completed STH (17.5 %)

The team just **came off** an incredibly successful season.

133. PASS ON

1. Circulate or communicate; give STH to SB after receiving it from SB else (information, ideas, object) (37.5 %)

I got this message this morning and was asked to **pass** it **on** to you.

2. Transmit from one generation to the next (traditions, beliefs, skills, possessions) (37 %)

These ancient traditions have been **passed on** from generation to generation.

3. Die (euphemism) (12.5 %)

She has been very depressed since her mother **passed on**.

134. TAKE IN

1. Provide a place for SB to live or stay (24.5 %)

The family **took** her **in** when she was abandoned by her parents.

2. Fully understand or grasp the meaning of STH (17.5 %)

You have to explain more thoroughly; it's too difficult to **take in**.

3. Deceive by behaving in a dishonest way (10 %)

He was very convincing, so I was easily **taken in**.

135. SET DOWN

1. Put something on a surface or on the ground (75 %)

He carried the bags to his room and **set** them **down**.

136. SORT OUT

1. Do what is needed to solve a problem, conflict or difficult situation (51 %)

A few ideas were raised to **sort out** the company's financial issues.

2. Find out information so as to understand STH (25.5 %)

He will need some time to **sort out** the reasons for his failure.

137. FOLLOW UP

1. Take action about STH after a previous action or thing, esp. so as to reinforce its effect (48.5 %)

You won't be cured immediately after the operation; you will have to **follow up** with therapy.

2. Try to find more information about STH (45.5 %)

Detectives are **following up** on a few promising leads.

138. COME THROUGH

1. Be clearly perceived, noticed or seen (feeling, emotion, quality) (20.5 %)

Her disappointment **came through** by the tone of her voice.

2. Reach success or a desired goal despite difficulty (20 %)

He worked really hard, and despite some difficulties, he **came through** in the end.

3. Arrive at a destination; come into view (train, ship) (10 %)

We had to wait for a ship to **come through** and rescue us.

139. SETTLE DOWN

1. Adopt a quieter and steadier lifestyle (31 %)

I just want to fall in love with the right guy and **settle down**.

2. Become calmer, quieter, more orderly (26.5 %)

We need things to **settle down** before we can make a serious decision.

3. Get into a comfortable position, either sitting or lying (20 %)

When he reached the top of the hill, he **settled down** in the grass to have a rest.

140. COME AROUND

1. Come in the area near STH/SB (45 %)

He **came around** to my room and kissed me goodnight.

2. (+ to) Convert to an opinion or decision (22 %)

I believe she will **come around** to our way of thinking eventually.

3. Happen again as a regular event, at its usual time (10 %)

You'll have to wait until summer **comes around**.

141. FILL IN

1. (+ for) Do SB's work temporarily because they cannot or will not do it themselves (31 %)

I had to **fill in** for her yesterday because she was ill.

2. (+ on) Give SB extra or missing information they want or need (29.5 %)

She **filled in** Carol **in** on the plan.

3. Put material or substance into STH in order to make it full or complete (19 %)

All the remaining holes had to be **filled in** with concrete.

142. GIVE OUT

1. Give to each of a large number of people (40 %)

The committee **gave out** more than 100 copies in the last meeting.

2. Make known openly or publicly (33.5 %)

You should be more careful and not **give out** your phone number so easily.

3. Collapse/fail; stop functioning properly (heart, knees) (11.5 %)

At 95 years of age, her heart finally **gave out**.

143. GIVE IN

1. Cease resistance to (liking/temptation/habit, or to SB's demands/control) (100 %)

She shouldn't **give in** to her children's demands.

144. GO ALONG

1. Progress or proceed with an activity (44 %)

You will learn as you **go along**.

2. Act in cooperation or express agreement (28 %)

The Democrats are not likely to **go along** with the plan.

3. Go to a place or event, esp. without much planning (15.5 %)

Would you like to **go along** with us to the party?

145. BREAK OFF

1. Separate a part (or become separate) from a larger piece (40 %)

He accidentally **broke off** a piece of wood from the fence.

2. Stop speaking, especially suddenly (28 %)

"There is something that..." He **broke off** abruptly.

3. Put an end to STH (relationship, discussion, talks, negotiations) (24 %)

They **broke off** diplomatic relations in 1986.

146. PUT OFF

1. Delay until a later time or date (68 %)

Now that I had more free time, there was no excuse to **put off** exercising any longer.

2. Cause to feel intense dislike (27.5 %)

The bad smell **put** everyone **off**.

147. COME ABOUT

1. Take place or happen/occur, esp. unexpectedly (81.5 %)

I did not expect this to **come about**.

148. CLOSE DOWN

1. Stop operating or functioning (87 %)

Non-profitable companies were **closed down**.

149. PUT IN

1. Put one thing inside another; include or insert (50 %)

You need to **put in** your contact details in case there is a problem.

2. Invest or devote so as to achieve STH (time, effort, work) (26.5 %)

I **put in** ten hours a day at the office.

150. SET ABOUT

1. Begin a course of action, usually with a specific purpose/objective in mind (97 %)

We **set about** laying the table before our guests arrived.

Appendix 2: List of phrasal verbs in alphabetical order (Study 1)

B		Come off	(132)
Back up	(95)	Come on	(25)
Blow up	(99)	Come out	(7)
Break down	(55)	Come over	(89)
Break off	(145)	Come through	(138)
Break out	(114)	Come up	(4)
Break up	(80)	Cut off	(61)
Bring about	(107)		
Bring back	(44)	E	
Bring down	(110)	End up	(18)
Bring in	(47)		
Bring out	(81)	F	
Bring up	(45)	Figure out	(21)
Build up	(84)	Fill in	(141)
		Fill out	(121)
C		Find out	(6)
Call out	(92)	Follow up	(137)
Carry on	(100)		
Carry out	(36)	G	
Catch up	(53)	Get back	(19)
Check out	(49)	Get down	(88)
Clean up	(65)	Get in	(98)
Close down	(148)	Get off	(56)
Come about	(147)	Get on	(127)
Come along	(112)	Get out	(13)
Come around	(140)	Get through	(117)
Come back	(3)	Get up	(23)
Come down	(31)	Give back	(128)
Come in	(14)		

Give in (143)

Give out (142)

Give up (16)

Go ahead (32)

Go along (144)

Go around (115)

Go back (5)

Go down (26)

Go in (54)

Go off (60)

Go on (1)

Go out (8)

Go over (74)

Go through (76)

Go up (33)

Grow up (10)

H

Hand over (129)

Hang on (82)

Hang out (86)

Hang up (75)

Hold back (118)

Hold on (77)

Hold out (79)

Hold up (38)

K

Keep on (102)

Keep up (57)

L

Lay down (108)

Lay out (73)

Line up (71)

Look around (52)

Look back (34)

Look down (42)

Look out (46)

Look up (20)

M

Make out (104)

Make up (17)

Move back (120)

Move in (90)

Move on (50)

Move out (131)

Move up (124)

O

Open up (48)

P

Pass on (133)

Pay off (78)

Pick out (125)

Pick up (2)

Point out (9)

Play out (113)

Pull back (82)

Pull out (39)

Pull up (63)

Put back (96)

Put down (58)

Put in (149)
 Put off (146)
 Put on (87)
 Put out (51)
 Put up (43)

R

Reach out (59)
 Rule out (123)
 Run out (103)

S

Send out (97)
 Set about (150)
 Set down (135)
 Set off (101)
 Set out (64)
 Set up (11)
 Settle down (139)
 Show up (27)
 Shut down (66)
 Shut up (105)
 Sit back (122)
 Sit down (22)
 Sit up (93)
 Slow down (68)
 Sort out (136)
 Stand out (111)
 Stand up (30)

Start out (91)
 Step back (108)
 Sum up (130)

T

Take back (72)
 Take down (126)
 Take in (134)
 Take off (28)
 Take on (15)
 Take out (24)
 Take over (37)
 Take up (41)
 Throw out (85)
 Turn around (40)
 Turn back (62)
 Turn down (94)
 Turn off (106)
 Turn out (12)
 Turn over (67)
 Turn up (70)

W

Wake up (35)
 Walk out (116)
 Wind up (69)
 Work out (29)
 Write down (119)

Appendix 3: List of phrasal verbs in frequency ranking order (Study 1)

2.	Go on	39.	Hold up
3.	Pick up	40.	Pull out
4.	Come back	41.	Turn around
5.	Come up	42.	Take up
6.	Go back	43.	Look down
7.	Find out	44.	Put up
8.	Come out	45.	Bring back
9.	Go out	46.	Bring up
10.	Point out	47.	Look out
11.	Grow up	48.	Bring in
12.	Set up	49.	Open up
13.	Turn out	50.	Check out
14.	Get out	51.	Move on
15.	Come in	52.	Put out
16.	Take on	53.	Look around
17.	Give up	54.	Catch up
18.	Make up	55.	Go in
19.	End up	56.	Break down
20.	Get back	57.	Get off
21.	Look up	58.	Keep up
22.	Figure out	59.	Put down
23.	Sit down	60.	Reach out
24.	Get up	61.	Go off
25.	Take out	62.	Cut off
26.	Come on	63.	Turn back
27.	Go down	64.	Pull up
28.	Show up	65.	Set out
29.	Take off	66.	Clean up
30.	Work out	67.	Shut down
31.	Stand up	68.	Turn over
32.	Come down	69.	Slow down
33.	Go ahead	70.	Wind up
34.	Go up	71.	Turn up
35.	Look back	72.	Line up
36.	Wake up	73.	Take back
37.	Carry out	74.	Lay out
38.	Take over	75.	Go over

76.	Hang up	116.	Go around
77.	Go through	117.	Walk out
78.	Hold on	118.	Get through
79.	Pay off	119.	Hold back
80.	Hold out	120.	Write down
81.	Break up	121.	Move back
82.	Bring out	122.	Fill out
83.	Pull back	123.	Sit back
84.	Hang on	124.	Rule out
85.	Build up	125.	Move up
86.	Throw out	126.	Pick out
87.	Hang out	127.	Take down
88.	Put on	128.	Get on
89.	Get down	129.	Give back
90.	Come over	130.	Hand over
91.	Move in	131.	Sum up
92.	Start out	132.	Move out
93.	Call out	133.	Come off
94.	Sit up	134.	Pass on
95.	Turn down	135.	Take in
96.	Back up	136.	Set down
97.	Put back	137.	Sort out
98.	Send out	138.	Follow up
99.	Get in	139.	Come through
100.	Blow up	140.	Settle down
101.	Carry on	141.	Come around
102.	Set off	142.	Fill in
103.	Keep on	143.	Give out
104.	Run out	144.	Give in
105.	Make out	145.	Go along
106.	Shut up	146.	Break off
107.	Turn off	147.	Put off
108.	Bring about	148.	Come about
109.	Step back	149.	Close down
110.	Lay down	150.	Put in
111.	Bring down	151.	Set about
112.	Stand out		
113.	Come along		
114.	Play out		
115.	Break out		

Appendix 4: Comparison of frequency percentages obtained between the two random samples for all the meaning senses in the PHaVE List (Study 1)

No.	Phrasal verb	Meaning sense	Mean % of occurrences	Sample 1	Sample 2	Difference
1	Go on	1	64.5	64	65	1
		2	13	12	14	2
2	Pick up	1	70.5	69	72	3
3	Come back	1	96.5	95	98	3
4	Come up	1	34	34	34	0
		2	27.5	29	26	3
5	Go back	1	90	98	82	16
6	Find out	1	100	100	100	0
7	Come out	1	38	37	39	2
		2	13.5	14	13	1
		3	11.5	11	12	1
		4	10	8	12	4
8	Go out	1	56.5	56	57	1
		2	19.5	15	24	9
9	Point out	1	89	90	88	2
10	Grow up	1	98	98	98	0
11	Get up	1	64.5	68	61	7
		2	16.5	16	17	1
12	Turn out	1	91	92	90	2
13	Get out	1	75.5	70	81	11
14	Come in	1	65	63	67	4
		2	14	19	9	10
15	Take on	1	42	37	47	10
		2	41.5	38	45	7
16	Give up	1	80.5	82	79	3
17	Make up	1	42.5	44	41	3
		2	18.5	20	17	3
		3	15.5	13	18	5
18	End up	1	100	100	100	0
19	Get back	1	78.5	75	82	7
20	Look up	1	88	86	90	4
21	Figure out	1	100	100	100	0
22	Sit down	1	100	100	100	0
23	Get up	1	92	92	92	0
24	Take out	1	50.5	48	53	5
		2	13.5	16	11	5
		3	12.5	12	13	1

25	Come on	1	50	52	48	4
		2	19.5	15	24	9
26	Go down	1	29	30	28	2
		2	27	21	33	12
		3	18	22	14	8
27	Show up	1	81	82	80	2
28	Take off	1	41	45	37	8
		2	28.5	26	31	5
		3	14	15	13	2
29	Work out	1	33	37	29	8
		2	23	20	26	6
		3	15	15	15	0
		4	12.5	15	10	5
30	Stand up	1	67.5	68	67	1
		2	11	10	12	2
31	Come down	1	32.5	32	33	1
		2	20.5	19	22	3
		3	11	10	12	2
32	Go ahead	1	99	98	100	2
33	Go up	1	47.5	46	49	3
		2	20.5	23	18	5
34	Look back	1	49.5	55	44	11
		2	30	22	38	16
35	Wake up	1	92	91	93	2
36	Carry out	1	63.5	61	66	5
		2	34	35	33	2
37	Take over	1	96.5	93	100	7
38	Hold up	1	54	54	54	0
		2	14	14	14	0
		3	11.5	13	10	3
39	Pull out	1	75	67	83	16
40	Turn around	1	67.5	67	68	1
		2	24.5	25	24	1
41	Take up	1	25.5	33	18	15
		2	17.5	21	14	7
		3	10.5	5	16	11
		4	10	6	14	8
42	Look down	1	92	92	92	0
43	Put up	1	23	23	23	0
		2	19	16	22	6
		3	18	18	18	0
44	Bring back	1	52.5	52	53	1
		2	22.5	22	23	1

45	Bring up	1	59.5	59	60	1
		2	17.5	15	20	5
46	Look out	1	50.5	43	58	15
		2	25.5	29	22	7
47	Bring in	1	52	52	52	0
		2	30.5	30	31	1
48	Open up	1	42.5	48	37	11
		2	27.5	25	30	5
49	Check out	1	97	95	99	4
50	Move on	1	42	42	42	0
		2	28	30	26	4
		3	25	24	26	2
51	Put out	1	47	48	46	2
		2	14	15	13	2
		3	10	10	10	0
52	Look around	1	100	100	100	0
53	Catch up	1	26	30	22	8
		2	18	19	17	2
		3	14	13	15	2
54	Go in	1	90	88	92	4
55	Break down	1	24	21	27	6
		2	20	23	17	6
		3	17.5	18	17	1
		4	13.5	18	9	9
56	Get off	1	54	53	55	2
		2	12.5	13	12	1
		3	12	12	12	0
57	Keep up	1	46	40	52	12
		2	32.5	36	29	7
58	Put down	1	62	59	65	6
59	Reach out	1	48.5	47	50	3
		2	39.5	39	40	1
60	Go off	1	44.5	48	41	7
		2	22	17	27	10
		3	14	14	14	0
61	Cut off	1	27	22	32	10
		2	24.5	25	24	1
		3	23.5	19	28	9
62	Turn back	1	51.5	52	51	1
		2	25.5	22	29	7
63	Pull up	1	47	51	43	8
		2	35.5	32	39	7
64	Set out	1	42.5	47	38	9

		2	26.5	26	27	1
		3	16	14	18	4
65	Clean up	1	74	69	79	10
		2	22	24	20	4
66	Shut down	1	94	94	94	0
67	Turn over	1	59.5	62	57	5
		2	34	33	35	2
68	Slow down	1	88.5	87	90	3
69	Wind up	1	87	87	87	0
70	Turn up	1	48	43	53	10
		2	21.5	20	23	3
		3	14	15	13	2
71	Line up	1	75	75	75	0
72	Take back	1	50	57	43	14
		2	33.5	31	36	5
73	Lay out	1	46	45	47	2
		2	35	36	34	2
74	Go over	1	63	67	59	8
		2	20	20	20	0
75	Hang up	1	76.5	75	78	3
76	Go through	1	61	62	60	2
		2	10	8	12	4
77	Hold on	1	57	53	61	8
		2	35.5	36	35	1
78	Pay off	1	49	49	49	0
		2	48.5	49	48	1
79	Hold out	1	61	67	55	12
		2	15	9	21	12
80	Break up	1	59	57	61	4
		2	34.5	38	31	7
81	Bring out	1	36	40	32	8
		2	33	31	35	4
		3	27	26	28	2
82	Pull back	1	66.5	67	66	1
		2	31	30	32	2
83	Hang on	1	41.5	41	42	1
		2	35.5	41	30	11
84	Build up	1	76	74	78	4
85	Throw out	1	29	31	27	4
		2	25.5	22	29	7
		3	21	23	19	4
86	Hang out	1	84	81	87	6
87	Put on	1	52	55	49	6

		2	14.5	15	14	1
88	Get down	1	26	26	26	0
		2	22.5	27	18	9
		3	17.5	17	18	1
89	Come over	1	95	95	95	0
90	Move in	1	62.5	61	64	3
		2	34	39	29	10
91	Start out	1	95	94	96	2
92	Call out	1	79	78	80	2
93	Sit up	1	93.5	93	94	1
94	Turn down	1	82.5	84	81	3
95	Back up	1	26	31	21	10
		2	21	19	23	4
		3	20.5	17	24	7
96	Put back	1	85.5	86	85	1
97	Send out	1	57	59	55	4
		2	32.5	30	35	5
98	Get in	1	65.5	70	61	9
		2	12.5	11	14	3
99	Blow up	1	75.5	77	74	3
100	Carry on	1	66	69	63	6
		2	15	16	14	2
101	Set off	1	30.5	35	26	9
		2	27.5	27	28	1
		3	25.5	21	30	9
102	Keep on	1	92.5	95	90	5
103	Run out	1	49.5	48	51	3
		2	34	37	31	6
104	Make out	1	60.5	64	57	7
		2	11	12	10	2
		3	10.5	9	12	3
105	Shut up	1	97	99	95	4
106	Turn off	1	69.5	69	70	1
		2	20.5	19	22	3
107	Bring about	1	100	100	100	0
108	Step back	1	72	68	76	8
		2	22.5	24	21	3
109	Lay down	1	31	26	36	10
		2	28	31	25	6
		3	17	17	17	0
110	Bring down	1	32.5	40	25	15
		2	26	24	28	4
		3	25	23	27	4

111	Stand out	1	60.5	62	59	3
		2	38	38	38	0
112	Come along	1	72.5	74	71	3
		2	20.5	20	21	1
113	Play out	1	79.5	81	78	3
114	Break out	1	69.5	70	69	1
115	Go around	1	76	67	85	18
116	Walk out	1	81.5	81	82	1
117	Get through	1	27	28	26	2
		2	22.5	17	28	11
		3	20.5	21	20	1
		4	14.5	14	15	1
118	Hold back	1	23.5	28	19	9
		2	21	19	23	4
		3	17.5	12	23	11
		4	16	21	11	10
119	Write down	1	98	98	98	0
120	Move back	1	75	77	73	4
121	Fill out	1	81.5	83	80	3
122	Sit back	1	66	62	70	8
		2	34	38	30	8
123	Rule out	1	93.5	95	92	3
124	Move up	1	47	51	43	8
		2	22.5	22	23	1
125	Pick out	1	71.5	78	65	13
		2	19	14	24	10
126	Take down	1	38.5	36	41	5
		2	27.5	25	30	5
		3	18	20	16	4
127	Get on	1	51	51	51	0
		2	14.5	16	13	3
128	Give back	1	100	100	100	0
129	Hand over	1	58.5	65	52	13
		2	41.5	35	48	13
130	Sum up	1	97	97	97	0
131	Move out	1	94.5	95	94	1
132	Come off	1	34	34	34	0
		2	24.5	30	19	11
		3	17.5	12	23	11
133	Pass on	1	37.5	38	37	1
		2	37	34	40	6
		3	12.5	13	12	1
134	Take in	1	24.5	24	25	1

		2	17.5	20	15	5
		3	10	10	10	0
135	Set down	1	75	77	73	4
136	Sort out	1	51	45	57	12
		2	25.5	26	25	1
137	Follow up	1	48.5	54	43	11
		2	45.5	39	52	13
138	Come through	1	20.5	23	18	5
		2	20	21	19	2
		3	10	7	13	6
139	Settle down	1	31	30	32	2
		2	26.5	24	29	5
		3	20	22	18	4
140	Come around	1	45	44	46	2
		2	22	30	14	16
		3	10	8	12	4
141	Fill in	1	31	33	29	4
		2	29.5	33	26	7
		3	19	13	25	12
142	Give out	1	40	40	40	0
		2	33.5	35	32	3
		3	11.5	10	13	3
143	Give in	1	100	100	100	0
144	Go along	1	44	49	39	10
		2	28	23	33	10
		3	15.5	15	16	1
145	Break off	1	40	35	45	10
		2	28	28	28	0
		3	24	28	20	8
146	Put off	1	68	64	72	8
		2	27.5	30	25	5
147	Come about	1	81.5	78	85	7
148	Close down	1	87	82	92	10
149	Put in	1	50	50	50	0
		2	26.5	28	25	3
150	Set about	1	97	96	98	2

Appendix 5: The PHaVE List Users' Manual (Study 1)

What is the PHaVE List?

The PHaVE List is a listing of the most common meaning senses of the most common phrasal verbs in English, intended to be seen as a complement to previous phrasal verb frequency lists. It was designed to be used as a reference source for practitioners and as a learning guide for learners of English.

What does the list contain?

There are a large number of phrasal verbs in English, perhaps over 8,000 (Liu, 2011). Furthermore, a very large proportion of these are polysemous, as in the following example:

WORK OUT

- a) plan, devise or think about STH carefully or in detail (33 %)
We still need to work out the details of the procedure.
- b) exercise in order to improve health or strength (23 %)
He works out at the gym 5 times a week.
- c) (+ well/badly) happen or develop in a particular way (15 %)
Everything worked out well in the end.
- d) prove to be successful (12.5 %)
Despite our efforts, it just didn't work out.

This large number of phrasal verbs and meaning senses make the teaching and learning of phrasal verbs extremely challenging. The PHaVE List strives to make phrasal verbs more manageable for pedagogical purposes by including only the very most important ones, thus limiting the number to be addressed, at least in the first instance. The PHaVE List includes only the 150 phrasal verbs which have been identified by previous research as being the most frequent, i.e. having at least 10 tokens per million words in either the COCA or the BNC. It also describes only the most frequent meaning senses for each of those items, giving the percentage of occurrence for each. This approach of including only the most frequent phrasal verbs and their most frequent meaning senses is very efficient; the 288 meaning senses included on the PHaVE List account for a very large proportion of all the phrasal verb occurrences in the BNC.

How was the list made?

The items were extracted by previous studies using various corpora and different searching procedures. For each item, two random samples of 100 concordance lines were analysed across all sections of the COCA in order to see what meaning senses are the most frequent among all of the possible meaning senses. Each meaning sense in the list is illustrated by an example sentence which was modelled on either the COCA or various internet sources.

What are the practical applications of the list?

Just like any existing frequency list, the PHaVE List has a number of practical applications. For language teaching practitioners like teachers and syllabus designers, the PHaVE List provides one means of handling a difficult aspect of one of the most challenging features of the English language. Because many phrasal verbs are polysemous and may have up to 10 or 15 meaning senses, it is impossible to deal with all of them in the classroom or in textbooks. Therefore, the PHaVE List offers the possibility of prioritizing their most frequent, and thus most important, meaning senses, thereby facilitating a more systematic approach to dealing with polysemous phrasal verbs. It is hoped that the PHaVE List will contribute to a more principled integration of phrasal verbs into language instruction and syllabi.

In addition, the PHaVE List can provide useful information for testing and assessment purposes. There may be uncertainty with polysemous items about which meaning sense should be tested. The List presents meaning sense frequency percentages and ranking orders, allowing test-makers to make informed decisions as to which meaning sense(s) should be tested, depending on language proficiency levels.

Finally, the PHaVE List can be used as a learning guide by students who may have noticed the importance of phrasal verbs in informal spoken discourse, but whose language instruction did not equip them with enough knowledge or enough confidence to use them accurately or appropriately.

What are the limitations of the PHaVE List?

The PHaVE List has a number of limitations which users should be aware of. Firstly, the PHaVE List was created with the sole purpose of providing a list of the most frequent meaning senses of the phrasal verbs it includes. No consideration was given to the meaning senses' varying degrees of semantic transparency or difficulty. It may be argued that completely transparent meaning senses (e.g. go out of a building) are rather easy to decode and learn and thus perhaps not worth being given explicit attention or being included in the list. The PHaVE List serves as a meaning sense frequency indicator only, and teachers and learners ultimately retain the power to decide what they want to pay explicit attention to.

Secondly, since the meaning sense frequency percentages were derived from a corpus, it is unlikely that they are 100% reflective of all language use and individual types of exposure. They are inherently an artefact of the various texts which the corpus contains. The PHaVE List is derived from the COCA, which has numerous advantages: it is very large, it is very recent and regularly updated, and it is balanced across several genres and discourse types. However, it is reflective of mostly American English. What has been found as the most common meaning senses for a particular phrasal verb may be different in some other varieties of English, such as British English. Because it combines several sources (popular magazines, newspapers, fiction, academic texts, TV broadcasts), it will probably not reflect any particular individual's experiences and English exposure. For instance, someone using English for reading finance newspapers may not find the list very reflective of their own use. Users should remain aware that the PHaVE List aims to be of general service and usefulness to a wide range of English language teaching professionals and students, which may limit its usefulness for some specific potential users.

Thirdly, it is not the aim of the PHaVE List to provide an exhaustive listing of common phrasal verbs, like a dictionary. The limited number of phrasal verbs and meaning senses are meant to facilitate practical pedagogic practice, but it should not be seen as being comprehensive. There are many important phrasal verbs not included on the list. Likewise, there are useful meaning senses not included for the phrasal verbs which do appear on the list. The list should be seen as a starting point for instruction and learning, not the end-point.

Reference

Liu, D. (2011). The most frequently used English phrasal verbs in American and British English: A multicorpus examination. *TESOL Quarterly*, 45(4), 661-688.

Appendix 6: List of target phrasal verbs and meaning senses with frequency and semantic opacity information (Study 2)

Phrasal verb		Meaning sense	COCA frequency
Back up	F	Move or drive backwards a short way	2974.66
	F	Take action in order to support STH or make it happen	2402.61
	F	Establish as valid or genuine	2345.40
Break down	F	Stop working or functioning; fail or collapse (vehicle, device, relationship, negotiations)	2106.72
	F	Divide or separate into categories or smaller components so as to make it easier to understand or deal with	1755.60
	F	Lose control of one's emotions and yield to tears or distress	1536.15
	L	Undergo chemical decomposition; separate into different substances	1185.03
Break off	L	Separate a part (or become separate) from a larger piece	843.60
	F	Stop speaking, especially suddenly	590.52
	F	Put an end to STH (relationship, discussion, talks, negotiations)	506.16
Bring in	L	Bring STH to a place	4248.92
	F	Ask SB to do a particular job or task	2492.15
Clean up	L	Get rid of dirt or mess	6147.92
	F	Make STH free from dangerous, unacceptable or controversial activities or contents	1827.76
Come along	F	Appear or arrive; come into existence	3969.37
	L	Go somewhere with SB	1122.37
Come in	L	Enter a place or area (room, building)	19765.20
	F	Become involved in a situation	4257.12
Come on	F	Said to encourage SB to try harder, or do or say STH	10445
	F	Said to show SB disbelief, disagreement, or anger	4073.55
Come out	L	Leave a place (room, building, container) or appear from it	13874.94
	F	Become known or revealed after being kept secret	4929.25
	F	(+ and do/say ...) Make public knowledge a privately held position	4198.99
	F	Become available or released to the public (film, book...)	3651.30
Cut off	L	Remove a part of STH by cutting it	2036.88
	F	Interrupt SB as they are speaking	1848.28
	F	End the provision of STH, or be deprived of a provision (electricity, money)	1772.84
Get down	F	(+ to ...) Begin to pay serious attention to STH	1957.80
	L	Lower one's body as by kneeling, sitting or lying	1694.25
	L	Come down from STH; descend (car, horse, tree)	1317.75
Get off	L	Go away from, leave (train, bus, aircraft, lift)	3884.22
	F	(Get off to a ... start) Begin STH in a certain way	899.12
	F	Manage to avoid serious trouble or consequences (esp. legal punishment)	863.16
Get on	F	(+ with ...) Continue doing STH after stopping; proceed with STH	2973.93
	L	Board some form of public transportation (train, bus, plane, elevator)	760.23
Give out	L	Give to each of a large number of people; distribute	1209.60
	F	Make known openly or publicly; reveal	1013.04
	F	Collapse, fail; stop functioning properly (heart, knees)	347.76
Go down	L	Move down to a lower level or position	5827.84
	F	Decrease in value or amount	5425.92
	F	Go from one place to another, esp. one that is further south or underneath	3617.28

Go up	F	Become higher in value; increase	9424.95
	L	Move upward, or from a lower spatial location to a higher one	4067.61
Hand over	L	Give STH to SB by holding it in one's hand and offering it to them	1755.58
	F	Surrender control or responsibility for STH/SB to SB else, esp. officially	1245.41
Hold back	F	Decide not to do or say STH	988.64
	F	Prevent SB/STH from reaching their full potential	883.47
	L	Prevent SB/STH from going somewhere	736.22
	F	Contain an unwanted physical manifestation (tears, laughter, sigh, sneeze)	673.12
Keep up	F	Move, progress or increase at the same rate or pace as SB/STH	4897.16
	F	Make STH continue	3459.95
Look back	F	Think of STH again, reconsider STH past	7551.22
	L	Look at STH/SB again after having momentarily looked elsewhere	4576.50
Look out	L	Look outside, or at the horizon	6499.85
	F	Take care of SB and make sure they are well; protect SB's interests	3282.10
Make out	F	See or hear with difficulty	4052.29
	F	Represent as being a particular way, esp. falsely	736.78
	F	(<i>Make it out</i>) Deal with a difficult situation successfully	703.29
Move up	F	Move to a better position; advance to a higher level/rank	2101.37
	L	Move upward, from a lower spatial location to a higher one	1005.97
Pay off	F	Pay the complete amount of STH	3438.33
	F	Pay back the effort spent in doing STH by becoming profitable or effective	3403.24
Pull back	L	Move backwards or make SB/STH move backwards	3767.22
	F	Withdraw or retreat from an activity or location, esp. military	1756.15
Put in	L	Put one thing inside another; include or insert	1525
	F	Invest or devote so as to achieve STH (time, effort, work)	808.25
Put on	L	Put a piece of clothing or jewellery onto one's body	3341
	F	Present or stage (play, show, competition)	931.63
Put out	F	Make STH known or accessible to the public (information, products)	3899.59
	F	Stop STH from burning or shining	1161.58
	L	Place STH somewhere in order for it to be seen or used	829.70
Put up	L	Display or attach STH (e.g. to a wall) so it can be seen	2456.17
	F	(+ <i>with</i> ...) Be willing to accept STH unpleasant or not desirable; tolerate	2029.01
	F	Build or place STH somewhere	1922.22
Reach out	L	Stretch an arm in order to hold, touch, or get STH that is within short distance	4792.77
	F	Make an effort to address or communicate with SB, so as to help them or involve them in STH	3903.39
Run out	F	Use STH (or become used) completely so that nothing is left	2822.98
	L	Leave suddenly, as if in a hurry	1939.02
Set out	F	Start doing or working on STH, esp. with a particular goal in mind	3553.85
	F	Start a journey	2215.93
	F	Explain or present STH clearly, esp. officially and in writing	1337.92
Sit back	L	Rest in a comfortable position against the back of a seat	2671.68
	F	Deliberately take no action/remain passive about STH	1376.32
Stand out	F	Distinguish oneself/itself by being better, more significant or more impressive than other people/things	3318.42
	F	Be easily seen or noticeable	2084.30
Take back	L	Take STH/SB to a place they were in before	3224.50
	F	Regain possession or control over STH	2160.41
Take in	F	Provide a place for SB to live or stay	935.16
	F	Fully understand or grasp the meaning of STH	667.97

	F	Deceive by behaving in a dishonest way	381.70
Take out	L	Remove or extract STH from a container	7182.61
	F	Invite to a recreational place or social event	1920.10
	F	Obtain an official document or service from an authority	1777.87
Turn around	L	Move so as to face in the opposite direction	7696.35
	F	Make STH become better or more successful than it previously was (economy, business)	2793.49
Turn over	F	Surrender possession or control to SB/STH (esp. in authority)	3709.23
	L	Change position so that the other side is facing towards the outside or the top, or another direction	2119.56
Turn up	F	Yield; be (or make STH be) found, discovered, or noticed	3608.64
	F	Increase the volume or level of STH	1616.37
	F	Arrive or make an appearance somewhere	1052.52

L = Literal meaning sense

F = Figurative meaning sense

SB = 'Somebody'

STH = 'Something'

Appendix 7: Information sheet for participants – English (Study 2)



INFORMATION SHEET

As part of my PhD in the School of English, I am carrying out a study investigating students' knowledge of a sample of the most common phrasal verbs in English. I am going to administer tests to voluntary participants from various backgrounds and with various English language proficiency levels, and then analyse and compare the scores of these tests.

I have approached you because I am interested in assessing the knowledge of speakers of English. I would be very grateful if you would agree to take part.

You will now be given a phrasal verbs' test with 100 items. Your knowledge of the phrasal verbs in this test will be assessed using gap-filling sentences. You have about 30 minutes to complete the test. Please answer only the questions where you are sure you know the answer. Do not guess.

You are free to withdraw from the study at any time. At every stage, your name will remain confidential. The data will be anonymized before the analysis and will be kept securely and used for academic purposes only.

Should you have any further queries about the study, please feel free to contact myself or my supervisor, Prof. Norbert Schmitt, who can be reached at norbert.schmitt@nottingham.ac.uk or by phone on +44 (0) 115 951 4847.

Signed

Mélodie Garnier

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Appendix 8: Information sheet for participants – Spanish (Study 2)



HOJA DE INFORMACIÓN

Como parte de mi doctorado en el departamento de Inglés, estoy llevando a cabo un estudio sobre el conocimiento que tienen los estudiantes sobre algunos de los verbos frasales más comunes en inglés. Voy a administrar pruebas a voluntarios de diferentes niveles de inglés, procediendo luego a analizar y a comparar los resultados de dichas pruebas.

Ha sido contactado/a porque estoy interesada en evaluar el conocimiento de los hablantes de inglés. Estaría muy agradecida de poder contar con su participación.

Si acepta participar en este estudio, tendrá que completar a continuación un test con 100 verbos frasales y un cuestionario. En el test encontrará frases con espacios en blanco que usted tendrá que rellenar. Cuenta con 30 minutos aproximadamente para completar la prueba. Ruego que complete solo aquellas oraciones de las que esté seguro/a de su respuesta. Trate de no adivinar.

Tiene la libertad de retirarse de este estudio en cualquier momento. Su nombre y datos personales permanecerán anónimos en todas las fases del estudio. Todos los datos se guardaran de una forma segura y serán usados para propósitos académicos solamente.

En caso de que tenga más preguntas sobre el estudio, por favor no dude en a mi o a mi supervisor, Profesor Norbert Schmitt, con quien se puede contactar a través del mail norbert.schmitt@nottingham.ac.uk o por vía telefónica al +44 (0) 115 951 4847.

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Appendix 9: Consent form for participants – English (Study 2)

University of Nottingham

School of English

Consent Form

Project title: **Investigating the productive knowledge of polysemous phrasal verbs**

- | | | |
|--|------------------------------|-----------------------------|
| 1. I confirm that the purpose of the study has been explained and that I have understood it. | YES ☐ | NO ☐ |
| 2. I have had the opportunity to ask questions and they have been successfully answered. | YES ☐ | NO ☐ |
| 3. I understand that my participation in this study is voluntary and that I am free to withdraw from the study at any time, without giving a reason and without consequence. | YES ☐ | NO ☐ |
| 4. I understand that all data are anonymous and that there will not be any connection between the personal information provided and the data. | YES ☐ | NO ☐ |
| 5. I understand that there are no known risks or hazards associated with participating in this study. | YES ☐ | NO ☐ |
| 6. I confirm that I have read and understood the attached information and that I agree to participate in this study. | YES ☐ | NO ☐ |
| 7. I have received a copy of this Consent Form and of the accompanying Information Sheet. | YES ☐ | NO ☐ |

Participant name:

Participant signature:

Date:

Researcher signature:

Appendix 10: Consent form for participants – Spanish (Study 2)

Universidad de Nottingham

Departamento de Ingles

Formulario de consentimiento

Título del proyecto: **Investigación del conocimiento productivo de los verbos frasales polisémicos**

- | | | |
|---|-----------------------------|-----------------------------|
| 1. Confirmo que el propósito de este estudio ha sido explicado y que lo he entendido. | SI ☐ | NO ☐ |
| 2. He tenido la oportunidad de hacer preguntas que han sido debidamente respondidas | SI ☐ | NO ☐ |
| 3. Entiendo que mi participación en este estudio es voluntaria y que tengo la libertad de retirarme del estudio en cualquier momento, sin explicar por qué y sin consecuencias. | SI ☐ | NO ☐ |
| 4. Entiendo que todos los datos son anónimos y que no habrá ninguna conexión entre la información personal proporcionada y los datos. | SI ☐ | NO ☐ |
| 5. Entiendo que no hay riesgos o peligros asociados a la participación en este estudio. | SI ☐ | NO ☐ |
| 6. Confirmo que he leído y entendido la información adjunta y estoy de acuerdo en tomar parte en este estudio. | SI ☐ | NO ☐ |
| 7. He recibido una copia del formulario de consentimiento y de la hoja de información. | SI ☐ | NO ☐ |

Nombre del participante:

Firma del participante:

Fecha:

Firma del investigador:

Appendix 11: Productive phrasal verb test – English (Study 2)

We are carrying out a study of students' productive knowledge of phrasal verbs. To help us in our research please complete this test.

Read each sentence carefully, and then write what you think the missing words (a phrasal verb) are, in the space next to the sentence. To help you, the first letter(s) of each word is/are shown. We have also given a definition for each phrasal verb after every sentence. **Please make sure you read each definition carefully.** There are 100 sentences and some of them use the same phrasal verb.

You have 30 minutes to finish the test. Good luck!

Example sentences:

#	Sentence	Answer
i	The prisoners are hoping to g___ o___ of jail soon. (<i>leave</i>)	<i>get out</i>
ii	I didn't think he would b___ u___ the subject. (<i>mention, introduce</i>)	<i>bring up</i>
iii	She b___ u___ her children under very difficult circumstances. (<i>raised, educated</i>)	<i>brought up / bring up</i>

1	Put the chicken on the grill and t___ it o___ a few times. (<i>bring the bottom to the top or vice versa</i>)	
2	You need to take the bus and g___ o___ at the third stop. (<i>leave the bus</i>)	
3	Their new album will c___ o___ next month. (<i>be released to the public</i>)	
4	She h___ b___ the laughter with great effort. (<i>contained, repressed</i>)	
5	Following a disagreement, the government br___ o___ diplomatic relations with China. (<i>ended</i>)	
6	They p___ u___ a few posters on the wall. (<i>displayed, attached</i>)	
7	After hitting the iceberg, the ship began to g___ d___. (<i>sink</i>)	
8	She p___ b___ the curtains so the light could come into the room. (<i>removed</i>)	
9	He t___ u___ to the meeting half an hour late. (<i>arrived, appeared</i>)	
10	He closed the dictionary and l___ b___ to his notes. (<i>watched again after watching something else</i>)	
11	This is amazing; k___ u___ the good work! (<i>continue</i>)	
12	They p___ o___ such an incredible show last night! (<i>presented, staged</i>)	

13	We s___ ou___ for San Francisco on the following day. (left, departed)	
14	We need experts to c___ i___ and give us advice. (join, become involved)	
15	After dinner, he t___ her b___ to her house. (returned)	
16	We l___ o___ for each other as if we were family. (protect, take care of)	
17	The storm c___ of___ electricity from the entire town. (ended the provision of)	
18	He had been b___ i___ to save the company. (involved in a situation, introduced)	
19	He was asked to cl___ u___ his language during the interview. (make more acceptable/appropriate)	
20	Unfortunately we've r___ o___ of biscuits. (used completely)	
21	We're going to the cinema tonight; you should c___ a___ with us! (join)	
22	Digestion b___ d___ substances into small molecules. (decomposes)	
23	We won't just si___ ba___ and watch the situation getting worse and worse. (take no action)	
24	I had to t___ o___ a loan to cover all my expenses. (obtain)	
25	You need to p___ i___ more hours at the office every day. (invest, devote)	
26	He got into his car and b___ u___ until he reached the street. (drove backwards a short way, retreated)	
27	The committee g___ o___ more than 100 copies in the last meeting. (distributed)	
28	She turned around to h___ o___ her keys to her husband. (give, present)	
29	We should g___ d___ to discussing those issues as soon as possible. (begin)	
30	Excellent product quality is what made the brand s___ o___ from its competitors. (distinguish itself by being better)	
31	C___ o___, don't be shy and tell us your story. (said as encouragement)	
32	Police have p___ o___ a warning about thieves in the area. (issued, broadcast)	
33	Oil prices have g___ u___ last year. (increased)	
34	She t___ ar___ and walked out the door. (moved so as to face in the opposite direction)	
35	The family t___ her i___ when she was abandoned by her parents. (accommodated, sheltered)	
36	It will take a dozen years for him to p___ o___ his debts. (clear)	

37	People need to c___ o___ and say what they think about it. (declare publicly)	
38	We might as well g___ o___ with it if we want to finish on time. (proceed, continue)	
39	The government has recently been trying to r___ o___ to right-wing voters. (address, communicate with)	
40	Security guards tried to h___ b___ the crowd. (stop)	
41	She se___ o___ to discover the truth behind the story. (undertook, began with a definite purpose)	
42	She m___ u___ from secretary to senior manager in just a few years. (advanced, progressed)	
43	I won't p___ u___ with your bad behaviour for much longer. (tolerate)	
44	I don't think prices will g___ d___. (decrease)	
45	Politicians often fail to b___ u___ their words with actions. (support)	
46	The team has g___ o___ to a good start this season. (begun in a certain way)	
47	He b___ d___ at his son's funeral. (yielded to tears or distress)	
48	G___ d___ on your knees so you can get a better view. (lower body)	
49	I could barely m___ o___ his face in the dark. (see)	
50	I really like this song; could you t___ u___ the radio? (increase volume)	
51	The fire has finally been p___ o___. (extinguished)	
52	We were lucky to m___ it o___ of the war alive. (deal with a difficult situation successfully)	
53	At 95 years of age, her heart finally g___ o___. (collapsed, failed)	
54	You cannot let a few unmotivated pupils h___ b___ the rest of the group. (limit potential)	
55	He was telling me a story but b___ o___ abruptly when his mobile phone rang. (stopped speaking)	
56	I've p___ o___ glasses and a bottle of wine. (displayed, made ready for use)	
57	She liked to go by the window and l___ o___ at the garden. (watch)	
58	I didn't expect such an opportunity to c___ al___. (appear, arrive)	
59	Workers' income has not k___ u___ with inflation. (increased as fast as)	
60	You should t___ her o___ to this new Chinese restaurant. (invite)	

61	The government isn't willing to h___ o___ power to local authorities. (surrender, yield)	
62	She put her hand on his shoulder and m___ it u___ along the back of his neck. (raised, lifted)	
63	Let's b___ d___ the task into three easy steps. (divide)	
64	The teacher c___ o___ the student in the middle of her sentence. (interrupted abruptly)	
65	Flashing lights make planes s___ o___ at night. (be easily seen or noticed)	
66	He loves climbing trees but finds it hard to g___ d___. (descend)	
67	He could see a few hands g___ u___ in the audience. (raise)	
68	You have to explain more thoroughly; it's too difficult to t___ i___. (understand)	
69	The official recommendations were se___ o___ in the document. (explained, described)	
70	They've p___ u___ a new fence after the previous one fell apart. (built)	
71	He g___ o___ the bus to school. (boarded)	
72	I b___ i___ my laptop computer today because my office computer is broken. (took to a place)	
73	She r___ o___ for the empty jar on the table. (stretched an arm so as to grab)	
74	The policeman tu___ o___ the criminal to the jail guard. (transferred, surrendered)	
75	Oh c___ o___, you're just lying to me! (said to show anger or disbelief)	
76	The politician's ultimate goal is to t___ b___ the Senate. (regain possession of)	
77	People have stopped believing the President could t___ a___ the economy. (change dramatically for the better)	
78	You have to b___ u___ your accusations with solid evidence. (prove, establish as true)	
79	The news c___ o___ that he was leaving the team. (became known)	
80	You should p___ o___ your gloves, it's really cold outside. (wear)	
81	They should not h___ b___ from joining us if they want to. (refrain)	
82	All the hard work will p___ o___ in the end. (be worth it, reward)	
83	He was innocent, but the media m___ him o___ to be a criminal. (represented as being, especially falsely)	
84	Make sure you c___ u___ your room because I won't do it for you. (tidy)	
85	The army was forced to p___ b___ due to bad weather. (withdraw)	

86	She opened the door and he c___ i___. (entered)	
87	You should be more careful and not g___ o___ your phone number so easily. (reveal)	
88	He was very convincing, so I was easily t___ i___. (deceived)	
89	He wants to g___ d___ to Australia next year. (travel)	
90	Take this application form and p___ i___ your name and contact details. (include, insert)	
91	She thinks some criminals g___ o___ too easily. (become cleared of a criminal charge)	
92	She s___ b___ in her chair and turned on the TV. (settled, rested)	
93	Our car b___ d___ yesterday. (stopped working)	
94	Take the carrots and c___ the ends o___. (remove)	
95	Sometimes we l___ b___ on those days and realize we had a very happy life. (think again, reconsider)	
96	After the argument, she r___ o___ into the garden and screamed. (left suddenly/in a hurry)	
97	He tore open the envelope and t___ o___ a few bills. (extracted, removed)	
98	The search t___ u___ solid evidence against him. (yielded, revealed)	
99	He accidentally b___ o___ a piece of wood from the fence. (removed, separated)	
100	She went into the bank and c___ o___ with some money. (exited, left)	

Thank you very much!

Appendix 12: Productive phrasal verb test – Spanish (Study 2)

Estamos llevando a cabo un estudio del conocimiento productivo de los verbos frasales. Para ayudarnos en esta investigación, por favor complete esta prueba.

Lea cada oración cuidadosamente, y luego escriba las palabras que usted cree que faltan en la columna de la derecha. Para ayudarle, la primera letra/las primeras letras de cada palabra han sido proporcionadas. También encontrará la definición de cada verbo frasal en paréntesis después de cada oración. **Por favor, asegúrese de leer cada definición cuidadosamente.** Hay 100 oraciones y algunas de ellas usan el mismo verbo frasal.

Tiene 30 minutos para completar la prueba. ¡Buena suerte!

Ejemplos:

#	Oración	Respuesta
i	The prisoners are hoping to g___ o___ of jail soon. (<i>leave</i>)	<i>get out</i>
ii	I didn't think he would b___ u___ the subject. (<i>mention, introduce</i>)	<i>bring up</i>
iii	She b___ u___ her children under very difficult circumstances. (<i>raised, educated</i>)	<i>brought up / bring up</i>

1	Put the chicken on the grill and t___ it o___ a few times. (<i>bring the bottom to the top or vice versa</i>)	
2	You need to take the bus and g___ o___ at the third stop. (<i>leave the bus</i>)	
3	Their new album will c___ o___ next month. (<i>be released to the public</i>)	
4	She h___ b___ the laughter with great effort. (<i>contained, repressed</i>)	
5	Following a disagreement, the government br___ o___ diplomatic relations with China. (<i>ended</i>)	
6	They p___ u___ a few posters on the wall. (<i>displayed, attached</i>)	
7	After hitting the iceberg, the ship began to g___ d___. (<i>sink</i>)	
8	She p___ b___ the curtains so the light could come into the room. (<i>removed</i>)	
9	He t___ u___ to the meeting half an hour late. (<i>arrived, appeared</i>)	
10	He closed the dictionary and l___ b___ to his notes. (<i>watched again after watching something else</i>)	
11	This is amazing; k___ u___ the good work! (<i>continue</i>)	
12	They p___ o___ such an incredible show last night! (<i>presented, staged</i>)	

13	We s___ ou___ for San Francisco on the following day. (left, departed)	
14	We need experts to c___ i___ and give us advice. (join, become involved)	
15	After dinner, he t___ her b___ to her house. (returned)	
16	We l___ o___ for each other as if we were family. (protect, take care of)	
17	The storm c___ of___ electricity from the entire town. (ended the provision of)	
18	He had been b___ i___ to save the company. (involved in a situation, introduced)	
19	He was asked to cl___ u___ his language during the interview. (make more acceptable/appropriate)	
20	Unfortunately we've r___ o___ of biscuits. (used completely)	
21	We're going to the cinema tonight; you should c___ a___ with us! (join)	
22	Digestion b___ d___ substances into small molecules. (decomposes)	
23	We won't just si___ ba___ and watch the situation getting worse and worse. (take no action)	
24	I had to t___ o___ a loan to cover all my expenses. (obtain)	
25	You need to p___ i___ more hours at the office every day. (invest, devote)	
26	He got into his car and b___ u___ until he reached the street. (drove backwards a short way, retreated)	
27	The committee g___ o___ more than 100 copies in the last meeting. (distributed)	
28	She turned around to h___ o___ her keys to her husband. (give, present)	
29	We should g___ d___ to discussing those issues as soon as possible. (begin)	
30	Excellent product quality is what made the brand s___ o___ from its competitors. (distinguish itself by being better)	
31	C___ o___, don't be shy and tell us your story. (said as encouragement)	
32	Police have p___ o___ a warning about thieves in the area. (issued, broadcast)	
33	Oil prices have g___ u___ last year. (increased)	
34	She t___ ar___ and walked out the door. (moved so as to face in the opposite direction)	
35	The family t___ her i___ when she was abandoned by her parents. (accommodated, sheltered)	
36	It will take a dozen years for him to p___ o___ his debts. (clear)	
37	People need to c___ o___ and say what they think about it. (declare publicly)	

38	We might as well g___ o___ with it if we want to finish on time. (<i>proceed, continue</i>)	
39	The government has recently been trying to r___ o___ to right-wing voters. (<i>address, communicate with</i>)	
40	Security guards tried to h___ b___ the crowd. (<i>stop</i>)	
41	She se___ o___ to discover the truth behind the story. (<i>undertook, began with a definite purpose</i>)	
42	She m___ u___ from secretary to senior manager in just a few years. (<i>advanced, progressed</i>)	
43	I won't p___ u___ with your bad behaviour for much longer. (<i>tolerate</i>)	
44	I don't think prices will g___ d___. (<i>decrease</i>)	
45	Politicians often fail to b___ u___ their words with actions. (<i>support</i>)	
46	The team has g___ o___ to a good start this season. (<i>begun in a certain way</i>)	
47	He b___ d___ at his son's funeral. (<i>yielded to tears or distress</i>)	
48	G___ d___ on your knees so you can get a better view. (<i>lower body</i>)	
49	I could barely m___ o___ his face in the dark. (<i>see</i>)	
50	I really like this song; could you t___ u___ the radio? (<i>increase volume</i>)	
51	The fire has finally been p___ o___. (<i>extinguished</i>)	
52	We were lucky to m___ it o___ of the war alive. (<i>deal with a difficult situation successfully</i>)	
53	At 95 years of age, her heart finally g___ o___. (<i>collapsed, failed</i>)	
54	You cannot let a few unmotivated pupils h___ b___ the rest of the group. (<i>limit potential</i>)	
55	He was telling me a story but b___ o___ abruptly when his mobile phone rang. (<i>stopped speaking</i>)	
56	I've p___ o___ glasses and a bottle of wine. (<i>displayed, made ready for use</i>)	
57	She liked to go by the window and l___ o___ at the garden. (<i>watch</i>)	
58	I didn't expect such an opportunity to c___ al___. (<i>appear, arrive</i>)	
59	Workers' income has not k___ u___ with inflation. (<i>increased as fast as</i>)	
60	You should t___ her o___ to this new Chinese restaurant. (<i>invite</i>)	
61	The government isn't willing to h___ o___ power to local authorities. (<i>surrender, yield</i>)	

62	She put her hand on his shoulder and m___ it u___ along the back of his neck. (raised, lifted)	
63	Let's b___ d___ the task into three easy steps. (divide)	
64	The teacher c___ o___ the student in the middle of her sentence. (interrupted abruptly)	
65	Flashing lights make planes s___ o___ at night. (be easily seen or noticed)	
66	He loves climbing trees but finds it hard to g___ d___. (descend)	
67	He could see a few hands g___ u___ in the audience. (raise)	
68	You have to explain more thoroughly; it's too difficult to t___ i___. (understand)	
69	The official recommendations were se___ o___ in the document. (explained, described)	
70	They've p___ u___ a new fence after the previous one fell apart. (built)	
71	He g___ o___ the bus to school. (boarded)	
72	I b___ i___ my laptop computer today because my office computer is broken. (took to a place)	
73	She r___ o___ for the empty jar on the table. (stretched an arm so as to grab)	
74	The policeman tu___ o___ the criminal to the jail guard. (transferred, surrendered)	
75	Oh c___ o___, you're just lying to me! (said to show anger or disbelief)	
76	The politician's ultimate goal is to t___ b___ the Senate. (regain possession of)	
77	People have stopped believing the President could t___ a___ the economy. (change dramatically for the better)	
78	You have to b___ u___ your accusations with solid evidence. (prove, establish as true)	
79	The news c___ o___ that he was leaving the team. (became known)	
80	You should p___ o___ your gloves, it's really cold outside. (wear)	
81	They should not h___ b___ from joining us if they want to. (refrain)	
82	All the hard work will p___ o___ in the end. (be worth it, reward)	
83	He was innocent, but the media m___ him o___ to be a criminal. (represented as being, especially falsely)	
84	Make sure you c___ u___ your room because I won't do it for you. (tidy)	
85	The army was forced to p___ b___ due to bad weather. (withdraw)	
86	She opened the door and he c___ i___. (entered)	

87	You should be more careful and not g___ o___ your phone number so easily. (reveal)	
88	He was very convincing, so I was easily t___ i___. (deceived)	
89	He wants to g___ d___ to Australia next year. (travel)	
90	Take this application form and p___ i___ your name and contact details. (include, insert)	
91	She thinks some criminals g___ o___ too easily. (become cleared of a criminal charge)	
92	She s___ b___ in her chair and turned on the TV. (settled, rested)	
93	Our car b___ d___ yesterday. (stopped working)	
94	Take the carrots and c___ the ends o___. (remove)	
95	Sometimes we l___ b___ on those days and realize we had a very happy life. (think again, reconsider)	
96	After the argument, she r___ o___ into the garden and screamed. (left suddenly/in a hurry)	
97	He tore open the envelope and t___ o___ a few bills. (extracted, removed)	
98	The search t___ u___ solid evidence against him. (yielded, revealed)	
99	He accidentally b___ o___ a piece of wood from the fence. (removed, separated)	
100	She went into the bank and c___ o___ with some money. (exited, left)	

¡Muchas gracias!

Appendix 13: Questionnaire – English (Study 2)

In order to help us better understand and interpret your score, we would like to know a little bit about yourself and your experience as a language learner. Please provide answers to the following questions by ticking the boxes (☐) or filling in the blanks.

Gender: ☐ Male ☐ Female

Age: _____

How many years have you been studying English? _____ years

How many months in total have you spent in English-speaking countries? _____ months

How many hours per week do you spend:

- **reading books, magazines and newspapers in English, or visiting English language websites?** _____ hours
- **watching films, videos or TV in English?** _____ hours
- **listening to music in English?** _____ hours
- **using English to keep in contact with people? (Facebook, MySpace, Twitter, Skype, email, SMS, etc.):** _____ hours

Finally, we would like to thank you very much for your participation. We really appreciate your help and contribution to this study. Thanks a lot!

If you would like to know more about the results of the study, please do not hesitate to contact us via email:
melodie.garnier@nottingham.ac.uk

Appendix 14: Questionnaire – Spanish (Study 2)

Para ayudarnos a entender y interpretar mejor tus respuestas, ¿te importaría contarnos un poco sobre ti y tu experiencia en el aprendizaje de idiomas? Por favor, proporciona la siguiente información poniendo un tick (☐) en el recuadro o escribiendo tu respuesta en el espacio en blanco.

Gender: ☐ Male ☐ Female

Age: _____

How many years have you been studying English? _____ years

How many months in total have you spent in English-speaking countries? _____ months

How many hours per week do you spend:

- **reading books, magazines and newspapers in English, or visiting English language websites?** _____ hours
- **watching films, videos or TV in English?** _____ hours
- **listening to music in English?** _____ hours
- **using English to keep in contact with people? (Facebook, MySpace, Twitter, Skype, email, SMS, etc.):** _____ hours

Finalmente, nos gustaría agradecerte mucho tu cooperación. Apreciamos muchísimo tu ayuda y contribución a este estudio. ¡Muchas gracias!

Si estás interesado en recibir información sobre los resultados de este estudio, por favor, no dudes en contactarme por email en: melodie.garnier@nottingham.ac.uk

Appendix 15: Information sheet for participants (Study 3)



INFORMATION SHEET

As part of my PhD in the School of English at the University of Nottingham, I am carrying out a study investigating English learners' acquisition of phrasal verbs. I am going to introduce you to some phrasal verbs, and then administer some tests in order to see how much you have learned.

I would be very grateful if you would agree to take part. Your participation is entirely voluntary, and you are free to withdraw from the study at any time without prejudice. All data will be anonymised, which means that there will be no association between your name and your results. All data will be stored safely and securely, and used for academic purposes only.

Should you have any further queries about the study, please feel free to contact myself or my supervisor, Prof. Norbert Schmitt, who can be reached at Norbert.schmitt@nottingham.ac.uk. We also have a School Ethics Officer, Dr Dominic Thompson, whose email is Dominic.Thompson@nottingham.ac.uk.

Thank you very much for your time.

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Appendix 16: Consent form for participants (Study 3)

University of Nottingham

School of English

Consent Form

Project title: **Acquisition of phrasal verbs**

Description: **This study aims to assess the learning of phrasal verbs by non-native speakers of English**

- | | | |
|---|------------------------------|-----------------------------|
| 1. I confirm that the purpose of the study has been explained and that I have understood it | YES ☐ | NO ☐ |
| 2. I have had the opportunity to ask questions and they have been successfully answered | YES ☐ | NO ☐ |
| 3. I understand that my participation in this study is voluntary and that I am free to withdraw from the study at any time, without giving a reason and without consequence | YES ☐ | NO ☐ |
| 4. I understand that all data are anonymous and that there will not be any connection between the personal information provided and the data | YES ☐ | NO ☐ |
| 5. I understand that there are no known risks or hazards associated with participating in this study | YES ☐ | NO ☐ |
| 6. I confirm that I have read and understood the attached information and that I agree to participate in this study | YES ☐ | NO ☐ |
| 7. I confirm that I am over 16 years of age | YES ☐ | NO ☐ |

Date:

Participant name:

Participant signature:

Researcher signature:

Appendix 17: Teaching materials (Study 3)

TEACHING SESSION

- I. Please study these six phrasal verbs and their definitions for five minutes:

Plod on: Continue doing something without interest or enthusiasm

Crop up: Happen or appear suddenly

Muck in: Help someone with a task

Slap down: Disagree with or criticize someone

Hash out: Discuss and agree the details of something

Palm off: Give or sell something in order to get rid of it

II. Please complete the three following exercises, using the six phrasal verbs below:

Haul in: Force someone to go somewhere

Boil down: Keep only the most important part of something

Mark off: Make someone different from someone else

Rack up: Get a large amount or number of something

Spur on: Encourage someone to do something

Roll out: Make something available to the public

i) Match the beginning of each sentence with its ending

The band decided to roll out	that spurred him on
He is such a good actor	so it's easier to understand
He was hauled in	for questioning by the police
Her dress and way of speaking	their album sooner than expected
It was his ambition	marked her off from the others
I'm just trying to boil it down	that he racked up more than 20 awards

ii) Fill in the blanks with the corresponding phrasal verbs

We would never have finished our project if the teacher hadn't us

This document includes too much information, you need to it

The company has managed to large profits over the past few years

He was afraid that his dad would him for punishment

There are some personality differences that her from her brother

People have been waiting for them to the product since January

iii) Write six separate sentences using each of the above phrasal verbs

III. Please try and guess the meanings of the phrasal verbs underlined in each passage

We went to a bar last night. I was actually enjoying the evening, but then Sam spoiled it by harping on about his last holidays and how everything was so perfect. He doesn't realise that not everybody has got as much money as him or his parents! He's so annoying! **Harp on:**

The company sold many of their products in 2005. This was due to a number of very good strategies, including powerful advertising. Nowadays, the economy is in bad shape. This means that they have to work even harder to reel in customers. **Reel in:**

When I was a teenager I had two favourite hobbies: listening to music and playing tennis. I was good at tennis, but since I started my job I've been a very busy man. But now I think it's time to dust off that racket and get back on the court! **Dust off:**

He came back from work later than usual. His wife had made some dinner for him, but as soon as he arrived he decided to go straight to bed. The children were still awake and very noisy, so he shouted "Pipe down! I'm trying to sleep". **Pipe down:**

She was very excited about the party. She knew everybody would be there, including Tom. She thought that was her chance to impress him and make him fall in love with her. So she went and bought the best dress she could find, and spent the morning vamping it up. **Vamp up:**

We had a big party at the end of my first year at university. I was so happy to be done with exams that I got drunk and asked my friend Claire to marry me. The memory of her reaction is so awful, that I wish I could just blot it out! **Blot out:**

Appendix 18: Vocabulary Levels Test 2K & 5K (Study 3)

Name:

This is a vocabulary test. You must choose the right word to go with each meaning. Write the number of that word next to its meaning. Here is an example.

- | | | |
|---|----------|----------------------------------|
| 1 | business | |
| 2 | clock | _____ part of a house |
| 3 | horse | _____ animal with four legs |
| 4 | pencil | _____ something used for writing |
| 5 | shoe | |
| 6 | wall | |

You answer it in the following way.

- | | | |
|---|----------|------------------------------------|
| 1 | business | |
| 2 | clock | ___6___ part of a house |
| 3 | horse | ___3___ animal with four legs |
| 4 | pencil | ___4___ something used for writing |
| 5 | shoe | |
| 6 | wall | |

Some words are in the test to make it more difficult. You do not have to find a meaning for these words. In the example above, these words are business, clock, and shoe.

If you have no idea about the meaning of a word, do not guess. But if you think you might know the meaning, then you should try to find the answer.

Version 1 The 2,000 word level

1 birth		1 adopt	
2 dust	_____ game	2 climb	_____ go up
3 operation	_____ winning	3 examine	_____ look at closely
4 row	_____ being born	4 pour	_____ be on every side
5 sport		5 satisfy	
6 victory		6 surround	
1 choice		1 bake	
2 crop	_____ heat	2 connect	_____ join together
3 flesh	_____ meat	3 inquire	_____ walk without purpose
4 salary	_____ money paid regularly for	4 limit	_____ keep within a certain size
5 secret	doing a job	5 recognize	
6 temperature		6 wander	
1 cap		1 burst	
2 education	_____ teaching and learning	2 concern	_____ break open
3 journey	_____ numbers to measure with	3 deliver	_____ make better
4 parent	_____ going to a far place	4 fold	_____ take something to someone
5 scale		5 improve	
6 trick		6 urge	
1 attack		1 original	
2 charm	_____ gold and silver	2 private	_____ first
3 lack	_____ pleasing quality	3 royal	_____ not public
4 pen	_____ not having something	4 slow	_____ all added together
5 shadow		5 sorry	
6 treasure		6 total	
1 cream		1 brave	
2 factory	_____ part of milk	2 electric	_____ commonly done
3 nail	_____ a lot of money	3 firm	_____ wanting food
4 pupil	_____ person who is studying	4 hungry	_____ having no fear
5 sacrifice		5 local	
6 wealth		6 usual	

Version 1 The 5,000 word level

1 balloon
2 federation _____ bucket
3 novelty _____ unusual interesting thing
4 pail _____ rubber bag that is filled
5 veteran _____ with air
6 ward

1 alcohol
2 apron _____ stage of development
3 hip _____ state of untidiness or
4 lure _____ dirtiness
5 mess _____ cloth worn in front to
6 phase _____ protect your clothes

1 apparatus
2 compliment _____ expression of admiration
3 ledge _____ set of instruments or
4 revenue _____ machinery
5 scrap _____ money received by the
6 tile _____ Government

1 bulb
2 document _____ female horse
3 legion _____ large group of soldiers or
4 mare _____ people
5 pulse _____ a paper that provides
6 tub _____ information

1 concrete
2 era _____ circular shape
3 fiber _____ top of a mountain
4 loop _____ a long period of time
5 plank
6 summit

1 blend
2 devise _____ mix together
3 hug _____ plan or invent
4 lease _____ hold tightly in your arms
5 plague
6 reject

1 abolish
2 drip _____ bring to an end by law
3 insert _____ guess about the future
4 predict _____ calm or comfort someone
5 soothe
6 thrive

1 bleed
2 collapse _____ come before
3 precede _____ fall down suddenly
4 reject _____ move with quick steps and
5 skip _____ jumps
6 tease

1 casual
2 desolate _____ sweet-smelling
3 fragrant _____ only one of its kind
4 radical _____ good for your health
5 unique
6 wholesome

1 gloomy
2 gross _____ empty
3 infinite _____ dark or sad
4 limp _____ without end
5 slim
6 vacant

Appendix 19: Testing materials (Study 3)

Please write the meaning/definition of the following phrasal verbs. Aim to give as clear and precise answers as possible, using your own words if you wish. Avoid vague meanings or definitions. If you do not know, do not write anything.

Phrasal verb	Meaning/definition
1) Crop up	
2) Mark off	
3) Pipe down	
4) Hash out	
5) Haul in	
6) Blot out	
7) Muck in	
8) Roll out	
9) Dust off	
10) Plod on	
11) Spur on	
12) Reel in	
13) Slap down	
14) Rack up	
15) Harp on	
16) Palm off	
17) Boil down	
18) Vamp up	

Please circle the correct meaning of each of the following phrasal verbs. If you do not know the meaning, circle 'I don't know'. Do not try to guess.

- 1) Crop up
 - a. Continue doing something without interest or enthusiasm
 - b. Discuss and agree the details of something
 - c. Help someone with a task
 - d. Happen or appear suddenly
 - e. I don't know
- 2) Mark off
 - a. Make someone different from someone else
 - b. Make something available to the public
 - c. Keep only the most important part of something
 - d. Force someone to go somewhere
 - e. I don't know
- 3) Pipe down
 - a. Ask someone to stop making noise
 - b. Keep talking about something in an annoying way
 - c. Try not to think about something
 - d. Make something look more attractive
 - e. I don't know
- 4) Hash out
 - a. Happen or appear suddenly
 - b. Discuss and agree the details of something
 - c. Give or sell something to get rid of it
 - d. Help someone with a task
 - e. I don't know
- 5) Haul in
 - a. Force someone to go somewhere
 - b. Get a large number or amount of something
 - c. Keep only the most important part of something
 - d. Encourage someone to do something
 - e. I don't know

- 6) Blot out
- a. Attract someone to make them do something
 - b. Make something look more exciting
 - c. Keep talking about something in an annoying way
 - d. Try not to think about something
 - e. I don't know
- 7) Muck in
- a. Help someone with a task
 - b. Disagree with or criticize somebody
 - c. Continue doing something without interest or enthusiasm
 - d. Happen or appear suddenly
 - e. I don't know
- 8) Roll out
- a. Encourage someone to do something
 - b. Make someone different from someone else
 - c. Make something available to the public
 - d. Keep only the most important part of something
 - e. I don't know
- 9) Dust off
- a. Attract someone to make them do something
 - b. Try not to think about something
 - c. Start using something again after a long time
 - d. Ask someone to stop making noise
 - e. I don't know
- 10) Plod on
- a. Discuss and agree the details of something
 - b. Disagree with or criticize someone
 - c. Give or sell something to get rid of it
 - d. Continue doing something without interest or enthusiasm
 - e. I don't know
- 11) Spur on
- a. Encourage someone to do something
 - b. Make something available to the public
 - c. Get a large number or amount of something
 - d. Force someone to go somewhere
 - e. I don't know

- 12) Reel in
- a. Attract someone to make them do something
 - b. Start using something again after a long time
 - c. Keep talking about something in an annoying way
 - d. Try not to think about something
 - e. I don't know
- 13) Slap down
- a. Give or sell something to get rid of it
 - b. Help someone with a task
 - c. Happen or appear suddenly
 - d. Disagree with or criticize someone
 - e. I don't know
- 14) Rack up
- a. Make someone different from someone else
 - b. Encourage somebody to do something
 - c. Force someone to go somewhere
 - d. Get a large number or amount of something
 - e. I don't know
- 15) Harp on
- a. Make something look more exciting
 - b. Start using something again after a long time
 - c. Keep talking about something in an annoying way
 - d. Ask someone to stop making noise
 - e. I don't know
- 16) Palm off
- a. Discuss and agree the details of something
 - b. Disagree with or criticize someone
 - c. Give or sell something to get rid of it
 - d. Continue doing something without interest or enthusiasm
 - e. I don't know
- 17) Boil down
- a. Make someone different from someone else
 - b. Keep only the most important part of something
 - c. Make something available to the public
 - d. Get a large number or amount of something
 - e. I don't know

- 18) Vamp up
- a. Ask someone to stop making noise
 - b. Make something look more attractive
 - c. Attract someone to make them do something
 - d. Start using something again after a long time
 - e. I don't know