The Figurative Nature of Collocations: Extent, Knowledge and Acquisition of Duplex Collocations by Non-Native Speakers

Marijana Macis, BA, MA

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Abstract

As shown by research conducted in the fields of corpus linguistics, psycholinguistics and second language acquisition (SLA), formulaic sequences (e.g. collocations, idioms, phrasal verbs, lexical bundles etc.) form a crucial part of second language learners' language competence. One of the main characteristics of some of these multi-word combinations is their idiomatic nature and idioms have been widely researched as being the most compositional type. However, little is known whether collocations can be idiomatic too. Therefore, this thesis aims to fill that gap with a specific focus on statistically-derived collocations. Three studies have been carried out to this end.

The first study examined the extent of collocations whose meanings were the sums of their component parts, those that were figurative (compositional or idiomatic) and finally, collocations that were polysemous, i.e. had both literal and figurative meanings. A corpus search was performed to find the most common V+N and Adj+N combinations and results showed that the majority of them had additive meanings (as reflected in traditional definitions of collocations), very few were completely opaque and a substantial percentage were those that allowed both literal and figurative interpretation.

The second study was conducted in the Chilean classroom context and it focused on the knowledge of the figurative meanings of collocations. A meaning-recall test was used as a measurement instrument and variables such as corpus frequency, semantic transparency and language use factors were manipulated. The findings demonstrated rather weak figurative knowledge and a positive relationship between this knowledge and the amount of outside engagement.

The last study investigated the same type of collocations, namely how non-native speakers acquired figurative meanings incidentally through reading. An authentic novel was used as a means to manipulate one single variable, frequency of exposure. Results showed that the figurative meanings could be acquired incidentally from reading and that the point at which a substantial amount of learning occurred varied greatly among individuals.

Overall, results of the studies presented in this thesis stress the importance of researching the acquisition, use and knowledge of collocations with figurative meanings as they have important implications for instructed SLA.

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List of abbreviations

AWL - Academic Word List

Adj+N - Adjective + Noun

BNC - the British National Corpus

CL - Cognitive Linguistics

COCA - the Corpus of Contemporary American English

DISCO - Discriminating Collocations Test

EFL - English as a Foreign Language

FTF - the Frequency-Transparency Framework

GSL - the General Service List

ICLE - the International Corpus of Learner English

L1 - First Language

L2 - Second Language

LDT - Primed Lexical Decision Task

LOCNESS - the Louvain Corpus of Native English Essays

MICASE - the Michigan Corpus of Academic Spoken English

NNS - Non-Native Speaker

NS - Native Speaker

PVs - Phrasal Verbs

RTs - Response Times

ERs - Error Rates

SLA - Second Language Acquisition

TOEFL - Test of English as a Foreign Language

V+N - Verb + Noun

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 or submitted to peer reviewed journals:

- Study 1, presented in Chapter 4, was published in *ELT Journal* (Macis & Schmitt, 2016b)

- Study 2, presented in Chapter 5, was published in *Language Teaching Research* (Macis & Schmitt, 2016a)

- Study 3, presented in Chapter 6, has been submitted and is currently under review (Macis, under review).

All chapters within this thesis represent extended versions of the published papers. Any citations or page references should be taken from the published versions only.

Chapter 1 - Introduction

1.1. Setting the scene

In order to communicate and express meaning in both their first language (L1) and second language (L2), people need to know large amounts of vocabulary. This is especially true in English, which has the largest vocabulary of any known language (Schmitt & Marsden, 2006) and a large number of loanwords from a vast number of other languages. Therefore, learning vocabulary is an essential part of mastering a second language because, as Wilkins (1972) points out, “without grammar very little can be conveyed, without vocabulary nothing can be conveyed” (p. 111).

Plenty of evidence points to the importance of vocabulary in language use (e.g. Schmitt, 2010). There is a strong relationship between vocabulary measures and the ability to read, write, listen and speak (e.g. Laufer & Goldstein, 2004; Zimmerman, 2004; Stæhr, 2008). Generally speaking, the more words learners know, the more they are likely to know about them and the better they are likely to perform whatever the skill. Considering the multitude of factors which could affect learners’ performance (e.g. learner motivation, background knowledge, familiarity with test task), it is striking that the single factor of vocabulary accounts for such a large percentage of the variation in the performance of the four skills. In short, vocabulary knowledge is clearly a very major contributor to success in language performance.

Several vocabulary researchers have argued that vocabulary is a multidimensional construct (e.g. Henriksen, 1999; Qian & Schedl, 2004) and that in order to master a word, various aspects of word knowledge need to be mastered both at the receptive (listening and reading) and productive level (writing and speaking) (Nation, 1990; 2001)). This thesis focuses on one of these aspects, collocations, i.e. words that typically co-occur together.

1.2. Aim of the thesis

It is now widely known that vocabulary has a strong tendency to occur in multiple word combinations. These phraseological units, clustered under the umbrella term

formulaic language (Schmitt, 2010), have been recognised to have a central role in fluent and idiomatic language use (e.g. Pawley & Syder, 1983, Lewis, 2000; Wray, 2002; Schmitt, 2004; Hoey, 2005). One of the reasons that formulaic language is so important is that it is very common and ubiquitous in language (both written and spoken discourse), as shown by a range of research (e.g. Erman & Warren, 2000; Foster, 2001; Kuiper, 2004; Vilkaite, 2016a).

Forming such a big part of language, it is not surprising that formulaic language is not a homogenous category, but instead consists of different categories such as idioms, collocations, lexical phrases, lexical bundles, phrasal verbs etc. An important aspect of some of these categories is their non-compositional or idiomatic nature (i.e. when a sequence cannot be interpreted literally, but has a figurative meaning). However, the main problem with non-compositionality/figurativeness is that it is typically associated with idioms, and collocations are usually not treated as having the same characteristics. Hence, it is unclear whether they can be idiomatic as well, and if they are, how pervasive idiomatic collocations are and how they can be approached from the teaching, knowledge and acquisition perspectives. The upshot of this is that if second language teachers and EFL practitioners are to engage effectively with formulaic language, many questions still need to be addressed and answered.

The present thesis aims to tackle some of these questions as they apply specifically to collocations with figurative meanings. As we shall see in Chapter 4, such collocations seem to exist and therefore, should not be neglected. Also, the existing research has shown that the acquisition of collocations is one of the most problematic aspects for second language learners and that its mastery is essential to communicate fluently and accurately in the target language (e.g. Howarth, 1996; Granger, 1998; Schmitt, 1999; Gitsaki, 1999; Bonk, 2001; Mochizuki, 2002; Barfield, 2003; Wolter & Gyllstad, 2013). Thus, taken together, these considerations make collocations an excellent testing ground for models of formula acquisition.

This thesis will address three main questions. The first one is the fundamental one of the pervasiveness of the different types of collocations, i.e. how many collocations are in fact figurative, how many follow the traditional definition of recurrent word combinations (e.g. Sinclair, 1991; Webb, Newton & Chang, 2013) and how many can

have two meanings, literal and figurative. Some researchers have indeed looked at collocations that can be idiomatic in nature (e.g. Webb & Kagimoto, 2009, 2011; Wolter & Gyllstad, 2013), which indicates that they are present in language. Unfortunately, despite this, collocations have normally been defined as co-occurrences of words that are semantically transparent (e.g. Fernando, 1996; Moon, 1998; Nesselhauf, 2003). However, if collocations with idiomatic meanings are widespread and not only a couple of examples, then certainly, it would change the way we typically conceptualise them. Also, the pedagogical focus on collocation would need to be reshaped and such phrases may represent good target items for learning and teaching. This thesis will aim to provide an account of the extent of the different types of collocations.

The second question relates to how much knowledge of figurative collocations second language learners have as most collocation studies to date have mainly used collocations with literal meanings (e.g. *strong man, live abroad, organic food*) (e.g. Barfield, 2003; Wolter & Gyllstad, 2013, González-Fernández & Schmitt, 2015) Idiomatic phrases have been shown to be relatively difficult to master (see Irujo, 1986, Cooper, 1999 and Liontas, 2003 for idioms). Likewise, phrasal verbs - which often have figurative meanings (*look up* = check in a reference source) - are often not particularly well-known either (e.g. Dagut & Laufer, 1985). Given these difficulties, it is not surprising that learners often avoid using figurative formulaic sequences (e.g. Liao & Fukuya, 2004), even in informal spoken contexts where they might be more appropriate (e.g. Siyanova & Schmitt, 2007). Nevertheless, there seems to be little research that focuses on the figurative meanings of collocations and whether they are equally problematic.

Additionally, there are various factors that might affect figurative knowledge (e.g. frequency, semantic transparency, language engagement etc.), and so it is crucial to find out what effect they have in case of collocations with figurative meanings. The second main aim of this thesis will be to explore the amount of knowledge of the figurative meanings of collocations and the relationship between that knowledge and the above factors.

The third question addresses how the figurative meanings of collocations are acquired in an incidental manner through reading. It investigates the effect frequency

of exposure has on learning these meanings. In case of single words, research suggests that around ten exposures are required for a considerable amount of learning to occur from reading (e.g. Waring & Takaki, 2003; Pigada & Schmitt, 2006; Webb, 2007). However, the effects of frequency for multiword phrases are still rather unclear (e.g. Szudarski, 2012; Pellicer-Sánchez, 2015). Since there is little research available on incidental learning of multiword units from reading, it is yet to be seen whether the amount of exposure needed to learn these units is same or different than for individual words. Determining this number is crucial, not only because it may increase our understanding of how repetition affects incidental learning of formulaic sequences through reading, but also because it may have important implications for pedagogy and material design. The third main aim of this thesis will be to test the number of occurrences necessary to learn the figurative meanings of collocations incidentally.

1.3. Shape of the thesis

This thesis has six central chapters. Chapter 2 provides general theoretical background on collocations. It first describes why formulaic language is important in general and then it focuses on collocations, how they have been traditionally defined and what we know so far about their knowledge, acquisition, testing and teaching. Chapter 3, on the other hand, looks at idioms since they are very similar to collocations in terms of their idiomaticity. Chapters 4, 5 and 6 address in turn each of the three research aims mentioned above. They include more detailed literature reviews pertinent to each issue and describe the three studies I have conducted. Chapter 4 presents the first study in this thesis and examines the different categories of collocations and how widespread each category is. It reports a corpus study of over 50 collocations and their characteristics in terms of different meanings (literal and/or figurative) they might have. It also explores the teaching implications of this, depending on whether the most important collocational characteristic is a pattern of co-occurrence or of meaning. The second research study is presented in Chapter 5. This study follows from the first one and tests the knowledge second language learners from the same L1 background have of the figurative meanings of collocations that can be both literal and figurative. It also evaluates the extent to which frequency, semantic transparency and language use (reading, watching TV,

listening to music in English etc.) affect this knowledge. Chapter 7 presents the final research study in this thesis and investigates how the figurative meanings are acquired incidentally through reading authentic material by various case studies. It measures the number of exposures that are necessary to learn those meanings. Finally, Chapter 7 highlights major findings of this thesis and concludes with main limitations and suggestions for future research.

Chapter 2 - Formulaic Language and Collocations

2.1. Introduction

It is now widely believed that formulaic language (idioms, collocations, phrasal verbs, lexical bundles etc.) is an essential component of language use and processing (e.g. Cowie, 1998; Moon, 1998; Nattinger & DeCarrico, 1992; Pawley & Syder, 1983; Schmitt & McCarthy, 1997; Wray, 2002). Formulaic language is what makes native speakers' speech idiomatic, natural and fluent. It is also what makes non-native speakers' speech awkward and unnatural. This chapter will first look at the reasons why formulaic language is important for linguistic theory. Then, the discussion will be narrowed down to the linguistic phenomenon which forms the central focus of this thesis, i.e. collocation. I will outline how the term "collocation" has been used in the research literature, in particular within two dominant approaches and present the definition of collocation used in this thesis. Following this, I will address empirical studies in which L2 collocation knowledge has been examined in order to show the difficulty of acquiring sufficient collocation knowledge and also review the psycholinguistic research on collocations. Next, I will discuss some of the most commonly used collocation tests that have been designed to gauge learners' collocation knowledge. The chapter will be concluded with a review of some of the teaching practices used across various collocation studies.

2.2. Importance of formulaic language

If it is indeed true that formulaic language is so important, then the question arises why this is the case. These reasons are outlined below.

2.2.1. Extent of formulaic language

Formulaic language is ubiquitous in language use. The notion that language is mainly generated by a set of syntactic rules has lost its popularity as there has been a great deal of research that provided evidence of the widespread existence of formulaicity (e.g. Lewis, 1993; Pawley & Syder, 1983; Sinclair, 1991). Although we do not know for sure the exact extent of formulaic language, it is assumed that at

least in spoken discourse, about four formulaic sequences are produced every minute (Glucksberg, 1989; Pollio, Barlow, Fine & Pollio, 1977). Different percentages have been produced and the main reason for such a variation is the fact that researchers have employed different measurement techniques and worked with either written or oral language (Moon, 1998).

Kuiper (2004, cited in Schmitt, 2004), for example, examined naturally occurring speech in two contexts: auctions and radio sports commentary. He found out that when under time pressure, i.e. working memory pressure, auctioneers and sports commentators rely heavily on the use of formulaic phrases. Moreover, Erman and Warren (2000) analysed both written and spoken discourse and discovered that more than half of these two modes was made up formulaic sequences (prefabs), 52.3% and 58.6% respectively. In yet another study, Oppenheim (2000) looked at a short speech on the same topic by six nonnative participants and found that it contained between 48% and 80% recurrent sequences with an overall mean of 66%. Furthermore, Foster (2001) investigated a corpus of 20,000 words of recorded spoken English and found out that about 32% of the speech consisted of prefabricated chunks or *lexicalised sequences* (Foster's term). Biber, Johansson, Leech, Conrad and Finegan (1999) looked at conversation and academic prose corpora and concluded that 30% of the words from the conversation corpus and 21% of the academic prose corpus consisted of lexical bundles. The significance attributed to formulaic language was further enhanced by Sinclair's (2008) claim that the unit of language is "the phrase, the whole phrase and nothing but the phrase".

Table 1: Percentages of formulaic language across different studies

Percentages	**Studies**
once every five words	Sorhus (1977)
31%-40%	Howarth (1998)
21%-30%	Biber, et al. (1999)
48- 80% (M=66%)	Oppenheim (2000)
52-58%	Erman and Warren (2000):
32%	Foster (2001)
15%	Rayson (2008)
41%	Vilkaitė (2016a)

If formulaic language is so widespread, surely the reason why native speakers sound fluent must lie in the knowledge of these preformulated chunks. This knowledge is reflected in Sinclair's view that that much of language use is dominated by the "idiom principle" rather than by the "open choice principle" (1991). Whereas the open choice principle envisages language as consisting of a number of slots that can be filled with items, the idiom principle, on the other hand, refers to language comprising ready-made phrases which exhibit certain restrictions. Sinclair states that "…a language user has available to him or her a large number of semi-preconstructed phrases that constitute single choices, even though they might appear to be analysable into segments" (p. 110). Likewise, Pawley and Syder (1983) assert that adult native speakers of English probably know several hundreds of thousands of formulaic sequences.

2.2.2. Functions of formulaic language

Meanings and functions are often realised by formulaic language. Being such a big part of language, it is not surprising that formulaic language has a multi-faceted functional and pragmatic value. Formulaic sequences both ensure the physical and social survival of individuals while communicating and help lower cognitive load. Coulmas (1981), for example, points out that *routine formulae* (his own term) realise different social functions and are closely related to rules of conduct. Since specific situations require the use of specific expressions, formulaic sequences are exactly what is expected from interlocutors in a conversation. These sequences function as

speech acts such as complaining, apologising, making requests, giving directions etc. For example, when we express sympathy, we normally say *I'm (very) sorry about/to hear (about) X*. Or, when we wish to refuse something or someone, *I'm sorry, but X* is one of the most commonly used sequences (Nattinger & DeCarrico, 1992). Furthermore, formulaic sequences serve as a tool for maintaining social interaction, e.g. when making comments about the weather (*Nice weather today*), agreeing with your interlocutor (*Oh, I see what you mean*), giving positive feedback (*How interesting*!) (Schmitt & Carter, 2004)).

Also, formulaic sequences are commonly used in both written and spoken discourse, serving as discourse markers. We use them to connect, organise and manage what we say or write (Nattinger & DeCarrico, 1992). Some typical examples include *additionally*, *on the other hand*, *furthermore*, *for instance*, *in contrast*, etc.

Basically, all fields have specific terminology which is used to convey meanings clearly and precisely. This terminology consists not only of individual words (e.g. *scalpel* in medicine), but also of formulaic sequences (e.g. *taxi into position and hold* in aviation). Finally, formulaic language is related to appropriacy and politeness because it is easier to understand language that is typical and expected. Quite often we have more than one formulaic sequence to choose from and which one/s we choose depend on politeness and formality. For example *Would it be possible for you to* is more polite than *Please* _____ when making requests. In short, functions refer to doing things and the choice of formulaic language allows them to be realised appropriately and politely.

2.2.3. Language comprehension

Formulaic language also aids comprehension simply because the hearer does not have to analyse every single word individually. As pointed out by Skehan, "an utterance is recognised as formulaic by the hearer and the corresponding phrase is accessed within the mental lexicon as a unit, thus avoiding computationally demanding analyses of the input" (1998, p. 38). Formulaic language thus helps produce fluent language which can be easily understood. With regards to sociocultural adaptation and integration, formulaic sequences are especially important because they may be seen as an attempt to become part of the target

community. Skehan (1998) states that learners who refrain from using phrasal items will be perceived as not belonging to the community they want to become part of. It follows from this that in order to achieve full command of a new language, learners have to learn phrases that are used in specific situations by native speakers (Wray, 2000).

2.2.4. Language production

Formulaic language can improve second language learners' fluency as well. The more formulaic sequences the learner uses, the more chances he/she has to produce natural, native-like speech. Regarding this point, Ellis and Sinclair (1996) note that the attainment of fluency, in both native and foreign languages, requires learning fixed phrases of language. Moreover, Ellis (1997) believes that if one wishes to speak like native speakers, one has to use frequent and familiar idiomatic language.

There have been several studies that showed that second language learners' fluency and proficiency improved after they used formulaic sequences. For example, Dechert (1983) discovered that the use of formulaic sequences led to more fluent speech. He called them "islands of reliability", i.e. set phrases that speakers possess and use frequently in their speech. The speaker is so familiar with these phrases that he/she retrieves them almost unconsciously without the need to search for or compose the right words in his/her mental lexicon. The more islands of reliability the speaker has, the more fluently his/her speech is. Wood (2009) showed that the participants in his study produced more fluent speech after they received focused instruction of formulaic sequences. Likewise, Ohlrogge's (2009) analysis of 170 L2 essays indicated that the higher scores were correlated with more frequent use of formulaic expressions than the lower ones. Dai and Ding (2010) examined the effect of text memorisation on L2 learners' use of formulaic sequences in writing. There was a positive correlation between the number of sequences students produced and their marks. Lastly, Stengers, Boers, Housen and Eyckmans (2011) looked at the relationship between the number of formulaic sequences produced during retell tasks and oral proficiency by Dutch-speaking students of English and Spanish. The results showed that the assessment of students' proficiency correlated positively with the number of formulaic sequences they produced.

2.2.5. Processing advantage of formulaic sequences

The research strongly suggests that formulaic sequences show a processing advantage over nonformulaic language. But how are they represented in the mind? To answer this question, it is probably best to refer to Pawley and Syder's (1983) assertion that formulaic sequences, no matter how many words they are composed of, are stored and memorised as wholes and are processed more quickly that words generated creatively, namely the same word sequences if they were created through the use of syntax and vocabulary. They further state that native speakers are cognitively limited in the way they process language. Human mind makes use of long-term memory capacity in order to compensate for very limited working memory (Baddeley, 2000). However, native speakers are able to produce language which exceeds these limits. Pawley and Syder believe that these constraints are overcome by language being clustered into phrases which can be easily retrieved without having to compose them online. They call this phenomenon the "puzzle of native-speaker fluency". In other words, native speakers are unable to process a string of 8-10 words at a time, but are perfectly able to fluently say multi-clause utterances.

Examples:

1) *You don't want to believe everything you hear.*
2) *It just goes to show, you can't be too careful.*
3) *You can lead a horse to water, but you can't make him drink.*

All these examples clearly have more than 8-10 words, but native speakers produce them without hesitation. This led Pawley and Syder to conclude that these expressions must be stored as wholes, which can be instantly retrieved from the mind. Accessing these pre-formulated chunks from long-term memory requires considerably less processing capacity than accessing and manipulating each of their individual components. This results in the processing burden being reduced. Ellis (1996) claims that the process of chunking of linguistic items involves the development of permanent associative connections in the brain, minimises the effects of limitations of working memory and helps reach automaticity and fluency in language. This is the reason why native speakers can produce stretches of fluent language.

Moreover, corpus evidence demonstrates that formulaic sequences are so frequently used to express functions (apologising, making requests) that this is also evidence that formulaic language is more efficient in terms of cognitive processing than novel language. Underwood, Schmitt and Galpin (2004) found that words are read more quickly in a formulaic text than in a non-formulaic one. In yet another study, Conklin and Schmitt (2008) used a self-paced reading task to check how long it would take for native and nonnative speakers to read formulaic sequences versus their nonformulaic equivalents in a given passage. The results showed that both groups read the formulaic sequences more quickly. The authors confirmed the claim that the speed of processing of formulaic sequences was higher than that of those that were nonformulaic in nature. Similarly, Siyanova, Conklin and Schmitt (2011) looked at NS' and NNS' eye movements while reading a series of stories containing idioms used figuratively, literally and as novel phrases. One of their findings was that, in case of native speakers, idioms in their figurative and literal senses showed a processing advantage over novel phrases. As for nonnative speakers, however, there was no difference in processing times between figurative and literal meanings of idioms on the one hand and novel phrases on the other. Another eye-movement technique study was carried out by Millar (2011), in which he found that malformed nonnative collocations were processed more slowly by L1 readers than native-like ones. In a grammaticality judgment study, Jiang and Nekrasova (2007) showed that reaction times of both native and nonnative speakers to corpus-extracted formulaic sequences were faster when compared to nonformulaic sequences.

Formulaic language also shows a processing advantage in terms of phonological coherence. For example, Van Lacker, Canter and Terbeek (1981) explored literal and non-literal readings of formulaic sequences and concluded that in literal readings, there were more pauses and more changes in pitch. Sosa and MacFarlane (2002) used an auditory word-monitoring task to check reaction times for the word *of* in collocations belonging to different levels of frequency. They found that the participants' responses were faster when the target word was part of very frequent collocations. This result led the authors to conclude that the frequent expressions are stored in a holistic manner.

Even though the studies reviewed above used various methodologies, they all seem to reach very similar conclusions: formulaic sequences are processed faster than

novel phrases. Furthermore, whereas in case of native speakers, there is plenty of evidence that formulaicity is strongly related with processing advantages, this is less clear for non-native speakers.

Nevertheless, as for holistic storage, some researchers bring this issue into question. For example, Siyanova-Chanturia (2015) notes that the evidence from psycholinguistic processing studies casts doubt on the idea of formulaic sequences being holistically stored. She claims that some studies that interpreted their findings as an indication of holistic storage (see the studies above) did not actually address the question of holistic storage and that their results can only be taken to show that frequent and familiar phrases are processed faster than control phrases. Siyanova-Chanturia and Martinez (2014) drew the same conclusion arguing that the existing evidence does not answer the question whether formulaic sequences are retrieved as wholes, but instead indicates that factors such as phrase frequency, familiarity, and predictability play a role in language processing. However, Siyanova-Chanturia (2015) makes it very clear that the fact that formulaic sequences are not necessarily stored holistically does not mean they are not important.

The above discussion points to the multi-faceted and complex nature of formulaic language. But what are formulaic sequences? In simple terms, they are strings of words which are processed as wholes without any resource to their component parts (Wray, 2002). Nevertheless, this is problematic mainly because formulaicity is a phenomenon that can be expressed in so many different forms (Schmitt & Carter, 2004). There has been a disagreement not only on how to define formulaic sequences but also on which coining term to use. Wray (2000, 2002) listed fifty different terms used in the literature to refer to the phenomenon such as *chunks, collocations, frozen metaphors, idioms, lexicalised sentence stems, multiword items/units, ready-made expressions, and routine formulae*. In the end, she presented her own definition of a “formulaic sequence”:

> 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 (Wray, 2002, p. 9).

In regards to the different categories of formulaic sequences (mentioned above), Howarth (1998) states that they have different degrees of “institutionalisation”,

“fixedness” and “non-compositionality”. Hence, it is would be misleading to treat them all as belonging to one single class. The focus of the present thesis is on one category of formulaic language, i.e. collocations.

2.3. Collocations

Even though collocations have been the focus of linguistic studies for some time now, it is difficult to give a precise and uniform definition because it is used and understood in many different ways. This is due to the fact that different scholars have looked at collocations from various perspectives, which resulted in inconsistent terminology and the existence of numerous definitions:

- “A composite unit which permits the substitutability of items for at least one of its constituent elements (the sense of the other element, or elements, remaining constant)”. (Cowie, 1981, p. 224)
- “A collocation is a pair of words that are often used together” (McCarthy & O’Dell, 2005 p. 6)”.
- “Collocation is a term used to describe a group of words which occur repeatedly in a language”. (Carter, 1987, p. 47)
- …”the way individual words co-occur with others”. (Lewis 1993, p. 93)
- “the relationship a lexical item has with items that appear with greater than random probability in its (textual) context”. (Hoey, 1991, p. 7)
- “fixed, identifiable, non-idiomatic phrases and constructions”. (Benson, Benson & Ilson, 1997, p. 15)

These various definitions represent the two main approaches to defining collocations: the frequency-based approach and the phraseological approach. The next two sub-sections will describe each approach in detail with an account of how collocations are conceptualised under each. I will also briefly discuss approaches to collocation which combine the aforementioned two traditions. The last subsection will explain how the term “collocation” will be used in the present thesis.

2.3.1. Frequency approach

The frequency approach has been a very influential approach simply because corpora have come in and powerful software have become available. In this approach, on the whole, collocations are looked at through frequency and statistics and defined as words which co-occur together and are at a certain distance from each other. Computer analyses have also shown that some collocations are more frequent and useful than others. This approach has given us insight into a wider range of patterning as well as the diversity of co-occurring patterns.

The original proponent of this approach is Firth (1951, 1957, 1968), who claims that part of the meaning of a word can be derived through the words it collocates with. His position is best expressed in his famous statement: “you shall know a word by the company it keeps” (1957, p.179). As an example, he gives the word “night” and argues that one of its meanings is reflected through its collocability with the word “dark”. Furthermore, Firth distinguishes between habitual, more restricted technical, unique and a-normal collocations. However, he does not specify the criteria that distinguish one type of collocation from another. Firth was followed by Halliday and Sinclair, who both tried to contribute to a better conceptualisation of the term collocation.

Halliday (1961) views collocation as “a syntagmatic association of lexical items that could be quantified textually in terms of their probability of occurrence at a certain distance from one another (p. 276). He further refers to lexical items as lexemes that include all their derivations. For instance, *strong, strongly, strength* and *strengthened* can all be seen as the same item; and *a strong argument*, *he argued strongly*, *the strength of his argument* and *his argument was strengthened* as examples of the same syntactic relation (1966, p.151). He introduces the terms *node, collocate and span*. *Node* refers to the word under study, *collocate* is related to the word that co-occurs with the node and *span* refers to the environment in which nodes and collocates appear.

Sinclair (1966, 1991) takes the groundwork laid out by Firth and Halliday even further and defines collocation as “the occurrence of two or more words within a short space of each other in a text” (1991, p. 170). As there was no way to statistically measure

the relationship between words, Sinclair first chose a 3:3 span. However, Jones and Sinclair (1974:21) later suggested that research demonstrates that a 4:4 span, i.e. four spaces to the left and to the right of the node, was the optimal distance which covered about 95% of the node's collocational influence. Despite that, it was found that significant collocations were mostly found in span positions immediately next to the node, i.e. ± 1.

Looking at Sinclair's definition above it might be claimed that, in theory, all occurrences of words in a corpus could be considered collocations. He makes a distinction, though, between "casual", accidental collocations with only very few occurrences and "significant", typical collocations characterised by above-chance frequency. Nevertheless, Stubbs (1995) observes that frequency of co-occurrence is not enough in identifying collocations and thus the need for measures of association strength.

Many measures have been developed to calculate strength of association based on the expected and observed frequency of a pair in a given corpus (e.g. Evert, 2008). I will review the two most commonly used ones: MI (mutual information) and t-score.

The MI score is a measure of the strength of the link between two words. The higher the MI score, the stronger the association between two items. The closer the MI score to zero, the more likely it is that the two items are linked by chance. Schmitt (2010) gives an example of *tectonic plates*. In the New Longman Corpus, out of the 214 occurrences of *tectonic*, 73 of them appear with *plate(s*). This means that the two items are strongly associated and as a consequence, have a high MI score. Also, MI is employed to identify pairs of words which are exclusively used one with another, regardless of their frequency. This is what differentiates the MI score from other statistical procedures. Concerning statistical significance threshold, Hunston (2002) suggests an MI score of 3 or higher as a point at which we can say that two items collocate.

Unlike the MI score, the t-score test takes a corpus size into account. For it to be statistically significant, a t-score should be 2 or higher (Hunston, 2002). While the MI score measures collocations composed of less frequent words, but with stronger links, the t-score test identifies frequent collocations composed of relatively frequent words. In other words, whereas MI score is prone to a low-frequency bias, t-score is

more prone to a high-frequency bias (Evert, 2008). Thus, one of Evert's suggestions is the necessity to include a frequency threshold together with MI to cancel out its low-frequency bias.

Finally, there are a couple of points worth mentioning. Even though it was stated above that there is a specific threshold for each type of association measure, Stubbs (1995) believes that this is an arbitrary decision. In addition, when extracting collocations from a corpus, various things have to be taken into account. These refer to span size (i.e., the number of words to be considered to the right and left of the node, often set between 3 to 5 words), word type (whether individual lexical units are defined as word forms, lemmas, or word families) and frequency thresholds (the minimum number of occurrences in the corpus for a string to be referred to as a potential collocation, often set between 3 and 10 occurrences).

It is obvious from the review above that the frequency approach does not consider semantic criteria to identify collocations. This is not to say that meaning plays no role. Rather, it is a different view of meaning that matters. For example, the proximity of two words establishes what is called "semantic preference" and "semantic prosody". Whereas semantic preference refers to the relationship between a lexical item and a set of lexically related words (Partington, 2004), the primary function of semantic prosody is to express the attitude of its speaker or writer (Louw, 1993). These two notions are interdependent and can be illustrated by the verb *undergo*, which shows semantic preference for (or collocates with) items from the lexical sets of "change" (e.g. *dramatic changes*), "medicine" (e.g. *brain surgery*), "testing" (e.g. *examinations*) and "involuntariness" (e.g. *must, forced to*). All these semantic preferences give the verb *undergo* a strong semantic prosody.

The frequency-based approach is criticised for considering frequency as one of the most important criteria for the identification of collocations. The criticism mainly comes from the advocates of the phraseological approach, which will be reviewed in the following section.

2.3.2. Phraseological approach

The phraseological approach is much more semantically based, i.e. phrasal units are seen as word combinations along a continuum with various degrees of fixedness and

opacity. The most important proponents of this approach are Cowie (1994, 1998), Howarth (1996, 1998), Mel′čuk (1995, 1998) and Nesselhauf (2005).

Cowie (1998) divides word combinations into two major types: “formulae” and “composites”. Whereas formulae are units with a pragmatic function, composites function syntactically at or below the sentence level. Collocations belong to the latter type. He gives examples of *run a business* in which *a business* may be substituted by *a theatre* or *a bus company*. Also, Cowie views collocations as strings of two or more lexemes which occur in a limited range of grammatical constructions. This is where we can see the difference between the frequency-based approach and the phraseological approach because in the former approach, collocations refer to combinations of any two words, no matter what word class they belong to. Yet another characteristic of Cowie’s collocations is that they allow various grammatical realisations, e.g. *heavy rain* and *rains heavily*.

Finally, Cowie suggests that all word combinations are placed on a continuum and proposes four categories: free combinations, restricted collocations, figurative idioms and pure idioms. Free combinations are those word combinations in which one of the constituent parts can be substituted by word/s that share same semantic features. For example, in the combination *drink tea*, the object “tea” can be substituted by any noun containing the semantic feature [+LIQUID]. Restricted collocations, known simply as collocations, are units that permit the substitutability of at least one of its constituents whereas the sense of the other element, or elements, remains constant. The substitutability of their component parts is arbitrary and cannot be explained in terms of semantic features. Some typical examples include verb-noun collocations such as *make a decision*, *run a business* in which the verbs *make* and *run* cannot be replaced by the verbs *do* and *jog*. They basically include restrictions on one or several points. Figurative idioms have both literal and figurative meanings, e.g. *do a U-turn*. The last category, pure idioms, refers to completely semantically non-transparent word combinations such as *a picture is worth a thousand words*. Therefore, semantic transparency is used as a criterion to distinguish collocations from idioms, whereas arbitrary and semantically based commutability serves to distinguish between collocations and free combinations.

Another important figure within the phraseological approach is Howarth (1996, 1998). He postulates that language should be investigated through corpus analysis, but that frequency alone does not suffice. Following Cowie‘s notion of “composites”, he further classifies them according to the word class of their component parts into “grammatical composites” and “lexical composites”. Whereas grammatical composites consist of nouns, verbs, adjectives and adverbs, lexical composites are made up of combinations of content and function words. This division is very similar to that of Benson et al. (1997), who distinguish between lexical and grammatical collocations. Lexical collocations are made up of two same lexical components, while grammatical collocations combine a lexical word with a grammatical word. Howarth‘s lexical composites are composed of two coarse categories: non-idiomatic and idiomatic. This two-way classification is, however, in fact a continuum. According to Howarth (1996), by applying such criteria as restricted collocability, semantic transparency and idiomaticity, four groups can be distinguished (Table 2).

Table 2: Howarth’s collocational continuum

Category	free collocations	restricted collocations	figurative idioms	pure idioms
Definition	Combinations of two o more words in which the elements are used i their literal sense. Each component may be substituted without affecting the meaning c the other	Combinations in which one component is used in its literal meaning, while the other is used in a specialised sense. The specialised meaning of one elemen can be figurative, delexical or in some way technical and is an important determinant of limited collocability at the other. These combinations are, however, fully motivated	Combinations which have figurative meanings in terms of the whole. They may permit arbitrary synonymous substitution of one or more elements. They have current literal interpretation and are clearly motivated.	Combinations that have a unitary meanin that cannot be derived from the meanings of the components. They permit almost no substitution, and are unmotivated.
Example	*blow a trumpet*	*blow a fuse*	*blow your own trumpet*	*blow the gaff*

Howarth also stresses the importance of restricted collocations in second language teaching. He claims that restricted collocations present a challenge for second language learners because figurative senses are more restricted in collocability than literal senses and should therefore be emphasized in teaching.

Yet another influential model worth examining is the one suggested by Mel′čuk (1998), who sees collocations as combinations consisting of two elements. One of these elements is chosen based on its meaning, whereas the other element is chosen contingent on the other element. Mel′čuk (1998, p. 30) suggest there are four subtypes of collocations (as summarised by Gyllstad, 2007, p. 23):

- Collocations containing a delexical verb (e.g. *give a look*, *launch an appeal*)
- Collocations containing a dependent lexeme meaning which only occurs with one or a few lexemes (e.g. *black coffee*, *French window*)
- Collocations containing a dependent lexeme meaning (intensifiers) that can be used together with other lexemes in the same sense, but its meaning cannot be expressed by a possible synonym (e.g. *strong coffee*)
- Collocations in which one lexeme is dependent on the other lexeme because the meaning of the latter is utterly specific (e.g. *the horse neighs*, *rancid butter*)

Furthermore, Mel′čuk (1998) treats collocations in terms of their lexical functions. Lexical functions are native speaker's preferences, e.g. someone who smokes a lot is called a *heavy smoker* by a native speaker and someone who eats a lot is referred to as a *big eater*. So, a lexical function is defined as "a very general and abstract meaning that can be expressed in a large variety of ways depending on the lexical unit to which this meaning applies" (Mel′čuk, 1995, p.186).

Finally, Nesselhauf (2003, 2005) distinguishes between three types of word pairs on basis of two criteria: semantic characteristics (sense restrictions) and commutability of elements (substitution of one or both elements): free combinations (e.g. *want a car*), collocations (e.g. *take a picture*) and idioms (e.g. *sweeten the pill*). Free combinations are expressions in which the verb and the noun are both unrestricted, so they can be freely combined. Collocations are phrases in which the sense of the noun is unrestricted, but the sense of the verb is restricted, so that the verb in the sense in which it is used can only be combined with certain nouns (*take a picture*/*a photograph*, but e.g. * *take a film/movie*). In idioms, both the verb and the noun are used in a restricted sense, so substantiation is either not possible at all or only possible to an extremely limited degree.

Differences in the above classifications largely correspond to differences in the selection of the features used to categorise multi-word combinations. Most typologies give prominence to features like the degree of semantic (non)-compositionality, fixedness and combinability.

Unlike the advocates of the frequency approach, researchers following the phraseological approach dismiss frequency as one of the most important criteria for the identification of collocations. They identify collocations by either using collocational dictionaries (Laufer & Waldman, 2011), natives' intuitions (Greenbaum, 1988; Hasselgren, 1994) or a combination of both (Nesselhauf, 2003). Stubbs (1995), however, sees limitations in using natives' intuitions because natives cannot give accurate frequency estimates.

The phraseological approach seems to be largely unaware of the benefits that automatic corpus-based methods of extraction and analysis provide so perhaps, combining the best of the worlds might be the solution. In the following section, I will look at some of the studies that integrated both approaches.

2.3.3. Combining frequency and phraseological approaches

There are a number of researchers who apply criteria which can be found in both these two traditions. In this section, I will briefly account for two of such views, namely Kjellmer (1991, 1994) and Stubbs (1995).

Kjellmer‘s (1991, 1994) view on collocation is clearly frequency-based, but he takes syntactic structures into account in his analyses. He is known for the production of a collocation dictionary (1994), based on the one-million-word Brown Corpus. In Kjellmer‘s words, a collocation is ”a sequence of words that occurs more than once in identical form [in a text corpus] and which is grammatically well-structured” (1987, p.133). Unlike Sinclair, he sees only adjacent items as collocations. The most interesting thing about Kjellmer is his inclusion of class of idioms as collocations. He defines the latter as “a collocation whose meaning cannot be deduced from the combined meanings of its constituents” (1994, p. xxxiii). This inclusion differs from other researchers working in a purely phraseological tradition. Kjellmer argues that the borderline between idioms and other collocations is a very fuzzy area and claims that an attempt to separate idioms from other collocations would create many

difficulties (in a work devoted to English collocations in general) and serve no useful purpose (1994, p. xxxiv).

Stubbs (1995) sees collocation as a relationship of habitual co-occurrence of words, lemmas or word-forms, the view that positions him in the frequency-based tradition. However, he uses grammatical relations as an identification criterion for collocates of a node word.

To summarise, even though two dominant traditions were discerned, a frequency-based approach and a phraseological approach, it can be seen that sometimes there is a fair degree of overlap between the two. In other words, what constitutes a collocation in one of these approaches may not be defined as such in another. This inconsistency in terminology is not without importance because obtained results for learners' knowledge, processing and acquisition may be strongly influenced by how they are defined. The choice of approach is clearly nuanced and which of the two will be followed and depends on the overall aim(s) of a study.

2.3.4. Definition of collocation in the present thesis

The two approaches to defining collocations outlined above are not in opposition but should rather be viewed as complementary and closely connected to each other (Evert, 2008). Many collocations identified through corpus analysis have phraseological significance and many collocations that have phraseological significance will stand out in corpus analysis. However, no matter which approach is used to identify collocations, some combinations will be extracted that have idiomatic, figurative meanings. To add to the complexity, some of them can be polysemous in the sense that they have both literal and figurative meaning senses. For example, *dead duck* refers to either a "dead bird" or "something doomed to fail".

Most studies into collocation knowledge have followed the statistical approach (Henriksen, 2013). Out of 36 studies that she reviewed, 27 (75%) used the statistical approach, which tends not to consider semantics (in terms of different meaning senses) as part of the identification process. As a result, the studies indicating learner problems with collocations have tended to use mostly collocations with additive meanings. There appears to be no research that indicates how many statistically derived collocations there are that are purely figurative or that have both

literal and figurative meanings and this is problematic given the ubiquity of collocations (e.g. Barfield & Gyllstad, 2009).

In the present thesis, both statistical and phraseological criteria will be applied. Collocation will be defined (e.g. Sinclair, 1991; Hunston, 2002) as the occurrences of two or more words within a given span demonstrating a statistical strength of co-occurrence (e.g. Sinclair, 1991; Hunston, 2002 - the statistical approach) that can have different meaning senses (literal and figurative) (e.g. Cowie, 1994; Howarth, 1996 - the phraseological approach).

For the purposes of this thesis, statistical strength will be indicated by MI score. An MI of 3 is often given as the minimum score for a word combination to be considered a collocation and this score will be adopted in this thesis (Hunston, 2002). The advantage of defining collocation starting from the frequency approach is that the above statistical measure can be used to quickly to identify collocates for a word. For example, a search for nouns that occur after the word *tie* within the COCA demonstrates that *knot, game, shoes* and *hands* all have MI scores showing that they occur as collocates far more than expected by chance alone. In addition, the first collocation *tie the knot* (with the highest MI score of 9.74) can be used both literally and figuratively, i.e. it is polysemous. It means “fasten or secure a knot with or as if with a cord, rope, or strap” literally, and “get married”, figuratively. This provides very useful information for researchers, teachers and second language learners.

Using the frequency approach as the starting criterion to identify collocations leads to the inclusion of idioms as collocations (e.g. Webb et al., 2013). Thus, collocations in this study will be highly transparent, as well as less transparent and completely opaque as well as polysemous. The disadvantage of this approach is that it does not consider transparency of meaning as one of the criteria for distinguishing idioms from collocations as some researchers would prefer (e.g. Moon, 1998; Nesselhauf, 2003). Nevertheless, the rationale for not separating these two types is because I wanted to avoid the complex issue of what constituted a collocation and what not.

2.4. How are collocations learned

In order to have a clearer picture of the phenomenon of collocation, we also need to understand how collocations are acquired and the types of difficulties second language learners might face when learning collocations. In this section, these issues will be discussed.

The mechanics of how collocations are acquired are not well understood. On the one hand, Wray (2002) argues that native and non-native speakers process collocations in a different way, i.e. that they are formulaic (holistically stored in the mental lexicon) for natives but not for nonnatives. In case of L1 acquisition, formulaic language serves as a processing shortcut and acquisitional aid in child first language acquisition. Wray states that: “the child will never be able to articulate all its needs, nor fully signal its identity, until it masters the linguistic system. Formulaic language appears to provide a means of supporting this process” (p. 131). She further notes that: “it is not a dictionary of morphemes that the child is exposed to, but rather an intermittent stream of speech sounds containing chunks, often longer than a single word, that recur with varying frequency. It is out of this stream of unknown meaning and structure that the child must attempt to capture some pieces in order to determine their meaning and to preserve them for future use” (p. 5). As opposed to just picking up unanalysed strings of words, children also memorise some of them because they fulfill certain functions and are used in certain situations. An example of these are institutionalised routines like *Thank you*, *Please, may I have* _____? etc. Eventually, children learn when and how to use these routines and by doing that, manage to achieve a desired act. They produce a great deal of formulaic sequences that they use even when they reach adulthood.

Accordingly, Wray and Perkins (2000) propose a model of how children acquire formulaic language in their L1. What is interesting about the model is that it helps explain how formulaic language appears, disappears and then appears again during language acquisition. The model consists of four phases and can be described as follows: In Phase 1, i.e. at birth, the child identifies, selects and stores those formulaic sequences that are necessary for social interaction. At this stage, language is basically processed in a holistic manner. Phase 2 starts somewhere between 20 and 30 months of age and finishes around the age of 8. In this phase, the child starts

creating language analytically. He/she starts applying grammar rules to and analysing already existing sequences in the mental lexicon. During Phase 3, which lasts until about the age of 18, formulaic language processing becomes more prevalent again. Finally, in Phase 4, the adult achieves a balance between holistic and analytical ways of processing.

Regarding L2 acquisition and unlike L1 children, L2 learners find learning formulaic language quite a daunting task. Nonnatives tend to focus on individual words rather than on chunks of words (e.g. Wray, 2002; Kuiper, Columbus & Schmitt, 2009). It has been suggested that in the early stages of learning, in both classroom-based and naturalistic settings, adults acquire a small set of formulaic sequences necessary for basic communication. Nevertheless, in later stages, they revert more to the analytical side of language and create language by combining individual words and grammar rules (e.g. Nattinger & Carrico, 1992; Wray, 2002). So, it seems that adults get stuck somewhere between Phases 2 and 3. Also, when learners are required to learn formulaic sequences, they commonly do so by means of memorisation. However, this may not always be the most efficient strategy.

In Wray's 2004 study, a subject was asked to learn a set of Welsh formulaic sequences in a week with the aim of presenting a cooking show on TV. Learning took place almost entirely through the memorisation of formulaic sequences tailored to her needs for the programme. When interviewed five and nine months later, the participant showed some typical early stage errors. The participant, for example, "accidentally edited" her formulas, that is to say, she sometimes substituted a word with a Welsh synonym; and sometimes, a word was substituted by its English translation. Such "editing", according to Wray, suggests a process of analytic processing. However, since her analysis is based on a rather anecdotal report of the productions of single learner, this conclusion remains highly speculative.

Durrant and Schmitt (2010), however, have argued against this position based on the results of their own study. They investigated whether repetition (more input) would lead to more learning of the target collocations. The findings reveal that more exposure led to higher gains. This finding made the authors conclude that learners' potential lack of collocational knowledge is likely to be a consequence of insufficient exposure to the target language rather than a language acquisition process that is

fundamentally different from that of native speakers. However, one of the limitations of this study is that its findings were based on a short time frame (i.e. only on immediate post-tests). The long-term retention of knowledge is the ultimate goal of research on language acquisition and the data in this thesis (Study 3) were obtained through delayed post-test showing durable learning effects.

2.4.1. Lexical priming

When talking about repeated exposure to L2 and in order to account for collocational use in language, I believe it is important to briefly discuss the notion of "lexical priming". Lexical priming was hypothesised in the early 1990's by Michael Hoey (1991), who claimed that collocations are acquired in an incremental manner. According to this view, language users store concordances of every word encountered in speech and writing together with its context. Thus, each contextual encounter with a word may either lead to the creation of a new collocation or the reinforcement and modification of an old one. Hoey (1991, 2005) argued that collocation should be defined in psychological, not statistical terms. Collocation, in his view, is not only a statistical construct supported by corpus evidence, but "a psychological association between words" (2005, p. 3), i.e. a psychological phenomenon relating to how words are associated through the cumulative encounters. He notes:

> Every word is primed for use in discourse as a result of the cumulative effects of an individual's encounters with the word. If one of the effects of the initial priming is that regular word sequences are constructed, these are also in turn primed (2005, p. 13).

In other words, "a priming word" can prompt a learner to recall a particular "target" word"; e.g. a word *heart* is recognised faster if a subject has recently seen a related word such as *body*, than if they have seen an unrelated word such as *trick*. The word *body* is then said to prime *heart* (2005, p. 8). Hoey claims the selection of one word will make its regular collocates come to mind more readily.

This view of collocational knowledge acquisition is in line with usage-based theories of language acquisition (see Section 5.2.1.) whereby the associations between words are built from experience in the mental lexicon (Foster, 2009).

2.5. L2 collocation studies

There has been an increased interest in the nature and behavior of collocations as this type of formulaic sequences presents one of the major problems in language processing and use. This section focuses on the studies of L2 collocation knowledge which have been carried out to date. It is worth pointing out that the existing studies differ to a great extent in terms of the methodologies employed and are limited in size and scope. They have dealt with different issues, such as the amount of learners' collocational knowledge, collocational errors and the relationship between general language proficiency and collocational competence.

By far the most common method of investigating L2 collocation knowledge has been using written learner corpora and comparing them with those of native speakers (e.g. Granger, 1998; Guilquin, 2007; Cross & Papp, 2008; Durrant & Schmitt, 2009; Paquot, 2010, Laufer & Waldman, 2011; Siyanova-Chanturia, 2015). Howarth (1996), for example, investigated a corpus of 10 essays written by advanced MA students from different L1 backgrounds. The essays (containing almost 25,000 words) were analysed in terms of V+N combinations, namely free combinations, restricted collocations and idioms. The essays were then compared to a native corpus. Howarth found that the 10 non-native speakers used more free combinations (67% versus 60%), fewer restricted collocations (25% versus 36%) and even fewer idioms (1% versus 5%) than the native speakers. He comes to the conclusion that the main difficulty for non-native speakers lies in the middle of the continuum, i.e. in the area of restricted collocations. In a similar study, Granger (1998) compared the data from a corpus of native speakers' writing and the written compositions by advanced French learners of English. The learner corpus material totalled about 250,000 words and was composed of argumentative essays and literature exam papers. The study dealt with amplifiers ending in -ly and functioning as modifiers, such as *bitterly cold* and *unbearably ugly*. Granger found that the NNSs underused these amplifiers compared to the NS. Also, in a few cases the NNSs overused specific amplifiers, especially the combinations with *completely* and *totally.* Granger calls these "safe bets" (1998, p. 148) because they can be easily translated from the subjects' L1 and are not so collocationally restricted. She concludes that the NNSs do not seem to use amplifiers as part of formulaic sequences, in this case

collocations, but instead, store them as separate words (Wray, 2002). Similarly, Altenberg and Granger (2001) used corpora (more specifically, the International Corpus of Learner English - ICLE) in order to compare the delexical and causative uses of the verb “make” by advanced Swedish and French speaking learners of English. Both groups showed similar results in the underuse and misuse of the delexical structure. In other words, some of the errors were shared by both groups of participants whereas others were L1 specific. Moreover, Juknevičiene (2008) researched the production of verb-noun collocations with high-frequency verbs (*have*, *do*, *make*, *take* and *give*) by Lithuanian learners of English. She compared the data from the LOCNESS corpus (NS corpus) with the NNS material obtained from the ICLE corpus. It was found that collocations were underused as well as misused in the students’ writing. More specifically, ICLE written compositions had fewer than two collocations per essay whereas the LOCNESS essays contained 3.74 collocations on average. This indicates that twice as many collocations were produced by NS students than by their NNS peers.

Siyanova and Schmitt (2008) conducted a series of studies involving adjective-noun collocations. The NNS corpus consisted of the Russian sub-corpus of the ICLE corpus which involved 31 essays written by Russian university students. The NS data was the LOCNESS corpus out of which 22 argumentative essays were selected for the comparison. Using frequency and MI scores, it was concluded that almost half of the collocations produced by the non-native speakers were actually possible English combinations. When the two corpora were compared, there was little difference as for the use of appropriate collocations. Although these results seem promising, they do not necessarily imply that the learners have reached native-like proficiency in terms of collocation knowledge. Furthermore, Laufer and Waldman (2011) examined the use of verb-noun collocations in the writing by Hebrew learners of English from three proficiency levels. Two types of analyses were carried out. The first one concerned the comparison between learners across different proficiency levels and the second analysis consisted in comparing the whole NNS corpus with the LOCNESS corpus. The purpose of the second comparison was to see the difference in frequency of use of verb-noun collocations between native and non-native speakers. The findings revealed that the NNS produced far fewer target collocations than the NS. Also, only at advanced levels did the NNS show an

increase in collocation use. In another study with Hebrew learners of English, Levitzky-Aviad and Laufer (2013) looked at a total of 290 essays (200 words each) written over a period of 8 years of learning by students starting at the end of elementary school (grade 6) and ending with English majors at the university. One of the aims was to investigate progress in the use of V+N and Adj+N collocations. Significant progress in the use of collocations was found only with the university students. These results corroborate previous findings (Laufer & Waldman, 2011; Nesselhauf, 2003; Pawley & Syder, 1983) and provide a clear indication of the difficulty involved in incorporating collocations into the writing of even advanced learners.

Relatively few studies have investigated the development of collocations longitudinally (e.g. Li & Schmitt, 2009) or other formulaic sequences (e.g. Crossley & Salsbury, 2011). For instance, Siyanova-Chanturia (2015) focused on learner production of Adj+N collocations from a longitudinal perspective. Thirty-six Chinese beginner learners of Italian wrote an essay (150-200 words) three times during their course (at the beginning, in the middle and at the end). These compositions were compared to an L1 Italian corpus. The findings revealed that there was a significant increase in the use of the target collocations by the end of the course. Siyanova-Chanturia concludes that a period of about five months might be enough for beginners to start producing more idiomatic, native-like input.

Concerning the studies involving the analysis of written output and elicitation tasks, Gitsaki (1999) investigated the use of lexical and grammatical collocations as described in the *BBI19* collocation dictionary (Benson et al., 1997) and four additional types which she herself included. The pool contained 37 target collocations in total. The essays were written by 275 Greek learners of English who belonged to three proficiency levels, post-beginners, intermediate and post-intermediate. Apart from the essays, the participants had to complete two more tasks, a translation task and a gap-filling task. The findings showed that the post-beginners used more lexical collocations than grammatical collocations, the intermediate learners showed a reverse trend, i.e. they used more grammatical collocations, whereas post-intermediate learners used a great deal of both grammatical and lexical collocations. Gitsaki came to the conclusion that learners first acquired simple grammatical collocations, then lexical collocations and finally

complex grammatical collocations. A flaw in Gitsaki's study is that the proficiency levels were obtained from the same data which was used to investigate the learners' use of collocations. Likewise, Nesselhauf (2005) analysed the writing by 207 advanced German university learners of English. The corpus was made up of 318 essays which were analysed in terms of V+N collocations. Each learner produced 10 collocations on average. The findings demonstrated that two thirds of the collocations produced were labelled as acceptable and the remaining one third was unacceptable or deviant. Nesselhauf concludes that V+N collocations are problematic even for advanced learners of English. The most problematic part of a collocation for learners was the verb. As for the factors that influence the acquisition of V+N collocations, the analysis showed that these were related to congruence of the L1 and L2 structures, that is to say, the directly translatable collocations from the learners' L1. Another important factor was the extent to which a collocation was restricted. Nesselhauf found that more restricted collocations showed fewer deviations than less restricted ones due to the fact that the verbs in these combinations collocate with a limited set of nouns. Finally, L2 exposure was found to have a positive effect on collocation use, which was not the case with the length of classroom exposure. However, a problem with Nesselhauf's study is that she did not analyse her data statistically, but based her conclusions on her impressions.

Several researchers have examined the relationship between general L2 proficiency and collocational competence. Different results have been found. Biskup (1992) examined a translation task carried out by 62 Polish and German university students. The task consisted of translating 23 V+N and Adj+N collocations from the participants' L1. The Polish learners produced more collocations that the German learners, but the latter group was more risk-taking in that it tried to paraphrase more without utilising a collocation. Also, the extent of L1 influence was greater in the Polish group than in the German group. However, it is not clear in the study what kind of translation task was actually employed. Also, Bahns and Eldaw (1993) examined 58 German advanced university students productive knowledge of English collocations. The experiment consisted of a translation and fill-in-the-gap task that included 15 V+N collocations. The students were divided into two groups. The first group was asked to translate 15 German sentences into English, whereas the second group was given a cloze format and had to provide the correct noun

collocate. A panel of three judges rated the answers as “acceptable” or “unacceptable”. The results show that there was no statistically significant difference between the two groups. Bahns and Eldaw also concluded that collocation knowledge does not develop together with general lexical knowledge. From a critical point of view, the number of target items was quite low. Moreover, the measures of general vocabulary and collocation knowledge were taken from the same data which makes the conclusions rather questionable.

Al-Zahrani (1998) looked at the collocation knowledge of 81 advanced Arabic-speaking learners of English. He developed a 50-item V+N collocation cloze test in which the first letter of each collocation was given. The participants’ general language proficiency was measured by a writing test and the TOEFL test. The results showed a strong relationship between the knowledge of collocations and general English proficiency. Farghal and Obiedat (1995) explored the productive knowledge of 22 adjective-noun and noun-noun collocations by 51 advanced Arabic learners of English. There were two groups involved in the study. The first group had to complete a fill-in-the-blank test, while the second group had to translate Arabic sentences into English. The subjects scored high when they had to translate the collocations that had equivalents in their L1. However, this was not the case with the collocations that could not be directly translated from Arabic into English. Also, Farghal and Obiedat identified 4 simplification strategies that were identified among the participants: the use of synonymy, avoidance, L1 transfer and paraphrasing. They concluded that the learners were not “made aware of collocations as a fundamental genre of multi-word units”, because new vocabulary was taught in form of single words, not chunks. This in turn leads to low lexical competence on part of the learners. Similarly, Bonk (2001) investigated the same relationship with a total of 98 university students from diverse L1 backgrounds who were given three tests of collocation knowledge and a general English proficiency test. The collocation tests used were two fill-in-the-gap tasks, one with missing verbs and another with missing prepositions and a multiple-choice task. Finally, general English proficiency was measured by a shortened TOEFL test. The analysis shows that a moderate correlation was found between collocation and general English proficiency. Unlike other studies mentioned here, Bonk tried to include a large number of items and support his conclusions by rigorous statistical analyses. However, one of the

shortcomings is that the selection of the target items was based solely on intuition. Barfield (2003) tested the recognition of a large number of decontextualised V+N collocations. 93 Japanese university students took a 40-item test which was based on the Academic Word List (AWL) (Coxhead, 2000) and the General Service List (GSL) (West, 1953). For each of the 40 items, there were three noun collocates out of which one collocate was incorrect. Barfield found that the recognition of nouns and verbs was high. However, it was not the case for the V+N collocations. Barfield concludes that knowing individual verbs and nouns does not necessarily imply knowing how they combine in a collocation. With regards to the relationship between collocation knowledge and overall language proficiency, there was no observed correlation. Moreover, Barfield also concluded that the frequency of the individual words in a collocation led to their better recognition. He investigated a large number of combinations, however, some of the collocations which he considered miscollocations were actually possible in some contexts.

In summary, the studies reviewed above differ in the methods of data analysis but more importantly, in the formal definition of collocation adopted. Some have relied on native speakers' judgements of formulaicity (e.g. Foster, 2001), some have conceptualised collocations as semantically restricted to a certain extent (e.g. Howarth, 1998; Nesselhauf, 2005), whereas others have adopted a purely frequency approach (e.g. Durrant & Schmitt, 2009). These various definitions only confirm the fact that conceptually speaking, collocation is a tricky term.

Even though there is a great deal of heterogeneity in both data and methods, a number of common findings can be identified. The most commonly reported finding is that of under-, over-, or misuse of L2 collocations compared to L1 (e.g. Howarth, 1998; Altenberg & Granger, 2001; Nesselhauf, 2005). Other interesting findings are related to learners' L1, immersion-based L2 exposure and proficiency. However, these will be discussed in more detail in the second study I carried out because they are some of the variables I manipulated in order to answer the research questions.

2.6. Psycholinguistic research on collocations

There has been a growing interest in psycholinguistic research on collocations. Yamashita and Jiang (2010), for instance, compared the performance on an

acceptability judgement task of native speakers of English and L1 Japanese learners of English as a second language (ESL) and English as a foreign language (EFL). They used a) congruent collocations (translatable from the L1) and b) incongruent collocations (collocations whose lexical components are different in the L1 and L2). The native speakers processed both types of collocations similarly both in terms of response times (RTs) and error rates (ERs), whereas the two groups of non-native participants made more errors on incongruent than on congruent collocations. The ESL learners generally performed better than the EFL learners (lower error rate and faster speed). Also, whereas the EFL learners showed a significant difference with regards to both response times and error rates, the ESL learners demonstrated a significant difference only in terms of error rates. These results led the authors to conclude that a) it is more difficult to acquire incongruent than congruent collocations and b) L2 collocations are processed independently of the L1 lexicon.

A similar conclusion was reached by Wolter and Gyllstad (2011), who also examined the influence of L1 on the processing of congruent and incongruent collocations. They used a primed lexical decision task (LDT) to investigate whether or not collocational prime-target items that can be directly translated from the L1 would result in a significant priming effect when compared to those collocations without direct L1 translation equivalents. The authors also included a set of unrelated items for baseline data. The participants were native speakers of English and highly proficient Swedish learners of English. The results revealed that the native speakers showed significant priming for both congruent and incongruent collocations in comparison to the unrelated items, whereas the non-native speakers had faster reaction times for the congruent collocations than the incongruent ones and for the incongruent collocations when compared to the unrelated items. Moreover, Walter and Gyllstad (2013) examined the effects of frequency on the processing of congruent and incongruent collocations. The authors used an acceptability judgment task which was administered to native and advanced non-native English speakers (L1 Swedish) in order to examine the participants' response times and error rates. Results show that the non-native speakers responded significantly faster to the congruent items than to the incongruent items and that they made significantly more errors on the incongruent items when compared to the congruent items. One of the

conclusions the authors reached is that the L1 may have a huge influence on how fast collocations are processed in L2.

Another psycholinguistic study that should be mentioned is that by Sonbul and Schmitt (2013). They used two elicitation tasks (form recall and form recognition) and at that time, an innovative priming technique to examine the link between implicit and explicit lexical collocation knowledge. The form recall test was a cloze format whose purpose is to measure the ability to recall the form of the collocation. It was composed of a reading passage with gaps in which one element of the target collocation was provided and the definition of the collocation was given in the margins. The second test used the same reading text, but with multiple-choice items in the margins. Three input conditions were taken into account: enriched, enhanced and decontextualised. The first two types of input were conceptualised as input in which target language was embedded at frequent intervals and input in which target items were emphasised either by glossing, bolding or underlining." (Reinders & Ellis, 2009, cited in Sonbul & Schmitt, 2013). The decontextualised input, on the other hand, was defined as input in which target collocations were presented without context. The authors evaluated how two groups of participants, adult native speakers (Experiment 1) and advanced non-native speakers of English (Experiment 2) acquired collocations under these three kinds of input conditions. The findings indicate that all conditions led to significant improvement in the explicit tests for both groups, whereas none of the conditions led to collocational priming effects either for native or non-native speakers.

Finally, Wolter and Gyllstad (2016) explored the role of semantic transparency in the processing of collocations. Semantic transparency, according to the authors, is another influential factor in the comprehension of collocations. The aim of the study was to assess whether there was any processing difference between collocations and free combinations (as they are defined by Howarth (1996)). A semantic judgement task was administered to advanced non-native speakers of English (L1 Swedish) as well as to native speakers to examine the participants' reaction times and error rates. The findings demonstrated that both group of participants processed collocations more quickly than free combinations. The authors conclude that the descriptive categories suggested by Howarth's Collocational Continuum (Table 2) may be reflected in processing costs.

2.7. Testing collocations

A variety of tests have been used in the literature to assess collocation knowledge. Some of them comprised measures that elicited target collocations directly and others focused on indirect retrieval of collocations from memory. This brief section is intended to review the former. The purpose of "direct" or "explicit" tests is to evaluate how much collocation knowledge has been gained after the application of a treatment. Examples of these include fill-in-the-blank and cloze tasks (e.g. Al-Zahrani, 1998; Barfield, 2003; Chan & Liou, 2005; Boers, Demecheleer, Coxhead & Webb, 2014; Peters, 2014; González-Fernández & Schmitt, 2015), translation tasks (e.g. Biskup, 1992; Farghal & Obiedat, 1995), word association tasks (Hoffmann & Lehmann, 2000; McGee, 2009), acceptability judgement tasks (Siyanova & Schmitt, 2008; Yamashita & Jiang, 2010; Wolter & Gyllstad, 2013), error correction tasks (Sun & Wang, 2003) and L1-L2 or L2-L1 translation tests (Biskup, 1992; Laufer & Girsai, 2008; Webb & Kagimoto, 2011).

However, most of these studies did not measure test reliability and validity (Bonk, 2001). One of the recent attempts to take into account these test development practices was made by Gyllstad (2005) who devised two collocation knowledge test formats: COLLEX and COLLMATCH. He was guided by four criteria: 1) measuring receptive knowledge of verb-noun collocations, 2) developing tests which show high degree of reliability, 3) choosing collocations that consist of high frequency words and 4) using decontextualised strings. The COLLEX format is quite a long test in which each item has two pairs (one frequent and conventionalised collocation and one non-collocation). Gyllstad refers to the former pair as a "target collocation" and to the latter, which is a distractor, as a "pseudo-collocation". The test asks the testees to identify the correct collocation pair. A few examples are given below:

- *set the bed / make the bed*
- *run a business / drive a business*

Gyllstad further argues that the test itself is not simple because test takers need to possess knowledge of the individual words making up the target collocations, then figure out which of the two pairs is an acceptable combination in English and finally, choose the one they believe is correct. The target items were taken from Kilgarriff's

(1996) BNC-based, Internet-available list. More than 80% of both verbs and nouns included in the test have been derived from the 3000 most frequent words in English. Also, the test contained a small number of adjective-noun collocations. As far as scoring was concerned, in the COLLEX format 1 point was awarded for each correctly chosen real collocation and 0 for each non-collocation.

In contrast, in the COLLMATCH format, the test takers are given five pairs for a given verb and are instructed to tick those that they believe are possible combinations in English:

a. draw the curtains	*b. draw a sword*	*c. draw a favour*	*d. draw a breath*	*e. draw blood*

As in case of the COLLEX format, the target real collocations were retrieved from the BNC and included the verbs of high frequency. The pseudo-collocations were also checked in the BNC to make sure they did not occur in the corpus. In contrast, in the COLMATCH format, each one of the pairs was scored 1 if it was either a correctly chosen collocation or a rejected pseudo-collocation.

The two test formats and a vocabulary size test (Schmitt, Schmitt & Clapham, 2001) were administered to two groups of learners, Swedish university students (1st, 2nd, and 3rd semester learners) and a group of Swedish school students. The scores from VLT correlated significantly with behaviour in the two tests (0.87 with COLLEX and 0.90 with COLMATCH). Moreover, there were significant differences between school students and university students in that school students obtained lower scores. However, no statistical difference was obtained across university students.

Barfield (2009), on the other hand, developed a recall test of explicit collocation knowledge which was named LexCombi. A group of 89 Japanese university learners of English took the test and were asked to provide three collocates for 30 target nouns. A database of possible collocations was created and used for scoring purposes. The elicited responses were scored 0/1, with a maximum score of 90. The target items were split into those consisting of highly frequent individual words and

those consisting of low-frequency words. The subjects were also divided into two groups, those with the 20 highest and those with the 20 lowest proficiency scores. The results of Rasch Analysis show that LexCombi was a reliable test. The test was also a good indicator of the differences between high and low proficiency groups.

Finally, Eyckmans (2009) devised a multiple answer receptive collocation test which she called the Discriminating Collocations Test (DISCO). The test set to measure the ability to distinguish collocations from free combinations. The test consisted of 50 items that were each composed of two V+N combinations (from the same frequency band) that were idiomatic in L2 (e.g. *pay attention*) and a third V+N combination that was not idiomatic (e.g. **express charges*). The test contained 15 high frequency items, 15 medium frequency items and 20 low frequency items. The instructions asked the test-takers to tick both idiomatic V+N combinations to obtain full marks. In order to validate the test, Eyckmans carried out a study in which she traced the development of receptive collocation knowledge of a group of 25 students majoring in English in which the test was used as a pre- and post-measure. The test appeared sensitive enough to capture the participants' progress.

To summarise, the review of the above collocation studies indicates that different measures of explicit collocation knowledge have been employed in which learners were directed to produce or judge target collocations. As can be clearly seen, most of these measures had been used without much piloting or validation with the exception of Gyllstad (2005), Barfield (2009) and Eyckmans (2009). The next section will focus on how collocations have been normally taught.

2.8. Teaching collocations

One of the first scholars who focused on the importance of teaching collocations was Lewis (1993, 1997, 2000), who proposed the Lexical Approach. The main tenet of the Lexical Approach is that language is not composed of traditional grammar and words, but often of multi-word chunks. Lewis asserts that "an important part of language acquisition is the ability to produce lexical phrases as unanalysed wholes or "chunks", and that these chunks become the raw data by which the learner begins to perceive patterns, morphology, and those other features of language traditionally thought of as 'grammar'" (p. 95). In other words, in this approach, L2 learners are

systematically encouraged to notice recurring lexical chunks in the L2 language input. As can be easily inferred, Lewis's appreciation of lexis has significant teaching implications. According to him, raising students' awareness of chunks should be at the core of language pedagogy. Lewis lists several classroom activities that could be used for enhancing the acquisition of chunks: using a given set of formulaic sequences for summarising a text, categorising chunks along structural and semantic criteria and reading sentences aloud in order to stress phonological chunking. Nevertheless, the Lexical Approach has been criticised for lack of "hard" empirical evidence as well as not presenting a comprehensive language syllabus that would be based on the premises of the Lexical Approach (e.g. Harwood, 2002).

Some empirical evidence was later provided in a study by Boers, Eyckmans, Kappel, Stengers and Demecheleer (2006). This study was set to explore the extent to which (i) the use of formulaic sequences (collocations and idiomatic expressions) can help learners be perceived as proficient L2 speakers and (ii) an instructional method that focuses on "noticing" of L2 chunks can help language learners enhance their knowledge of formulaic sequences. Over the course of 22 teaching hours, 32 students of English listened to and read large quantities of authentic L2 materials. The experimental group were made aware of the word combinations in their input, whereas in the control group, the teacher did not draw the students' attention to chunks. Afterwards, the participants' oral proficiency was assessed in an interview by two blind judges. Both perceived the experimental group as more proficient than the control group. Also, two other blind judges counted the number of phrasal units in the interviews that they considered to be formulaic in nature. Their counts correlated well with the oral proficiency. Results suggest that raising students' awareness of formulaic sequences might be a helpful tool to recognise chunks in a new text and to subsequently use these in a conversation. The authors conclude that the evidence they have presented should be taken into account for further evaluations of the effectiveness of the Lexical Approach.

The importance of highlighting lexical patterns in the input was also stressed in a number of classroom-based studies. Several researchers point to the benefits of consciousness-raising activities (e.g. Howarth, 1996; Hill, 2000; Woolard, 2004; Revier & Henriksen, 2006; Peters, 2009). This is because, according to the studies addressed in the section on L2 collocation studies, collocation use is problematic for

L2 learners, no matter how many years of English instruction they have received, their L1, or the type of input they were exposed to. Bahns and Eldaw (1993) state that learners know many more individual words than combinations in which these occur and this indicates the need for explicit teaching of collocations. Another reason is the fact that the majority of collocations are relatively transparent and therefore, rather easy to comprehend. Hence, learners fail to see them as combinations of words in which one word has a special link with another (Laufer & Waldman, 2011).

Laufer and Girsai (2008), for example, explored the effect of explicit contrastive analysis and translation on the acquisition of single words versus collocations. L1 transfer is a very common source of learners' errors and because it affects the acquisition of collocations, teachers need to incorporate translation exercises or give explicit explanations on the differences between the learner´s L1 and L2. One major advantage of selecting L2 collocations on basis of the contrastive approach is the reduction of the L2 teaching/learning load. In the above study, Laufer and Girsai compared three groups of high school students who had similar levels of proficiency. Each group received a different treatment: meaning focused instruction, non-contrastive form-focused instruction and contrastive analysis and translation. The target items consisted of ten unfamiliar words and ten collocations in L2 English. In the meaning-focused group, the participants performed content-oriented tasks which did not require paying attention to the target items. The form-focused group completed text-based vocabulary tasks which focused on the target items. Finally, the contrastive analysis and translation group was required to do text-based translation tasks: both from L2 into L1 and from L1 into L2. Straight after completing the tasks as well as one week later, the three groups were tested on the retention of the target items by two tests: active recall and passive recall. Results indicate that the third group obtained significantly better results than the other two groups for both single words and collocations.

In a different study by Laufer (2011), 95 students were given a set of gap-filling sentences, in which they were asked to provide the missing verbs of the target collocations with the use of a dictionary. In comparison with the results of the pre-test, the use of dictionary led to an increase of 150% of correct collocations (using Laufer's formula) after the exercise and an increase of 54% in the unannounced post-test delivered one week later. Concerning the use of dictionaries, Bahns (1993)

claim that learners should become familiar with the existing collocation dictionaries and how to use them. There are numerous well-known collocation dictionaries currently available: the *LTP Dictionary of Selected Collocations* (Lewis & Hill 1997) and the *Oxford Collocations Dictionary for Students of English* (McIntosh, Francis, & Poole, 2009) and the *Longman Collocations Dictionary and Thesaurus* (2013). These dictionaries can help students express their ideas more accurately, both in speaking and writing.

Webb and Kagimoto (2009) investigated the effectiveness of reading and cloze tasks as tools for explicit teaching of collocations. The participants were 145 Japanese-speaking learners of English from two universities in Japan. The study involved 24 V+N collocations that were embedded in three glossed sentences and as well as in a cloze exercise. These two types of tasks were shown to be effective in learning collocations.

Chan and Liou (2005) explored the benefits of a Chinese-English bilingual concordancer on the knowledge of V+N collocations. Students' overall improvement in collocational knowledge was statistically significant. In other words, their knowledge increased from the pre-test to the immediate post-test by 25% (from 27.78% to 52.78%). This knowledge decreased significantly in the delayed post-test (administered two and half months after the intervention); however, it was still better than the initial knowledge.

Other teaching activities for learning collocations have also been studied: typographical enhancement (Bishop, 2004; Peters, 2009; 2012; Sonbul & Schmitt, 2013; Szudarski & Carter, 2014) and exercises that involve matching collocations and filling in the gaps, supplying the correct collocations when given a definition (Peters, 2014). Peters (2009), for example, explored the effect of marginal glosses on recall of single words and collocations. Fifty-four EFL students read a glossed text in one of two conditions. The control group was instructed to pay attention to unknown vocabulary and write down unfamiliar lexical items. The experimental group was explicitly instructed to pay attention to unknown individual words as well as collocations. All participants were forewarned that a vocabulary posttest would follow. Although the experimental group wrote down more single words and collocations than the control group, there was no significant difference in recall

scores between the two groups. Peters concludes that one of the reasons for such results is due to the test effect, i.e. the participants took the pre-test during the same session as the experimental task. In a similar study, Peters (2012) also reported the beneficial effects of textual enhancement (boldfacing and underlining) on the acquisition of German collocations by Dutch students. In the experiment, the participants received a text in which single words and collocations were boldfaced and underlined while others were presented in the baseline form (with no textual enhancement). Results indicate that the learners were better able to recall textually enhanced target items than those which were not highlighted.

The above methods to teaching collocations can be justified in terms of several hypotheses that explain effectiveness in L2 learning in general and one of them is the “noticing hypothesis”. This hypothesis postulates that learners must consciously notice forms and the meanings these forms realise in the input they receive in order for input to turn into intake (Schmidt 1990, 1994). According to Schmidt, only the input that is consciously attended to becomes available for subsequent processing. Since many features of L2 input are likely to be infrequent, non-salient or and communicatively redundant (this is especially true of collocations), they may go unnoticed unless attention is directed to them. In fact, there is an ongoing debate on the role of awareness in learning (e.g. Hama and Leow, 2010), but it is beyond the scope of this research to discuss it in more detail.

Another important issue related to teaching collocations concerns the criteria that have to be taken into account for selection of target collocations. McCarthy (1990) proposes three criteria (frequency and range, learnability and learners’ needs), whereas Nation (1990) provides an even more exhaustive list (frequency, range, language needs, availability and familiarity, coverage, regularity and ease of learning or learning burden). However, when it comes to applying such criteria, teachers have to bear in mind learners’ proficiency levels as well. Furthermore, Nesselhauf (2005) suggests several principles of collocation teaching based on her own study of V+N collocations. The first one is related to repetition. This goes in line with one of the principles of learning vocabulary in general, namely the fact that vocabulary is learned in an incremental manner and that new words must be met several times in order to be learnt (Schmitt, 2007). Teachers then have to find the way to recycle items that have been previously introduced. The second principle deals with

systematic teaching of collocations because systematicity seems to be beneficial for acquisition (Nation, 1990). Howarth (1996) reviewed some of the teaching materials for collocations and came to the conclusion that collocations are presented to learners in an unsystematic way. However, teaching collocations systematically can depend on several factors. For example, if learners confuse certain collocations or the elements that collocations are composed of, teachers should focus on the differences in meaning and usage of similar collocations (contrasting collocations similar in form and meaning, contrasting collocations that have their one-word equivalents etc). Systematicity also implies teaching typical collocates simultaneously. In other words, teachers should teach several verbs that collocate with a certain noun or several nouns that collocate with a certain verbs for the learners to become aware of the restrictions of the target noun or verb. This is especially important in the case of near-synonyms. The third principle is related to L1-L2 collocation congruence (Lewis, 2000). Learners must know that not all collocations can be literally translated from their mother tongue. Hill (2000) also suggests that words should be taught with their most frequent collocates. He gives an example *hold a conversation* and points that intermediate students probably know the words “hold” and “conversation” but they do not know that these collocate together.

The results of the aforementioned studies have to be interpreted with caution. First, some of them used only a small number of participants, so the extent of generalisability is limited. Second, some of the techniques used were efficient for one type of formulaic sequence, not all of them. It means that if one teaching method is effective for collocations for example, it does not necessarily mean that it will be equally effective in the case of phrasal verbs or idioms.

2.9. Conclusion

This chapter reviewed the role of formulaic sequences in language with a specific focus on collocations: definition, acquisition, testing and teaching. When defining collocation, I encountered the recurring problem in the existing literature, that of whether a particular item is a collocation or an idiom. The complexity of the notion of collocation/idiom is due to the fact that different approaches applied different criteria,

with different terms covering the same units and the same terms denoting units that are quite different. With respect to this loose terminology, Wray and Perkins (2000) point out that “it is extremely difficult to be sure when like is compared with like” (p. 20). The messy terminology, to some extent, hinders the smooth integration of insights from both approaches into a field like language teaching where formulaic language plays an increasingly important role. All this fuzziness calls for some kind of terminological order, which I tried to “establish” by presenting my own definition (which does not separate between collocations and idioms). However, I believe that it would not be fair to neglect the work done on idioms, because someone coming from the phraseological approach and using a different set of criteria could rightfully call my items “idioms”. For that reason and because the thesis focuses on the figurative nature of collocations, the next chapter will briefly account for the research on idioms and figurative language in general. I will not provide a complete review of idioms as it is unfeasible and not of primary relevance to the current research.

Chapter 3 - Idioms

3.1. Introduction

The idea that formulaic language is an intrinsic part of linguistic competence has become widely attested in the field of second language acquisition. Its relevance stems from its pervasiveness in everyday language (see Chapter 2). Glucksberg (1989), for instance, estimated that people used 1.8 novel and 4.1 frozen figurative expressions per minute of discourse. If we assume that people engage in a daily conversation for a minimum of 2 hours, the sheer number of these phrases amounts to 4.7 million novel and 21.4 million within a 60-year life span. Similarly, Stengers (2007) counted idioms in the online Word Banks Corpus and found that there were around 2,400 instantiations per million words (also see Jackendoff, 1995; Siyanova-Chanturia & Martinez, 2014).

There are many types of formulaic sequences (see previous chapter on collocations) and idioms, the focus of this chapter, are considered to be the most prototypical type. Because of their figurative nature, they pose a challenge for second language learners. Textbook authors Celce-Murcia and Larsen-Freeman (1999) refer to idioms as “notoriously difficult” (p. 39) and research has demonstrated that L2 learners struggle with idioms in both comprehension and production (e.g. Irujo, 1986; Cooper, 1999; Liontas, 2003). In terms of processing, most research has shown that even at high levels of proficiency, formulaic phrases, including idioms, continue to pose problems to learners (Barfield & Gyllstad, 2009; Boers & Lindstromberg, 2012; Kuiper et al., 2009; Laufer & Waldman, 2011; Nesselhauf, 2005), both in terms of producing the accepted form and in understanding the figurative meaning.

Most empirical studies to date have had a strong psycholinguistic flavour, whereas pedagogically-oriented research has been mainly descriptive, either using corpus tools to identify the most frequent idioms to teach (e.g. Liu, 2003; Simpson & Mendis, 2003; Grant & Nation, 2006; Grant, 2007) or providing practical suggestions for teaching idioms (e.g. Cooper, 1998; Cornell, 1999; Levorato, Nessi & Cacciari, 2004; Zizik, 2011).

This chapter will first look at how idioms have been normally defined and what their common characteristics are. The subsequent section will focus on research done on idioms, by first reviewing the psycholinguistics-oriented studies followed by the pedagogical strand. The final section will discuss the main tenets of Cognitive Linguistics as well as studies that have used this approach in their methodologies.

3.2. Idioms

Idioms are expressions that abound in English and are easily produced and understood by speakers of that language. They are typically defined as phrases whose idiomatic meanings cannot be deduced from their components parts (e.g. Fernando & Flavell, 1981; Fernando, 1996; Abel, 2003; Cacciari, 2014). Surprisingly, this seemingly simple criterion is the most controversial one as scholars have pointed out that not all idioms are equally non-compositional, but instead, vary between more and less decomposable units (e.g. Bibbs & Nayak, 1989; Gibbs, Nayak & Cutting, 1989).

Idioms are highly heterogenous and vary along various dimensions. Some of them have a plausibe literal meaning (you can literally *wear the pants*), whereas others do not (you cannot literally *jump the gun*). Some are highly predictable or quickly recognised as having a literal meaning. For instance, upon encountering the sequence, *Kick the*…, the language user is likely to complete the phrase idiomatically with *bucket*, even before the end of the sentence is reached. On the contrary, some idioms are not very predictable and cannot be recognised as idiomatic until the whole unit has been processed. For example, upon seeing *He passed the*…, it is not likely for the language user to predict the missing word *buck*, unless the context of the sentence is defining enough.

Idioms are often seen as “frozen metaphors” where an original denotation may have been lost, which means that that they can be arbitrary and difficult to understand unless the meaning is known from prior experience. However, research on conceptual metaphor (e.g. Lakoff, 1987; Gibbs, 1994; Kövecses & Szabó, 1996) has debunked this claim. Instead, it is now widely acknowledged that idioms are often motivated, i.e. their derivation from a literal meaning can be explained (more details below).

Another defining characteristic of idioms is their fixedness (e.g. Moon, 1997; Grant & Bauer, 2004). That means that they will lose their idiomatic meaning if they are for example passivised (*kick the bucket* but not *the bucket was kicked*) or if one of the component lexical items is substituted (*booting the bucket* is not equivalent to *kicking the bucket*, despite the near synonymy of *kick* and *boot)*. Nevertheless, they seem to be much more syntactically flexible than is normally assumed (e.g. Cacciari & Glucksberg, 1991; Moon, 1998; Konopka & Bock, 2009). Moon's 1998 corpus study revealed that almost 40% of English FEIs (fixed expressions and idioms) allow lexical variation or transformation and a smaller percentage (14%) have two or more variations.

Examples of these variations include:

- British/American variations: *not touch someone/something with a bargepole* (British); *not touch someone/something with a ten foot pole* (American)
- Varying lexical component: *burn your boats/bridges*
- Unstable verbs: *show/declare/reveal your true colours*
- Truncation: *every cloud has a silver lining/silver lining*
- Transformation: *break the ice/ice-breaker/ice-breaking*

What is also interesting about idioms is their infrequency as an individual type of formulaic language. Because of this, acquiring idioms in a second language is a big challenge for learners. Boers and Lindstromberg (2009) analysed a 120-pages long novel and identified (idiom was defined as an expression that appeared in the *Colins Cobuild Dictionary of Idioms*) over 90 instances of idiom. Almost all of these idioms occurred only once, which confirms the view that idioms are infrequent taken individually (also see Moon, 1998, Biber, Johansson, Leech, Conrad & Finegan, 1999; Liu, 2003).

Moreover, in terms of idioms that allow literal and figurative interpretations, research suggests that an idiom's figurative meaning is almost always more frequent than its literal counterpart. In other words, idioms are more readily understood figuratively than literally because they occur figuratively with much higher frequency in everyday discourse (Gibbs, 1986; Popiel & McRae, 1988; Van Lancker-Sidtis, 2003).

3.2.1. Classifications of idioms

There have been various attempts at classifying idioms, semantically (e.g. Bolinger, 1975; Fernando, 1996; Moon, 1998), syntactically (e.g. Yorio, 1980; Fernando, 1996; Moon, 1998) and functionally (e.g. Strassler, 1982; Cowie, Mackin and McCaig,1983, 1993; Moon, 1998).

Presenting all these classifications is beyond the scope of this thesis, therefore I will only focus on the semantic classifications because they deal with different degrees of semantic transparency, one of the variables used in this thesis.

The following table displays such classifications, in which the scholars, instead of giving a narrow definition of idioms, preferred to describe them on a continuum of idiomaticity together with collocations and free combinations.

Table 3: Semantic classification of idioms

Yorio (1980)	Cowie, Mackin & McCaig (1983/93)	Alexander (1987)	Cacciari and Glucksberg (1991)	Howarth (1998)	Moon (1998a)	Fernando and Flavell (1981)	Fernando (1996)
Transparent (not idioms): *your face looks familiar*	Open collocation: *fill the sink, a broken window, in the raw*	Literal phrase: *hit the ball*	Analysable transparent: *break the ice, spill the beans*	Free combination: *under the table*	Transparent metaphor: *alarm bells ring, behind someone's back*	Literal and/or transparent: *cut wood, break eggs, rely on, add fuel to the fire*	Literal idiom [sic]: *tall, dark and handsome, on foot, for example*
Semi-transparent (expressions or idioms): *shake hands, bumper to bumper, skyscraper*	Restricted collocation/ Semi-idiom: *jog one's memory, a blind alley, catch someone red-handed*	Semi-idiom: *hit a six*	Non-analysable: *by and large*	Restricted collocation: *under attack*	Semi-transparent metaphor: *on an even keel, grasp the nettle, the pecking order*	Metaphor/Semi-transparent: *skate on thin ice, kill two birds with one stone, the boot/shoe is on the other foot*	Semi-literal idiom: *kith and kin, drop names* Semi-idiom: *catch your breath, foot the bill*
Figurative idiom: *catch fire, close ranks, beat one's breast, bleed someone white*	Metaphorical idiom: *hit the jackpot* Figurative idiom: *hit list*	Quasi-metaphorical: *giving up the ship, count your chickens before they're hatched, carry coals to Newcastle*	Figurative idiom: *under the microscope*		Metaphor/Semi-opaque: *burn one's boats, tarred with the same brush, off the top of one's head*		
Opaque/True idioms: *by and large, take a leak, knock on wood, be on the wagon*	Pure idiom: *blow the gaff, kick the bucket, in a nutshell*	Opaque/Pure idiom: *hit the sack*	Analysable-opaque: *kick the bucket*	Pure idiom: *under the weather*	Opaque metaphor/Pure idiom: *bite the bullet, over the moon, red herring, kick the bucket*	Full idiom/ Opaque: *pull someone's leg, pass the buck, trip the light fantastic*	Pure idiom: *spill the beans, chin wag, red herring, take 40 winks, have cold feet*

Grant and Bauer, 2004

One of the problems with these classifications, however, is that they do not seem to be based on any central understanding of what an idiom is, but rather on a perception that all formulaic sequences are not equally transparent. The end result is a great deal of overlap among the categories. While some idioms like *red herring* are

classified as opaque, others like *by and large* are listed in different categories. Also, while there is a difference between *watch the clock* and *kick the bucket*, these two phrases are listed in the same dictionary *Cambridge International Dictionary of Idioms* (McCarthy & Walter, 1998).

In sum, whereas there may be agreement about the idiomaticity of phrases like *kick the bucket*, there is unfortunately much less agreement in case of less extreme examples such as *spill the beans*. The terminology becomes variable and not very helpful (Grant & Bauer, 2004). Cowie also sees the terminology as problematic, asserting that even the differences between word combinations such as free combinations, restricted collocations and idioms lack consistency and clear boundaries (p. 218). It is not surprising then that learners have difficulties mastering idioms. Nevertheless, the terminology is only the tip of an iceberg. Idioms are challenging for other reasons as well, some of which will be discussed below.

3.2.2. Why are idioms hard for L2 learners?

First of all, in some cases, idioms are motivated, i.e. the idiomatic meaning can be guessed by an image evoked by the literal meanings of the individual components. However, this is not always the case. Some idioms contain words that are infrequent and that L2 learners are not familiar with, hence it is hard to figure out the figurative meaning (e.g. *at the end of your tether*).

Another problem when trying to arrive at the idiomatic meaning of an idiom relates to homonyms (words that have the same form but different meanings). Upon seeing *to follow suit*, the learner might activate what is according to him/her the most common meaning of suit, i.e. “a piece of clothing” instead of “a type of card”. Consequently, the learner may interpret the idiom as having a completely different figurative meaning (Boers, Demecheler & Eyckmans, 2004).

Polysemy is yet another obstacle. When encountering the idiom *to show someone the ropes*, the learner may think that the ropes have to do with hanging people or a boxing ring, but not necessarily with the ropes of a ship. Other examples include *shot in the arm* or *the gloves are off*.

Cross-cultural differences may be a further obstacle to a successful interpretation of idiomatic meaning (Kövecses, 2005). In Western culture, for example, the emotions reside in the heart (according to the Jamesian view of emotion), so there are a high number of expressions with heart (e.g. *a bleeding heart, to lose heart, to eat your heart out*). In other cultures, like Mandarin Chinese, this is not the case, so Chinese EFL learners struggle with idioms containing the word *heart* (Hu & Fong, 2010).

Because of the difficulties described above, there are reasons to believe that idioms should be taught explicitly (see section on Teaching idioms).

3.3. Research on idioms

3.3.1. Psycholinguistic studies

Most research into idioms has focused on processing and the effect of salience, context and compositionality, among other factors.

Many studies have considered the contribution of semantic decomposability and transparency on idiom processing, with often conflicting results. Titone and Connine (1999) found that reading times for non-decomposable idioms were significantly affected (processed faster) by a preceding biasing context (*After being ill for months*, *she finally kicked the bucket* versus *Forgetting to move it from the path*, *she finally kicked the bucket.*), whereas there was no differences in processing times for decomposable idioms. They concluded that when the components contribute to both the figurative and literal meaning of the phrase, integration of meaning is easier than when there is no such a relationship (also see Gibbs, 1991; Gibbs & Nayak, 1989). Caillies and Butcher (2007) also found evidence supporting an advantage for decomposable idioms. In their study, targets related to the figurative meaning of idioms were processed more quickly for decomposable idioms than for non-decomposable idioms.

In contrast, Tabossi, Fanari and Wolf (2009) found no difference between non-decomposable and decomposable idioms on a semantic acceptability judgement task (judging whether a word sequence was a meaningful Italian phrase). All conditions were faster than control items and the authors suggested that this was evidence that familiarity rather than the idioms' semantic properties, was responsible

for the processing advantage. Cutting and Bock (1997), using a cued production task, and Tabossi, Fanari and Wolf (2008), employing a series of semantic tasks, also found no evidence that decomposability had an effect in idiom processing.

Another aspect of idiom processing explored (using different methodological approaches) has been the effect of salience and how quickly figurative meanings are processed when compared to their literal counterparts (e.g. Conklin and Schmitt, 2008; Siyanova-Chanturia et al., 2011). Mixed results have been yielded as well. Some studies have shown that the literal meanings of L2 idioms might be more salient than the figurative one in the course of processing by second language users (e.g. Kecses, 2000; Liontas, 2002). Ciéslicka (2006) used a priming technique in which non-native speakers of English were presented with idioms in contexts that were neither literal nor figurative biased (e.g. *Peter was planning to tie the knot later that month*.). The participants listened to the target items and performed a lexical decision task for words that appeared on a computer screen. The meanings of the target idioms were either literal (e.g. *rope*) or figurative (e.g. *marry*). Ciéslicka found a significant priming effect for the literal meanings and concluded that these meanings have the priority during L2 idiom comprehension.

Abel (2003) approached the processing question from a different angle. She asked her participants (both natives and non-natives) to perform a decomposability task in which they had to divide idioms into decomposable (e.g. *miss the boat*) and non-decomposable ones (e.g. *shoot the breeze*). Results indicated that whereas native speakers judged idioms as non-decomposable, the non-native speakers judged the same idioms as decomposable in that they assigned meaning to individual components of opaque idioms.

Siyanova-Chanturia et al. (2011) presented idioms used figuratively (*at the end of the day* -"finally"), literally (*at the end of the day* - "in the evening") and novel phrases (*at the end of the war*). By using the eye-tracking methodology, the authors recorded the number and length of fixations of the whole unit as well as the last word of the idiom in each of the three conditions. The non-native participants showed faster processing for the literal meanings, suggesting that these meanings might be more salient for L2 learners. Similarly, Ciéslicka and Heredia (2011) examined the effects of salience and context in idiom processing by non-native speakers of English. Each

idiom was embedded in an ambiguous and unambiguous sentence context. For the ambiguous condition, the preceding context was neutral, i.e. each idiom could be read literally or figuratively (I know he is very happy to be in the saddle.). For the unambiguous condition, the preceding context biased the figurative meaning (*It looks like liberals are again going to be in the saddle*.). The findings demonstrate that literal facilitation was found for L2 idioms, which supports the notion of the special status that literal meanings enjoy in the course of their processing by non-native language users (also see Ciéslicka, 2007, 2010, 2012; Ciéslicka et al., 2009). The results of these studies support the view that L2 learners are more inclined to process formulaic sequences analytically, by breaking them down into component parts (e.g. Fitzpatrick & Wray, 2006; Wray, 2002).

These studies also suggest that it seems reasonable to assume that L2 learners become familiar with literal meanings first, normally as part of their formal L2 instruction. Because literal meanings are likely to be more frequently used in classrooms than their figurative interpretations, they will, consequently, enjoy a more salient status. In other words, second language learners cannot be expected to recognise the idiomatic status of idioms, especially if these are composed of familiar words. Martinez and Murphy (2011) report a study on how L2 learners fail to recognise the idiomaticity of phrases such as *He is over the hill* (the participants interpreted is as *He lives on the other side of the hill*).

Nevertheless, other psycholinguistic studies cast doubt on the idea that second language learners first compute the literal meaning before the figurative meaning. Gibbs et al. (1997) showed that idiomatic expressions were processed just as quickly as their literal paraphrase. The participants were presented with idiomatic phrases (*He blew his stack*), a literal paraphrase (*He got very angry*), or a control phrase (*He saw many dents*) in story contexts. Following a target phrase, the participants performed a lexical decision task on a word related to the meaning of the idiomatic phrase, the literal phrase, or the control phrase. It was found that there was no reading time difference for idiomatic phrases and their literal counterparts. Response times to the words related to the meaning of the idiomatic phrase were faster following the idiomatic phrases than literal paraphrases or control phrases. This indicates that readers quickly understand idiomatic phrases in context and that they are not more difficult to understand than literal speech. More importantly, such

results suggest that it is unlikely that readers first process literal meaning of an expression before the figurative one. If this were the case, the authors would have found longer reading times for idiomatic phrases than their literal counterparts.

Moreover, one of the aims in Conklin and Schmitt's (2008) study was to examine the processing differences between idioms when interpreted idiomatically versus literally. Similarly to the work by Gibbs et al. (1997), the results of this study showed that both renderings were read more quickly than the control phrases and that it did not matter whether the target phrases carried an idiomatic or a literal meaning. The authors made this conclusion on basis of the participants' reading times for idiomatic meanings, which were not any longer then for the literal ones. One of the explanations might be that these idiomatic meanings are consolidated better in memory by virtue of them receiving more attention at the time of first encounter because of their opaqueness (Wulff, 2008).

An alternative explanation may be that their non-compositional nature gives them an added degree of salience: the first encounter with a non-compositional phrase (and the consequent confusion or lack of understanding) implies a certain degree of novelty that makes the expression more salient (Bley-Vroman, 2002), resulting in better retention of the whole phrase. So, encountering an idiom like *kick the bucket* for the first time should be highly disruptive, even if the learner already knows the individual words. Such disruption should in turn lead to a heightened degree of salience and consequently, better retention.

On the other hand, Matlock and Heredia (2002) posit that it is proficiency in the L2 that determines whether the literal or figurative meaning sense will be processed first. They suggest that idiom comprehension involves three stages. In the first stage, learners literally translate idiomatic phrases into their L1. In the second stage, learners access the literal meaning first and try to figure out what they mean. Finally, learners access the figurative meaning. More proficient learners may access the figurative meaning automatically, without interpreting the idiomatic phrases literally first. This is consistent with the results obtained by other studies as well (e.g. Jiang & Nekrasova, 2007; Isobe, 2011; Underwood, Schmitt & Galpin, 2004; Carrol, Conklin & Gyllstad (2016)). They also suggest that in case of advanced non-native speakers, processing of L2 input does become more formulaic as proficiency increases,

presumably because the links between items become strengthened with increased exposure. Carrol et al. (2016), for instance, suggest that their high proficiency participants began to develop formulaic representations for at least some idioms in their L2 as a result of the high amount of input.

Overall, the studies reviewed above demonstrate the complexity of idiom processing in non-native speakers. Many different factors affect online comprehension of idiomatic language, salience being the most researched one. The upshot seems to be that the most salient meanings for any given word or phrase are those that are most strongly entrenched in the lexicon (Giora, 2003) and this entrenchment is dependent on multiple exposures to the item (Siyanova-Chanturia, 2015; Carrol et al., 2016). However, further research is needed to fully capture the intricacies of bilingual figurative processing. The full picture of how idioms are understood and learnt in a second language would not be possible without looking at the offline/pedagogical side of the coin. Therefore, the following section will focus on the knowledge of idioms by L2 learners as well as how idioms are taught.

3.3.2. Pedagogical studies

Whereas the effortless use of idioms by native speakers is unquestionable, the difficulty they pose for second language learners is well-known. Unlike the psycholinguistic research reviewed above, there is a growing strand of studies on idioms that are more pedagogically oriented.

Some of them looked at how L2 learners comprehend, learn and use idioms. Irujo (1986), for example, carried out a study in order to determine whether advanced learners of English used knowledge of their L1 (Spanish), to comprehend and produce second language idioms. Three lists of idioms were created, one identical to, one similar to and one different form Spanish idioms. The participants' knowledge of these three groups of idioms were tested through recognition and production tasks and showed that the identical idioms were the easiest to process. The similar idioms showed an equally good level of comprehension, however, on the production task, L1 transfer was prevalent. The idioms that were completely different in both languages were the hardest to comprehend and produce.

A related study regarding the degree of avoidance as a function of L1-L2 similarity was conducted by Laufer (2000). Four degrees of idiom similarity (and consequently four idiom types) were established between English and Hebrew: exact translation, partial translation (*miss the boat* in English versus *miss the train* in Hebrew), different idioms in the two languages that express the same meaning (*to fool someone* is expressed as *to take someone for a ride* in English and as *to work on someone* in Hebrew) and idioms that do not have idiomatic counterparts in Hebrew (*It's not my cup of tea.*). Fifty-six participants were tested on 20 idioms (divided equally into the four groups) through a fill-in translation task. Results show that those idioms that the idioms that were avoided the most were those that were partially similar (Type 2) and those that were not idiomatic in Hebrew (Type 4).

Deignan, Gabryś and Solska (1997) found that the easiest idioms to comprehend were those that had the corresponding L1 equivalent (Polish). Charteris-Black's (2002) study conducted with Malay learners of English showed similar results.

Other studies (more corpus based), focused on which idioms should be taught. They showed that idioms overall are not very frequent, so knowing which ones of these are frequently used and which ones to teach is crucial.

Liu (2003) carried out a corpus-based study in which he identified the most frequently spoken American English idioms for ESOL students. The rationale for this study, according to Liu, was the fact that most idiom teaching materials were based mainly on intuition and not on any empirical data (based on interviews with the authors of some of the existing idiom teaching materials). The study examined three contemporary spoken American English corpora: a Corpus of Spoken, Professional American English (Barlow, 2000); Michigan Corpus of Academic Spoken English (Simpson, Briggs, Ovens & Swales, 2002) and Spoken American Media English (Liu, 2003). As a result of the search, four separate idiom lists were created, three for each of the corpora and one that covered all of them. The lists were compared to seven idiom dictionaries and two idiom publications. The comparative analysis revealed the following inadequacies: idioms that were highly frequent on the list were excluded from the publications (one of the dictionaries contains *above par*, but not *according to*), the primary meanings listed in the publications are not found in the corpora (all the dictionaries list "to educate a person" as a primary meaning of *bring*

up, whereas the corpus analysis shows that the most common meaning is “to start a discussion of an issue”) and the materials do not normally include variations of the idioms and if they do, they do not mention their frequency (*with regard to* versus *in regard to*). On basis of these results, Liu suggests that items in the reference and teaching materials have to be selected on basis of more rigorous criteria and include information such as descriptions of idiom’s primary and secondary meanings together with their frequency and variations.

Likewise, in a study by Simpson and Mendis (2003), the authors looked at the Michigan Corpus of Academic Spoken English (Simpson et al., 2002) with the aim of identifying idioms that would be useful to teach in academic contexts. Target idioms were selected by reading a selection of the transcripts from the corpus and searching the entire corpus for those idioms and their variations as well. The search yielded 238 idioms in total, the finding the authors interpreted by stating that idioms are not particularly frequent in academic discourse. Based on the findings, they propose some strategies on how idioms should be taught. The first one relates to the balance between a holistic and analytical approach (e.g. whereas *a drop in the bucket* could be taught by teaching the separate meaning of the component parts, an idiom like *cut to the chase* would be better learnt if taught as a chunk). Another strategy concerns the incorporation of the notion of discourse function due to the fact that some idioms perform important pragmatic functions in discourse (e.g. *on that note* is used at a discourse boundary). (for other corpus studies on idioms, see Biber et al., 1999; Francis, Hunston & Manning, 1996, 1998; Moon, 1998; Hunston & Francis, 2000)).

Yet, another set of studies looked at how to teach idioms and the most systematic approach to teaching idioms has been informed by Cognitive Linguistics (CL). What follows is first a brief account of this approach and then a summary of the studies that employed CL as part of their methodologies.

3.3.2.1. Cognitive Linguistics

The fact that idioms are a challenging type of formulaic language makes it sufficiently worthwhile to see what Cognitive Linguistics and especially its branch Cognitive Semantics, can contribute to the teaching and learning of idioms. The main tenet of

Cognitive Semantics is that the meanings of idioms are much more motivated and far less arbitrary than it was previously thought (Lakoff, 1987). People try to understand “intangible domains of experience with concrete domains of experience “(Boers & Webb, 2015, p. 369) and these systematic mappings, called *conceptual metaphors*, are believed to exist in idioms. For example, emotion concepts and concepts denoting personal relationships are particularly susceptible to metaphorical understandings (e.g. Kövecses & Szabó, 1996). But how do conceptual metaphors provide semantic motivation for idioms? In phrases such as *being hot under the collar*, *being hot-tempered* and *blowing off steam,* the domain of *heat* is used to understand the domain of *anger*, therefore, it can be suggested that there is an overarching metaphor ANGER IS HEAT. Recognising the underlying metaphor can render idioms such as these relatively transparent. Other examples include *drop the ball* and *get a grip*, which are motivated by the conceptual metaphor MENTAL CONTROL IS PHYSICAL CONTROL. Or *She carries a torch for him* and *The flames are gone from our relationship* point to LOVE IS FIRE as the conceptual metaphor that “motivates” these two idioms.

Motivating the meaning of an idiom can thus help establish the correspondence between the literal and figurative meanings of a word combination. If the literal interpretation is congruent with the figurative reading, then the image evoked by such an idiom can make it more semantically transparent. For example, if a learner recognises that *takes a back seat* literally refers to “taking a back seat in a car as a passenger and not driving”, the image that could potentially be evoked in his mind of somebody being inactive might help implicitly arrive at the idiomatic interpretation, i.e. “to let other people take a more active and responsible part in a situation”. However, there is a risk that the image evoked will not be the correct one, i.e. it will not lead to the correct interpretation of the figurative meaning. For example, the correct interpretation of the idiom *on an even keel* in *The economy is on an even keel* depends on whether the learner has imagined a boat making a steady progress or a motionless boat (Boers, Eyckmans & Stengers, 2007). In other words, a potential problem arises when learners find some idioms multi-interpretable.

When the link between the literal and idiomatic meanings does not exist, such idioms become “truly opaque” and harder to comprehend. Semantic motivation is especially helpful for non-native speakers who are more inclined to activate a literal reading

(e.g. Cieślicka, 2006). Kecskes (2000) has suggested that, due to the lack of metaphorical competence in L2, it is more likely for second language learners to rely on literal meanings of idiomatic expressions as well as their L1 conceptual system. Native speakers, on the other hand, will immediately activate the meaning of an expression that is most salient to them, which, according to the research (e.g. Moon, 1998), is the most frequent and hence, the most readily activated one.

3.3.2.2. CL studies

Cognitive Linguistics-informed research for idiom teaching investigates the motivated nature of idioms to help learners comprehend and master these word combinations. This research has indicated that retention can be facilitated by raising learners' awareness of the conceptual metaphors (e.g. Gibbs, 1994; Kövecses & Szabó, 1996; Kövecses, 1997; Boers, 2000; Boers & Demecheleer, 1998, 2001; Bortfeld, 2002; Charteris-Black, 2002). More specifically, the advocates of this approach have emphasised the importance of a technique called *etymological elaboration*, in which students are asked to become aware of the origin or literal interpretation of idioms. Even though I mentioned above that there was a risk that students would misinterpret some idioms, these researchers thought it would be worth investigating the success of such a strategy. Some of them were encouraged by the results with regards to learners' ability to interpret figurative meaning senses of polysemous words on the basis of knowledge of the literal senses of those words (Boers, 2000, Csábi, 2004, Verspoor & Lowie, 2003).

For instance, Boers (2000) carried out three experiments with L2 English speakers whose L2 was either Dutch or French. The experimental groups in each experiment received target vocabulary that was organised along various metaphoric themes, whereas the control groups received the same vocabulary input along different lines. In Experiment 1, the participants completed a cloze test, in Experiment 2, they had to write a short essay and in Experiment 3, they completed a cloze-test again. In each of the experiments, the experimental groups outperformed the control groups. However, Boers rightly acknowledges that this result is due to the fact that the target figurative expressions were semantically rather transparent or imageable. As a result of the experiments, Boers suggests a couple of activities that can be conducted in a

classroom: a) considering students' L1 about an abstract phenomenon, b) grouping idioms under more general metaphoric themes and c) guessing from context.

In a later study by Boers et al. (2007), the participants (Dutch learners of English) completed four types of computerised exercises presented in a different order. The control group did the "identify-the-meaning" exercise before the "identify-the-source" exercise, whereas the order was reversed for the experimental group. The findings demonstrate that the previous knowledge of the origins of the target idioms led to better scores. The authors recommend that teachers teach idiomatic expressions in the following order: (a) ask the students to hypothesise about the origin of the expression (b) refine or rectify their hypothesis (c) ask the students to interpret the figurative meaning of the idiom by combining etymology and context and (d) refine or rectify their interpretation (p.56).

Also, Beréndi et al. (2008) found that explicit representation of polysemy and idioms in connection to their underlying conceptual metaphors led to increased levels of comprehension and retention. Their experiments showed significant difference in learners' performance in both immediate and delayed post-tests. Similarly, Skoufaki (2008) carried out an experiment that explored two methods of presenting idioms: conceptual metaphor grouping vs. conceptual metaphor grouping plus a meaning guessing task. The latter proved to be more effective as the participants performed better in both the after-task cloze test and the comprehension test. Li (2009) also found that the intended application of conceptual metaphors in a series of experiments with 394 Chinese learners of English led to higher scores in recall post-tests in the experimental group.

Apart from etymological elaborations, other techniques have also been employed in order to investigate the cognitive linguistic motivation of figurative expressions. These are phonological elaborations (Boers, Lindstromberg & Eyckmans, 2012; Boers & Lindstromberg, 2005; Boers & Stengers, 2008; Lindstromberg & Boers, 2005), pictorial elucidation (Boers, Demecheleer & Eyckmans, 2004; Boers, Lindstromberg, Littlemore, Stengers & Eyckmans, 2008; Boers, Piquer-Piriz, Stengers & Eyckmans, 2009; Boers & Stengers, 2008) and total physical response (Lindstromberg & Boers, 2005).

Overall, it appears that there is an advantage of using CL-informed instruction over comparison treatments. Boers (2011) reviewed over twenty published studies on CL-style techniques and concluded that they certainly have a great pedagogical value. This is especially important if we consider that deficient or insufficient metaphoric competence may hinder the development of learners' receptive and productive skills. For example, Littlemore, Chen, Barnden and Koester (2011) conducted a study in which they examined metaphor comprehension by the international students attending lectures at a British university. They found that 42% of the language the participants struggled with was metaphorical in nature. Littlemore et al. concluded that as metaphors realise important functions such as explaining and evaluating, the students' inability to comprehend the metaphoric characteristics of the expressions is a great obstacle towards mastery and they "may be missing valuable learning opportunities" (p. 1).

3.4. Conclusion

This chapter looked at idioms and their heterogeneous nature. Idioms are pervasive in language, yet they have consistently been proven difficult to define (like collocations) and the issue of what should be labelled as an idiom or a collocation has been debated in the literature (e.g. Macis & Schmitt, 2016b). Another difficulty with idioms is reflected in the conflicting results obtained from the studies summarised in this chapter.

Overall, review of the L2 idiom research provided here suggests that a number of factors are responsible for determining how second language learners comprehend, acquire and use idioms. Studies into online processing have helped shed some light on the interaction of those factors. The pedagogical studies have revealed some common problems L2 learners tackle when encountering idioms and offered some suggestions on how to teach them.

In addition, with the advent of corpus linguistics and psycholinguistics techniques, it has become evident that figurativeness extends far beyond the class of sequences one would call idioms. The next chapter will present the first research study in this thesis which addresses the nature of collocations by examining the extent of their idiomaticity.

Chapter 4 - A new conceptualisation of collocation: A descriptive study of the different types of collocations and their extent

4.1. Introduction

In Chapters 2 and 3, the scarcity of research into the idiomatic (figurative)[1] and polysemous[2] nature of collocations could be noted because the majority of studies that have looked at these two characteristics of formulaic language have focused on idioms. However, the phenomenon of idiomaticity appears to extend beyond idioms as many other multi-word units have a meaning that does not transcend the combined meanings of their component parts (Hoey, 2005; McCarthy & O'Dell, 2005; Taylor, 2004; 2006). McCarthy and O'Dell (2005), for instance, in the introduction to their first book on collocations (pages 4-5), state that their target items are not "immediately obvious", which also points to a certain degree of idiomaticity in collocations. Furthermore, it has been noted that idiomatic language is not restricted to what might be considered "prototypical" idioms, but can include phrases that are typically thought of as collocations (e.g. Boers & Webb, 2015). Despite this, idiomaticity has normally been linked to idioms and as a consequence, collocations have been looked at and typically defined as mere co-occurrences of words that are semantically transparent (Fernando, 1996; Moon, 1998; Nesselhauf, 2003).

As stated earlier, collocation is one of the problematic terms in applied linguistics, with different definitions and approaches to identification. The phraseological approach (e.g. Moon, 1998) sees them as word combinations, displaying various degrees of fixedness, opacity and combinability (e.g. the verb *want* can go with virtually any noun, but *drink* must combine with liquids). The statistical approach (e.g. Sinclair, 1991) harnesses the power of computers to search very large modern corpora, based on statistical formulas (e.g. MI, T-score) or frequency. Unfortunately, what constitutes a collocation in one of these approaches may not be defined as

[1] The terms "figurative" and "idiomatic" are used interchangeably in this thesis.
[2] The term "polysemous" can denote different types of polysemy. For example, polysemous in case of collocations could mean "more than one literal meaning" or "more than one figurative meaning". In this study, however, "polysemous" refers to "one literal and one figurative meaning".

such in another (see below for more details). This inconsistency in terminology is not unimportant because obtained results for learners' knowledge, processing and acquisition may be strongly influenced by how they are defined (O'Donnell, Romer & Ellis, 2013). The choice of approach is clearly nuanced and which of the two will be followed depends on the overall aim(s) of a study.

Another problem is the lack of a clear distinction between idioms and collocations. Whereas some authors would call the word combinations *pull the strings*, *cut corners* and *bottom line* collocations (e.g. Wolter & Gyllstad, 2013; Webb et al., 2013), other would argue that these are idioms (e.g. Howarth, 1996; Boers & Webb, 2015). To illustrate this inconsistency in defining the terms, the expression *a piece of cake* (which has both literal and figurative meanings) can be found in the *Collins COBUILD Idioms Dictionary* (2012) as well as in the *LONGMAN Collocations Dictionary for intermediate-advanced students* (2013).

The fact that major disagreements exist shows that no one has reached a satisfactory account for the language teacher or language learners trying to make sense out of this. Dictionaries and textbooks have been and are being created following the ill-established practice that idioms are non-compositional and opaque units and collocations are not. Unfortunately, this does not seem to be the case, as shown in the above dictionary examples. Problems in classifying multi-word units lead to problems in presenting them to second language learners as they are neither presented in a consistent manner nor explained adequately in textbooks and reference works (Cowie, 1998, p. 218).

Furthermore, we have seen in the previous chapter that collocations are important for language competence (e.g. Peters, 2014; Szudarski & Carter, 2014) and because of that, there is a clear need, especially for pedagogical purposes, for a better description of this type of formulaic language. This in turn raises the following questions: Are all collocations the same, i.e. typically defined as two or more occurrences of words or can they also be figurative and polysemous? If so, how widespread are they in reality?

This chapter will explore the issues of idiomaticity and polysemy in collocations. It will first briefly discuss the issue of polysemy of individual words and then review studies on the polysemous nature of other types of formulaic language, i.e. idioms

and phrasal verbs. Next, it will present evidence showing that collocations are also figurative. The discussion will go on to a new way of classifying collocations by emphasising the fact that they can behave as wholes, having their own characteristics of idiomaticity and polysemy. Based on that, a study exploring this new categorisation will be presented. After this, results will be presented and discussed in light of further understanding of the nature of collocations. Finally, the chapter will talk about the role of figurative and polysemous collocations in ELT and address the pedagogical implications.

4.2. Background

4.2.1. Polysemy of individual words

English is a highly polysemous language and as a result, L2 lexical proficiency is closely related to the development and knowledge of different meaning senses. Polysemous words are words that have more than one meaning sense (Crossley, Salsbury & McNamara, 2010, p. 575). As such, they exhibit a higher degree of ambiguity and are therefore more difficult to understand and process (Davies & Widdowson, 1974).

Learning polysemous words is a slow process and requires a huge amount of exposure. One of the studies that looked at L2 polysemous knowledge was carried out by Schmitt (1998), who tracked the use of eleven polysemous words by three highly proficient L2 learners over a period of one year. Four kinds of word knowledge were measured: meaning, spelling, grammatical behaviour and associations. With regards to meaning, the participants were asked to provide all of the meaning senses to the target items which had at least three meaning senses each. Schmitt found out that overall, the knowledge of the meaning senses of the target words was improved even though some of the meaning senses were forgotten. Schmitt also concluded that even advanced learners had difficulty learning all the meaning senses. In another study, Verspoor and Lowie (2003) examined whether L2 learners would guess peripheral meanings of a polysemous word if they were given its core meaning. The results show that core meaning clues helped the learners guess the additional meanings. Furthermore, Crossley, Salsbury and McNamara (2010) conducted a longitudinal study in which they looked at the use of polysemous and

frequent words by six low-proficiency L2 learners over a period of twelve months. The participants were enrolled on an intensive English course at an American university. The data was collected by conducting and transcribing the interviews that were held every two weeks. The results showed that the learners started producing more polysemous and more frequent words in the first trimester and then extended the core meanings of these words in the second and third trimesters.

All in all, these studies indicate that learning polysemous words is a long and patchy process. However, given there is enough exposure, learners become aware of and learn a word's multiple senses, at least to a certain extent. This is in line with Larsen-Freeman's (2002) view on the role of frequency, according to which it is suggested that if polysemous words are frequently encountered in input, their processing should be facilitated.

4.2.2. Polysemy and idiomaticity of idioms and phrasal verbs

We have seen above that individual words can be polysemous. Formulaic language, to some extent, can be polysemous in nature, too. One way of tackling the aforementioned issue of polysemy and idiomaticity of collocations is by looking at what has been done in relation to other, similar kinds of formulaic sequences. For this purpose, two recent studies focusing on idioms and phrasal verbs will be reviewed.

4.2.2.1. Idioms - Grant (2005)

In this study, the author looked at the extent of "core idioms", which she defined as "non-compositional and non-figurative multiword units" (Grant & Bauer, 2004). Core idioms can be classified as such if each lexical word cannot be replaced with its own definition (*red book* versus *red herring*), if it is not possible to understand the meaning by recognising the "untruth" and pragmatically reinterpreting it as a truth (*like a red rag to a bull* versus *red herring*) and if there is only one word in the unit which is either non-literal or non-compositional (*a long face* versus *red herring*). These criteria were applied to different written and spoken sources, i.e. idioms dictionaries, language coursebooks, vocabulary teaching books, journal articles, book chapters focusing on idioms, magazine horoscopes (as being "idiom"-rich

according to McCarthy & Carter, 1994), newspaper sports reports and scripted and unscripted television programmes. As a result of this search, only 103 core idioms were identified (Table 4), the majority of them found in the idioms dictionaries.

Table 4: Core idioms ordered from most to least frequent

By and large	487	By and by	17	Shoot the breeze	4
So and so	327	Push the boat out*	16	Heap coals of fire on sb's head	3
Such and such	196	Gird (up) your loins	16	Swing the lead	3
Out of hand	141	Hell for leather	15	(Have) bats in the belfry	3
Take the piss	137	Cock a hoop	15	Sell sb a bill of goods	2
And what have you	136	Bob's your uncle	14	Splice the mainbrace	2
Serves sb right	101	Chew the fat*	14	(Be) a fine kettle of fish	2
Take sb to task	92	Cold turkey	14	Set sb/sth by the ears	2
Red herring(s)	87	Kick the bucket	13	Take the rise out of sb	1
(Be) beside yourself	72	(Be) the cat's whiskers	13	Lay an egg	1
Out and out	72	Give sb the bird*	13	How's your father	1
Take the mickey	71	(Be) all in*	13	Make sth put of whole cloth	1
Pull sb's leg*	60	French letter	12	All gas and gaiters	1
Touch and go	53	Not cut the mustard	12	Make your number	1
The Big Apple	52	Odds and sods	12	Half seas over	1
Cut no ice with sb	50	Like the clappers	12	Hop the twig	1
Come a cropper (49)	50	Beat it!*	12	All ends up	1
Come a purler (1)		Butter wouldn't melt in sb's mouth	11	Box and Cox	0
A piece of cake* (43)	50	Sweet Fanny Adams	10	Buy the farm*	0
A piece of piss (7)		To boot	10	Come the raw prawn	0
Put your foot in it (37)	48	Knock into a cocked hat	9	Go bung	0
Put your foot in your mouth ((11)		Cook sb's goose	8	The ghost walks	0
An axe to grind	47	Do your nut	8	Part brass rags with	0
Make no bones about it	44	Old Glory	8	Bust sb's chops	0
White elephant (s)	43	Cut up rough	8	The bitch goddess	0
(All) of a piece	38	Pop your clogs	8	Row crosshanded	0
Uncle Sam*	35	Bang to rights	8	Clean sb's clock	0
And what not	33	At sizes and sevens	8	Tie one on	0
Go by the board(s)	32	(Be) the bee's knees	7	Eat crow	0
So long!	24	Like nobody's business	7	Lay out in lavender	0
Eat your heart out	23	Cut a rug	6	Over the transom	0
Not hold a candle to	23	(Be) off your face	5	To a fare thee well	0
(Be) off the wall	22	Get your rocks off	5	Peg it	0
Pull the other one	19	Have a bone to pick with sb	4	Wear the green willow	0
Trip the light fantastic	18	(Be) nip and tuck	4		
Cut a dash	18				
To a tee/T	18				

Out of these 103 idioms, those that have a literal counterpart (polysemous) are marked with an asterisk (*) and underlined. In total, there are ten of them (9.71%). The idioms that only have figurative meanings account for the remaining 90.3% of the sample.

4.2.2.2. Phrasal verbs - Garnier and Schmitt (2015)

The aim of Garnier and Schmitt's study was to create a pedagogic list of most frequent phrasal verbs (PHaVE List) and their key meaning senses that would be as practical and usable for teachers as possible. This was because PVs (phrasal verbs) are highly polysemous lexical items and some of them may have up to 10 or 15 meaning senses, therefore learning all of them is certainly an unmanageable task for second language learners. Another reason was because the previous lists of phrasal verbs (Gardner & Davies, 2007; Liu, 2011) had some serious limitations in that they did not include PV frequency and ranking order of the most useful meaning senses. In order to overcome these shortcomings, the authors examined Liu's (2011) 150 most frequently used PVs in American and British English and set a threshold of 75% as optimal, i.e. the meaning senses included in the PHaVE List for each item should account for at least 75% of all occurrences of this PV in the target corpus (the COCA). However, it was also necessary to set a minimal threshold (10% in this case) because in numerous cases, the primary meaning sense did not reach 75% coverage. This meant that if the 75% threshold was not reached by the primary meaning sense, additional senses were included if they added at least 10% of total occurrence. Sample sentences illustrating the use of a particular meaning sense were also included. The following examples (Figure 1) show just a small portion of what the list looks like.

Figure 1: Selected items from PHaVE list

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.

The authors also point out that some of the meaning senses can be literal (e.g. *look up*), others are figurative (e.g. *show up*), yet others can be polysemous, i.e. they can have both literal and figurative meaning senses (e.g. *take off*).

In sum, these two studies clearly indicate the polysemous and also the figurative nature of some types of formulaic language, namely idioms and phrasal verbs. An interesting point about Grant's study is that she does not separate (or give percentages of) idioms that are purely figurative from those that have a literal counterpart, but instead, groups them under the same umbrella term. Similarly, Garnier and Schmitt do not give an account of how many phrasal verbs in their

sample are literal or figurative or both. Despite this, both studies demonstrate the presence of polysemy (and not surprisingly, idiomaticity) in formulaic sequences.

4.2.3. Polysemy and idiomaticity of collocations

Another way of approaching the matter of polysemy and idiomaticity of collocations is by looking for evidence showing that collocations exhibit these two characteristics. We have seen some examples earlier in this chapter, but are there more? For this purpose, I looked at different published articles on collocations and more specifically, examined the target items used in these studies. The purpose of this search was to see whether (if any) of the collocations were purely figurative and whether they had both literal and figurative meanings. The results of this search showed that there is indeed some level of figurativeness and polysemy among collocations as well. For example, Webb and Kagimoto (2009, 2011) investigated the effects of receptive and productive vocabulary tasks (cloze and reading tasks) and the effects of the number of collocates per node word, the position of the node word and synonymy on learning collocations, respectively. In both studies, the authors defined collocation from a statistical approach (Hunston, 2002; Sinclair, 1991), rather than a phraseological approach (Cowie, 1994; Nesselhauf, 2003) as "the frequency of co-occurrence of two lexical items within a given span" (pages 59 and 263, respectively). However, when checking their target items, I could see that some of them were just literal partnerships of words, whereas others were figurative or had both literal and figurative meanings (Tables 5 and 6). For instance, in the first table the collocation *give example* is a typical example of a "word partnership", whereas collocations like *see light* and *pull strings* can actually be both literal and figurative (although the authors use only the figurative meanings in their studies). In the second table, it is pretty much the same situation. *Deep voice* and *dead leaves* are collocations where the literal meanings of the component words happen to co-occur together, while *deep end*, *black sheep, big deal* and *narrow escape* have both literal and figurative meanings. In addition, some items can only be used figuratively, i.e. *black market* and *bad blood*.

Table 5: Target items from Webb and Kagimoto (2009)

Touch wood	Sit exams
Stay course	Pull strings
Buy time	Draw blood
Run risk	Meet demand
Throw light	Grant wish
Give example	Cut corners
Spread word	Shoot film
See light	Lose touch
Read thoughts	Raise questions
Blow nose	Launch attacks
Remember time	Ensure safety
Tell time	Develop strategies

Table 6: Target items from Webb and Kagimoto (2011)

Deep respect	Good laugh	Dead leaves	Difficult time	Fast track
Deep feelings	Good reason	Simple truth	Full time	Quick check
Deep end	Good behaviour	Film offer	Right time	Awful truth
Deep sleep	Big business	Wrong direction	Private life	Bad blood
Deep voice	Big day	Sweet tooth	Social life	Minor role
Deep divisions	Big deal	Current affair	Quiet life	Slight improvement
Black mark	Dirty work	Thick hair	New look	Strong suit
Black eye	Dirty words	Severe damage	Natural look	Powerful figure
Black humour	Dirty joke	Sad state	Funny look	Tall order
Black sheep	Short message	Honest mistake	Smart money	High spirits
Black cloud	Short cut	Old days	Serious money	Narrow escape
Black market	Short list	Bright ideas	Easy money	Slim chance

The same trend was spotted in Webb et al. (2013) and Wolter and Gyllstad (2013), in which the statistical approach was adopted as well when defining collocation. Some examples include *cut corners, big picture, bottom line, turning point, straight face, huge leap* etc. (Tables 7 and 8):

Table 7: Target items form Webb et al. (2013)

Blow nose	Pull strings
Break silence	Raise questions
Buy time	Reach decision
Cut corners	Read thoughts
Face facts	Remember time
Grant wish	Run risk
Lose touch	Spread word
Make mind	Stay course
Meet demand	Through light

Table 8: Target items form Wolter & Gyllstad (2013)

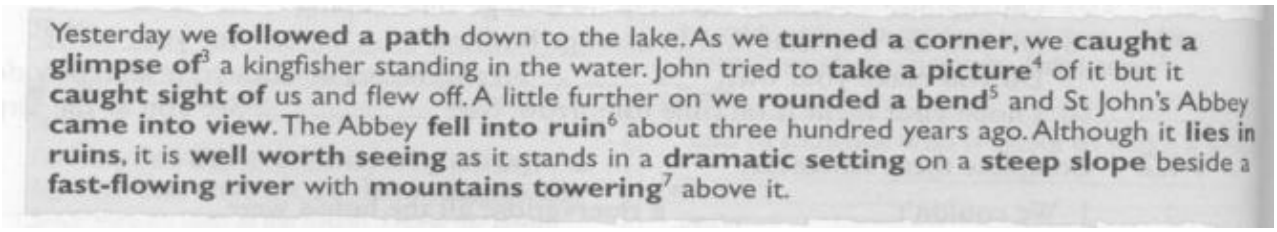
Commercial break	Social security
Human rights	Real estate
Good news	Bottom line
Middle class	General manager
Economic growth	Grand jury
Ethnic groups	Secret service
Mental illness	Fine arts
Black hole	Free speech
Older people	Foreign affairs
Closer look	Near future
Clean water	Senior year
Wrong way	Big picture
Turning point	Broad range
Beautiful woman	Double standards
Happy ending	Soft drinks
High profile	Stained glass
Best seller	Solar panels
New clothes	Great fun
Handsome man	Identical twins
Baked goods	Straight face
Harsh words	Usual suspects
Common enemy	Tall order
Mutual trust	Small fortune
Closed eyes	Cheap shot
Strong defense	False teeth
Green peas	Scotch tape
Super power	Darkest hour
Smoked fish	Slow burn
Odd behaviour	Dry spells
Pure luck	Broken record
Huge leap	True colour
Sweet revenge	Living daylights
Shiny surface	Trying time
Tragic deaths	Short hours
Bleeding ulcer	Rough guide
Fast runner	Petty politics
Fatty food	Blind trial
Taboo topic	Sore losers
Tepid response	Catchy tune
Cracked mirror	Canned laughter

Next, I also wanted to know if collocations with different meanings existed in collocation dictionaries. For this purpose, I explored[3] the *Longman Collocations Dictionary and Thesaurus for Intermediate-Advanced Students* (2013) and found quite a few examples of collocations with both literal and figurative meanings: *turn a page, deep waters, a rainy day, dirty laundry, one-way ticket, bread and butter, a piece of cake, long face, wear trousers, take the cake* etc.

[3] I did not however, examined the dictionary in detail as this was beyond the aims of my thesis

Finally, I looked at one of the most commonly used collocation self-practice books, *English Collocations in Use* (McCarthy & O'Dell, 2005) and identified a few examples, too.

Figure 2: Target items from McCarthy and O'Dell (2005)


Yesterday we **followed a path** down to the lake. As we **turned a corner**, we **caught a glimpse of**[3] a kingfisher standing in the water. John tried to **take a picture**[4] of it but it **caught sight of** us and flew off. A little further on we **rounded a bend**[5] and St John's Abbey **came into view**. The Abbey **fell into ruin**[6] about three hundred years ago. Although it **lies in ruins**, it is **well worth seeing** as it stands in a **dramatic setting** on a **steep slope** beside a **fast-flowing river** with **mountains towering**[7] above it.

In the above text, there are two collocations that can be used in the figurative meaning sense as well, i.e. *follow path* (normally used with the definite article) - "take the required steps" and *turn a corner* -"pass the critical point and start to improve".

In summary, what can all these examples tell us about collocations and their behaviour? As mentioned earlier, one important aspect of some formulaic sequences is their non-compositional or idiomatic nature (i.e. when a sequence cannot be interpreted literally, but has a figurative meaning). It is mainly a characteristic of idioms and some phrasal verbs. But what about collocations? Can we think of collocations as units that have figurative meanings? The above evidence suggests that we can.

Additionally, because collocations are not normally seen as being idiomatic, there is little guidance for teachers on how to teach different meaning senses of collocations as most pedagogical materials treat these units as word partners which co-occur together. There has been little attention to date-especially in ELT textbooks-regarding the semantic qualities of collocations and their pedagogical implications. As a result, many teachers simply do not look at collocations as units for which meanings can be more than just literal. Instead, most definitions of collocation that teachers are familiar with focus on the pattern of co-occurrence in language. This is reflected in typical descriptions of collocation in recent textbooks:

- "Collocation means a natural combination of words; it refers to the way English words are closely associated with each other." English Collocations in Use: Intermediate (McCarthy & O'Dell, 2005, p. 4).

- “It is important to know which words collocate (commonly go together).” Cambridge English: Objective Advanced (O’Dell & Broadhead, 2014, p. 13).

This approach is essentially about the co-occurrence of words, i.e. that words “partner” together. But can the consideration of semantic properties add to our understanding of collocations? I believe it can because there seems to be more than one type of collocation if we consider their meaning.

4.2.4. A new classification of collocation

The literature review has brought up the idea that collocations have certain characteristics and it has also highlighted the fact that collocations are not all the same. There are different definitions because there are different kinds of collocations. They are not only word partnerships, where Word A co-occurs with Word B, but also single-meaning units with figurative meanings (with or without a literal counterpart). In order to account for the different characteristics of collocations from a meaning-based perspective, I propose three different types of collocations: *Literal Collocations, Figurative Collocations and Duplex Collocations* (Macis & Schmitt, 2016b).

4.2.3.1. Literal Collocations

Literal Collocations are combinations where the literal meanings of the words are simply added together (*powerful computer* = “a computer with powerful processing abilities”) (Appendix 1)). Meaning is not such an issue here, as learners merely need to know the meaning(s) of the component words, and then string them together in a “Meaning A + Meaning B” manner. The real challenge is knowing which words pattern together for that particular meaning (e.g. not *strong computer* or *tough computer*). This definition of collocations does not differ from the way collocations have commonly been defined and almost all research and discussion have conceptualised collocations in this way.

Literal Collocations also include collocations in which one of the components is not used in its primary sense. For example, *take a break* would be a literal collocation as one of the meanings of *take* is “have” and one of the meanings of *break* is “rest” and

they happen to co-occur together (Meaning A + Meaning B). Another example is *meet a deadline*, where one of the meanings of *meet* is "to comply with". So, although some would argue the meanings of "take" and "meet" are not strictly literal, I believe that the issue is not whether collocation is more or less literal, but whether the individual words making up a collocation have one or more literal meaning senses or not. Even if they are polysemous, they are still defined as Literal Collocations in this study because they are "literal meanings of two words are added together". Regarding second language learners, the real problems for them is not only the polysemy of the individual words making up the collocations, but which words combine with which, i.e. which meaning senses combine in a meaningful collocation.

4.2.3.2. Figurative Collocations[4]

However, some collocations have characteristics beyond just separate words and have characteristics as a unit (Appendix 2). An example of this is *hot ticket* which does not literally mean "a ticket with a high temperature'", but rather "something highly sought after'". Thus, *hot ticket* behaves like a chunk rather than two words which simply partner together. But we seldom see this type of collocations discussed in textbooks or materials. Therefore, I introduce the term *Figurative Collocation* to refer to collocations that only have an idiomatic, figurative meaning.

4.2.3.3. Duplex Collocations[5]

There is also a third type. Some collocations have characteristics of both Literal Collocations and Figurative Collocations. They have the idiomatic elements but are also word partners. I will call them *Duplex Collocations* to refer to those collocations

[4] I decided to use the term "figurative collocations" because "figurative" is a more friendly term, pedagogically speaking. Some teachers of English, particularly those who are not native speakers may not be familiar with the word "idiomatic". So, I believe that "figurative" is the easiest and the most transparent concept and "literal versus figurative" sounds like a clear, straightforward contrast.

[5] As for the use of the term "duplex", the rationale for choosing that term is pretty much the same: the most transparent terminology is the best. I first wanted to use the term "polysemous", but it can be misleading because some collocations can have two literal meanings (for example the collocation *old block* can refer to either to "a block as a solid piece of material that is old" or to a" block as a section of the city that is old"), or two figurative meanings (for example the collocation *hit the roof* can mean both "to get really angry or mad" or "to reach the maximum"). For these reasons, the term "polysemous" did not fit with the type of polysemy I was interested in, so I opted for "duplex".

that have both literal and figurative meanings (*to bend knee*: “to form a curve in the knee” and “to submit to authority”) (Appendix 3)).

To sum up, it seems that, according to the presented evidence, we can think of collocations as units that have figurative meanings and are polysemous. However, to my knowledge, no study to date has examined the extent of the different types of statistically-derived collocations. I believe it is important to make a distinction between these types because they may or may not be learned and processed in the same way and may thus require different pedagogy. In fact, research suggests that figurative language is stored, processed and learned differently than language where meaning is constructed from individual components (e.g. Siyanova-Chanturia & Martinez, 2014).

The study presented in this chapter is an attempt to fill this gap in research by investigating how many collocations follow the traditional “co-occurrence of words” definition, how many are purely figurative in nature and how many can be both literal and figurative (i.e. polysemous). This study also endeavours to discuss teaching implications depending on whether the most important collocational characteristic is pattern of co-occurrence or meaning. This is because meaning can bring useful insights into the nature of collocations and how to teach them.

Therefore, the study aims to provide a more complete picture of the pervasiveness of the different types of collocations by addressing the following research questions:

1. What percentage of collocations have additive, literal meanings (Literal Collocations)?

2. What percentage of collocations have figurative meaning only (Figurative Collocations)?

3. What percentage of collocations have both literal and figurative meanings (Duplex Collocations)?

4.3. Methodology

When analysing collocations, they have to be extracted from corpora. Various methods of collocation extraction have been employed (e.g. Manning & Schütze,

1999) and a rather common way of identifying collocations is by using certain statistical measures such as MI score, *t*-score etc. (see Section 2.3.1.). However, even though there are differences between these measures, Barnbrook (1996) suggests that it is impossible to make any claims as to which one is the best. Similarly, Gries (2013) points out that despite the fact that the idea of collocation has been around for a while (works of Firth (1957)), there is still no consensus on how to best identify and extract collocations or measure their associations.

An additional problem is the fact that it is impossible and impractical to describe all collocations. This is especially true considering the fact that formulaic language makes up a great deal of everyday language (e.g. Jackendoff, 1995; Hopper, 1998; Oppenheim, 2010). Regarding the number of multi-word units, Mel'čuk (1995) even states that formulaic sequences outnumber individual words by a ratio of 10 to 1. Another reason is a lack of standard list of collocations. Although most would agree with the Sinclair's (1991) general definition of collocation as being words that co-occur together, there are a range of criteria for identifying individual cases of collocation (e.g. Shin & Nation, 2008). As a result, different techniques produce different kinds of collocation, so it is not surprising that a universal list of collocations has not yet been established.

On the whole, the choice of an extraction method is not an easy issue and clearly depends on the objectives of a study. In order to answer the above research questions, I have taken the following steps:

4.3.1 Target nouns

First of all, it was necessary to create a sample of collocations which would provide preliminary information about the extent of the different types of collocations. In other words, I had to have a starting point and choose one segment that I could sample from. I started with a list of frequent words in English and I only looked at collocations based on the words from that wordlist. Nation's frequency BNC lists seemed the most suitable choice as they have been widely used for research purposes.

I decided to use frequency as a criterion because higher frequency words are generally acquired before lower frequency words (e.g. Nation, 2006). The first 3000

most frequent words have generally been accepted as high-frequency vocabulary (Schmitt & Schmitt, 2014) and these words are crucial to use English at the basic and useful level. Another reason for choosing high frequency words is text coverage. They cover around 90 per cent of all running (the total number of) words in both written and spoken discourse (Nation, 2006). Nation (2006), for instance, analysed nine written and spoken corpora (including the Brown, Kohlapur & Wellington written corpora and the LUND spoken corpus). The written corpora included texts from sources such as novels and newspapers, while the spoken corpora comprised speech from sources such as everyday conversation with friends and family and people calling in to radio programs (Table 9).

Table 9: Vocabulary size and text coverage (written and spoken) across nine spoken and written corpora (Nation 2006, p. 79)

Word families	Approximate written coverage (%)	Approximate spoken coverage (%)
1st 1000	78-81[5]	81-84[5]
2nd 1000	8-9	5-6
3rd 1000	3-5	2-3
4th - 5th 1000	3	1.5-3
6th - 9th 1000	2	0.75-1
10th - 14th 1000	<1	0.5
Proper nouns	2-4	1-1.5
14000 +	1-3	1

Table 9 shows that the first 1,000 word families clearly do the bulk of the work in English (in large part due to the extremely high frequency and coverage of function words). The second 1,000 contribute a much smaller, but still useful, amount of coverage, as does the third 1,000 to a lesser extent. But by the fourth 1,000 families, the coverage drops substantially, with only a maximum of 3% for 2,000 families (4th and 5th 1,000). Beyond this, the coverage return becomes increasingly small. Even though the most frequent three thousand words are not enough for a reasonable comprehension of text (Hu & Nation, 2000; Laufer & Ravenhorts-Kalovski, 2010; Schmitt, Jiang & Grabe, 2011 suggest that 8,000-9,000 word families, i.e. it is suggested that around 98% of vocabulary coverage is necessary for reading authentic materials independently), they still provide a very good basis for language use (Hirsh & Nation, 1992).

Furthermore, high frequency words tend to be more polysemous, so if there is polysemy in collocations, they are most likely to be found in collocations made from words in these frequency bands. My rationale was that if the most frequent words

are so important, surely the collocations around these words must be important as well. Also, since this study is pedagogically relevant, students should strengthen and enhance the knowledge of words they already know before they move to unknown, lower frequency vocabulary. Due to time constraints, I could not analyse all three frequency bands (1K, 2K and 3K), hence I decided to choose the middle ground, i.e. I focused on collocations forming around the words in 2k frequency band.

From the 2,000th level frequency list (see Appendix 4 for a sample), a stratified sample of 10 nouns was obtained, i.e. every hundredth noun was selected (Babbie, 1990). This was done so I could have frequency across the band. If the word selected was a verb or an adjective, the following closest noun would be chosen. For example, the 100th word was the adjective *blind*, so I chose the 101st word, i.e. the noun *block.* In addition, I chose nouns as "nodes" of collocations because it is nouns that carry the most important information for communication.

Even though the nouns were taken from a list that is based on the BNC, it was ensured that the target nouns did not have strong British English focus, but were actually used in wider contexts. For example, one of the original target nouns was the noun *courgette*, which was excluded because it is typically used in British English. The following table lists the ten target nouns.

Table 10: Selected nouns

Block
Conflict
Drawer
Furniture
Knee
Nose
Pupil
Shame
Ticket
Zero

4.3.2. Corpus

In order to ensure representativeness of data and a more comprehensive analysis, a corpus needs to contain millions of running words (tokens) and a balanced selection of types and lengths of texts (both spoken or written) (Sinclair, 1991)). A representative corpus should also include as many different texts and as many

authors or speakers as possible to avoid data distortion caused by a few individuals' personal styles (Liu, 2003).

Therefore, the corpus that was selected for the extraction of target collocations in this study was the Corpus of Contemporary American English (COCA). The COCA is a large and balanced corpus of American English that contains more than 520 million words that are spread evenly across five different text types: spoken, fiction, popular magazines, newspapers and academic texts. It was created by Mark Davies of Brigham Young University and is widely used by tens of thousands of users every month. It was chosen for the following reasons:

- It is large in size
- It's a freely-available corpus of English, frequently used by researchers so it is becoming the standard
- It is balanced and varied
- It is constantly updated and as such, includes current and ongoing changes in the language.

Also, all five sections (spoken, fiction, popular magazines, newspapers, academic texts) of the COCA were used in the analysis to obtain the most diverse "picture" of English.

4.3.3. Target collocations

In order to create a pool of target collocations, I followed several criteria:

1. All target collocations had to be either V+N or Adj+N lexical combinations. This was because I had to set the limit as it was impossible to look at all collocations. Another reason is because these two types are the most researched ones (e.g. Henriksen, 2013) and seem to be challenging for second language learners (e.g. Grant, 2005; Nesselhauf, 2005).
   Boers, Demecheleer, Coxhead and Webb (2014), for example, list several reasons why there is a slow uptake of these word combinations. They claim that learners do not attend to collocations as chunks because these normally consist of verbs that are high frequency and therefore familiar to the learner,

or because it is the noun that carries most of the semantic meaning and verbs thus go unnoticed. Regarding the difficulty of Adj+N collocations, Webb and Kagimoto (2011) suggest that if learners encounter with semantically similar words (the authors give examples of *narrow* in *narrow escape* and *slim* in *slim chances*), they may struggle to commit such phrases to memory.

2. MI score had to be 3 or higher than 3 (Hunston, 2002).
   As the MI score has no clear threshold, but rather indicates the strength of association, different cut-off points can be and have been used. For example, Sonbul (2012) used a cut-off of one and Kennedy (2003) used a cut-off point of two. However, three seems to be the most frequently adopted cut-off point in corpus linguistics. Additionally, MI score as an association measure has been criticised because it can give very high scores for collocations made up of low frequency words, even if the total number of occurrences of the collocation is very low. To guard against accepting word pairs as strong collocations on the basis of minimal evidence, MI is often used together with a minimum frequency threshold (e.g. Church & Hanks, 1990).
3. Raw frequency of ≥ 5 (in the whole corpus) was chosen as a cut-off point because the MI score was reported to tend towards overestimation when the frequency counts are lower than 5 (Dunning, 1993; Kilgarriff, 2005).
   A raw frequency of five is admittedly a low frequency. However, the lowest possible frequency cut-off was chosen on purpose, though, so that as many collocations as possible would be captured. Inevitably, some collocations were missing from this list even if a low cut-off point was chosen, as there would always be items used only a few times in a particular corpus. Nevertheless, this is an inevitable limitation of any corpus study when a certain frequency limit is set.
4. Verb collocates in V+N collocations had to be lexical verbs, not modal, auxiliary or delexical verbs. Modal and auxiliary verbs do not have any meanings but serve different grammatical functions and indicate tenses. In relation to delexical verbs, the meaning is taken out of the verb and put into the noun. Also, research suggests that even advanced English language learners struggle with the correct use of delexical verbs and as a consequence, tend to avoid them (e.g. Altenberg & Granger, 2001). Sinclair (1991) states that one of the reasons for this avoidance is because delexical

verbs form part of idiomatic phrases, so learners prefer less frequent and less appropriate words instead. This is turn makes their language “stilted and awkward” (p. 79). Because they are a big category (in Howarth’s 1996 study, 56% of all V+N combinations were composed of delexical verbs) and known to cause difficulty for L2 learners, I thought that collocations formed around these verbs deserved a separate and thorough research of their own.

5. The span between the collocates had to be zero or 1. This was chosen to capture both adjacent collocations (such as *immediate effect*) and collocations with one word in between the collocates (such as *make a mistake*). Extracting collocations with a larger span was impossible because research has shown that frequencies of adjacent and non-adjacent collocations can vary to a great extent. Vilkaite (2016), for example, has demonstrated that in case of Adj+N collocations, non-adjacency changed the overall frequency only a little. However, for V+N collocations, the change in frequencies when accounting for non-adjacency was more than 9000%. Also because at the time it was not clear how well learners recognise collocations that are non-adjacent (*confirm findings* versus *confirm the very surprising findings*). Since then, research has shown that non-native speakers do not seem to have collocational knowledge of non-adjacent collocations with a span of 4 words (Vilkaitė, 2016b).
6. I decided to search for each collocation as a word form, not lemma, as Sinclair (1991) argues for individual word form, because collocates and meaning senses are often different for the different word forms included in a lemma. An example of this is the collocation “*take a hike*”, which figuratively means “*go away*”. Its lemmas *takes a hike*, *taking a hike*, *took a hike* and *taken a hike,* on the other hand, are typically used in their literal meaning sense in the COCA.

4.3.4. Extraction procedure and analysis

Once the criteria have been set, I proceeded to extract collocations from the corpus. From the POS (Part of Speech) drop down menu on the COCA website, I selected verb.ALL option and then typed in each of the target nouns. In the text type section, no particular text type was chosen as all five sections were given equal weighting in the analysis.

By clicking on Search, I obtained all the verbs and adjectives that collocated with the target nouns together with their frequency and MI information. The same procedure was done with the adj.ALL option. For example, the noun “conflict” generated the following information (Tables 11 and 12):

Table 11: Verb collocates for the noun “conflict”

		CONTEXT	FREQ		ALL	%	MI	
1		AVOID CONFLICT	102		35202	0.29	9.79	
2		MAY CONFLICT	66		407637	0.02	5.63	
3		RESOLVING CONFLICT	53		2011	2.64	12.98	
4		RESOLVE CONFLICT	52		9647	0.54	10.69	
5		WOULD CONFLICT	31		1054191	0.00	3.17	
6		AVOIDING CONFLICT	27		5819	0.46	10.47	
7		MANAGE CONFLICT	24		14794	0.16	8.95	
8		REDUCE CONFLICT	24		32940	0.07	7.80	
9		CREATE CONFLICT	23		55371	0.04	6.99	
10		HANDLE CONFLICT	21		25603	0.08	7.97	

Table 12: Adjective collocates for the noun “conflict"

		CONTEXT	FREQ		ALL	%	MI	
1		ARMED CONFLICT	506		19573	2.59	10.39	
2		ARAB-ISRAELI CONFLICT	401		954	42.03	14.41	
3		ETHNIC CONFLICT	290		24473	1.18	9.26	
4		ISRAELI-PALESTINIAN CONFLICT	257		775	33.16	14.07	
5		POTENTIAL CONFLICT	211		55955	0.38	7.61	
6		MILITARY CONFLICT	206		107268	0.19	6.64	
7		POLITICAL CONFLICT	205		162305	0.13	6.03	
8		VIOLENT CONFLICT	191		17890	1.07	9.11	
9		INTERNAL CONFLICT	158		24818	0.64	8.37	
10		DIRECT CONFLICT	137		34708	0.39	7.68	

As the generated data was organised in terms of frequency, the goal was to select the top three verb + noun and adjective + noun collocations. Nevertheless, this was not always possible because some of the generated verb and adjective collocates were modal and auxiliary verbs, delexical verbs or proper names. For example, in the first table above, some of the excluded collocations were *may conflict* and *resolving conflict*, whereas in the second table, *Arab-Israeli conflict* and *Israeli-Palestinian conflict* were removed.

Moreover, in order to ensure consistency and due to time constraints, I focused on the base form of the verbs (in case of the target V+N collocations). That is why I, for example, did not include *resolving conflict* and *avoiding conflict* in Table 11 above. However, it was not always possible to stick to one form only. In such cases, I had to use other forms, i.e. the third person singular present tense and the past tense. These examples are marked with a star in Table 13 below. Even though I mentioned earlier that in certain cases different word forms in a lemma may have different meaning senses, for these specific cases, I checked all available word forms and there was only one meaning sense (the one reported in the tables below).

The final result was 54 collocations with the lowest MI of 3.00 and highest of 15.46 (Table 13). Even though I was expecting to have a pool of 60 target collocations, I ended up with a lower figure because some of the items occurred very infrequently (only once or twice) and I therefore excluded them.

Table 13: The most common V+N collocations and Adj+N collocations

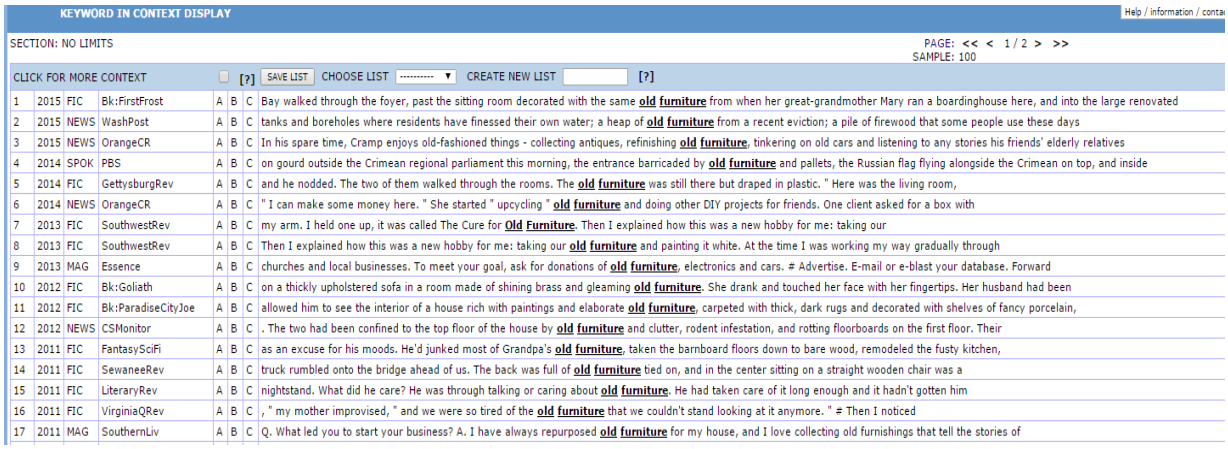
(note: the excluded collocations are marked in red)

Sampled nouns	Adj+N collocations	Freq.	MI	V+N collocations	Freq.	MI
Block	Concrete block	125	10.65	To pass block (Adjacent)	6	5.85
	Big block	94	6.41	To cut block (Adjacent)	5	4.38
	Old block	59	5.75	To run block (Adjacent)	5	4.23
Conflict	Armed conflict	506	10.39	To avoid conflict (Adjacent)	102	9.79
	Ethnic conflict	290	9.26	To resolve conflict (Adjacent)	52	10.68
	Potential conflict	211	7.61	To manage conflict (Adjacent)	24	8.95
Drawer	Top drawer	214	9.96	To open drawer (Adjacent)	2	9.69
	Bottom drawer	147	11.04	To empty drawer (Adjacent)	1	14.52
	Open drawer	26	6.89	To use drawer (Adjacent)	1	6.94
Furniture	New furniture	141	4.80	To buy furniture (Adjacent)	40	8.26
	Antique furniture	136	11.87	To sell furniture (Adjacent)	21	8.11
	Old furniture	106	6.17	To move furniture (Adjacent)	16	6.30
Knee	Right knee	844	7.77	To bend knee (Non-Adjacent)	100	7.62
	Left knee	819	9.04	To injure knee* (Non-Adjacent)	70	6.64
	Wounded knee	230	11.49	To hurt knee* (Non-Adjacent)	63	4.91
Nose	Runny nose	186	15.46	To wrinkle nose* (Non-Adjacent)	222	10.01
	Broken nose	169	9.56	To blow nose (Non-Adjacent)	122	6.39
	Big nose	135	6.38	To wipe nose* (Non-Adjacent)	107	7.45
Pupil	Apt pupil	15	12.91	To guide pupil (Adjacent)	3	4.18
	Young pupil	8	6.29	To motivate pupil (Adjacent)	1	7.31
	Favourite pupil	7	8.24	To assist pupil (Adjacent)	3	5.37
Shame	Damn shame	66	11.46	To feel shame (Adjacent)	56	8.54
	Real shame	63	8.08	To bring shame (Adjacent)	30	8.51
	Great shame	49	7.12	To experience shame (Adjacent)	6	5.95
Ticket	One-way ticket	140	13.81	To buy ticket (Non-Adjacent)	314	4.45
	Speeding ticket	98	12.84	To purchase ticket (Non-Adjacent)	38	3.49
	Hot ticket	92	8.27	To afford ticket	35	3.00

Zero	Ground zero	217	10.87	(Non-Adjacent) To approach zero*	21	8.25
	Absolute zero	143	13.15	(Adjacent) To equal zero*	18	10.68
	Global zero	37	9.17	(Adjacent) To pay zero	17	5.35
				(Adjacent)		

In the next step, when all target collocations were extracted, I started with the analysis of the concordance lines in order to find out which items were literal, figurative or had both literal and figurative meaning senses. The concordance lines were accessed by clicking on the target collocations after which the context in which they appeared became available (Figure 3).

Figure 3: An example of concordance lines for the collocation “old furniture”



KEYWORD IN CONTEXT DISPLAY

SECTION: NO LIMITS

PAGE: << < 1 / 2 > >>
SAMPLE: 100

CLICK FOR MORE CONTEXT [?] SAVE LIST CHOOSE LIST ---------- CREATE NEW LIST [?]

1	2015	FIC	Bk:FirstFrost	A	B	C	Bay walked through the foyer, past the sitting room decorated with the same **old furniture** from when her great-grandmother Mary ran a boardinghouse here, and into the large renovated
2	2015	NEWS	WashPost	A	B	C	tanks and boreholes where residents have finessed their own water; a heap of **old furniture** from a recent eviction; a pile of firewood that some people use these days
3	2015	NEWS	OrangeCR	A	B	C	In his spare time, Cramp enjoys old-fashioned things - collecting antiques, refinishing **old furniture**, tinkering on old cars and listening to any stories his friends' elderly relatives
4	2014	SPOK	PBS	A	B	C	on gourd outside the Crimean regional parliament this morning, the entrance barricaded by **old furniture** and pallets, the Russian flag flying alongside the Crimean on top, and inside
5	2014	FIC	GettysburgRev	A	B	C	and he nodded. The two of them walked through the rooms. The **old furniture** was still there but draped in plastic. " Here was the living room,
6	2014	NEWS	OrangeCR	A	B	C	" I can make some money here. " She started " upcycling " **old furniture** and doing other DIY projects for friends. One client asked for a box with
7	2013	FIC	SouthwestRev	A	B	C	my arm. I held one up, it was called The Cure for **Old Furniture**. Then I explained how this was a new hobby for me: taking our
8	2013	FIC	SouthwestRev	A	B	C	Then I explained how this was a new hobby for me: taking our **old furniture** and painting it white. At the time I was working my way gradually through
9	2013	MAG	Essence	A	B	C	churches and local businesses. To meet your goal, ask for donations of **old furniture**, electronics and cars. # Advertise. E-mail or e-blast your database. Forward
10	2012	FIC	Bk:Goliath	A	B	C	on a thickly upholstered sofa in a room made of shining brass and gleaming **old furniture**. She drank and touched her face with her fingertips. Her husband had been
11	2012	FIC	Bk:ParadiseCityJoe	A	B	C	allowed him to see the interior of a house rich with paintings and elaborate **old furniture**, carpeted with thick, dark rugs and decorated with shelves of fancy porcelain,
12	2012	NEWS	CSMonitor	A	B	C	. The two had been confined to the top floor of the house by **old furniture** and clutter, rodent infestation, and rotting floorboards on the first floor. Their
13	2011	FIC	FantasySciFi	A	B	C	as an excuse for his moods. He'd junked most of Grandpa's **old furniture**, taken the barnboard floors down to bare wood, remodeled the fusty kitchen,
14	2011	FIC	SewaneeRev	A	B	C	truck rumbled onto the bridge ahead of us. The back was full of **old furniture** tied on, and in the center sitting on a straight wooden chair was a
15	2011	FIC	LiteraryRev	A	B	C	nightstand. What did he care? He was through talking or caring about **old furniture**. He had taken care of it long enough and it hadn't gotten him
16	2011	FIC	VirginiaQRev	A	B	C	, " my mother improvised, " and we were so tired of the **old furniture** that we couldn't stand looking at it anymore. " # Then I noticed
17	2011	MAG	SouthernLiv	A	B	C	Q. What led you to start your business? A. I have always repurposed **old furniture** for my house, and I love collecting old furnishings that tell the stories of

The initial goal was to analyse one hundred concordance lines for each collocation and this was possible for only some of the target items (e.g. *top drawer, runny nose, ground zero*). Other collocations, even though they had a high MI, occurred less frequently. In that case, I analysed all the existing concordance lines (e.g. *open drawer, sell furniture, feel shame*). Even though there were fewer concordance lines in these cases, it was rather easy to figure out what type that particular collocation belonged to. The number of analysed concordance lines ranged between 5 and 100.

Furthermore, some of the target collocations sometimes behaved as proper names or were part of proper names in the analysed concordance lines. Their exclusion/inclusion depended on whether or not their meaning (literal or figurative) could be reliably determined. As illustrated in the following example, the collocation *antique furniture* is the name of a book.

…X. // Fig. 5. Footnote 1 Fine Points of Furniture: Early American (Crown Publishers, New York, 1950), p. 285. 2 American Furniture, the Federal Period in the Henry Francis du Pont Winterthur Museum (Viking, New York, 1966), p. 344. Footnote 3 For earlier references to sofa tables see Charles Over Cornelius, Furniture Masterpieces of Duncan Pyhfe (Doubleday, Page and Company, Garden City, New York, for the Metropolitan Museum of Art, New York, 1922); Edgar G. Miller Jr., American **Antique** **Furniture**: A Book for Amateurs (Lord Baltimore Press, Baltimore, 1937), 2 vols.; and Nancy McClelland, Duncan Phyfe and the English Regency, 1795-1830 (William R. Scott, New York, 1939). Subsequent commentary, embodying new discoveries, appears in Oswaldo Rodriguez Roque, American Furniture at Chipstone (University of Wisconsin Press, Madison, 1984), pp. 306307, No. 143; and Treasures of State: Fire and Decorative Arts in the Diplomatic Reception Rooms of the US. Department of…

However, even though this collocation is actually a proper name, it does not change its original literal meaning. On the other hand, the collocation *big block* in the example below is the name of a gang and a music company and as such, it is not clear from the analysed concordance lines what kind of meaning it had.

…in the 1970s and 1980s. # " We were straight-up family, like cousins, eating in each other's homes, " says Stepney, 29. # Stepney didn't rap in " Lesson, " but says he helped promote the CD, putting out posters, letting people know it was " a hot album. " # But with success came a falling out between Mathews and Stepney. # " They got some money and said they didn't want us around, " said Stepney, who went on to form his own music company, **Big** **Block** Productions. "... They showed a lot of disrespect to me and my family. " # In the wake of the fallout, tensions ran high on the Hunters Point hill. Both Mathews and Church realized, friends said, that they had to watch their backs -- especially on Harbor Road. # Church lived in the family home close by the projects, and was often on the hill hanging out. In the late afternoon on New Year's Day in 1996, the winter sun was…

I decided to use letters L and F to refer to literal meaning and figurative meaning respectively. I would then read each concordance line and label it appropriately. This was done for all target collocations. In some cases, it was not clear from the concordance lines whether the target item was literal or figurative, therefore I had to look at the expanded context before making the decision.

As part of the procedure and in order to assure accuracy of the categorisation, an interrating exercise was conducted. For this purpose, I randomly selected around 20% of the target collocations in order for the interrater to analyse these and confirm my judgements. The rater chosen for this task was a native speaker and a second-year doctoral student from the School of English at the University of Nottingham. This rater received an explanation about the different types of collocations (their definitions and examples). I also showed her a few concordance lines and analysed them myself so that she could get a better idea of what she actually had to do. At the end, she said she was comfortable with the concepts involved.

There were 733 concordance lines within this 20% of the sample and out of these items, the raters agreed on 703 cases or 95.80% (Table 14). This indicates a high

level of agreement between the rater and I and confirms the accuracy of my judgements to a great degree.

Table 14: Judgements made by the researcher and the interrater

	Researcher		Interrater		
Collocation (No of conc. lines)	**Literal meaning**	**Figurative meaning**	**Literal meaning**	**Figurative meaning**	**No of items agreed on**
Concrete block (100)	96	4	96	4	100
Avoid conflict (100)	100	0	100	0	100
Top drawer (100)	88	12	90	10	98
Buy furniture (40)	40	0	40	0	40
Bend knee (100)	83	17	83	17	100
Runny nose (100)	94	6	96	4	98
Favourite pupil (7)	7	0	6	1	6
Damn shame (65)	0	65	0	65	65
One-way ticket (100)	90	10	64	36	74
Approach zero (21)	21	0	21	0	21
733=100%					**703=95.80%**

4.4. Results

The main purpose of this study was to provide a preliminary indication of how much figurative meaning there may be in collocations. To do this, I investigated the distribution of three types of collocations (Literal, Figurative and Duplex Collocations) as they occurred in my small sample.

4.4.1. Literal Collocations

The results of the analysis show that the majority of collocations seem to follow the traditional definition, i.e. that collocations are word combinations in which two words co-occur together. This is true whether we have a lot of concordance lines to look at or only a few of them. It is also true whether we deal with V+N or Adj+ N collocations. Out of 54 target collocations, 42 collocations are Literal Collocations by definition (Table 15).

Table 15: Literal Collocations

No.	Collocation	No of conc. lines analysed
1	Big block	81
2	Old block	13
3	Pass block	6
4	Cut block	5
5	Run block	5
6	Armed conflict	100
7	Ethnic conflict	100
8	Potential conflict	100
9	Avoid conflict	100
10	Resolve conflict	100
11	Manage conflict	24
12	Open drawer	26
13	New furniture	100
14	Antique furniture	100
15	Old furniture	100
16	Buy furniture	40
17	Sell furniture	21
18	Move furniture	16
19	Right knee	100
20	Left knee	100
21	Wounded knee	5
22	Injure knee	70
23	Hurt knee	62
24	Broken nose	100
25	Wrinkle nose	100
26	Blow nose	100
27	Wipe nose	100
28	Apt pupil	15
29	Young pupil	8
30	Favourite pupil	7
31	Real shame	63
32	Great shame	46
33	Feel shame	56
34	Bring shame	30
35	Experience shame	6
36	Speeding ticket	98
37	Buy ticket	100
38	Purchase ticket	69
39	Afford ticket	5
40	Approach zero	21
41	Equal zero	18
42	Pay zero	7

Some examples of concordance lines include:

New furniture

3	2004	FIC	MassachRev	a question for you, " I continued. " I'd like some **new furniture** for my office. I was thinking about an uncomfortable chair. Simple and traditional

Left knee

74	1999	NEWS	Houston	help him recover more quickly and effectively from arthroscopic surgery performed Sunday on his **left** **knee**. # The word " ashram " usually refers to a Hindu retreat where religious

Feel shame

24	2004	MAG	Atlantic	the writers who supported them should be ashamed. They have no reason to **feel** **shame**. They should be thanked for the courage, honor, and integrity with which

In the examples above, the first number denotes the number of a concordance line whereas the next number is the year that particular concordance line dates from. The third column refers to one of five sections used in the COCA (spoken, fiction, magazines, newspapers, academic texts). Finally, the fourth column is the source from which this concordance line was retrieved.

In terms of percentage, Literal Collocations make up 77.8 % of the sample examined. This result provides the evidence that in the majority of cases, the partner definition of collocations works well. In other words, the main pattern is that of co-occurrence of words. Literal Collocations seem to be the majority case in all cases.

4.4.2. Figurative Collocations

The results also show that a very small number of the target collocations are completely idiomatic in nature, i.e. they have a figurative meaning. More specifically, only two collocations or 3.7% of the cases (Table 16) share the characteristics of Figurative Collocations.

Table 16: Figurative Collocations

No.	Collocation	No of conc. lines analysed
1	Damn shame	65
2	Hot ticket	93

Damn shame is not a shame that is damned but refers to “an unfortunate situation”:

34	2000	FIC	Analog	done. These are the lessons that life teaches adults and it's a **damn** **shame** that children have to pay such a heavy price for them. Time passed.

Hot ticket ticket relates to "something that is very popular and attractive at the moment" rather than "a ticket that is hot".

32	8	NEWS	WashPost	from the day in July when this restaurant opened, Redwood has been a **hot ticket**. Now that I've eaten here several times, it's hard to …

4.4.3. Duplex Collocations

While few collocations are wholly idiomatic, ten collocations (18.5%) have the characteristics of Duplex Collocations, i.e. they can be both literal and figurative and as such, are polysemous according to the definition of polysemy adopted in this study (Table 17).

Table 17: Duplex Collocations

No.	Collocation	No of conc. lines analysed
1	Concrete block	100
2	Top drawer	100
3	Bottom drawer	98
4	To bend knee	100
5	Runny nose	100
6	Big nose	100
7	One-way ticket	100
8	Ground zero	99
9	Absolute zero	100
10	Global zero	37

For example, the collocation *big nose (*in the examples below) literally means "a nose that is big in size", but there is one concordance line in which *big nose* refers to a "strong smell". Also, *concrete block* is literally "a masonry building unit of concrete that has been cast into a standard shape, size, and style", but can refer to "something heavy" as well. The following examples show both literal and figurative meanings of the two abovementioned collocations.

Big nose

Literal meaning

1	2012	FIC	Bk:Sailor	do you see? " # She was young. Maybe twenty-five. A **big nose** but otherwise pretty. But then it was like she was turning into an old

Figurative meaning (expanded context)

…a sparkling, or champagne, cider. # Maybe it was beginner's luck. We made 125 bottles. From the kitchen steps the loosened corks shoot all the way to the perennial bed -- an activity that, like fireworks, is too much fun not to indulge in. Poured into a glass, the cider foams handsomely. The color is wonderful -- the lightest clear amber -- with streams of tiny bubbles rising to the surface. The taste is dry and just pleasantly alcoholic. The fragrance is what I think winemakers would describe as a " **big** **nose**. " It is an unalloyed delight. Even Elisabeth, who partway through our epic of bottle washing was looking askance at the whole project, has been completely won over. " Why drink anything else? " she says, popping open another bottle. Why indeed. # For the address of Happy Valley Ranch, turn to page 82. # PHOTO (BLACK &; WHITE): This photograph, circa 1916, shows a double basket press, which permitted simultaneous grinding and pressing of the apples.

Concrete block

Literal meaning

12	2014	SPOK	CBS	a body. He said I wrapped it up in plastic, tied a **concrete** **block** around it and took it out and dropped it in the water.

Figurative meaning

66	2006	FIC	Bk:EnslaveMe	other. The crossbow strapped to my back suddenly weighed me down like a **concrete** **block**, and the ache in my stomach intensified. It was becoming harder and harder

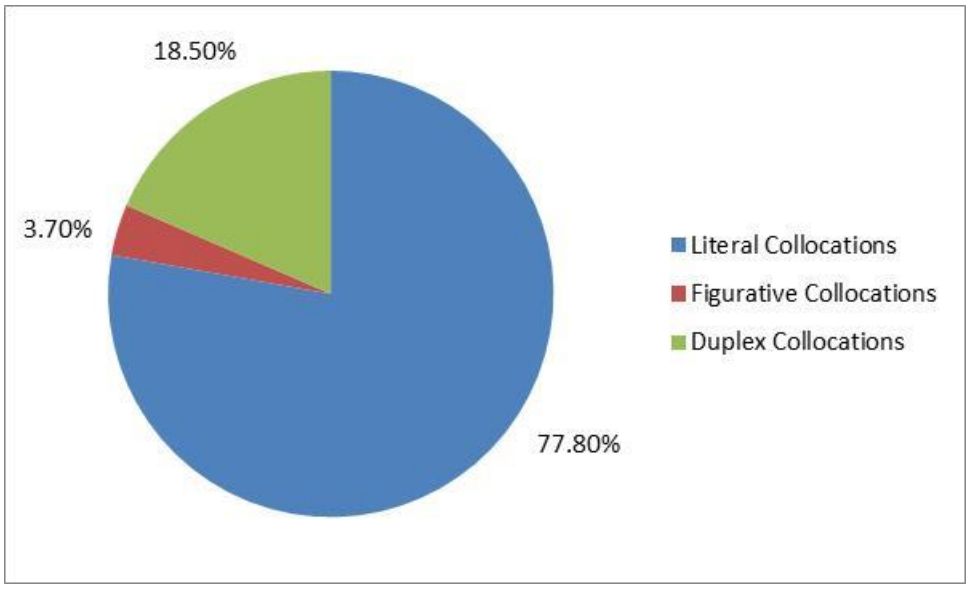
Furthermore, as shown in Table 18 below, the balance between literal and figurative meanings of Duplex Collocations varies. In some cases, the majority are literal meanings with a very small percentage of figurative meanings. This is the case of “big nose” (99%-L, 1%-F). In other cases, the ratio is more balanced, for example “one-way ticket”, where 64% of the cases are literal, while the remaining 36% have a figurative sense. Finally and interestingly, there are no Duplex Collocations that show the opposite trend, i.e. where there are more cases of figurative meaning than the literal meaning (Table 18).

Table 18: Ratio of L and F meanings

No.	Duplex Collocation	L meaning	F meaning
1	Concrete block	96	4
2	Top drawer	90	10
3	Bottom drawer	85	13
4	To bend knee	83	17
5	Runny nose	96	4
6	Big nose	99	1
7	One-way ticket	64	36
8	Ground zero	78	22
9	Absolute zero	95	5
10	Global zero	36	1

Overall, the two types of collocation with non-literal meanings (Figurative and Duplex Collocations) combined to make up 22.2% of the total sample. This means that over one-fifth of the sample collocations had one or more figurative meaning senses. Thus, while the majority of collocations conformed to a literal A+B pattern, a substantial percentage did not (Figure 4). It is also interesting that even though Figurative Collocations appear to be rare, Duplex Collocations seem to be relatively common.

Figure 4: Percentages of Literal Collocations, Figurative Collocations and Duplex Collocations



4.4.4. Qualitative analysis

Apart from the collocations analysed by the interrater, there were two particularly tricky collocations to analyse, i.e. *bottom drawer* and *ground zero*. Two native

speakers were asked to analyse them. They agreed on almost all of the target collocations in terms of deciding whether they were literal or figurative. Those they could not agree on were then analysed by a third native speaker. Despite the third analysis, there are a very few collocations that were not clear enough and as such were excluded from the analysis. The following examples can illustrate this ambiguity.

Bottom drawer

…by the redness in Sister's face. Swooping him up from his desk, she stood him next to hers, and continued, " This, class, is our smartest pupil, and look what happens to you when you turn your back on the Lord. You get dumb. Now, Mister Abiku, you must be our first lesson for today. Class be seated. " # Suddenly Abiku became aware of his scrotum and did not know on what to focus his eyes. He knew Sire Paddle was going to pop out of Sister's **bottom drawer** at anytime, but his greater fear was what knotty-haired Blaze might do if he cried. # Before he could muster another thought, Sister had him touching his toes and saying " Jesus died for me " as she held his kinky head in one hand and slammed his behind with Sire Paddle. But he did not cry. " Return to your seat, gather your books, and take the seat behind Joanne Chalk in the very last row. Better conduct and good grades will earn this seat for…

Whereas the first native speaker said that *bottom drawer* in the above example was literal, the second native speaker said it was figurative, referring to a “hiding place”. When the third native speaker was asked to analyse the target expression, she said it was literal, meaning a “drawer in which the weapon is kept”, but she then put a question mark next to the letter L.

Ground zero

The " Shower " monitor shows Alex and Toomey, visible through the trashed set, updated every six seconds. MADDEN SNIFFS gas. The HISS now audible along with Alex's voice. Madden smiles. Pulls out his 9mm. And BACKS UP, away from the Fantasy Sets toward the back room. Madden takes aim at... THE FIRST MONITOR The images is Alex threatening Toomey. Updating now -- LOSING ALEX on the Monitor as he steps into frame in person, looks up and BAM! CROWVISION a speeding bullet passes narrowly by and... ANGLE - **GROUND ZERO** as the bullet hits the monitor in a shower of sparks, followed by... BOOM! A ROILING FIREBALL Seems to vaporize Alex before flying down the hallway right at CAMERA. Madden manages a couple steps in retreat before it blows him into the back room with a deafening roar. EXT. " THE HOLE " - INFERNO - NIGHT BOOM! Windows blow out in a gas fired inferno. A body flung out the rear door. BOOM! --70. EXT. " THE HOLE " - NIGHT Interior/exterior.

The first native speaker said *ground zero* had a literal meaning, while the second native speaker analysed it as figurative. The third native speaker, however, could not decide whether the expression was L or F.

The different opinions given by three native speakers indicate that some collocations are particularly “problematic” when it comes to defining their characteristics and hence, classifying them appropriately. However, in this study, the percentage of “tricky collocations” was so low that experience showed that the classification of collocations into Literal Collocations, Figurative Collocations and Duplex Collocations was usually a quite straightforward process.

4.5. Discussion and teaching implications

The aim of this study was to gain some initial understanding of how pervasive idiomatic and polysemous collocations (as identified by a statistically-based approach) were. I argued that collocations were not only word partnerships, where word A co-occurs with word B, but that they also have characteristics as single-meaning units and are polysemous as well.

The literature review has revealed that collocations indeed appear to be idiomatic and polysemous just like other types of formulaic language, idioms and phrasal verbs. It has shown that these collocations are used as target items in the current research (Webb & Kagimoto, 2009, 2011; Webb et al., 2013) and included in some widely used dictionaries (*Longman Collocations Dictionary and Thesaurus)* and collocation practice books (*English Collocations in Use*). Nevertheless, their idiomatic and polysemous nature and the extent of these collocations have not actually been examined and discussed. This is because all research on idiomaticity is related to idioms (same in characteristics to my target items, but defined according to the phraseological approach). However, there is no arguing that the frequency-based approach to phraseology, especially collocations, is very strong, and probably dominant (at least in terms of the number of collocation studies that use it as the basis of identification and analysis). With this in mind, many people will approach collocations initially as statistical units, rather than units that may have different meaning senses. I think this is important, because most people will use computers to identify collocations, using the power of computers to interrogate multimillion-word corpora, rather than looking for examples of collocation with idiomatic meanings in an idiom dictionary. I believe that both approaches are valid; however, the fact is that corpus linguistics is ubiquitous, and I feel it is useful to have a discussion of idiomatic

phrases which starts from a statistical approach. In that sense, I could find no previous research which investigated the relative extent of statistically-derived collocations that were Literal, Figurative and Duplex, thus, to the best of my knowledge, my admittedly modest study is the first to suggest a preliminary estimate of what those percentages might be.

The findings demonstrate that by far the most numerous were Literal Collocations, making up 77.8% of my small sample. This is reassuring for the statistically-based approach, as the (usually implicit) assumption that collocations carry A + B meanings seems to be appropriate in the majority of cases. There was a noticeable lack of Figurative Collocations (3.7%), but perhaps this follows the general trend that idiomatic word combinations in language overall "are not common" (Biber, et al. 1999, p. 1025), despite being very numerous as a category with various idiom dictionaries listing thousands of items (Liu, 2003). This result also confirms findings from Grant's 2005 study on the extent of "core idioms". She found that only 103 idioms were truly "core" (following her own criteria). In contrast, Duplex Collocations, with both literal and figurative meanings, made up 18.5% of our target collocations. Thus, it seems that while "pure" idiomatic collocations are not that common, collocations that have an idiomatic meaning in addition to a literal meaning are much more frequent.

Furthermore, the analysis I carried out was time-consuming but quite straightforward, except for a few collocations (see Section 4.4.4.). In this particular case, two of the target collocations (*bottom drawer* and *ground zero*) were hard to analyse. In other words, it was not always possible to clearly decide whether a collocation was literal or figurative or both, but as there were only few cases of "tricky collocations", I can conclude that categorising collocations into Literal, Figurative and Duplex is not too much of a problem. Even though it is a very small percentage of occurrences, I believe it is important to inform those researchers who are interested in going beyond the scope of this study that they should be aware of the existence of some "tricky" collocations.

The study was motivated by the question of whether Figurative and Duplex Collocations were widespread enough to warrant further investigation, or whether they were rare enough to be considered exceptional cases. My results suggest that

around one-fifth to one-quarter of collocations (22.2%) do carry idiomatic meaning. Is this a lot? Is it enough to change the way we think of collocations? I would argue that it is. The percentage of Figurative and Duplex Collocations appears to be substantial, and cannot be written off as peripheral behaviour.

As a result, several interesting points can be made. The first one is the ratio between literal and figurative meaning senses. Moon (1998) suggests that the literal meanings of polysemous phrases are always rarer than the figurative meanings senses, whereas Cowie, Mackin and McCaig (1983, p. 13) even claim that the literal meaning senses of phrases "do not survive alongside their figurative ones in normal, everyday use". However, the results of this study do not seem to support this finding. In my sample, I found that the all target collocations were more frequently used in their literal sense than the figurative sense (e.g. *big nose, top drawer, bend knee*). It might be due to the size of the corpus used in this study. The COCA had 450 million words when this study was conducted and currently, it has around 520 million words. Because it is so big, the chances of finding more instances of literal senses of Duplex Collocations are higher. Also, all these collocations, except one, are Adj+N collocations. It might be that the percentages of literal and figurative meanings vary across different collocation patterns and that in case of Adj+N collocations, there are more literal meaning senses.

Another interesting point is the extent of idiomaticity. Some researchers (e.g. Boers, 2000) argue that the extent to which figurative collocations (or idioms), for example *raise the bar,* can be understood to be figurative depends on a number of speaker-dependent variables, such as if the speaker has an awareness that the word combination is related to the sport of high jumping or not. Even if such awareness exists, the mental association between one meaning and the other cannot be assumed. If the speaker in question already has awareness that that "top" metaphorically maps onto "best" or "first" (e.g. *top drawer*), then these items may not be inherently called figurative or idiomatic.

So, what does this all mean for teachers? The three categories of collocations are clearly different in their characteristics and behaviour. Even though it would be premature to start drawing implications on such preliminary results, there are reasons to believe that further research in this area could be useful.

An important property of formulaic sequences is their figurativeness. One way of thinking about this is to consider whether receptive or productive knowledge of a collocation is required. Let us first take the case of receptive knowledge where the collocation needs to be recognised and understood in reading or listening. There is probably little need to worry about Literal Collocations, or the literal meaning senses of Duplex Collocations, as learners should be able to understand the meaning(s) of the two component words and how they come together. We might speculate that knowing the collocations could add to reading fluency, but probably would not aid comprehension to any great degree. However, for Figurative Collocations and the figurative meanings of Duplex Collocations, the meaning is opaque and unlikely to be understood.

If productive knowledge is required, then collocation knowledge becomes more crucial, as learners are required to produce language of their own volition. While meaning can be expressed in many ways, it is well known that skilful use of collocation is one of the factors that distinguishes proficient language use. So, knowledge of Literal Collocations and the literal meaning senses of Duplex Collocations is especially important for appropriacy. However, for the expression of certain meanings, knowledge of Figurative Collocations and the figurative meanings of Duplex Collocations is highly advantageous. This is because they express idiosyncratic and opaque meanings that are tied to specific situations. For example, the collocation *big nose* does not only figuratively mean a “strong aroma”, but it also belongs almost exclusively to the world of wine tasting.

This discussion leads to the conclusion that collocations need to be approached in two different ways depending on their category. Literal Collocations and the literal meaning senses of Duplex Collocations require knowledge of their co-occurrence patterns. Most collocation exercises and activities to date have attempted to enhance learner awareness of this patterning, and so this need is already beginning to be addressed. On the other hand, Figurative Collocations and the figurative meanings of Duplex Collocations require knowledge of their idiosyncratic meanings. This leads to the question of how these might best be taught. Martinez (2013), for example, proposed a framework (the Frequency-Transparency Framework or FTF) that would help teachers choose which multi-word expressions should be targeted

for explicit instruction. According to this framework, if there are two, highly-frequent phrases of similar frequency but different degrees of semantic transparency, the more opaque expression should be prioritised. If two phrases are infrequent but one of them is transparent and the other one is opaque, the opaque one should be explicitly taught as such phrases may be a barrier to successful comprehension. Martinez emphasises, though, that this framework works only if frequency is measured in a way which reflects the needs of the learners. For example, if learners are enrolled on a flying course, then the vocabulary related to that specific area should be regarded as "frequent" for that particular group of students.

Furthermore, there is some limited evidence that teaching verb-noun collocations holistically has advantages over teaching them with matching exercises (Boers et al, 2014). This is mainly because in the holistic approach, learners are less prone to make incorrect verb-noun associations (as is the case with "underline the correct verb" exercises). Instead of breaking down collocations into component parts, a more sensible approach might be to present them as intact wholes.

How to present the literal and figurative meanings of Duplex Collocations, and whether they should be taught in conjunction with each other, are also interesting questions. Boers' (2000) work on metaphors (see Section 3.3.2.1.) suggests that there might be value in teaching figurative collocation meanings through some form of linguistic analysis and analogy because enhancing learners' metaphor awareness may facilitate retention of unknown figurative language. For example, the "excellent quality" meaning of *top drawer* might be explained by some analogy that things in the top drawer of a dresser are usually good, and/or the metaphorical theme that HIGHER→BETTER. Therefore, activities in which learners are asked to group figurative expressions under general metaphoric themes (for example *to tighten the screws* under MACHINERY) or explain the figurative meaning of a collocation by using metaphors (for example *to hit the roof* may be explained in terms of ANGER) may be a good start. However, teachers must be aware that some collocations are opaque and hence not easy to imagine. In this case a more direct, explicit approach seems a sensible option.

Furthermore, regardless of their type (either Figurative or Duplex), some collocations form part of bigger lexical chunks or act as modifiers when used figuratively. For

example, in the majority of cases, the collocation *hot ticket* is used with the noun "item" (e.g. *This year the retail giant is trying something new, they're leaving their doors open all night. So they don't have any of those mad dashes that we've seen. Other stores like Target are spreading some of their* ***hot ticket items*** *throughout the stores so that shoppers have a little bit more room to work with.*). Despite this, the figurative meaning of *hot ticket* and other similar collocations as chunks of language does not change, no matter whether or not they are part of bigger phrases. Of course, this can be seen only if the collocations are embedded in the context. The upshot is that teachers should not become too "narrowly focused" on the two-word limit. They should be aware that two-word collocations might not necessarily be the end of phraseology and that the meaning of collocations can sometimes be connected to the meaning of a longer phrase.

Unfortunately, it is unclear whether current textbooks have a principled approach to teaching different types of collocations, hence teachers will still need to think about their own teaching approaches. The first step is realising that collocations are not all the same in terms of meaning. In addition to the possible teaching approaches discussed above, some additional guidelines based on the procedure and the results of this study may prove useful for teachers.

1 Make learners aware of the existence of the three types of collocations.

2 Make use of corpora and show learners how figurative meanings are used in context and what longer phrases (if any) they form part of.

   For example, by reading the concordance line below and paying attention to the surrounding context, learners can clearly see that *top drawer* is used figuratively:

   … KOTB: What about Angelina Jolie? She's always in the *top drawer*, isn't she?

   Mr KARGER: Of course. She played Mariane Pearl in 'The Mighty Heart' this summer and did a great job in that, and now she's in 'Beowulf', …

Another option would be to present both literal and figurative meaning senses of the same collocation in context and ask learners to decide when the collocation in question is used literally or figuratively.

3 Teach learners to successfully guess from context, as context will determine whether a collocation is used literally or figuratively (this is of course only possible when learners know the majority of words in a text). For beginners, teachers giving clues might be a better approach.

4 Encourage learners to make use of specialised collocation dictionaries, for example the *Oxford Collocations Dictionary for Students of English* or the *Longman Collocations Dictionary and Thesaurus for Intermediate-Advanced Learners*.

4.6. Limitations and directions for future research

It is important to be careful when interpreting the results of this exploratory study. First of all, my sample is rather small and limited, i.e. only one frequency band was examined and this in turn leaves many questions unanswered. Are there any Figurative and Duplex Collocations at other frequency levels? If there are, what is the percentage? The study could not be fully automated and required quite a lot of manual checking. Therefore, 54 collocations and the percentages derived from their analysis seemed to be an adequate starting point. This study is indicative that different types of collocations do exist and the key issue is not the exact percentages of the different categories, but that collocations, as extracted by statistical means, often have figurative meanings. This reality does not seem to have made it into materials, or I suspect teachers' consciousness. Thus, this study also brings this issue to the attention of the ELT practitioners by emphasising that it is still worthwhile to start the conversation and make teachers aware of the existence of collocations that have figurative meanings. Further analysis with a larger number of target items using more advanced computational techniques could definitely be useful in order to validate and refine the current findings.

Overall, I feel that, even though the percentages should not be taken as final, the sample is large enough to get an initial idea of the bigger picture. The aim was to

show that figurative collocations exist and they are not just a few percentage points. Therefore, the best way to interpret the reported figures is as being indicative in nature only. Only further research with larger and more varied samples of collocations (also using different identification criteria) will be able to demonstrate how these percentages need to be adjusted.

The meaning senses were derived from a corpus, so it is unlikely that they are 100% reflective of all language use and individual language exposure. They are inherently an artefact of the various texts and genres that the corpus is composed of. The percentages were taken from the COCA, which has many advantages: it is large, recent and regularly updated, and is balanced across various genres and discourse types. Nevertheless, it is reflective of mostly American English, hence the percentages of the literal and figurative meanings may be different in other varieties of English. Because the COCA comprises several sources (popular magazines, newspapers, academic texts, TV broadcasts, etc.), it may not reflect individual experiences and exposure types.

In addition, the L and F percentages should be seen as percentages, and not as fixed, exact absolutes. Using a different corpus, or making somewhat different judgements (as they are inherently subjective and differ from person to person) about whether a particular phrase is used literally or figuratively, may lead to slightly different meaning percentages.

Also, this study, like the majority of studies on collocations, focuses on V+N and Adj+N combinations. The different kinds of collocations may vary in frequency, number of literal and figurative meaning senses and learnability. Also, some types are acquired earlier than others (e.g. Gitsaki, 1999). Therefore, future research should also be directed at analysing the percentages of literal, figurative and idiomatic meaning senses among other categories as this can gives us a clearer picture of the extent of idiomaticity and polysemy across all collocations.

In case of V+N collocations, I used mainly adjacent collocations or collocations within one slot. Looking at collocations with a span of +/-4 might have extracted collocations with relatively greater or lesser percentages of idiomaticity. Clearly, future research should look at different spans and how they affect the overall percentages.

Moreover, researchers as well as teachers have to be careful when working with these collocation categories as they are not always clear-cut. The reality is fuzzy because so many different factors come into play: the learner's L1, how rich the context is, metaphor awareness, etc. Despite this, collocation meanings can differ and collocations are not only "literal".

Caution is also necessary in the case of Literal Collocations because some of them may have more than one meaning sense. Even though they follow the A + B pattern, their accurate interpretation, for example in case of the collocation *take a break*, will depend on the learner's existing understanding that "take" can also mean "have" and that "break" also refers to "rest".

The reported 18.5% figure is representative of Duplex Collocations across the whole corpus. However, it should not be assumed that these collocations will be equally distributed across the different sub-corpora, but instead, they will be more likely found in specific genres and registers as linguistic features of texts vary significantly from one register to another (Biber, 1989; 1993; Vilkaitė, 2016a). Only further research with larger and more varied samples of collocations will be able to report percentage figures the field can have confidence in.

I used ten high frequency node nouns from the 2,000 frequency level. It remains to be seen how well the results reported here are extendable to the whole frequency band. Hopefully, this will offer more insight into the extent of the figurative/polysemous nature of collocations. Likewise, I do not know if the percentages would be the same if I used a different word class as the node word (e.g. verbs). Each of these decisions might have affected the results.

Finally, including delexical verbs or using lemmas and word families would most likely yield different percentages. Nevertheless, I am very confident that "the new percentages" would not undermine my point, i.e. that collocations can be figurative and polysemous. The results presented in this study are just one way of looking at the different characteristics of collocations and using different criteria and search procedure is certainly something that merits further investigation. In sum, while this was a useful first step to identify idiomatic collocations, clearly the use of different sampling methods and wider sampling would be very interesting to confirm or refine the collocation category percentages I report here.

4.7. Conclusion

This study attempted to answer three research questions concerning the extent of the different types of collocations. In response to the first research question, results of this study showed that, as typically defined, the majority of collocations behave as units in which two words co-occur together (Literal Collocations). This result indicates that the traditional definition of collocations seems to be valid. However, it also demonstrates that some collocations exhibit different characteristics to those of "frequent co-occurrence of two meanings", not previously thought of in the existing research.

The second and third research questions addressed the extent of idiomaticity and polysemy (one literal and one figurative meaning) in collocations. Results showed that, a very small percentage was completely opaque (compositional) in nature (Figurative Collocations). I suspect that this was probably due to a rather small sample but it may also be because idiomatic phrases are relatively infrequent in language on an individual basis (e.g. Moon, 1998; Liu, 2003). Results also showed that collocations with literal and figurative meanings were much more frequent (Duplex Collocations). More research is needed though to show whether the percentages I found for Figurative and Duplex Collocations would remain the same if a larger sample was examined.

Overall, these results go against the previous assumption that collocations are word partnerships that reside on the transparent side of the continuum (e.g. Howarth, 1996). They indicate that collocations cannot be seen as and should be treated as more than merely the co-occurrence of words. Since collocations have been widely acknowledged as important in language learning and use, I believe that they should be adequately addressed in pedagogy. I would claim that a different approach to the teaching of collocations can enrich learners' knowledge of these phrases and that the first step towards this change would be raising an awareness of the existence of the different kinds of collocations. With collocations, just as with individual words and other types of formulaic language, meaning matters.

Taken as a whole, I believe that the study in this chapter has provided promising results which support my claim that collocations are not all the same. If the main aim

of the study was to find out percentages of the different types of collocations, I feel that this aim has been accomplished. It is not my intention to say though, that results presented here are conclusive. In order to be able to generalise them, further research needs to be conducted.

The limitations highlighted in the previous section could serve as points of departure, but perhaps two of them, namely the difference between different types of collocations and the difference between registers and genres merit most attention. The first one is the number of types analysed. Having too many types compromises interpretation of the scores and focusing only on V+N and Adj+N collocations was one of the methodological decisions I had to make. However, in reality, learners are exposed to all kinds of both lexical and grammatical collocations. In addition, research on adjective-noun and noun-noun collocations (e.g. Carrol, 2015), for example, seems to suggest that that they behave differently from verb-noun collocations (e.g. Vilkaite, 2016b). I suspect that they also differ in the percentages of literal and figurative meaning senses. In this study, it was found that the analysed Adj+N collocations were more idiomatic and polysemous in nature that the V+N collocations. A follow-up study, focusing on all types of lexical collocations for example, would give us an overall indication of the amounts of idiomaticity and polysemy across all types. This potential variability could inform the decisions of which collocations types to focus on when teaching figurative language in various contexts.

The second limitation regards the distribution of collocations across different registers and genres. Research has shown that the distribution of collocations in a corpus is dependent on the register. For example, results of Vilkaite's (2016a) study demonstrate that spoken conversations were the register that contained the most collocations. This was followed by fiction. If these are the two places where most collocations can be found, then we may assume that figurative and polysemous collocations are most likely to be found here as well. Thus, when teaching collocations, register information has to be taken into account to at least some extent.

The figurative and polysemous nature of collocations brings up other issues as well. One of them is related to second language learners and how well they know these

figurative meanings. The research reported in the main literature review has revealed that in terms of collocations (as they have been normally defined), figurative meanings have not been investigated. With regard to idioms, the majority of studies have focused on the processing side. Concerning knowledge, there has been little research as well (e.g. Irujo, 1986, Laufer, 2000) and these studies have mainly looked at L1 influence or how to best teach idioms. However, none of them examined the knowledge of the figurative meanings of collocations that were derived statistically from a corpus, hence I decided to examine this issue in the following chapter.

Chapter 5 - Knowledge of Duplex collocations by L2 learners

5.1 Introduction

In Chapter 4, I have claimed that collocations are not all the same, but instead, can also be figurative and polysemous. The study presented in Chapter 4 looked at a small sample of statistically-derived V+N and Adj+N collocations. Results show that the majority of collocations are word combinations in which Meaning A co-occurs with Meaning B (e.g. *antique furniture* - "old house items"), a very small number of collocations were completely figurative in nature (e.g. *hot ticket* - "something that very popular and attractive at the moment") and about a fifth of the sample was duplex, i.e. had both literal and figurative meanings (Macis & Schmitt' (2016b) (e.g. *top drawer* - a) "the uppermost drawer of a filing cabinet" and b) "something of the highest quality")).

The study reported in this chapter focuses on knowledge of the figurative meaning senses of Duplex Collocations by second language learners and was motivated by the lack of research concerning learner knowledge of collocations that had been initially derived from a statistical approach and then analysed for figurative meaning. I thought this was an important aspect of figurative knowledge to measure, because most research has used the power of computers to interrogate multimillion-word corpora and identify collocations, rather than looking for examples of collocation with idiomatic meanings in dictionaries (e.g. Henriksen, 2013). Consequently, I felt it was useful to have a discussion of idiomatic phrases which started from a statistical approach.

The common sense view is that, as there are two different meaning senses, Duplex Collocations may be even more difficult to acquire, especially their figurative meaning sense. There are at least two reasons for this: a) learners might not have a sufficient amount of exposure to the L2 and b) they fail to notice that a particular phrase has an idiomatic meaning because it is composed of words that are already known. Thus, it is becoming increasingly clear that our models of language acquisition need to provide an accurate description of how these collocations fit into the learning process.

Furthermore, it is widely recognised that the recognition and production of individual words is a function of their frequency of occurrence in the language. In other words, learners generally acquire higher-frequency words before lower-frequency ones (Nation & Waring 1997; Leech, Rayson & Wilson, 2001; Nation, 2001; Ellis, 2002). It has also been suggested that frequency plays a major role in the acquisition of formulaic sequences (Nattinger & DeCarrico, 1992; Durrant & Schmitt, 2010; Martinez & Schmitt, 2012). However, can the same findings be applied to Duplex Collocations? Can frequency (counts derived from huge corpora like the COCA and the BNC) be indicative of learners' knowledge of the figurative meanings of Duplex Collocations? And what about language use, i.e. the degree to which learners engage with and use the L2 (e.g. time spent in English-speaking countries or time spent watching TV and listening to music in English)? Research suggests that language socialisation (interaction, level of engagement etc.) can lead to the learning of formulaic language (e.g. Burdelski & Cook, 2012). How does this factor relate to knowledge of Duplex Collocations? Finally, what role does the degree of semantic transparency play and does it affect this knowledge? This study attempts to answer these questions.

This chapter is organised in the following way. It will first explore usage-based models of language and the role of frequency in case of both individual words and formulaic sequences. Second, it will address the issue of semantic transparency and how it affects knowledge of collocations. It will then discuss factors that influence the acquisition of formulaic language, namely L1 influence, the relationship between collocational knowledge and L2 proficiency and the role of communicative engagement with language and its benefits for the learning of chunks. Finally, it will present a study on the knowledge of the figurative meaning sense of Duplex Collocations by Chilean learners of English, discuss its results and offer some directions for future research.

5.2. Background

5.2.1. Usage-based models of language acquisition and frequency effects

In order to understand the mechanisms underlying the acquisition of collocations in a L2, some of the researchers interested in this kind of formulaic sequences have drawn on usage-based models. The proponents of these models suggest that frequency plays the central role in language acquisition at all levels, from individual words to phrases (e.g. Arnon & Snider, 2010; Bybee, 2000; Ellis, 2002; Tomasello, 2003). Language learning in both L1 and L2 is seen as an experience-driven process in which learners, after every exposure with a linguistic unit (from the smallest to the largest), entrench it in their memory and eventually, retrieve it automatically (Langacker, 1987).

Research on first language has shown that language users are sensitive to frequency effects in the input, e.g. in reading and spelling (Coltheart, Curtis, Atkins & Haller, 1993) and morphology (Stemberger & MacWhinney, 1986). In lexis too, the recognition and production of words appears to be affected by frequency (Balota & Chumbley, 1984; Forster, 1976). It also seems that frequency has beneficial effects for the acquisition of multi-word phrases. The study conducted by Bannard and Matthew (2008) demonstrated that L1 children were better at repeating higher frequency phrases in comparison to those of lower frequency. The participants were thirty-eight monolingual British children who were tested on their ability to produce via a sentence-repetition test a number of frequently occurring phrases. The target items were taken from the Max Planck Child Language Corpus collected by the Max Planck Child Study Centre, Manchester. They differed in phrase frequency but were matched on the frequency of the individual components (e.g. *a drink of milk* vs *a drink of tea*). The results showed that the children repeated the more frequent target items better and faster than the less frequent ones. In case of adults, research shows similar frequency benefits. Arnon and Snider (2010) investigated the effects of frequency in adult comprehension. They wanted to see if the frequency of compositional four-word phrases (*I don't know why*, *We have to talk*) affected processing and whether this held true for very frequent phrases (Experiment 1) and when a higher frequency phrase was compared to a lower frequency one

(Experiment 2). The results of both experiments showed that the participants responded faster to more frequent phrases. Similarly, Tremblay, Derwing, Libben and Westbury (2011) looked at the processing of lexical bundles (*in the middle of the*) and their matched control phrases (*in the front of the*) via a self-paced reading task. They found that the participants read sentences containing lexical bundles faster and were better able to remember these correctly on follow-up sentence recall experiments. These results suggest that the more frequent a multiword sequence is, the more likely it is to get entrenched and leave memory traces in the brain.

When it comes to acquiring a second language, however, there is some evidence that suggests that non-native speakers are also sensitive to frequency of usage, although not everybody agrees that it is the most dominant. Wray (2002), for example, claims that internal structure and context of use are equally important. Furthermore, Ellis (2006b) suggests that L2 acquisition is also dependant on factors such as salience, interference and perceptual learning, among others. Despite all other factors, the emerging empirical evidence shows that non-native speakers may still be sensitive to frequency effects in their second language in case of both individual words and larger chunks. Sonbul (2014) explored frequency effects on the processing of formulaic sequences. She was interested in finding out whether native speakers of English and non-natives were sensitive to frequency of synonymous adjective-noun collocations derived from a corpus. Two measures, an offline rating task and an online eye-movement measure were employed. The results of the offline task showed that both groups of participants were sensitive to frequency. In case of the non-native speakers, the sensitivity to frequency increased alongside their proficiency. The online task, on the other hand, indicated that this sensitivity was only present at early stages (first reading time) and that it was not affected by proficiency.

Likewise, Sosa and MacFarlane (2002) looked at *of* in two-word collocations (*kind of*) that varied in frequency. The reaction times to *of* in high-frequency target items were slower that in those of lower frequency. No difference was found between medium-frequency and low-frequency collocations. The authors concluded that frequent collocations were treated as single units. A limitation to Sosa and MacFarlane´s study, however, is that they did not control for the lexical properties of the component words. Another study that has shown similar results is Siyanova-Chanturia, Conklin

and van Heuven's 2011 study on binominals, i.e. phrases composed of two contents words belonging to the same lexical class and connected by a conjunction, where one word order is more frequent than the other (*bride and groom*/*groom and bride*). They were interested in whether native English speakers and highly proficient non-native speakers would process binominals faster than their reversed forms. They used an eye-tracking technique and concluded that native speakers and highly proficient non-natives were sensitive to the frequency of the target binominals. As the frequencies of the first and second content word of the binominals and the reversed forms did not affect reading speed significantly, the authors concluded that reading speed was influenced by the frequency of the entire binominals, not their component words. They also found that proficiency level was closely tied to the faster processing speed, i.e. more proficient non-native speakers and natives read binominals faster than the reversed forms and less proficient non-natives read both phrase types at similar speeds.

Durrant and Schmitt (2009) looked at the production by L2 learners of collocations of various frequencies extracted from the BNC. They found that the learners used high-frequency collocations extensively, but failed to use those that were less frequent and strongly associated (MI score). This led the authors to conclude that frequency was the best predictor of how non-natives processed collocations. One of the weaknesses of this study is the assumption that the BNC is a close approximation to the input learners are exposed to. Therefore, the same authors carried out a similar study in 2010, in which they controlled the learners' input. Three different conditions were created, namely single presentation (one repetition in a single context), verbatim repetition (two repetitions in the same sentence context) and varied repetition (two repetitions in two different sentences). Similar results to the above studies were obtained. The learners remembered nouns that had been seen with their paired adjectives in the training session better than those that had not. In other words, L2 learners do acquire at least some of the collocations from the input they receive. These results support the view that the more frequent a linguistic form is, the more entrenched it seems to become in memory. Similarly, Nizonkiza (2012) investigated the role of frequency in controlled knowledge of collocations. A productive V+N collocation test containing 40 target items from three frequency levels (2000th, 3000th and 5000th) was designed. For each target item, the

participants had to provide the missing verb. The first two letters of each verb were given in order to avoid varying answers. Nizonkiza concluded the more frequent the collocations, the better they are known.

Nevertheless, other studies bring into question the robust effect of frequency shown above. González-Fernández and Schmitt (2015), for instance, measured the productive knowledge by Spanish learners of English of a wide range of collocations. The results indicate that although frequency seems to have an effect on the acquisition of collocations, this effect is weak and cannot be used as the major predictor of collocation learning, but only as one factor of influence. Similarly, while Ellis et al. (2008) found that frequency of academic formulas is a good predictor for L2 learners´ processing, it does not seem to exert the same influence on the acquisition of collocations. Lastly, Durrant (2014) carried out a meta-analysis of nineteen collocation studies in order to establish a reliable relationship between learner knowledge and frequency. He found that frequency correlated moderately with knowledge in all the studies.

5.2.1.1. Frequency derived from corpora

The logic behind using frequency to predict knowledge is that the more frequent an item is, the more chances there are for learners to encounter it in the input. As the above studies show, it seems that frequency of exposure does affect the acquisition of collocations to some extent.

Nevertheless, in terms of frequency derived from corpora, there is one major limitation. Few of them are likely to be representative of the language which any learner has been exposed to (Durrant & Schmitt, 2010). The reason is that corpora are normally designed to represent different types of discourse, not individuals' experiences. In other words, it is impossible to either know or control the number of exposures any learner receives. This leaves corpora as the main indicator of frequency. Another problem is that counts in corpora do not distinguish different senses of polysemous words or formulaic sequences, more specifically collocations. It is not viable to count the occurrences of all literal and figurative meaning senses of all formulaic sequences in a 520-million-word corpus like the COCA. Since learners do make a distinction between literal and figurative meanings in their everyday lives,

this constitutes a distortion of their experience of the L2. So, the question remains of whether frequency with which collocations occur in their figurative meaning sense in a corpus really indicate the likelihood of their acquisition? It seems it may not be the case for several reasons. First of all, the input that learners commonly receive is the language of instruction in a classroom. This language is different from that which can be found in a natural native environment to a great extent, making expressions that are not that frequent in natural language much more frequent in the classroom and vice versa. Also, formulaic language in general, and collocations in particular, have been shown to present a challenge for even very advanced L2 speakers. Meunier (2012) states that as the majority of ELT teachers are L2 speakers themselves, their students' exposure to formulaic sequences can be limited as a consequence. Even when they use formulaic sequences, they may not use them like native speakers do, overusing some that they know very well even if such expressions are not that frequent in native language.

Overall, all the above studies, to a greater or lesser extent, suggest that phrasal frequency plays an important role in processing of formulaic sequences. An important caveat, however, is that most collocation studies to date have mainly used collocations with literal meanings (e.g. *strong coffee*). So, it is an open question to what degree the previous findings about frequency also apply to the figurative meanings of Duplex Collocations.

5.2.2. Semantic transparency

Semantic transparency refers to the degree to which the meaning of a word combination is deducible from the meanings of its components (Gibbs et al., 1989; Cacciari & Glucksberg, 1991). Related terms found in the literature are "opacity", "opaqueness", "compositionality" and "idiomaticity". Even though some researchers make a distinction between compositionality and transparency (e.g. Gyllstad, 2007), for the purposes of this thesis, these terms will be used interchangeably (e.g. Abel, 2003; Vega Moreno, 2005).

The issue of semantic transparency has been mainly related to idioms. Transparency is a matter of degree and is determined by various factors (Boers and Demecheler, 2001), some of which include: the idiom's clear etymological origin (e.g.

Under one's own way is clearer than *It's under way*), a common metaphorical theme, where one conceptual domain (e.g. anger) is expressed in terms of another (e.g. heat), as in *let off steam* and idiom imageability (i.e. how easy it is to visualise an idiom's meaning (e.g. *foam at the mouth* evokes the image of a very angry person) (pages 255-256). The authors further posit that transparency is closely related to conventions that differ across cultures and what is quite transparent to one community may not be as transparent in another.

Regarding idiom imageability, if the literal interpretation supports the figurative reading, then the image evoked by such an idiom can make it more semantically transparent. However, there is a lot of individual variability. Since different people have different knowledge and experience, an idiom which is transparent to one person may remain opaque to others. For example, if a learner recognises that *takes a back seat* literally refers to "taking a back seat in a car as a passenger and not driving", the image that could potentially be evoked in his mind of somebody being inactive might help implicitly arrive at the correct idiomatic interpretation, i.e. "to let other people take a more active and responsible part in a situation". Moreover, for those familiar with ball games (e.g. tennis and boxing), for instance, it might be easy to arrive at the correct figurative meaning of the phrase *the ball is in our court* ("it is our turn to act") or the phrase *throw in the towel* ("surrender"). Such people would see these idiomatic expressions as considerably more transparent than those people who do not have access to these assumptions or have not been able to infer their relation to the idiomatic meaning. Nevertheless, there is a risk of evoking an incorrect image and subsequently, an incorrect figurative interpretation. When the link between the literal and idiomatic meanings does not exist, such idioms become more opaque and more difficult to comprehend.

L2 idiom research seems to support this variability and suggests that speakers' intuitions may not be reliable. Abel (2003), for example, carried out a judgment task about the transparency of English idioms by native speakers of German. The results show that the subjects tended to judge idioms as transparent rather than opaque in that they saw the idiomatic meaning of these phrases as a sum of the meanings of their components. Similar conclusions were reached by Titone and Connine (1994), who found that native speakers judged idioms as non-compositional, whereas non-natives tended to decompose them. Tabossi et al. (2008) also conducted an idiom

judgment rating task and concluded that the overall agreement in the classification of idiomatic expressions was not different from chance.

In terms of the relationship between the degree of transparency and idiom learning, a number of studies have demonstrated a facilitating influence of idiom transparency on both recognition and production (e.g. Irujo, 1986; Yorio, 1989; Steinel et al., 2007; Skoufaki, 2008). Steinel et al. (2007), for example, employed a paired-associate task in which they tested recognition and production of twenty English idioms by 129 Dutch university students. They hypothesised that idiom imageability and transparency should facilitate the learning of the target items. They found that transparency had an effect on the scores in the recognition task. However, there was no difference between more and less transparent idioms in the production task. Skoufaki (2008), also found similar results, more transparent idioms were easier to comprehend that the less transparent ones.

As can be seen, non-compositionality is associated first and foremost with idioms. However, as mentioned earlier, many multiword items, including collocations, are to some extent opaque (Taylor, 2004). The view that collocations are positioned on the less opaque end of the spectrum comes from the phraseological approach. Most proponents within the phraseological tradition (e.g. Cowie 1981; Howarth 1996) have come to an agreement that the degree of semantic non-compositionality of a phraseological unit is a continuum, with the least degree of non-compositionality and fixedness (e.g. literal phrasal verbs, collocations) at one end and others that are highly non-compositional and fixed (e.g. idioms) at the other, while the middle area is occupied by those partly non-compositional and partly fixed (e.g. restricted collocations).

In essence, whichever terminology is adopted, figurative meanings have varying degrees of semantic transparency, and one might assume more transparent meanings are learned before less transparent meanings. If a learner knows the meaning of the two words making up a transparent (literal) collocation, then that collocation can be understood through decoding the constituents in their literal sense (*take the money*). The meaning of a semi-transparent collocation (*take a course*) is not decoded as easily as a literal counterpart, but is less salient than a non-transparent (figurative) collocation (*take sides*), which is very noticeable because it

cannot be understood on the basis of its constituent parts. As a result, it has been argued that it is precisely the semi-transparent collocations that will cause problems for language learners (Nesselhauf, 2005).

Moreover, some collocations can be “deceptively transparent” (Boers et al., 2014). Consequently, it would be logical to assume that more opaque idiomatic phrases pose a challenge for L2 learners since semantically, they are less transparent. As such, they can cause deceptive comprehension because L2 learners know the individual, usually very frequent general words, but are not familiar with these words in combination (Martinez & Murphy, 2011). On the other hand, it could also be argued that precisely because they are opaque, they become more salient and language users are more prone to notice them (e.g. Wulff, 2008; Bley-Vroman, 2002.).

To sum up, non-compositional units (however they are defined in the literature) seem to pose problems to learners (Read, 2000). The question is whether the degree of transparency (as measured by learners’ intuitions in this study) affects the knowledge of the figurative meaning sense of Duplex Collocations and to what extent.

5.2.3. L1 influence

Even though research suggests that learners are sensitive to frequency with which linguistic units occur in the language, it is certainly not the only factor that affects the speed of processing. L1 has a considerable impact on the way we process input in a L2. Although it is not one of the variables I used in this study, it is certainly worth briefly discussing its effect on the acquisition of collocations in a second language.

L1 congruency can be both inhibitive and facilitative, depending on the degree of the overlap between the first and second language. Congruency is defined as the presence or absence of a literal L1 translation equivalent (Nesselhauf, 2003). When a learner encounters a new collocation for the first time, he or she can understand its meaning if the components words can be directly translated from L2 to L1. Nevertheless, learners may have difficulty understanding incongruent collocations and therefore take much longer to learn these.

Zinkgräf (2008), for example, analysed V+N miscollocations compiled from a corpus of texts written by Spanish speaking students (high-intermediate to advanced level of English). Most of the errors were the result of negative transfer from their mother tongue. Similarly, Huang (2001) examined Taiwanese EFL students' knowledge of four types of lexical collocations: free combinations, restricted colocations, figurative idioms and pure idioms. The results showed the students' had insufficient knowledge of English collocations and the errors they made could be attributed to negative first language transfer. Nesselhauf (2003) investigated the use of English V+N collocations by German-speaking university students and found that 56% of the collocation errors were due to L1 transfer. A comparison of congruent and incongruent collocations revealed that second language learners produced far more incongruent than congruent collocations.

In another study, Revier and Henriksen (2006) looked at Danish EFL learners' written production. The examined the use of V+N collocations in a set of 30 essays by 15 learners from different levels of the Danish educational system and found that the main source of error was L1 transfer. Peters (2016) investigated the effect of congruency, collocate-node relationship (adjective-noun, verb-noun, phrasal-verb-noun collocations) and word length on learning collocations. Forty-one EFL learners of Dutch read a word list containing 18 target items (divided into 9 congruent and 9 incongruent collocations and into six V+N collocations, six phrasal-V+N collocations and six Adj+N collocations), their translation and a sample sentence and completed four online exercises in which the 18 collocations were presented twice. Results show that incongruent collocations appeared to be more difficult than the congruent ones. Finally, other studies also found that congruency played a role in acquiring second language collocations (e.g. Wolter & Gyllstad, 2011, 2013; Laufer & Waldman, 2011).

The general conclusion is that learners are prone to making more errors in case of collocations that have no L1 equivalents than those that are directly translatable from learners' L1.

5.2.4. Collocational knowledge and L2 proficiency

Collocations have been found to characterise L2 proficiency, with empirical evidence demonstrating that collocational knowledge develops alongside proficiency both receptively and productively.

With regards to receptive knowledge of collocations, Gyllstad (2007), for example, used two collocation tests, COLLEX and COLLMATCH, to measure Swedish university students' receptive knowledge of collocations. He found that it correlated positively with their proficiency levels. Swedish university students performed significantly better than upper-secondary school students. Also, there were significant differences between university student groups that were one year apart in terms of learning level. However, differences were not always significant between student groups only one term apart (4-6 months). The author suggests that the type of collocation knowledge measured in COLLEX and COLLMATCH does not develop over such short periods of time. Similarly, Keshavarz & Salimi (2007) investigated the relationship between the collocational competence of 100 Iranian EFL learners and their performance on open-ended and multiple-choice cloze tests as an overall language proficiency measure. The participants took a TOEFL test that served as an indicator of their proficiency level and then completed a 50-item test consisting of grammatical and lexical collocations which measured their collocational competence. The findings show that there was a significant relationship between collocational competence and performance on cloze tests (r= .68).

In a longitudinal study conducted by Eyckmans (2009), 25 students of modern languages (majoring in English) were assessed on their English proficiency and receptive knowledge of collocations before and after 60 hours of English instruction. The aim of the study was to check if the learners' ability to discriminate between idiomatic and non-idiomatic V+N collocations was related to their overall proficiency. The analysis of the results showed that the students' collocational knowledge improved over time. Barfield (2003) tested the recognition of a large number of decontextualised V+N collocations. 93 Japanese university students took a 40-item test consisting of three noun collocates out of which one collocate was incorrect. Barfield found that even though the recognition of nouns and verbs was high, it was not the case for whole V+N collocations. He concludes that knowing individual verbs

and nouns does not necessarily imply knowing how they combine in a collocation. In addition, there was no observed correlation between collocation knowledge and overall language proficiency.

In terms of productive knowledge of collocations, Gitsaki (1999) looked at the use of lexical and grammatical collocations plus four additional types (which she herself included) in the essays produced by 275 Greek learners of English who belonged to three proficiency levels, post-beginners, intermediate and post-intermediate. The findings showed that the post-beginners used more lexical collocations than grammatical collocations, the intermediate learners showed a reverse trend, i.e. they used more grammatical collocations, whereas post-intermediate learners used a great deal of both grammatical and lexical collocations. Gitsaki came to the conclusion that learners first acquire lexical collocations followed by grammatical collocations and that this knowledge was related to their proficiency level. Furthermore, Bahns and Eldaw (1993) examined 58 German advanced university students productive knowledge of English collocations. The experiment consisted of a translation (Group 1) and fill-in-the-gap task (Group 2) that included 15 V+N collocations. The analysis revealed that there was no statistically significant difference between the two groups. The authors also concluded that collocation knowledge did not develop at the same pace as general lexical knowledge. From a critical point of view, the number of target items was quite low. Moreover, the measures of general vocabulary and collocation knowledge were taken from the same data which makes the conclusions rather questionable.

In his study, Al-Zahrani (1998) investigated the collocation knowledge of 81 advanced Arabic-speaking learners of English. He developed a 50-item V+N collocation cloze test in which the first letter of each collocation was given. The participants' general language proficiency was measured by a writing test and the TOEFL test. Results showed a strong relationship between the knowledge of collocations and general English proficiency. Similarly, Bonk (2001) investigated the link between collocation knowledge and general English proficiency. A total of 98 university students from diverse L1 backgrounds were given three tests of collocation knowledge and a general English proficiency test. The collocation tests used were two fill-in-the-gap tasks, one with missing verbs and another with missing prepositions and multiple-choice task. Finally, general English proficiency was

measured by a shortened TOEFL test. A moderate correlation (r= .73) was found between collocation and general English proficiency. Lastly, Nizonkiza (2012) also explored the relationship between controlled productive knowledge of collocations and L2 proficiency (measured through a TOEFL test administered to five levels of proficiency). The results of regression analysis suggest that generally, controlled productive knowledge of collocations develops as proficiency increases (.84). Furthermore, the author concludes that "collocational growth is slow at low levels, gains momentum at intermediate levels and stabilises and even reaches plateau at very advanced levels" (p. 81). These findings are consistent with Laufer's study (1998) by showing that a plateau can be reached as well as Li and Schmitt's study (2009) in which no progress in terms of collocation production among advanced Chinese learners of English was found.

In summary, the answer to the question whether collocation knowledge is closely related to general proficiency is inconclusive. In some studies, a clear relationship was established (e.g. Gitsaki 1999; Bonk 2001), whereas in other studies, no relationship was observed (Bahns & Eldaw, 1993; Barfield 2003). Second, with the exception of Gyllstad (2007), none of the studies compared learners at different university levels. Consequently, it is not clear whether collocation knowledge increases as a function of higher level of study. It is also not clear how proficiency and the knowledge of the figurative meaning sense of Duplex Collocations are related.

5.2.5. Communicative engagement with L2

Another facilitative factor in acquiring collocations in the L2 seems to be related to learner's communicative engagement with a second language. In L1 acquisition, for example, Nelson (1973) conducted a longitudinal study of the acquisition of first words by 18 children between 1 and 2 years of age who either had referential preferences (naming things or activities and dealing with individual word items) or more expressive tendencies (having interactional goals; focusing on the social domain). It was found that referential speakers built larger vocabularies faster than the expressive speakers. However, children with more expressive tendencies were more likely to learn whole expressions which were not segmented. As for L2

contexts, Adolphs and Durow (2004) examined whether there was a link between the level of sociocultural adaptation and the acquisition of formulaic language. The participants were two postgraduate students, one high-integration and one low-integration. They were interviewed over a period of seven months and tracked on their usage of frequent formulaic sequences. The analysis of the data indicates that there was a relationship between the quality of social integration and the amount of formulaic language produced in the speech of the two students. In other words, the high-integration student used more formulaic sequences than the low-integration student over time.

In another study, Schmitt and Redwood (2011) investigated learners' receptive and productive knowledge of some of the most common phrasal verbs and the factors that may have affected that knowledge. They found the amount of engagement with an L2 (extensive reading, watching films and television) facilitated the learning of the target PVs. Similar results were obtained in Garnier and Schmitt's (2016) study on highly frequent polysemous phrasal verbs in English. Moreover, Dörnyei, Durow and Zahran (2004) were interested in finding what learner characteristics and learning conditions facilitated the successful mastery of formulaic sequences. They concluded that success in the acquisition of formulaic sequences depended on three main factors: language aptitude, motivation and sociocultural adaptation. If second language learners do not adapt socioculturally, it seems that only a combination of high levels of language aptitude and motivation can compensate for this. On the other hand, successful sociocultural adaptation does not seem to be dependent on high levels of the first two factors. Hence, sociocultural adaptation is, according to the authors, a major factor in the learning of formulaic language. They believe 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).

González-Fernández and Schmitt (2015) also tackled the issue of the degree of engagement with the L2. They wanted to know whether the amount and type of informal exposure to English learners had outside the classroom (e.g. reading, watching TV and listening to music in English etc.) could affect the degree to which collocations were learned. They found a positive relationship between the amount of

L2 engagement and the knowledge of the target collocations (reading: r=.51; watching English TV or films: r=.24; social networking: r=.18 and immersion in English speaking countries: r=.22). These findings are consistent with Ellis´s (2001) claim that frequent collocations which fulfil a meaningful communicative function will be more salient to learners, and therefore more likely to be learnt than those with less useful functions.

However, it may not be just the amount of input that is crucial, but also the quality. Siyanova and Schmitt (2007) explored whether longer exposure to L2 environments increased the likelihood of using multi-word vs. one-word verbs by both natives and highly-proficient non-native speakers. They found that the amount of exposure to L2 environments was not enough to increase the likelihood of using the multi-word verbs. This, nevertheless, might be explained by Adolphs and Durow's (2004) findings that socio-cultural integration was the key factor in the study they conducted. Likewise, Bardovi-Harlig (2012) makes a similar case for pragmatics and formulaic language. Pragmatics entails using the most effective language to achieve communicative purposes and formulaic language realises many of these common, everyday functions. Wray (2000) identifies three types of socio-interactional functions formulaic sequences serve (Table 19).

Table 19: Socio-interactional functions of formulaic sequences

Function	Effects	Types	Examples
Manipulation of others	satisfying physical, emotional and cognitive needs	• commands • requests • politeness markers • bargains, etc.	• keep off the grass; hand it over • could you repeat that please? • I wonder if you'd mind . . . • I'll give you __ for it
Asserting separate identity	a) being taken seriously	• story-telling skills • turn claimers etc.	• You're never going to believe this, but . . . • Yes, but the thing is . . . ; Thank you very much (in response to invitation to speak); The first thing that you have to realize, of course, in addressing this issue is . . .
	b) separating from the crowd	• personal turns of phrase	• I wanna tell you a story *(Max Bygraves)*; You know what I mean, Harry *(Frank Bruno)*
Asserting group identity	a) overall membership	• 'in' phrases • group chants • institutionalized forms of words, etc. • ritual • proverbs	• Praise the Lord!; as the actress said to the bishop • We are the champions • Happy birthday; dearly beloved, we are gathered here today . . . • Our Father, which art in Heaven . . . • Look before you leap; A stitch in time (saves nine)
	b) place in hierarchy (affirming and adjusting)	• threats • quotation • forms of address • hedges etc.	• I wouldn't do that if I were you • ''I don't want to belong to any club that will have me as a member'' (*Groucho Marx*) • Your Highness • Well I'm not sure (as a polite denial or refusal)

She further states that “formulaic sequences can be used to assert both our individual and our group identity”. They enable us to makes statements about our sameness and differentness and to jostle for position within the hierarchy. In a similar vein, Burdelski and Cook (2012) point out that formulaic language is closely related to socialisation, as it plays an important role within social dimensions such as politeness, hierarchy and social identities like social roles and relationships.

As a consequence, the formulaic sequences attached to these ideas become not only frequent, but also highly salient as they are related to personal functional needs. This all suggests that it may not be exposure per se that is important, but the kind of high-quality engagement with language that takes place in a socially-integrated environment, where learners want to use the L2 for the sake of meaningful and pleasurable communication.

Thus, we might conclude that the more learners engage in meaningful language use, the more formulaic sequences they will learn, especially as learners are thought to be more likely to learn sequences that have a specific purpose and are meaningful in their everyday lives (Ellis, 2005). In other words, more outside classroom exposure like reading English books, watching TV in English and social networking in English should lead to better learning.

In sum, acquiring enough collocation knowledge is a challenge for L2 learners. Different factors such as frequency, transparency and L2 engagement affect this knowledge. The previous study demonstrated that collocations, just like phrasal verbs and idioms, can be idiomatic and polysemous as well. Yet, there is no research on how well the figurative meaning sense of Duplex Collocations is known by L2 learners and what factors have an effect on this knowledge. Therefore, this research study will attempt to fill that gap by asking the following questions:

1. How good is L2 learners’ knowledge of the figurative meanings of Duplex Collocations?

2. How do corpus frequency and semantic transparency relate to knowledge of the figurative meanings of Duplex Collocations?

3. How strongly do education and language engagement factors relate to the knowledge of the figurative meanings of Duplex Collocations?

5.3. Methodology

5.3.1. Selection of target items

For the purposes of testing, it is common sense to restrict the number of patterns/types used in a test. If there are too many types, it might be hard to interpret scores. In addition, in order to be able to generalise the results, a large number of items would be needed from each pattern. Collocations are numerous, and if we tried to systematically measure each type, the study would soon become unmanageable and difficult to interpret. I thus limited the search to V+N and Adj+N combinations, as these seem to be the most researched types (Henriksen, 2013).

As there is no established collocations list, I extracted my target items arbitrarily from a range of different sources. First, I consulted different collocation dictionaries (e.g. *the Longman Collocations Dictionary and Thesaurus* and *the LTP Dictionary of Selected Collocations* (Hill & Lewis, 1998)), I searched for collocations on the internet and looked into media like TV and radio. As Macis & Schmitt's (2016b) results suggest that collocations with only figurative meanings are relatively rare, I focused my search on polysemous collocations with both literal and figurative interpretations, i.e. Duplex Collocation. If I thought a collocation had two meanings, I would look it up in an online dictionary and if it was duplex, I would include that collocation in the candidate pool. An additional native speaking rater confirmed that the candidate items indeed had figurative meanings. These items were chosen to include a variety of features: they varied in frequency (see below), some were very transparent in meaning and others were rather opaque. Overall, they were intended to represent the range of Duplex Collocations learners may come across when studying and learning English. Over 50 potential items were identified at the end of this stage.

Next, I looked at the frequency and MI score (minimum: 3 or higher following Hunston, 2002)) of the target collocations in the COCA. The reason for choosing the COCA is the fact that the corpus is big, regularly updated and freely accessible (see previous chapter for more details).

The following step consisted of making sure the target collocations were not directly translatable into Spanish. This was done because the participants were Spanish

speakers and I wanted to control for the L1 effects. A collocation was considered congruent across English and Spanish if the meaning of the corresponding constituents enabled a direct translation equivalence (e.g. Bahns, 1993 ; Nesselhauf, 2005; Wolter & Gyllstad, 2013). As an example, the English collocation *build bridges* can be argued to correspond congruently to the Spanish collocation *construir puentes*. A couple of items were removed as a result of this check, so the remaining number was 32 target items.

Furthermore, I had to decide whether to focus on adjacent or non-adjacent collocations. Adjacency, i.e. whether collocating words occur immediately next to one another or are within a certain distance from each other. This distance is normally operationalised as a number of orthographic words apart. Kjellmer (1994), for example, argues that only adjacent word forms can be seen to form a collocation, but he ignores the fact that word forms that attract each other may be positioned a number of orthographic word slots Halliday (1966), on the other hand, claims that it is appropriate to have intervening words between components of collocated items, claiming that in some case this gap could be one, two, three, or four words. This is especially true for V+N combinations which are very frequently separated by an article (e.g. *make a mistake*). Thus, for the purposes of the present study, collocates making up a collocation were either adjacent, or separated by one ortographic word (article, possessive adjective etc). In case of Adj+N collocations, I assumed that no other elements would occur between these two elements.

The following table lists the target collocations according to their frequency in the COCA.

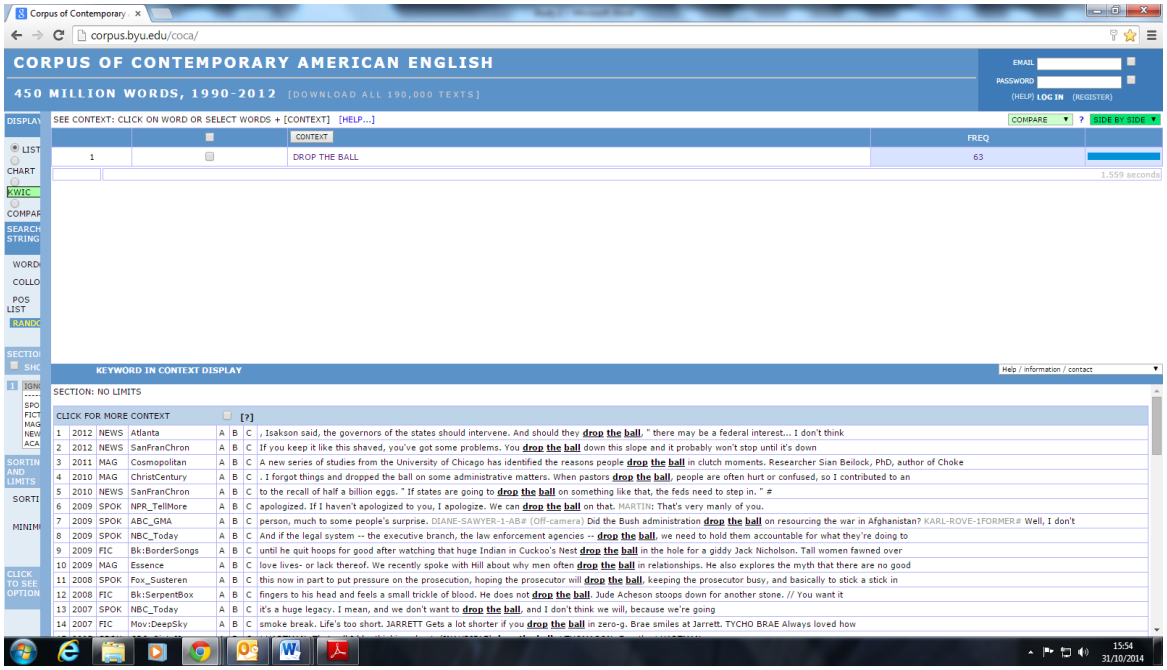
Table 20: Target Duplex Collocations

No	Duplex Collocation	Frequency in the COCA	MI score
1	Red tape	801	10.27
2	Red flag	691	9.89
3	Brick wall	674	10.81
4	Hold (one's) breath	569	6.64
5	Hit the road	550	4.43
6	Rainy day	461	9.08
7	Free ride	412	8.65
8	Blue ribbon	391	10.99
9	White collar	364	10.43
10	Dark horse	255	8.49
11	Cold feet	219	7.44
12	Top drawer	214	9.98
13	Hold the line	180	7.14
14	Old hat	178	6.82
15	Thick skin	152	8.10
16	Hold water	150	5.07
17	Take a hike	149	4.41
18	One-way ticket	141	13.87
19	Small potatoes	124	6.04
20	Acid test	121	7.79
21	Old hand	121	7.63
22	Sore spot	117	10.48
23	Soft touch	115	8.83
24	Break a leg	114	5.25
25	Fat cat	111	8.45
26	Queen bee	99	13.20
27	Big wheel	93	7.00
28	Drop the ball	63	5.62
29	Hit the roof	41	5.56
30	Dead duck	33	7.01
31	Bend (one’s) knee	24	8.92
32	Fancy pants	18	7.27

5.3.2. Analysis of the literal (L) and figurative (F) meaning senses of the target items

After the target items have been selected, I proceeded with the analysis of the concordance lines for each Duplex Collocation. The analysis consisted in reading the concordance lines and tagging them for literal meaning or figurative meaning. For more frequent collocations, I first looked at a random set of 100 concordance lines and then, confirmed the resulting figurative/literal ratios with a second random set of 100 concordance lines. In case of collocations whose frequency was low, i.e. below 200, I analysed all available concordance lines. Below is an example of the search results for the duplex collocation *drop the ball*. It only occurs 63 times in the COCA, therefore, since its frequency is below 200, all concordance lines were analysed.

Figure 5: An example of search results for “drop the ball”



If I was not sure whether a certain collocation was used literally or figuratively, I would first look at expanded context. This usually clarified the usage. If it still was not clear whether the meaning of the collocation was literal or figurative, I would put a question mark next to it and then ask native speaker rater to analyse the collocation. If he/she could not decide either, a third native speaker would read these concordance lines and make the final decision. There were a very small number of ambiguous cases that were excluded, as in the following example:

Expanded context:

Novel of Rwanda. Elisabeth Combres. Trans. Shelley Tanaka. Groundwood Books. 978-0-88899-892-7. # Compromised. Heidi Ayarbe. **27;108385;TOOLONG 978-0-06-172849-5. # Confessions of the Sullivan Sisters. Natalie Standiford. Scholastic. 978-0-545-10710-5. # Crazy. Han Nolan. Houghton Mifflin Harcourt. 978-0-152-05109-9. # Crossing the Tracks. Barbara Stuber. Simon and Schuster. 978-1-4169-9703-0. # Dash &; Lily's Book of Dares. Rachel Cohn and David Levithan. Random House/ Knopf Books. 978-0-375-86659-3. # Every Little Thing in the World. Nina DeGramont. Simon and Schuster/Atheneum. 978-1-4169-8013-1. # **Fat Cat**. Robin Brande. Random House. 978-0-375-84449-2. # Fever Crumb. Philip Reeve. Scholastic/ Scholastic Press. 978-0-545-20719-5. # Finnikin of the Rock. Melina Marchetta. Candlewick. 978-0-7636-4361-4. Forge. Laurie Halse Anderson. Simon and Schuster. 978-1-4169-6144-4. # Gateway. Sharon Shinn. Penguin. 978-0-670-01178-0. Girl, Stolen. April Henry. Macmillan/ Henry Holt. 978-0-805-09005-5. # Glimpse. Carol Lynch Williams. Simon Schuster. 978-1-4169-9730-6. # Green Witch. Alice Hoffman. Scholastic. 978-0-545-14195-6. # Guardian of the Dead…

Furthermore, some of the target collocations behaved as proper names or were part of proper names in a few concordance lines. Therefore, their exclusion/inclusion in the analysis depended on whether or not their meaning (literal or figurative) could be reliably determined. If it could, it would be included in the analysis (Example 1). On the other hand, if I could not figure out if the target item was used in its literal or figurative sense, I would ask a native speaker to make the decision. If he could not decide, such collocations were excluded (Example 2).

Example 1: Included in the analysis:

43	2007	NEWS	NYTimes	A	B	C	in Your Eyes " and of course " Stardust " and " Here's That **Rainy Day** " and Ellington's " Prelude to a Kiss " (" I would

Note: A song by Frank Sinatra in which he sings about a cold rainy day (therefore *rainy day* is used in its literal sense).

Example 2: Excluded from the analysis:

149	1995	NEWS	Atlanta	A	B	C	. Free buffet, cash bar. # Music by the numbers What: " **Rainy Day** Records Party-Jam. " # The basics: At Rainy Day Records, 3005

In cases where a decision could not be made and the concordance line was discarded, a random additional line was selected to take its place (*top drawer, red flag, free ride, rainy day*). If there were fewer than 200 concordance lines available in total, the ambiguous concordance line was simply deleted from the analysis (*fat cat, break a leg*).

In addition, if there was more than one figurative meaning (this was the case with the collocation *hit the roof = reach the maximum*), it would be excluded from the analysis since I could test only one figurative meaning sense, i.e. the most frequent figurative meaning sense. In these cases, I selected the most frequent figurative meaning sense.

The following table represents the target collocations together with their literal and figurative meaning senses, which were taken from different online dictionaries (*thefreedictionary.com* and *urbandictionary.com*).

Table 21: Selected Duplex Collocations and their dictionary definitions

Duplex Collocation	L/F	Dictionary definitions
Fancy pants	L	Pants that are posh and impressive
	F	Someone who is dressed fancy or act in a fancy matter
Bend (one's) knee	L	To form a curve in one's knee
	F	To submit to authority
Dead duck	L	A duck that is not alive
	F	A person or thing doomed to death, failure, etc., esp. because of a mistake or misjudgment
Hit the roof	L	To come into contact with a roof forcefully
	F	Get very angry and fly into a rage
Drop the ball	L	Let the ball fall to the ground
	F	To make a serious mistake
Big wheel	L	A wheel that is big in size
	F	A very important person
Queen bee	L	The fertile female bee in a hive
	F	A woman in a position of dominance or ascendancy over her peers or associates
Fat cat	L	A cat that is overweight
	F	A very wealthy or influential person
Break a leg	L	To fracture a leg
	F	Good luck!
Soft touch	L	Touch that is gentle
	F	One who is easily persuaded or taken advantage of
Sore spot	L	A spot that is painful
	F	A subject which someone would prefer not to talk about because it makes them angry or embarrassed
Acid test	L	A test that measures the acidity of something
	F	A decisive or critical test/test
Old hand	L	A hand that is old in age
	F	Someone who is experienced at doing something
Small potatoes	L	Potatoes that are small in size
	F	Something or someone insignificant
One-way ticket	L	A ticket in one direction
	F	An escape; an irrevocable action
Take a hike	L	To go on an extended walk for pleasure or exercise
	F	To leave because one's presence is unwanted

(Not)hold water	L	Not be able to contain water
	F	If an opinion or a statement does not hold water, it can be shown to be wrong
Thick skin	L	skin that is very thick
	F	The ability to withstand criticism and show no signs of any criticism you may receive
Old hat	L	A hat that is not new
	F	Old-fashioned, dated
Hold the line	L	Hold the phone line open
	F	Not to exceed a certain limit regarding someone or something
Top drawer	L	The uppermost drawer of a filing cabinet or a dresser
	F	The highest level in status, excellence, or importance
Cold feet	L	Feet that are cold
	F	Fearfulness or timidity preventing the completion of a course of action; loss or lack of courage or confidence
Dark horse	L	A horse that is dark coloured
	F	A competitor that is relatively unknown or that wins unexpectedly
White collar	L	A collar that is white coloured
	F	Office workers in middle or upper classes
Blue ribbon	L	A ribbon that is blue
	F	Of superior or unmatched quality
Free ride	L	A ride that costs nothing
	F	Something acquired without the ordinary effort or cost
Rainy day	L	A day when it rains
	F	A time of need or trouble
Hit the road	L	To come into contact with the road forcefully
	F	To set out, as on a trip; leave
Hold (one's) breath	L	To not exhale
	F	To wait expectantly or anxiously
Brick wall	L	A wall made of bricks
	F	An obstacle
Red flag	L	A flag that is red coloured
	F	A warning signal; something that demands attention or provokes an irritated reaction
Red tape	L	A tape that is red coloured
	F	Obstructive official routine or procedure; time-consuming bureaucracy

For practicality reasons and as mentioned earlier, in case of Duplex Collocations whose frequency was above 200, I analysed two random sets of 100 concordance lines to obtain percentages of the figurative and literal meaning senses. I assumed from a sample of 200 concordance lines that the percentage would be the same if I analysed the whole dataset (*red tape, red flag, brick wall, hold one's breath, hit the road, rainy day, free ride, blue ribbon, white collar, dark horse, cold feet, top drawer*). This was done so I could accurately compare items with different frequencies. The following table displays the L/F ratios for each target item. From the collocation *top drawer* up, all percentages are derived from analysing 200 concordance lines.

Table 22: L/F ratios

No	Duplex Collocation	L	F	L%	F%
1	Red tape	1	199	0.50%	99.50%
2	Red flag	25	175	12.50%	87.50%
3	Brick wall	128	72	64.00%	36.00%
4	Hold one's breath	98	102	49.00%	51.00%
5	Hit the road	5	195	2.50%	97.50%
6	Rainy day	123	77	61.50%	38.50%
7	Free ride	34	166	17.00%	83.00%
8	Blue ribbon	62	138	31.00%	69.00%
9	White collar	47	153	23.50%	76.50%
10	Dark horse	3	197	1.50%	98.50%
11	Cold feet	62	138	31.00%	69.00%
12	Top drawer	174	26	87.00%	13.00%
13	Hold the line	28	151	15.64%	84.36%
14	Old hat	24	150	13.79%	86.21%
15	Thick skin	26	126	17.11%	82.89%
16	Hold water	77	72	51.68%	48.32%
17	Take a hike	62	87	41.61%	58.39%
18	One-way ticket	73	97	52.14%	47.86%
19	Small potatoes	17	105	13.93%	86.07%
20	Acid test	9	112	7.44%	92.56%
21	Old hand	17	96	15.04%	84.96%
22	Sore spot	33	84	28.21%	71.79%
23	Soft touch	39	72	35.14%	64.86%
24	Break a leg	59	45	56.73%	43.27%
25	Fat cat	17	79	17.71%	82.29%
26	Queen bee	26	69	27.37%	72.63%
27	Big wheel	51	40	56.04%	43.96%
28	Drop the ball	16	46	25.81%	74.19%
29	Hit the roof	18	21	46.15%	53.85%
30	Dead duck	6	27	18.18%	81.82%
31	Bend (one's) knee	19	5	79.17%	20.83%
32	Fancy pants	3	12	20.00%	80.00%

In case of the majority of the target collocations (23/30), the figurative meaning was more frequent than the literal meaning. I felt this uneven distribution was acceptable, as research (with the exception of Macis & Schmitt, 2016b) shows that collocations

with dominant figurative meanings are more common than collocations with dominant literal meanings (Moon, 1998, p. 181). However, I also wanted to include collocations with dominant literal meanings, because in real life learners are exposed to all different types of collocations.

5.3.2.1. Interrating

As part of the procedure and in order to assure accuracy of my analysis, an interrating exercise was conducted. Due to time constraints and because there were a great number of concordance lines to analyse, three interraters participated in this task. The purpose of the task was for the interraters to analyse and confirm my judgements. They were three doctoral students from the School of English at the University of Nottingham. The first reason for choosing these interraters was that they were university educated and aware of linguistic principles. Two of them were literature PhD students, whereas the third one was an Applied Linguistics PhD student. The interraters were also selected because they were native speakers of English.

I selected around 20% of the target collocations and divided them into three parts. The interraters received an explanation about Figurative and Duplex Collocations (their definitions and examples). I also showed them a few concordance lines and analysed them myself so that they could have a better idea of what they were required to do. At the end, they said it was clear to them what they had to do. The results, presented in Table 23, showed an interrater reliability of nearly 96%, indicating my ratings were reliable.

Table 23: Judgements made by the researcher and the interraters

Collocation	No. of concordance lines analysed	No of items agreed on
Hit the roof	39	38
Acid test	121	118
Take a hike	149	137
Cold feet	200	197
Blue ribbon	200	190
Red flag	200	191
	909=100%	**871=95.8%**

5.3.3. Developing the instrument

5.3.3.1. Format

The purpose of the test was to measure the participants' receptive knowledge of Duplex Collocations. It asked the participants to provide definitions of the figurative meaning sense of the target items. Receptive knowledge (also referred to as *passive knowledge*) implies knowing a lexical item well enough to extract its meaning from speech or writing. Following Schmitt's terminology, this test involves *meaning recall* from participants (2010, p. 86), as they have to supply the L2 definition after receiving the L2 form. He considers meaning recall as "the first step along the road to receptive mastery" (p. 87). The reason for choosing this format lies in the incremental nature of vocabulary. As Schmitt (2010) argues, learners first establish meaning recall and then build up other aspects of vocabulary knowledge before reaching a form recall level of knowledge. We could assume that collocations are also acquired incrementally, and before learners can use Duplex Collocations productively, they should master them receptively.

5.3.3.2. Piloting with natives and non-natives

A set of two pilot tests was conducted to check the validity of the test for purposes of the research. The first one was done with 10 native speakers of English (9 females and 1 male). It consisted of three parts. The aim of the first part was to check if the target collocations could be guessed from the sentence contexts. This was done by giving sentences without target items. The native speakers had three options. If they did not know or could not guess what the target collocation was, they had to circle a). If they thought they knew what the missing phrase was, they could try guessing it up to twice (options b and c). The second part contained the same sentences but with the target collocations inserted. The native speakers were asked to provide the meanings of these phrases. Finally, the third part was an interview in which I wanted to know if it was easy to guess the missing phrases, if it was easy to guess the figurative meaning sense of the items from the literal meanings of their component words, if there was anything misleading and awkward on the test and if the context pushed them to the figurative meanings (Appendix 5).

The results showed that the sentence contexts were essentially not guessable by the native respondents, and so were highly unlikely to be guessable by the nonnative main study participants. (28 out of 32, 87.5%). The sentence contexts of three collocations (*hold water, rainy day*) were reported to be guessable in 20% of the cases. 30% of the native speakers guessed the collocations *hit the roof* from the context. However, I decided to keep them all. I recognise that I did not meet the criterion of guessability fully, but just because native speakers guessed them, it did not mean that L2 learners would guess them too. Also, it was unlikely that L2 learners were going to know them just from the context and this can be seen in percentage of knowledge for these items (see the results).

The findings of the second part demonstrate all the meanings of the target items provided by the native speakers were correct (they were checked against their dictionary definitions).

Lastly, the interview produced the following results:

1. It was not easy to guess the missing expressions.
2. There was nothing misleading on the test.
3. Some of the native speakers would use some of the expressions in a slightly different context (“blue ribbon event” instead of “blue ribbon committee”) Note: “blue ribbon committee” was however very frequent in the sample taken from the COCA.
4. Almost all of the sentences push to figurative meaning except for *rainy day*.

The sentence in which *rainy day* was embedded was ambiguous in terms of the context. Nevertheless, it was kept because it was only 1 item out of 32 and again, the participants´ knowledge of this target item was not particularly high (see the results), so the context was probably not as guessable for them as it was for the native speakers.

The second pilot test, which looked identical to the real test, was carried out with 10 non-native speakers (6 males and 4 females, all of them postgraduate students at the University of Nottingham). The non-native speakers had to write the figurative meaning sense of the target collocations. The test was followed by an interview whose aim was to see if the test was really capturing their knowledge (Appendix 6).

The results indicate that they tried to guess the meaning of the target collocations whenever they were not sure about it and if they could not guess, they would leave a blank space. They were also asked if there was anything misleading on the test and everybody reported there was nothing awkward. Also, they said that they left blank spaces because they did not know the target items.

After the piloting, the 32 items seemed to be suitable for measuring collocation receptive knowledge.

5.3.3.3. Instrument

The instrument consisted of two sections. To obtain a measure of the learners' knowledge of the target collocations, a receptive collocation test was designed (first section). The test asked the participants to provide definitions of the figurative meaning sense of the target items. It contained 32 items targeting the participants' collocational knowledge (Appendix 7).

The test was written in English and Spanish. As I am a fluent speaker of both languages, I translated it from English into Spanish. Then I asked a native speaker of Spanish to review the test and suggest changes. Some minor grammatical mistakes were spotted and corrected. After the corrections were made, she reported that the Spanish version was equivalent to the English one.

The test started with an information sheet in which the basic purpose of the research was provided followed by a consent form emphasising the voluntary nature of the participation and the confidentiality of both the answers and the personal data. The test then continued with the instructions after which the target collocations were presented. Since the test was administered to Chilean students of English, the information sheet, the consent form and the instructions were written in both English and Spanish. The section that measured the students' knowledge of the figurative meaning sense of Duplex Collocations was written in English only, however, the students were free to answer in either English or their mother tongue. I did this because I wanted to ensure that the students with lower proficiency level in English could also show how much knowledge they had even though they could not express it in their L2.

The target collocations were embedded in sentences, marked in bold and italics. Below each sentence, there was space for the students to write the definitions. Next to each collocation, the students were asked if they knew the collocation, had some idea about it and did not know it (participant's perception). Here is an example of *queen bee*.

Because of her personality, she is known as the ***queen bee***.

_____

_____

I know it	**I have some idea, but I am not sure**	**I don't know it**

The second section was developed to collect information about the degree of engagement with the L2. It consisted of a questionnaire with a) questions related to the participants' language learning background (e.g. *How many years have you been studying English?* or *How many hours per week do you spend watching films in English*) and b) biodata questions concerning gender, age, and English proficiency (Appendix 8). The participants were asked to complete this section as soon as they finished the collocation test.

5.3.3.4. Transparency task

Semantic transparency was one of the factors I wished to investigate, and so I needed to determine the transparency of the target collocations. Transparency is not a notion that can be quantified in absolute terms. Rather, it resides on a continuum and so must be quantified by subjective ratings. Thus, a transparency task in this research study was conducted to see how easy or difficult it was to guess the figurative meaning of the target collocations based on their literal meanings. The purpose of the task was to check if the knowledge of Duplex Collocations was related to their degree of transparency. In other words, I wanted to determine whether more transparent Duplex Collocations (as indicated by intuitions) would lead to more knowledge. As the "reliability [of transparency ratings] is enhanced when the estimates of several raters are pooled" (Boers & Webb, 2015, p. 383), 18 native speakers of Spanish (13 Chilean, 3 Mexican and 2 Spanish participants) took part in

the task, all with university degrees. However, they were not familiar with terminology and general vocabulary issues; therefore, they had to receive an adequate explanation on collocations in general, polysemy and Duplex Collocations. I, being a fluent speaker of Spanish, gave them a couple of examples in Spanish for them to understand what they were required to do. In the transparency task, they were provided with both the literal and figurative meaning of each collocation and then they were asked a) to state whether they knew the figurative meaning sense and b) to rate each item on a scale from 1 to 4, 1 being very difficult to guess (very obscure) and 4 being very easy to guess (very transparent) (Appendix 9)). As desired, the collocations showed good diversity in their transparency (min = 1.44, max = 3.56, SD = .650). Table 24 shows the results and the mean score for each collocation.

Table 24: Transparency task results

Participant	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**Mean score**
Queen bee	4	3	4	3	4	3	4	4	4	4	3	2	2	3	3	4	4	4	3.44
Drop the ball	2	1	3	2	4	3	1	2	2	1	2	1	3	1	2	3	1	3	2.06
Thick skin	3	3	3	4	2	3	4	3	3	3	4	4	4	3	3	4	4	4	3.39
Fancy pants	2	2	4	4	2	4	3	3	3	2	2	4	4	1	3	4	2	3	2.89
Old hat	4	4	3	3	4	2	3	4	3	2	2	1	3	2	2	3	3	4	2.89
Brick wall	2	2	3	4	4	4	4	4	4	4	3	4	4	3	4	4	4	3	3.56
Sore spot	1	2	2	3	4	3	1	3	3	3	2	4	4	3	4	2	4	3	2.83
Take a hike	2	1	3	3	2	3	3	1	4	2	2	1	3	3	2	3	4	3	2.50
Soft touch	1	1	3	2	1	4	1	4	2	2	2	1	2	1	2	2	1	3	1.94
One-way ticket	3	3	3	4	2	4	4	4	4	3	4	4	4	4	4	4	4	3	3.61
Bend one's knee	4	3	4	2	2	2	4	2	4	1	4	4	3	4	2	4	4	3	3.11
Blue ribbon	2	1	3	1	2	1	1	2	1	1	2	1	2	1	1	1	1	2	1.44
Rainy day	3	4	2	4	3	4	3	4	3	2	3	4	4	3	2	3	4	4	3.28
Hold the line	2	1	4	2	2	3	2	4	2	1	3	2	1	4	3	4	1	2	2.39
Hit the road	3	1	3	4	3	4	4	3	3	3	1	1	4	1	3	2	1	4	2.67
Dead duck	3	1	3	2	2	3	2	2	2	3	1	1	2	4	2	1	2	3	2.17
Hold one's breath	2	2	4	3	4	4	3	3	4	3	3	4	3	4	4	3	3	3	3.28
Cold feet	2	1	3	2	2	3	1	4	1	2	1	1	2	1	2	2	1	3	1.89
Small potatoes	3	1	2	3	4	2	4	4	2	3	1	1	2	3	2	1	4	3	2.50
Dark horse	3	1	2	1	1	2	3	4	3	4	1	1	2	1	1	1	1	3	1.94
Red tape	1	1	2	1	1	1	4	3	1	3	2	1	1	1	1	1	1	3	1.61
Fat cat	1	1	2	4	2	3	4	4	3	2	2	4	3	3	2	2	1	3	2.56
Hit the roof	1	1	1	2	1	2	2	4	1	3	2	1	3	2	3	2	1	3	1.94
(Not) hold water	1	1	2	1	2	1	3	2	4	3	2	1	2	3	3	1	1	1	1.89
Top drawer	2	1	4	3	3	3	4	3	4	4	2	1	4	3	4	2	4	4	3.06
Old hand	2	3	3	4	4	3	3	3	4	1	3	3	4	4	2	3	1	3	2.94
Break a leg	1	1	1	1	1	3	4	3	1	1	1	4	1	1	1	1	1	1	1.56
Free ride	4	2	4	3	4	4	4	3	4	2	2	4	4	4	4	4	4	4	3.56
Red flag	2	3	2	4	4	4	4	3	4	4	3	4	4	3	4	4	4	4	3.56
White collar	1	1	2	2	1	3	1	3	1	1	1	1	2	3	1	4	3	2	1.83
Big wheel	2	1	4	3	2	2	2	3	3	3	1	3	2	3	2	3	2	4	2.50
Acid test	1	1	3	3	3	4	1	3	3	2	1	4	1	3	3	2	4	4	2.56
																			Mean: 2.60

The results show a range of transparency scores. Whereas some collocations were quite obscure (e.g. *break a leg*, *red tape*), others were rather transparent, i.e. it was not difficult to guess the figurative meaning of an expression based on the literal meaning of its component words (e.g. *brick wall*, *one-way ticket*). There are two reasons for this. First, some of them had similar equivalents in Spanish (even though they were not congruent following the definition in Section 5.3.1.) and that might have been the reason why they were rated as more transparent. Some examples include *sore spot* (un punto debil→a weak spot), *fat cat* (pez gordo→fat fish), *thick skin* (piel dura→hard skin). Another reason why some target collocations were rated as more transparent is because at least one component part kept some aspects of its literal meaning in the figurative sense (e.g. old hat → old).

5.3.4. Administration

The test was administered in Chile. No time limits were set, but the piloting suggested that about 30 minutes were required to complete it. The tests administered at Universidad Católica de Chile and Universidad Chileno-Británica de Cultura were done on computers and emailed to the researcher whereas the tests given Universidad de Chile were completed in a pen-and-paper form, scanned and then sent to me.

All participants were given an explanation about the purpose of the study, its voluntary nature and the confidentiality of the data. They were asked to read the instructions and encouraged to ask any questions they had. Then, they signed the consent forms and proceeded with the test-taking.

5.3.4.1 Participants

The participants were 107 Chilean students of English from three Chilean universities: Universidad Católica de Chile, Universidad de Chile and Universidad Chileno-Británica de Cultura. The age range was 18-36 year (mean = 21.80 years, SD = 3.01). There were 37 males and 70 females (34.6% and 65.4%, respectively). The majority had never visited an English-speaking country and the length of stay for those that had ranged from 1 to 20 months. At the time of the test, they were all

following partially English-medium undergraduate programmes (English Language and Literature and English-Spanish Translation) in their respective universities. I recruited students from 1st through 4th years of study. Only Spanish speaking participants were selected for this study in order to control for the L1-L2 congruency effects. Unfortunately, I was unable to obtain proficiency measures for the participants, but all were successfully taking classes at university level in English.

5.3.5. Data analysis

One point was assigned per correct figurative meaning. Accurate spelling and correct inflections were not required for a collocation to be marked as correct, as long as the meaning definitions were comprehensible and clear. However, two of the target items were difficult to mark as the participant´s answers were spurious, indicating there was no real trend or pattern. For example, for the collocation *soft touch*, some of the participants' answers were: "sensitive", "kind", "weak"," relaxed", "delicate"). As a result, these two collocations (*soft touch and one-way ticket*) were removed from the main analysis, so the data analysis section reports the findings of the knowledge of the figurative meaning sense of 30 Duplex Collocations.

5.3.5.1. Interrating

Another interrating exercise was conducted to make sure that my marking was accurate. The marking consisted of deciding whether the participants´ answers (definitions provided) were correct or incorrect. The interrater for this task was a native speaker of Spanish, who was a PhD student in Applied Linguistics from the School of English at the University of Nottingham. Her PhD was in the area of second language vocabulary acquisition, so she was familiar with my own research. I randomly selected 30% of the tests, some of which were answered in Spanish, English or combination of both. The interrater had to mark the tests in the same way as me, i.e. by putting a "0" next to incorrect answers, and a "1" next to the correct ones. In the selected tests, there were 641 (100 %) answered items. Out of these, the interrater and I did not agree on 35 (5.5%) items. Therefore, there was 94.5% of agreement in this interrating task.

5.4. Results

5.4.1. How well do Chilean students of English know the figurative meaning sense of Duplex Collocations?

The main research question of this study was to see how much knowledge of the figurative meaning sense of Duplex Collocations second language learners had. For that purpose, 107 Chilean students of English were asked to answer a receptive test which assessed this knowledge (30 target collocations).

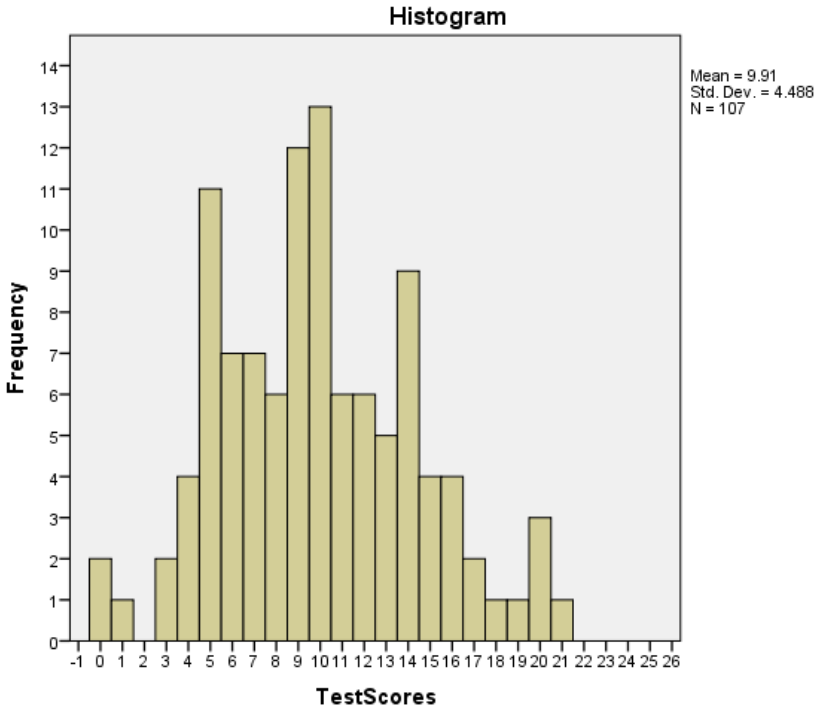
The descriptive statistics (means, standard deviation, minimum and maximum scores, and number of participants) are reported in Table 25.

Table 25: Descriptive statistics of the participants' test scores (Max score = 30)

Variable	N	Min.	%	Max.	%	M	%	SD
Participants' scores	107	0	0.0%	21	70.0%	9.91	33.0%	4.49

Table 25 shows that the mean is relatively low, whereas the standard deviation (4.49) indicates that there was a relatively small amount of variation across the sample. Very few students knew a little and very few students knew a lot. This variation is also shown by the range, with the number of correct answers varying from a minimum of 0 to a maximum of 21 out of 30. Overall, the average of correct answers was 33.02%, (9.91/30), which suggests relatively weak collocational knowledge within this participant sample. Figure 6 illustrates the distribution of the test scores, together with the number of participants.

Figure 6: Distribution of test scores



The above figure shows that the vast majority (81 people, 75.7%) scored between 5 and 14. There were no exceptionally strong students so it seems that the test was equally hard for everybody. Also, there were two students who scored 0 which is another indication of how difficult it may be to learn the figurative meaning sense of Duplex Collocations.

5.4.2. How do corpus frequency and semantic transparency relate to knowledge of the figurative meanings of collocations?

After analysing the participants' knowledge of the figurative meaning sense of Duplex Collocations, I wanted to find out what factors affected this knowledge and to what extent. For the purposes of clarity, I divided these factors into language related factors (frequency and semantic transparency) and use related factors (everyday engagement with the second language (L2) outside the classroom).

Results were analysed using an omnibus linear mixed effects model using the lme4 package (Version 1.1-10, Bates, et al., 2014) in R (Version 3.2.2, R Core Team, 2015). The model development procedure was conducted in the following way. First,

I extrapolated the frequency of the figurative meanings (hereafter F Frequency) in order for them to be representative of the total number of occurrences of the figurative meanings in the COCA. Second, I log transformed the total F Frequencies to reduce skewing as the data had a wide range (from 5 to 797). Then, I centered all continuous variables, e.g. transparency. Because my independent variable (knowledge of figurative meanings) was binary, I used a generalised linear model with binomial regression.

A model was created that included two variables that have been shown to be important in figurative meaning: F Frequency and transparency. The first model included fixed effects of F Frequency and transparency, along with random effects of subject and item. The results of the model (Table 26) showed that neither of the variables was significant.

Table 26: Model 1

Fixed effect	Estimate	Std. Error	*z*-value	*p*-value
(Intercept)	-0.6980	1.3932	-0.501	0.616
LogFrequency	-0.1976	0.2115	-0.934	0.350
Transparency	0.2191	0.3751	0.584	0.559
Random effects	Variance			
Subject	0.690			
Item	1.645			

Significance values are estimated by the R package lmerTest (version 2.0–11; Kuznetsova, Brockhoff & Christensen, 2014): ∗∗∗ p < .001, ∗∗ p < .01, ∗ p < .05, + p < .10

Since, surprisingly, I did not find any effect of frequency, I decided to look at the knowledge of each target item in more detail. The following table demonstrates how many participants answered each target items correctly and the percentage of correct answers per collocation.

Table 27: Knowledge per collocation

No	Duplex Collocation	F Frequency in COCA	No of participants correctly answering items (out of 107)	%
1	Red tape	801	13	12.15%
2	Red flag	691	32	29.91%
3	Brick wall	674	47	43.93%
4	Hold one's breath	620	47	43.93%
5	Hit the road	550	49	45.79%
6	Rainy day	461	45	42.06%
7	Free ride	412	3	2.80%
8	Blue ribbon	391	9	8.41%
9	White collar	364	60	56.07%
10	Dark horse	255	8	7.48%
11	Cold feet	219	19	17.76%
12	Top drawer	214	9	8.41%
13	Hold the line	180	46	42.99%
14	Old hat	178	61	57.01%
15	Thick skin	152	44	41.12%
16	Hold water	150	43	40.19%
17	Take a hike	149	8	7.48%
18	Small potatoes	124	55	51.40%
19	Acid test	121	22	20.56%
20	Old hand	121	7	6.54%
21	Sore spot	117	28	26.17%
22	Break a leg	114	80	74.77%
23	Fat cat	110	13	12.15%
24	Queen bee	99	80	74.77%
25	Big wheel	93	54	50.47%
26	Drop the ball	63	7	6.54%
27	Hit the roof	41	29	27.10%
28	Dead duck	33	59	55.14%
29	Bend (one's) knee	24	65	60.75%
30	Fancy pants	18	18	16.82%

In the above table, it can be seen that even though some collocations are more frequent than others, it does not necessarily mean that they are better known. First of all, it is interesting to note that the best known collocations were of relatively low frequency, e.g. *queen bee* and *break a leg*. On the other hand, the least known collocation, *free ride*, was relatively frequent in this sample. Furthermore, the collocation *red tape* is the most frequent one, however, only 12% of the participants knew it. In contrast, *bend (one's) knee* is the second least frequent collocation, but is known by more than 60% of the subjects. As a conclusion, it is not possible to see any trends regarding the relationship between test scores and F Frequency so it is not surprising that the mixed effects model showed no significant result for F Frequency. Having a look at these figures, a plausible explanation is that it is factors other than F Frequency that affect knowledge of the figurative meaning sense of Duplex Collocations.

I repeated the same procedure with semantic transparency. In the following table, the target collocations are ordered in terms of their transparency, from least to most transparent.

Table 28: Transparency and knowledge scores per collocation

No	Duplex Collocation	Transparency mean (out of 4)	Knowledge (out of 107 participants)	%
1	Blue ribbon	1.44	3	2.80%
2	Break a leg	1.56	13	12.15%
3	Red tape	1.61	13	12.15%
4	White collar	1.83	45	42.06%
5	Not hold water	1.89	28	26.17%
6	Cold feet	1.89	46	42.99%
7	Hit the roof	1.94	59	55.14%
8	Dark horse	1.94	9	8.41%
9	Drop the ball	2.06	80	74.77%
10	Dead duck	2.17	29	27.10%
11	Hold the line	2.39	9	8.41%
12	Big wheel	2.5	54	50.47%
13	Take a hike	2.5	7	6.54%
14	Small potatoes	2.5	43	40.19%
15	Fat cat	2.56	55	51.40%
16	Acid test	2.56	44	41.12%
17	Hit the road	2.67	47	43.93%
18	Sore spot	2.83	22	20.56%
19	Fancy pants	2.89	65	60.75%
20	Old hat	2.89	19	17.76%
21	Old hand	2.94	8	7.48%
22	Top drawer	3.06	7	6.54%
23	Bend (one's) knee	3.11	18	16.82%
24	Rainy day	3.28	8	7.48%
25	Hold one's breath	3.28	49	45.79%
26	Thick skin	3.39	61	57.01%
27	Queen bee	3.44	80	74.77%
28	Brick wall	3.56	60	56.07%
29	Free ride	3.56	47	43.93%
30	Red flag	3.56	32	29.91%

A similar trend as in case of frequency can be noted, i.e. the knowledge of the figurative meaning sense of Duplex Collocations does not increase as the transparency goes up. The figures in the table show no upward trend or pattern, but instead a random set of results. For example, the fourth least transparent target collocations *white collar* was known by 45 out of 107 participants (42.06%). In contrast, one of three most transparent collocations, *red flag* was scored correctly by only 32 students (29.91%). Similarly, some very transparent collocations, like *queen bee,* were known by 80 out of 107 students, which corresponds to almost 75% of the sample. Conversely, other collocations that were of similar transparency to *queen bee* (e.g. *rainy day*) were scored correctly by a much lower percentage of the

participants, namely 7.48%. Again, this is congruent with the result of the mixed-effects model.

5.4.3. How strongly do education and language engagement factors relate to the knowledge of the figurative meanings of collocations?

In order to answer the third research question, I built a comprehensive model that included the other variables, i.e. year of EFL study, time spent in an English-speaking country and time spent reading, watching TV, listening to music and social networking in English. I used a backwards stepwise procedure to eliminate variables that did not significantly improve the overall fit of the model. The process involved eliminating the variable with the lowest z-score and then refitting the model (see Appendix 10 for the complete analysis). This procedure continued until all insignificant variables were removed. I first eliminated music, social networking and TV. I used explicit model comparisons to confirm that removal of these variables did not significantly reduce the fit of the model (i.e. the more complex model was not a significant improvement). As a result, the final model (Table 29) included knowledge of figurative collocations as the independent variable, with year of EFL study, time spent in an English-speaking country and time spent reading in English as significant covariates.

Table 29: Final model

Fixed effect	Estimate	Std. Error	*z*-value	*p*-value
(Intercept)	-2.0407	0.3107	-6.568	5.09e-11 ***
Year of EFL study	0.2972	0.0689	4.319	1.57e-05 ***
Time abroad	0.0581	0.0270	2.152	0.0314 *
Time reading	0.0201	0.0070	2.881	0.0040 **
Random effects	Variance			
Subject	0.4506			
Item	1.7118			

Significance values are estimated by the R package lmerTest (version 2.0–11; Kuznetsova, Brockhoff & Christensen, 2014): ∗∗∗ p < .001, ∗∗ p < .01, ∗ p < .05, + p < .10

I then compared the initial comprehensive model and the final model, and there was no statistically significant difference between the two (p= .26).

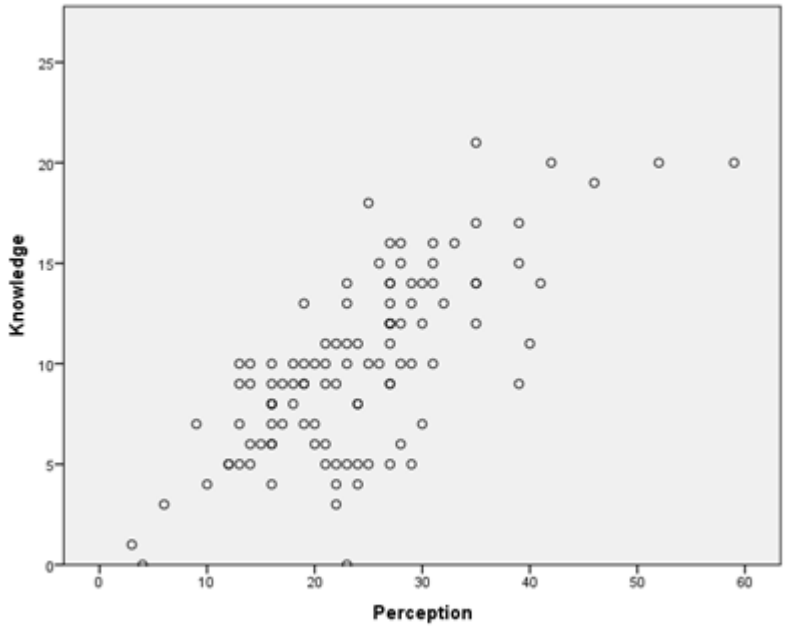
Finally, I tried adding F Frequency and transparency back into the final model to check whether they were significant when the three other significant factors were included. No significant effects were seen for either variable (also Appendix 10).

To sum up, the omnibus analysis shows clear effects of year of EFL study, time spent abroad and time spent reading in English. However, there was no effect for other factors, including F Frequency and transparency.

5.4.4. Collocation knowledge and perception

In order to establish the relationship between knowledge and perception, .a bi-serial correlation was performed and showed a statistically significant difference between knowledge and perception (r = .630, r^2 = 0.397, p = .000). This is illustrated in the scatterplot that follows.

Figure 7: Scatterplot showing the relationship between collocation knowledge and perception



The effect size, according to Cohen, is medium. The r^2 value indicates that perception accounts for almost 40% (r^2 = 0.397) of the variance in the knowledge of the figurative meaning sense of Duplex Collocations.

Perception was done to explore the accuracy of learners' perceptions. Essentially, I wanted to know whether the students who provided correct answers felt as if they knew them. The judgments obtained matched the actual answers to a great extent. This is the additional information that the test taps into the knowledge of the figurative meaning sense of Duplex Collocations. It shows that the instrument worked.

5.5. Discussion and teaching implications

The aim of the second study was to investigate learner knowledge of the figurative meanings of 30 Duplex Collocations that can be both literal and figurative. Although I was not able to obtain a proficiency measure for my participants, they were doing university degrees in partially English-medium courses at respected universities, which would imply a relatively high level of English. Nevertheless, my study found that they knew only about 33% of the target figurative collocation meanings. But

should we interpret this as a relatively good or weak performance? In this case, the best approach would be to take terminology into account. If one wishes to view the target phrases as “figurative idioms” (e.g. Howarth, 1996), then they might compare these results to other results from idiom studies. These usually show quite low levels of mastery - e.g. virtually nothing at lower proficiencies up to around 22% at Certificate of Proficiency (CPE) level (McGavigan, 2009, reported in Milton, 2009, pp. 151-159) - and so the results might look quite encouraging in comparison. Alternatively, results of collocation studies (usually statistically-derived) often show better knowledge (e.g. 78%-82%; Gyllstad, 2009). Compared to these figures, the results are not so impressive. Also, the participants were doing degrees in English and are therefore able to use the language fluently. In other words, they were able to get a place in the English language programme, take classes in English and cope at university level in English. Overall then, it could be argued that they are quite advanced. Having this in mind, 33% does not seem so good. Perhaps the most straightforward way of viewing the results is that the students still struggled with the figurative meanings of collocations, suggesting these meanings are a problematic feature for learners. In addition, it is also important to note that they were tested at a receptive meaning recall level of mastery, and use of a productive test (form recall) would probably have yielded even lower scores.

Another reason why the participants scored 33% may have to do with the extent of imageability of the target expressions. Because second language learners have been found to activate a literal interpretation of the figurative phrases first (e.g. Ciéslicka, 2006), this literal reading can make an idiom imageable (e.g. Steinel et al., 2007). Therefore, learners are inclined to try to make sense of the phrase’s figurative meaning through its literal constituents. However, there is a danger that such analysis might lead to erroneous interpretations (Boers & Webb, 2015). It is possible that the participants in this study misinterpreted the figurative meanings of the target collocations and consequently, scored less.

In addition, some of the target items were “deceptive” in the sense that they seemed to have a negative connotation, but they actually do not. For example, a less proficient second language learner might think that the figurative meaning of *break a leg* is related to pain because that is what the literal meaning of the phrase implies.

These “erroneous” mental associations might have also affected the participants’ knowledge.

The study also examined the effects of frequency, semantic transparency, year of EFL study and everyday engagement with the second language (L2) outside the classroom on collocation knowledge. Because the participants knew some of the figurative meanings and a relatively few (11/107: 10%) knew one-half or more, I wanted to know which of the above factors were related to this knowledge.

Frequency is usually the leading candidate, but in this case it showed no statistically reliable effect. Furthermore, it did not seem to make much difference which meaning sense (figurative or literal) was more frequent for the collocations. In fact, if anything, there was a slight advantage in knowledge of figurative meanings for collocations in which the literal meaning was more frequent, e.g. *brick wall* was the 11th best known collocation, even though its literal meaning was more frequent. These results are in contrast to the many studies that show a robust effect of frequency on the acquisition of individual vocabulary items (e.g. Ellis, 2002; Tomasello, 2003) and formulaic sequences (e.g. Sonbul, 2014; Garnier & Schmitt, 2016). I feel five explanations are possible.

First, it may be that formulaic language does not follow frequency nearly as strongly as individual words. Schmitt and Redwood (2011) found relatively weak relationships between frequency and knowledge for phrasal verbs (receptive: r^2 = 9-13%; productive: r^2 = 18-20%) and González-Fernández and Schmitt (2015) found similar low results for collocations (productive: r^2 = 20%). My receptive meaning recall test scores did not correlate to figurative frequency at all (Spearman, p = .469, ns). It is unclear why frequency should relate more weakly to formulaic sequences than individual words, but one might speculate that formulaic sequences are less noticeable in language because learners tend to process them word by word and do not remember them as a chunk (Wray, 2002). While a first language learner would note the collocation *major catastrophe* as a single unit, and remember it as the idiomatic way to refer to “large disasters”, a second language learner, on the other hand, would instead “break it down into a word meaning *big* and a word meaning *disaster* and store the words separately, without any information about the fact they went together”. If they had to talk about major catastrophes in the future, they would

not remember *major catastrophe* as a chunk. This might negate the effect of sequence frequency somewhat.

Another explanation revolves around Durrant and Schmitt's (2010) idea that corpus frequency counts may not correspond very well to the amount of actual input learners receive in their own environments. In other words, the frequency of the L2 input which learners in their L1 environment are exposed to may not match the one found in L2 settings. Durrant and Schmitt (2010) claim that learners acquire those collocations they encounter in their input. However, how can we know which collocations an L2 learner in an L1 environment is exposed to? Non-native speakers normally receive the language of instruction in a classroom as their most common input. Classroom language varies from that which can be found in a natural native environment to a great extent. The input from instructed environments may not relate strongly to corpus frequency simply because vocabulary selection tends to be relatively unprincipled and opportunistic in both written materials (Schmitt & Schmitt, 2014) and teacher talk (Horst, 2010). Consequently, phrases that are not that frequent in natural language are much more frequently used in the classroom and vice versa. In the worst of scenarios, if teachers are not highly advanced L2 speakers, students will very receive little or no exposure to phrasal language at all. But even if they use these formulaic sequences, they may not use in the same way as natives do, by overusing those phrases that are well-known to them (even though they are not that frequent in native language) and underusing those they are less familiar with, but which are much more common amongst native speakers. Also, it may be the textbooks that these learners use either do not contain figurative phrases at all or if they do, there are not enough encounters. This brings us to the third explanation.

The figurative meaning senses of Duplex Collocations are more difficult to learn than individual words due to the facts that they are not as frequent in the input as individual words, thus for learners to encounter collocations a sufficient number of times to acquire them, they have to be exposed to great quantities of L2 input (Durrant & Schmitt, 2010). A number of studies (see Chapter 6 for a comprehensive overview) argue that the number of repetitions needed to learn single words is around ten occurrences. Regarding collocations, research is inconclusive.

Yet another explanation is the degree of frequency. On average, individual words are more frequent than formulaic sequences, including collocations. It might be that the relatively higher frequency of individual words (compared to the relative frequency of most collocations) is sufficient to drive acquisition in a usage-based (Ellis, 2002) manner. Conversely, the relatively lower frequency of most collocations may not be enough to push acquisition in a systematic manner that shows up in statistics.

The last explanation concerns the context in which a second language is learned (ESL or EFL). Previously, SLA contexts (with high language availability) were considered much more advantageous because of the large amount of potential input outside the classroom. So, frequency could be assumed to predict learning to a great degree, simply because learners could be expected to be exposed to language features in roughly the amounts which corpus frequency counts indicated. However, with the age of widespread electronic communication, FLA contexts (the context used in this study) may not longer be quite as impoverished as thought before. If learners are actively engaged with their L2 outside the classroom with second language books, television, music, and social media, then this personal language engagement might be a better predictor of their L2 input (and thus acquisition) than corpus frequency in these FLA environments.

No relationship was found between the knowledge of the figurative meaning sense of Duplex Collocations and their degree of transparency. This finding is congruent with Garnier and Schmitt (2016), who also found a negative relationship between transparency and the knowledge of phrasal verbs. It also supports the results of Tabossi et al's (2008) study on idioms, in which the authors concluded that people do not have clear and systematic intuitions about semantic compositionality of idioms. One would expect that the more transparent a phrase is, the easier it is to learn. The participants in the transparency task had to rate each of the target items in terms of their semantic transparency and the results show that the greater degree of transparency did not lead to better scores. This may seem somewhat surprising, as degree of semantic transparency is often seen as factor affecting difficulty (e.g. Martinez & Murphy, 2011). This non-significant result might be explained by the fact that people's intuitions about transparency are based on the degree to which they can see the relationship between individual components and their figurative referents. This is personal and subjective, and can vary a great deal from person to

person. For example, in case of collocations such *hit the road* and *small potatoes*, there was a range of answers on the transparency task. A much larger norming sample might even out this variability to some extent (e.g. 100s or 1,000s of respondents as in word association norms (e.g. Nelson et al., 2015), but perhaps semantic transparency is simply too subjective to relate reliably to collocation knowledge when exposed to the precision of statistical analyses. Finally, it might be that semantically transparent items are less noticeable to learners and therefore fail to be acquired.

Since F Frequency and semantic transparency did not relate to figurative collocation knowledge, this leads us to language use factors. "Year of EFL study" was related to knowledge and we could speculate that the more proficient learners become (assuming that more years at a (partially) English-medium university equates to higher proficiency), the more collocation knowledge they will have. Indeed, proficiency generally has been shown to have a facilitative effect (e.g. Gyllstad, 2007; Eyckmans, 2009). Furthermore, Matlock and Heredia (2002) state that it is proficiency in the L2 that determines the processing of literal and figurative meaning senses, i.e. the more proficient the learner is, the more automatic access to the figurative meaning will become. This might be one of the explanations why the more proficient learners scored better. But even if we do not allow the assumption about higher proficiency, the results demonstrate that more years of university education leads to better knowledge of the figurative meaning senses of Duplex Collocations.

Finally, language use factors showed mixed results, with only "time spent abroad" and "the hours of L2 reading per week" having an effect. The "time spent abroad" result is consistent with the existing research on facilitative nature of the L2 environment (e.g. González-Fernández & Schmitt, 2015; Milton, 2009). It is generally known that extensive exposure to the L2 environment through social and cultural adaptation and an on-going contact with local native speakers can lead to students' increase of the use of formulaic sequences in their L2 production and their overall language proficiency (e.g. Adolphs & Durow, 2004; Dörnyei et al., 2004; Wong & Fillmore, 1976). Dörnyei et al. (2004) claim that "formulaic language is so closely linked to the everyday reality of the target language culture that it cannot be learnt effectively unless the learner integrates, at least partly, into the particular culture. The context-appropriate application of colloquial phrases cannot be learned from

textbooks, but only through participation in real-life communicative events" (p.87). This is in line with Wray's (2002) view that naturalistic settings differ from the language in a classroom, since the former contains more formulaic sequences that fulfil social and communicative functions. It might explain why the participants who spent some time in an L2 country obtained better scores than those who never had such an opportunity. While being in an L2 environment, the students have extensively engaged with the L2 which in turn improved the quality of exposure. This so-called sociocultural adaptation (Dörnyei et al., 2004) is, according to the authors, considered a crucial factor in the learning of formulaic language.

Research evidence suggests that extensive reading facilitates both vocabulary knowledge (e.g. Horst et al., 1998; Nation, 2001; Pigada & Schmitt, 2009) and overall language proficiency (Renandya et al., 1999). The participants in this study were asked to indicate how many hours per week they read in English. The results show that there was a statistically significant difference between the knowledge of the figurative meaning sense of Duplex Collocations and reading, i.e. the more the students read in English, the better they performed in the test. Similar finding were obtained in Schmitt and Redwood (2011), González-Fernández and Schmitt (2015) and Garnier and Schmitt (2016), who also found a positive relationship between the amount of reading and knowledge of phrasal verbs and collocations. It seems that amount of input from reading has a positive effect on the learning of the figurative meaning senses of Duplex Collocations. Thus, the results of this research study suggest that reading facilitates the acquisition of all types of formulaic language.

As for other language use factors (watching TV, listening to music and social networking), none of the other possible language inputs reliably related to collocation knowledge. In case of the social media, the result is somewhat surprising as this is the type of language use which should make language interesting and meaning-based. González-Fernández and Schmitt (2015), for example, found a significant relationship between social networking and collocation knowledge, but perhaps figurative meanings are less salient and go unnoticed.

Time spent watching TV did not have any effect either. Even though learners can be exposed to a wide range of vocabulary through films and TV (Rodgers & Webb, 2011), including the figurative meanings of collocations, perhaps they simply do not

notice them as long as they can understand the general message. This speculation is supported by research that shows the effectiveness of subtitles in facilitating learning (e.g. Neuman & Koskinen, 1992), presumably by promoting noticing of the target items and showing their written forms. The same explanation may apply to listening to music: although recent studies have shown the benefits of listening to music for the improvement of general L2 proficiency (Sjöholm, 2004; Lieb, 2005), it does not require as much attention and/or concentration as reading, unless it is accompanied by other more conscious tasks (Beasley et al., 2008). Learners might also listen more to the tune, than the words/phrases.

Last but not least, it is worth briefly discussing the ratio between literal and figurative meanings. The existing research findings are mixed and inconclusive. Moon (1998), in her corpus study, found that figurative meanings are more common than collocations with dominant literal meanings. Similarly, in Siyanova-Chanturia et al's (2011) study, all of the target items appeared figuratively more frequently than they did literally (approximately 83% vs. 17%). In my first study, I found the opposite trend. All of my target collocations were used more frequently literally than figuratively. Lastly, in this study I found the prevalence of the figurative meaning for two thirds of the phrases. I believe that the L/F ratio is mainly an artefact of different approaches to defining collocation as well as different criteria that are used to identify target expressions.

When it comes to pedagogy, the idea that collocations can be polysemous and that some of those meanings can be figurative seems to be very novel. I suspect most teachers have never thought about these possibilities, but if Macis and Schmitt's (2016b) preliminary calculations hold up, then figurative meanings of collocations are not just a peripheral phenomenon that can be ignored. Collocations in general are a widespread and important feature for language and figurative meanings may well make up a substantial percentage of the total occurrences (i.e. perhaps one-fifth to one-quarter).

My results suggest that figurative meanings of collocations will not be learned very comprehensively if left to themselves. In EFL environments like I studied, there does not seem to be enough input to ensure that a high percentage of these meanings will be learned. So what can be done? Spending time in an L2 country is one solution

that seems to have an effect (as it probably would with most language features), but is obviously impractical in most situations. Encouraging students to engage with the L2 outside the classroom does not always work either, as watching TV, listening to music and using social networking all proved ineffective in this case.

It appears that figurative meanings might not be learned very efficiently unless some attention is given to them. CL-informed instruction (see Chapter 3) might be useful, but the problem remains in determining which collocations to teach. Frequency is the normal way of grading vocabulary for difficulty/ importance for teaching, and this works reasonably well for high frequency individual words. But formulaic language does not seem to follow a frequency profile to nearly the same extent, and so frequency may not be such a useful guideline for selecting which collocation items to focus upon. Without an obvious way to select collocations for explicit instruction, perhaps the way forward is to focus the explicit attention on strategy instruction and how to use dictionaries well to look up collocation meaning, and how to infer from context more effectively.

5.6. Limitations and directions for future research

Inevitably, there are limitations in this research design. My study is limited by only using 30 collocations to represent the vast range possible. Also, these collocations were only of two types, V+N and Adj+N. Even though a restriction on collocation patterns in the tests is likely to facilitate the interpretation of scores (e.g. Gitsaki, 1999), it also limits the generalisability of the test scores to other types. Also, the results pertain to receptive meaning recall knowledge, and presumably productive form recall knowledge would be weaker, although this is a matter for further research.

The amount of L2 engagement of the participants was assessed via self-report questionnaires, and thus could be prone to slight underestimation or overestimation. The participants were a fairly homogeneous group, all university students with only one L1: Spanish, and therefore further research involving more diverse samples of L2 populations will be needed in order to make more robust generalisations.

Although my search unit was only the word form, it would be interesting to carry out a full lemmatised analysis to see if F Frequency figures would have been different. The problem is that at present, for practicality reasons, this might not yet be possible.

Moreover, to my knowledge, there are no corpora that contain concordance lines tagged for literal and figurative meaning senses. There is an increasing need for software that will be able to automatically do the tagging. Until it is available, researchers will unfortunately have to engage in long, tedious analyses in order to inform the field about the behavior and characteristics of formulaic sequences.

Finally, outside exposure seems to play an important role as the more time spent reading in English can improve learners' knowledge of the figurative meaning sense of Duplex Collocations. Therefore, future research will almost certainly have to include a component which encourages learners to engage more with reading outside the classroom. The search should be continued in order to find ways of helping second language learners master Duplex Collocations and formulaic language in general.

5.7. Conclusion

The study reported in this chapter showed that the participants´ knowledge of the figurative meaning sense of Duplex Collocations was rather low (33%). This is a rather disappointing result considering that these learners were BA English Language and Literature/English-Spanish Translation students in a partial English-medium academic environment, which lends further support to the common assertion that collocations are a problematic feature of English vocabulary for many learners, including presumably advanced ones. This result is congruent with previous findings showing the lack of collocational knowledge in general (e.g. Barfield 2003; Wolter & Gyllstad, 2013). Those studies usually included only or mostly literal collocations, and I found that collocations with figurative meanings were also difficult for my learners. This was not unexpected, given the problems learners have in general with idiomatic formulaic sequences (i.e. idioms, phrasal verbs) (e.g. Irujo, 1986) and my study gives initial evidence that this difficulty also extends to the figurative meanings of collocations. Collocations are important for language use, however they are a problematic feature for second language learners.

If fluent, precise and accurate language use is dependent on knowledge of idiomatic phrases, then the results obtained here point toward the need for some kind of intervention. As discussed in the previous study, I personally doubt collocations are taught as idiomatic and polysemous expressions, so the first step could be directing teachers' attention to and making them aware of these characteristics of collocations. The next important step would be raising students' awareness of formulaicity and idiomaticity in collocations through classroom activities and teaching and learning materials. Many studies have shown that awareness raising activities are effective for learning collocations (e.g. Boers et al., 2006) and there is no reason to believe that they would not be as beneficial for figurative meanings as well. I still do not know what the best way to teach figurative language is, but I think these activities would be a good starting point.

Regarding the factors that affected this knowledge, it was found that the frequency of figurative meaning sense (F Frequency), as indicated in the COCA, and semantic transparency did not predict the knowledge of Duplex Collocations in terms of receptive mastery. I have speculated above what the reasons for the non-significant results might have been and all I can say with certainty is that frequency and semantic transparency were not strong enough to produce a significant effect on the knowledge of the figurative meanings of collocations in this study and with this particular group of students. More research is needed though to show whether similar results would be obtained with different types of collocations and a different L1.

The findings, however, indicated the facilitative role of year of EFL study, time spent abroad and time reading in English. Learning English in an English-speaking country would be ideal, but, unfortunately, it is not always possible. Regarding the year of EFL study, there is no reason to think that my target collocations were explicitly taught to our participants (at least not in any systematic way), but there seems to be something in the instructed environment which is facilitative, as students in higher university years knew more collocations. This suggests that figurative meanings of collocations would benefit from explicit attention in the classroom. Unsurprisingly, reading was the strongest predictor, which suggests that it is possible to learn a lot outside the classroom, via daily activities that are engaging and enjoyable. As a

result, we should encourage L2 learners to spend more time reading in order to increase their knowledge of the figurative meanings of Duplex Collocations and L2 vocabulary in general.

So, reading seems to be a powerful facilitator for language learning, with extensive reading being tied to improved language learning overall (e.g. Day & Bamford, 1998), and this beneficial effect seems to work with the figurative meanings of collocations to some extent as well (Schmitt & Redwood, 2011; González-Fernández & Schmitt, 2015). This incidental learning from reading might be even stronger if it were not for the relative infrequency of idiomatic phrases in the texts/listening. Boers and Lindstromberg (2009) found that, although these phrases were common as a class, individually, they are unlikely to appear frequently enough to facilitate their acquisition. The authors identified 42 occurrences of verb-noun collocations (e.g. *commit suicide*) in 120 pages of the novel *Beneath the bleeding*, but 35 (83%) occurred only once and the best case was three repetitions (for only three collocations). I believe that one solution to this problem be might be “modified materials” where idiomatic language is “seeded” into the text at higher rates of recurrence so that second language learners have more exposure to L2. This is the topic that I addressed in my last study in Chapter 6.

Chapter 6 - Incidental Learning of Duplex Collocations from a Semi-Authentic Novel: Three Case Studies

6.1. Introduction

The study in Chapter 5 looked at second language learners' knowledge of the figurative meaning sense of Duplex Collocations and found that even students who were doing a degree in English still struggled with figurative language. The study also showed that reading had a significant effect on this knowledge, i.e. the more the students read, the more figurative language they knew. Because of a large number of collocations, they cannot all be explicitly taught in a classroom and the majority of them have to be learned incidentally. However, incidental learning is slow but can be effective provided that learners encounter the new vocabulary enough times within a limited time span.

A number of studies have shown that second language learners can indeed acquire single words incidentally from reading (e.g. Waring & Takaki, 2003; Pigada & Schmitt, 2006; Webb, 2007). The findings of these studies have not been conclusive as to the point at which learning occurs, but what they seem to show is that between eight and ten encounters are needed for a substantial amount of learning to accrue from reading.

Incidental learning of collocations (mainly from reading) is an area that, unlike the research on single words, has received little attention. The studies that exist have produced somewhat conflicting results. In a study by Webb et al. (2013), collocations were presented through reading while listening, which in turn makes it hard to know how much reading only contributed to the overall gains. They did, however, find that reading while listening led to significant learning gains. On the other hand, Szudarski (2012) found that reading only did not result in such effective gains. Therefore, little is still known about how collocations are acquired incidentally from reading only and whether the findings from studies on individual words can be applied to collocations as well.

In an attempt to address these gaps, this study explores the relationship between incidental vocabulary acquisition and reading and focuses on frequency of exposure,

a variable that has been shown to affect the retention of words (Horst, 2005). Because the available research is limited and because meaning is one of the first aspects learners acquire, the aim was to explore the effects of frequency on the acquisition of the figurative meanings of collocations. Moreover, the study tried to capture partial knowledge to show incremental vocabulary improvement towards full mastery (Schmitt, 2010). Furthermore, it focused on one specific type of collocation, namely Duplex Collocations (Macis & Schmitt, 2016b). Duplex Collocations are word combinations that have both literal and figurative meanings (e.g. *small potatoes* is an expression that literally refers to "potatoes that are small in size" but figuratively means "something insignificant or unimportant") and appear to be challenging for learners (e.g. Grant & Bauer, 2004). Finally, it was the first study on this topic that focused on three separate case studies in order to account for individual differences.

This chapter will look at incidental acquisition of the figurative meaning sense of Duplex Collocations from reading by addressing various issues. It will first provide a brief summary of research carried out on incidental learning of L1 vocabulary from reading and then discuss the studies carried out on incidental L2 vocabulary acquisition with respect to the frequency of occurrence. Second, it will review the literature on collocations and what is known about how they are acquired incidentally and how frequency affects this knowledge. Third, it will briefly address other factors that also facilitate successful language learning, namely motivation and positive attitudes. Fourth, it will emphasise the importance of an explicit approach to the learning of collocations as a way to complement gains from incidental learning. Finally, it will present three case studies on incidental learning of the figurative meaning sense of Duplex Collocations from reading, report their results and discuss them in light of general understanding of effects of frequency on incidental vocabulary acquisition.

6.2. Literature review

6.2.1. L1 reading research

There is no doubt that learning vocabulary incidentally from reading accounts for most L1 vocabulary acquisition (Nation & Meara, 2002). A number of influential L1 studies have indeed shown that learning takes place from reading (e.g. Jenkins, Stein & Wysocki, 1984; Nagy, Herman & Anderson, 1985; Shu, Anderson & Zhang, 1995). Nagy et al. (1985), for example, examined incidental acquisition of word meanings by 70 eighth-grade students. The students were asked to read texts appropriate for their level, in which words that were likely to be unknown were identified by teachers. The immediate post-test, consisting of an interview and a multiple-choice test, assessed their knowledge of the meaning of the unknown words. Significant gains were obtained, with between 15% and 20% of improvement on the multiple-choice test. In a later study, Nagy, Anderson and Herman (1987) explored 352 students from third, fifth and seventh grades. In each grade, four texts (two narrative and two expository) were selected from the children's textbooks. Students were asked to read either two narrative or two expository texts. In order to investigate the long-term retention, students were tested on their knowledge of the target words six days after the reading treatment. Gains were statistically significant, but smaller than in the previous study (5%). Moreover, Shu et al. (1995) looked at vocabulary learning while reading in a study involving 447 American and Chinese children in third and fifth grades. Four grade-level texts were selected from American and Chinese textbooks. The Chinese texts were translated into English and the American texts were translated into Chinese, resulting in eight texts in total. The children read one of two cross-translated stories and then completed a series of multiple choice tests. The results indicated that there was significant incidental learning of word meanings in both grades in both countries, namely 10% for American children and 8% for Chinese children. Using measures sensitive to partial knowledge, other studies have also demonstrated that children are able to learn vocabulary incidentally from reading (e.g. Herman, Anderson, Pearson & Nagy, 1987; Stanovich, 1986).

An interesting result, however, came from a study by Saragi, Nation & Meister (1987), which showed that vocabulary can be learned from reading novels as well.

Twenty adult native speakers of English read the novel *A Clockwork Orange* (Burgess, 1972) and then were tested on their knowledge of ninety Russian slang words ("nadsat") through a multiple-choice meaning recognition test. There was a significant amount of nadsat learning, with an impressive average score of 76% correct answers. The authors also looked at the effect of repetition on learning and found that words had to occur at least ten times in a text in order to be learned. They concluded that repetition affects learning but that other factors come into play as well.

All in all, the above studies suggest that incidental learning from reading is possible but that the amount of learning varies. During the last two decades, there has been an increased interest in incidental L2 vocabulary from reading. These studies have used different materials (but particularly graded readers), various methodologies and test batteries and have shown a wide range of learning gains. These L2 studies will be reviewed in the next section.

6.2.2. L2 reading research-focus on individual words

Research into L2 incidental vocabulary acquisition started with the Saragi et al.'s 1978 study. Replications of this study, however, did not produce such high gains (e.g. Pitts, White & Krashen, 1989; Day, Omura & Hiramatsu, 1991; Dupuy & Krashen, 1993). In a study conducted by Pitts et al. (1989), adult L2 learners read two chapters of *A Clockwork Orange* and consequently were tested on their knowledge of the meaning of 30 nadsat words. The findings show much smaller gains, between 6.4% and 8.1%. These studies were criticised for a number of reasons; less than 50% of the participants finished the reading (Pitts et al., 1989), there were no delayed post-tests (Day et al., 1991) and the gains are questionable due to the gains coming from reading while listening (Dupuy & Krashen, 1993).

In later studies, some of these limitations were addressed to some degree (Horst et al., 1998; Horst & Meara, 1999). For instance, Horst et al. (1998), in their replication study of the original study, asked thirty-four participants to read a simplified version of Thomas Hardy's *The Mayor of Casterbridge* (Jones, 1979). After reading the novel, the participants' knowledge was assessed trough a multiple-choice test which focused on recognising correct word definitions. The results show that around 22%

of the words were acquired incidentally and this knowledge was durable for at least ten days when the post-test was administered. In addition, the words had to be encountered around eight times for substantial gains to occur.

A variety of recent studies have also documented incidental vocabulary gains from reading graded readers. For instance, Waring and Takaki (2003) investigated how much vocabulary would be picked up from reading the graded reader *A Little Princess*. To account for the effects of frequency, 25 words were split into different frequency bands. Fifteen participants completed three tests measuring word-from recognition, prompted meaning recognition and unprompted meaning recognition. The results indicate that the word-form recognition test rendered the highest score (61.2%), followed by prompted meaning recognition test (41.6%) and unprompted meaning recognition test (17.6%). However, the results of two delayed post-tests (one week and three months later) demonstrate that the amount of decline that occurred was dependant on the number of repetitions of the target words. In other words, there was a 50% of chance of recognising a form or meaning three months after the exposure if the word was met eight times. On the other hand, for unprompted form-meaning recognition, there was only a 10% to 15% chance that the word's meaning would be retained if it occurred more than 18 times. The authors conclude that it is difficult to "pin" the number of repetitions it takes to learn a word from reading (p.150).

Brown, Waring and Donkaewbua (2008) found similar results in terms of word-form recognition and prompted-meaning recognition as opposed to unprompted meaning production (the latter did not seem very durable after three months). Nevertheless, this result has to be interpreted with caution because the treatment included both reading from and listening to graded readers. Similarly, Webb (2007) looked at the effects of repetition on different word knowledge levels (productive and receptive knowledge of orthography, association, grammatical functions, syntax and meaning and form). He found that repetition had a significant effect although at different rates for different knowledge aspects. In terms of the effect of exposure, at ten occurrences, sizeable gains were shown for each aspect. Pigada and Schmitt (2006) investigated how frequency affected incidental learning of spelling, meaning and grammatical characteristics of words by a learner of French. Spelling was the most enhanced type of knowledge, followed by meaning and grammatical characteristics.

The authors also found that there was not set frequency point at which learning occurred, but that ten and more exposures led to a considerable amount of uptake. Unlike Pigada and Schmitt's (2006) study, Rott (1999) found that even two encounters led to significant gains and six encounters produced significantly greater gains than four and two encounters. Rott concluded that for a considerable amount of learning to accrue from reading, six repetitions may be enough. In contrast, Hulstijn, Hollander and Greidanus (1996) found that there were no statistically significant differences between one and three exposures.

Finally, the majority of the reported studies used graded readers and as a consequence, very few focused on unmodified authentic texts. To investigate this gap in research, Pellicer-Sánchez and Schmitt (2010) conducted a study in which they explored the degree to which spelling, word class and recognition and recall of meaning could be acquired from the unmodified authentic novel *Things Fall Apart*. Controlling for the frequency of exposure, they found that some learning occurred with even few repetitions, but that the biggest gains were achieved at ten+ exposures.

Table 30: A summary of studies in incidental learning of L2 single words and the effects of frequency

Study	No. of participants	Text type	No. of words tested	No. of encounters measured	Gains
Horst, Cobb and Meara (1998)	34	A simplified version of Thomas Hardy's *The Mayor of Casterbridge*	45	2-17	8+
Waring and Takaki (2003)	15	Graded reader *A Little Princess*	25	1, 4-5, 8-10, 13-14, 15-20, 21-31	20+
Pigada and Schmitt (2006)	1 case study	Graded readers from the *Lectures CLE en Français facile* collection (Level 1)	133	1, 2-3, 4-5, 6-10, 10+, and 20+	10+
Webb (2007)	121	Graded readers	10	1, 3, 7, 10	10+
Chen and Truscott (2010)	72	Stories composed by advanced Chinese bilingual learners	10	1,3,7	Strength of the effect of repetition varied with knowledge types (e.g. for semantic knowledge, most gains occurred between 3 and 7 exposures)
Pellicer-Sánchez and Schmitt (2010)	20	Authentic novel *Things Fall Apart*	34	1, 2-4, 5-8, 10-17, and 28+	10+

Table 30 above shows that different numbers of participants and target items have been used. Graded readers have been the main reading material and the effects of frequency have been tested by using various numbers of encounters through varying frequency groups. Taken as a whole, the literature provides considerable evidence of positive effects of repetition on incidental vocabulary acquisition. Even though it is still unclear how many encounters are necessary for learning to occur, the research suggests that around ten repetitions are needed for a discernible rise in the learning rate. However, there are still gaps in our knowledge of incidental learning of phrases beyond individual words. There have been fewer studies that have focused on the

effect of exposure on learning collocations incidentally from reading and these studies will be the focus of the following section.

6.2.3. L2 collocation research

Unlike the numerous studies done on incidental learning of individual words (see above), research on the incidental learning of collocations is scarce. In a study done by Webb et al. (2013), the authors investigated the effects of repetition on the learning of collocations through reading while listening. 161 Taiwanese students of English read and listened to one of four versions of a modified graded reader, in which eighteen collocations were embedded 1, 5, 10 and 15 times (Group 1, Group 5, Group 10, Group 15 plus the control group). The pre-test measured only receptive knowledge of form. In contrast, there were four different post-tests that measured receptive and productive knowledge of form and receptive knowledge of form and meaning. Results of the post-tests show that Group 15 had significantly higher gains than any of the other groups and the control group, both on the test measuring receptive knowledge of the form as well as on the other three tests. However, there were also statistically significant differences between Group 10 and Group 5 on the two productive tests as well as between Group 5 and Group 1 together with the control group on the receptive test of form. This means that, according to the authors, 5 or more occurrences may be necessary for receptive knowledge of form. In contrast, the number of necessary encounters increases to 10+ when it comes to productive knowledge. Nevertheless, as acknowledged by the authors, results have to be interpreted with caution due to lack of a pre-test that tested these levels of collocational mastery.

Although with the aim of showing the differences between implicit and explicit approaches to learning of collocations, Szudarski (2012) explored the effectiveness of reading only versus reading plus an explicit vocabulary task (reading+) on the acquisition of frequent delexicalised English collocations (e.g. *make a mistake*). Target collocations appeared twice in each of the three target texts, i.e. six times in total. Results demonstrate that the reading-only group significantly improved their knowledge on verb form recall (a test in which learners have to provide a verb that forms a collocation) and verb form recognition (a multiple-choice test in which

learners had to choose the correct verb that forms a collocation), but not on collocation form recall. However, when compared to the control group, no statistically significant difference was found which led the author to conclude that there was not much improvement in the reading-only group. The reading+ group showed statistically significant results on all three level of collocational knowledge. This suggests that some sort of additional explicit activity is more effective when it comes to the most difficult productive level.

A similar conclusion was reached in Sonbul and Schmitt's study (2013) on the effect of reading-only treatment (reading a text with target items inserted three times) and reading plus treatment (reading a text with target items written in red, bold font) on the learning of adjective-noun collocations. The second condition led to significantly higher gains on form recall and form recognition than the condition in which participants only read the items. Likewise, Szudarski and Carter (2014) examined how effective input flood condition (reading only) would be in comparison to input enhancement condition (reading with target items underlined). There were six stories and each one of them contained ten collocations inserted once and ten collocations inserted twice. So, the target items were encountered either six or twelve times. The findings demonstrated that the input enhancement condition led to significant improvement in collocational knowledge. At twelve occurrences, there was considerable learning at the form recall level, but at the meaning recall and form recognition levels, significant gains were found at six occurrences. The authors conclude that more exposure does not necessarily lead to equivalent results at all levels of collocational mastery (i.e. form recall, meaning recall, meaning recognition)**.** Moreover, Durrant and Schmitt (2010) also looked at how repetition affected the learning of adjective-noun collocations. They compared three conditions: one repetition in a sentence context, two repetitions in the same sentence context (verbatim repetition) and two repetitions in two different sentences (varied repetition). Results show that two repetitions led to better results than one repetition only and that verbatim repetition was slightly more effective than varied repetition.

Finally, Pellicer-Sánchez (2015) looked at the incidental acquisition of adjective-pseudoword collocations while reading. Six collocations were presented in a story either four or eight times. One week after the reading, forty-one L2 learners were

tested on their knowledge of the form, meaning and collocation of the target items. Results demonstrate that collocation knowledge can be acquired incidentally from reading but that there was not a statistically significant difference between four and eight encounters.

Table 31: Selected studies of incidental learning of L2 collocations and the effects of frequency

Study	No. of participants	Text type	No. of words tested	No. of encounters measured	Gains
Webb et al. (2013)	161	Graded reader	18	1, 5, 10, 15	15+
Szudarski and Carter (2014)	41	Stories created for the study	20	6 and 12	6 for the meaning recall and form recognition levels 12 form for the form recall level
Pellicer-Sánchez (2015)	41	Stories created for the study	6	4 and 8	No effects of frequency have been shown

Table 31 shows that it is unclear how many encounters lead to sizeable gains, unlike individual words where we have a clearer picture. What is similar to individual words though, is that the number of repetitions required for different mastery levels varies as well.

Overall, L2 learners can learn new words incidentally if they are exposed to the new vocabulary a sufficient number of times. However, different levels of collocation mastery might need a different number of exposures to be acquired. Also, adding an explicit component to learning collocations seems to lead to higher gains. If we look at gains produced by the review of studies provided in the above section, we can also see that although the role of frequency of exposure is dominant, other factors are surely involved. One of these factors is motivation and positive attitudes towards learning a second language, the variables that will be briefly focused on below.

6.2.4. Motivation and positive attitudes

There are a lot of factors that influence success in learning a second language. One of them is unarguably the learner's motivation and this is due to different reasons. Students learn a language not only to understand it, but also to accomplish something. They learn a second language for instrumental reasons, such as career promotion (Dörnyei, 1990; Gardner, 1985) or integrative reasons, such as making friends with speakers of the L2 language (Oxford & Shearin, 1994). Integrative motivation is held by students who want to join with "the culture of the second language group and become involved in social interchange in that group" (Brown 2000, p. 162).

Moreover, students' ability to learn a second language can also be influenced by their attitudes towards the target language. Ellis (1994) posits that the positive attitudes are typically connected to the speakers of L2 in question and the culture represented by its speakers. Such positive attitudes can be expected to enhance learning, because learners want to communicate with native speakers of the language they are learning. In other words, if students are interested in the countries where the languages are spoken, they may be more motivated to learn the language (Noels et al. 2003, p. 36).

Positive effects of motivation and attitudes have also been demonstrated in research on formulaic sequences (e.g. Dörnyei et al., 2004; Schmitt, Dörnyei, Adolphs & Durow, 2004). Dörnyei et al. (2004), for example, were interested in finding what learner characteristics and learning conditions facilitated the successful mastery of formulaic sequences. They found that success in the acquisition of formulaic sequences depends on three main factors: language aptitude, motivation and sociocultural adaptation. Furthermore, if second language learners do not adapt socioculturally, it seems that only a combination of high levels of language aptitude and motivation can compensate for this.

6.2.5. Explicit learning of collocations

As stated in the introduction to this chapter as well as in the main literature review, and clearly shown by research (e.g. Laufer, 2011; Laufer & Girsai, 2008; Webb &

Kagimoto, 2009), different types of explicit activities can improve learner's knowledge of collocations and thus boost gains obtained from incidental learning. Schmitt (2008) points out that incidental and intentional vocabulary learning can be seen as complementary to each other and "usefully integrated" in vocabulary acquisition (p. 346). Moreover, another argument for adding the explicit component is that incidental vocabulary acquisition studies have demonstrated rather limited amounts of learning (see above) due to the fact that words and phrases have to be frequently met in discourse to avoid their being forgotten. Meeting an item a sufficient number of times would of course be possible if second language learners read 1-2 graded readers per week, a task that seems rather ambitious and time-consuming. It is therefore reasonable that L2 learners acquire their vocabulary not only from reading or listening, but also through word-focused activities (Laufer, 2005).

Research suggests that intentional vocabulary learning almost always results in greater and faster gains, a better chance of retention and even the possibility of attaining productive levels of mastery. In case of individual words, Laufer (2005) reviews a number of studies that have employed explicit activities and concludes that the learning gains ranged between 33% and 86% when the explicit exercises were related, but not embedded in, meaning-based tasks. Exercises which focused on working on words in isolation produced learning gains between 13% and 99%.

With regard to collocations, various explicit teaching methods have been used, such as use a dictionary and corpus tools, enhancement techniques (underlining, using bold or italics, or using different colours) and L1 translation (e.g. Chan & Liou, 2005; Laufer & Girsai, 2008; Szudarski & Carter, 2014; Peters, 2014) (also see Section 2.8.)).

To summarise, as far as collocations are concerned, the findings of the reported studies are conflicting. In most of them, learning occurs from incidental reading and more repetition leads to better results (e.g. Sonbul & Schmitt, 2013; Webb et al., 2013), whereas in others the effectiveness of frequency is brought into question (e.g. Szudarski, 2012, Pellicer-Sánchez, 2015). Thus, it is not known at which point learners start making greater gains when exposed to collocations in reading. Determining this number is therefore crucial, not only because it may increase our

understanding of how repetition affects incidental learning of formulaic sequences through reading, but also because it may have important implications for pedagogy and material design.

Moreover, almost all of these previous studies used collocations that were used in their literal senses as their target items, except for a few collocations from Webb et al.'s 2013 study, which had both literal and figurative meanings (Duplex Collocations in this study). More specifically, because Webb et al. use different kinds of collocations, it makes it difficult to know how specific types behave, i.e. how repetition affects acquisition of each type from reading. Second, different levels of collocational mastery were measured in the post-tests, but only one of them (receptive knowledge of the form) was tested in the pre-test. So, it is questionable whether the results from these tests are a true reflection of the participants' learning. Third, it is not clear how the authors scored the responses and whether they measured partial knowledge. Because of incremental nature of vocabulary acquisition (Schmitt, 2010), accounting for partial knowledge is essential in order to fully appreciate the benefits of reading (Pigada & Schmitt, 2006). Fourth, the authors used a graded reader as their target material. While there is no doubt that graded readers are a valuable tool in promoting incidental vocabulary acquisition, especially at the initial stages of language proficiency, intermediate and advanced students would certainly benefit more from authentic or semi-authentic texts as they provide more real-life exposure. Thus, it is worth determining the amount of incidental learning that can occur from such reading. Finally and most importantly, the participants both read and listened to the target text, which could have inflated scores, further justifying the need for more research on incidental learning of collocations (i.e. Duplex Collocations) from reading only.

Considering all the above, the present study examines the acquisition of L2 collocational knowledge from reading in a natural context. It attempts to fill two main gaps: lack of research on incidental learning of collocations in general and absence of research on incidental learning of the figurative meanings of collocations only. By employing one-to-one interviews, including multiple case studies and accounting for partial knowledge, the study seeks to answer the following research questions:

1. To what extent does reading a semi-authentic novel lead to gains in L2 learners' knowledge of the figurative meaning of Duplex Collocations in the text?
2. How does frequency of occurrence affect incidental vocabulary acquisition? In other words, how many exposures are needed in order to learn the figurative meanings?
3. Does more exposure lead to increased certainty levels?
4. What is the relationship between participants' attitudes toward reading and vocabulary acquisition?

6.3. Methodology

6.3.1. Participants

The participants who took part in this study were three female PhD students at the University of Nottingham, namely one Thai, one Polish and one Libyan. Their age ranged from 28-34 years old (mean=30.33, SD=3.21). They had lived in England for an average of 3.67 years. To be able to study at their English-speaking university, they all had to take a standardised, internationally-recognised language proficiency test. The Thai and Libyan participants took the IELTS and scored 7.0 and 6.5, respectively. The Polish participant was not required to sit any language proficiency tests, as she did what she described as A levels at the end of high school. She obtained 82% in these exams.

At the beginning of the experiment, the participants completed a self-rating test of proficiency in English (Table 32) in which they had to rate their level of the four skills on a scale of 1 to 10, 1 being extremely poor, almost no knowledge and 10 being extremely good, almost native like. The mean values for all skills were between 6 and 8, and participants rated their reading skills as between 7 and 9.

Table 32: Self-rating proficiency scores

Skills	Max	Min	M	SD
Reading	9	7	8.00	1.00
Writing	8	5	6.67	1.53
Listening	9	6	7.33	1.53
Speaking	7	5	6.33	1.15

The participants' vocabulary sizes based on scores from the Vocabulary Size Test up to the 14,000 level (Nation & Beglar, 2007) ranged between 7,800 and 10,400 word families. Overall, based on proficiency scores, self-rated reading level and vocabulary size scores, all participants can be described as relatively advanced users of English and thus able to read authentic texts. Also, they were extremely motivated and very excited to participate in this research study.

6.3.2. Reading material

An authentic novel was chosen for this study for several reasons. First, authentic texts increase learners' interest, enjoyment and are motivating (Currie, 1997). She states that novels allow learners to become engaged with the characters and plot, which in turn leads to a feeling of excitement and suspense (p. 12). She goes on to say that if novels cause such a feeling, then people are more receptive to learning. Also, authentic novels offer a real context and prepare learners to read outside the classroom (Barnett, 1989).

The novel selected was *Playing Dead* from the *Prison Break* trilogy, published by Allison Brennan in 2008. It is a romantic thriller chosen on basis of my intuitions. I thought that, considering the fact that the participants were females, the novel would be interesting for them. I then asked them if they liked the genre and they all said they said they did (this was later also confirmed in the post-treatment interviews). The novel was long, around 115,000 words spread across 462 pages but readable within a reasonable amount of time. Moreover, following my intuitions and the above proficiency scores, I judged that the language level of the novel was appropriate for successful L2 reading comprehension (again, confirmed in the subsequent interviews).

6.3.3. Selection of target items

The target items initially consisted of 44 Duplex Collocations (Macis & Schmitt, 2016b). However, because there are many types of collocations, trying to systematically measure each one would make data difficult to interpret. Therefore, for a meaningful analysis to be possible, I limited my study to adjacent lexical collocations (or with only one intervening word, e.g. *hit the road*). I further restricted these to V+N and Adj+N combinations for the same reasons I explained in the previous two studies.

I extracted the target items from a range of different sources. First, I selected a few Duplex Collocations from Macis and Schmitt's (2016a) study. Second, I consulted different collocation dictionaries (e.g. the *Longman Collocations Dictionary and Thesaurus for Intermediate-Advanced Learners* and the *LTP Dictionary of Selected Collocations* (Hill & Lewis, 1998)). Finally, I searched for collocations on the internet, and looked into media like TV and radio.

Regarding target items' length, they were all of roughly same length, the only noticeable difference were the phrases that contained a possessive adjective, (e.g. *hold one's breath*).

The following table lists the initial 44 target items.

Table 33: Target items

Big Brother	Take a hike	Miss the boat	Deep pockets
Open book	Soft touch	Hit the roof	Carry weight
Wet blanket	Bend one's knee	Hold water	Bite one's tongue
Climb the wall	Blue ribbon	Top drawer	Tie the knot
Open one's eyes	Hit the road	Old hand	Lay an egg
Run a mile	Dead duck	Break a leg	Big picture
Drop the ball	Hold one's breath	Free ride	Pull the strings
Old hat	Small potatoes	Red flag	Kick the bucket
New blood	Dark horse	White collar	See the light
Brick wall	Red tape	Big wheel	Make noises
Sore spot	Fat cat	Acid test	Build bridges

6.3.4. Methods of measurement

Because this study was about three separate case studies, it was feasible to employ one-to-one interviews as the main measurement method due to their highly informative nature (Schmitt, 1998). I was able to interactively question each participant in length, until a very good impression was achieved concerning the knowledge level of the figurative meanings of Duplex Collocations. Because the participants were likely to know some of the target items, they were interviewed before the reading treatment (hereafter “pre-test”) and after the treatment (hereafter “post-test”). The participants were told that they would be tested on their reading comprehension, but were not informed of the research questions.

Both the pre-test (Appendix 11) and the two post-tests (immediate and delayed) had the same format. Each participant was presented with a list of target items embedded in as non-defining contexts as possible and marked in bold (e.g. They will soon **tie the knot**. / You are such a **wet blanket**.). They were given a brief summary about literal and figurative multi-word combinations and provided with a few examples. Then, in order for partial knowledge to be traced, they were asked to say everything they knew about the meaning of each item. They were encouraged to provide examples. They were also asked to inform the researcher if some of the target items had cognates in their L1s. The pre-test lasted about 20 minutes, whereas the post-tests were about 15 minutes long. Moreover, the order of the target items was randomised in each post-test for each participant in order to account for order effects.

Finally, a questionnaire on participants’ attitude was created in order to explore the relationship between readers’ attitudes and vocabulary acquisition (Appendix 12). Sixteen questions were prepared regarding participants’ opinions about their reading habits, the target items, strategies, etc. The questions were asked through interviews and the participants were encouraged to answer freely.

6.3.5. Procedure

The procedure consisted of several steps. First, after the novel was selected, it was scanned and saved in a doc. file. Then, I proceeded to insert the target items as

many times as possible. The insertion involved reading the book by me and looking for contexts/instances which would allow for the insertions to be made. It also involved looking for synonyms of the target items. Modifications like word order change or breaking down a sentence into several parts took place.

Examples of insertions

… He had no desire to go into medicine. He'd tell his father to **go to hell**… was replaced by

… He had no desire to go into medicine. He'd tell his father to **take a hike**...

Or

…Raw anger and deep sadness always accompanied any thoughts of her father… was replaced by

… Any thoughts of her father were a **sore spot**. Raw anger and deep sadness accompanied them…

Furthermore, in order to account for the role of frequency, four frequency groups were created: 1-3 occurrences, 5-8 occurrences, 12-16 occurrences and 20-25 occurrences (Appendix 13). The reason for these sub-groupings was to manipulate frequency. This was facilitated by the fact that the genre of the novel itself allowed for certain target phrases to be inserted frequently (e.g. *kick the bucket*) whereas other phrases were more difficult to insert, thus they had fewer repetitions (e.g. *acid test*).

Finally, different grammatical forms of V+N Duplex Collocations and Adj+N Duplex Collocations were presented in the text. This was because the storyline dictated whether a particular V+N Duplex Collocation was used in present or past or whether any of the Adj+N Duplex Collocations had to be used in singular or plural. Another reason is the ecological validity of the reading process itself. When reading, learners are exposed to all sorts of grammatical forms in which individual words and phrases occur.

Examples of V+N Duplex Collocations

…His parents **kicked the bucket** when he was just a kid…

…Relieved upon finally finishing the unsavory task, he returned to the fraternity his father had insisted he join. His father was **pulling the strings** so he had to continue the proud family legacy…

Examples of Adj+N Duplex Collocations

…But there were a lot of powerful, criminal, Russian **fat cats** in Sacramento and Stockton. But would they or any other petty criminal have set up such an elaborate frame?...

…The thesis has to be vetted by not only his advisor, but a committee. He might have had to stay another year. There's a lot of pressure and **brick walls** for third-year law students…

During this phase, it was not possible to insert all of the target items (there were 44 items at the beginning of the study) as there were no instances in which these collocations could be embedded. Also, some of the items were synonymous (e.g. *blue ribbon* and *top drawer*). Instead of having very few instances of each item, i.e. having too many items occurring only once or twice, I decided to choose only one of the two phrases (in this case *blue ribbon*) and have more occurrences of that particular item. As a result, six Duplex Collocations were removed (*dark horse, top drawer, break a leg, miss the boat, deep pockets, big picture)* and the final number of target items (reported in the results) was 38.

After I finished the insertions, the novel was sent to additional 4 raters (native speakers of English), who were asked to do the same. Once all possible insertions were completed, they were collated into one master copy which was then confirmed by a separate native-speaker judge who checked every insertion and excluded those that did not fit the context well.

At the same time the insertions were being carried out, the pre-test was administered. Therefore, it contained the original 44 items. As expected, different degrees of knowledge were demonstrated. For some target items, the participants could explain the figurative meanings fully, some target phrases were only partially known and the participants would say they were not sure what these meant, and finally, there were items the participants said they did not know. Those target items that each participant showed full knowledge of (according to the criteria) were excluded. Cognates were excluded as well. As a result of this exclusion, the Thai participant did not know 32 target items (21 unknown and 11 partially known target items), the Polish participant's number of unknown items was 18 (13 unknown and 5 partially known items) and the Libyan participant's knowledge equalled 27 items (19 unknown and 8 partially known items).

In order to flush the effects of the pre-test, two distraction tasks were administered straight afterwards (Appendices 14 and 15). The first one measured the number of words read within a certain amount of time (three minutes in this case). The participants were asked to read an excerpt from Agatha Christie's novel while I timed them. The second task was a grammar multiple-choice test in which the participants had to choose the grammatically correct option. These tasks took an additional 7-10 minutes to complete.

Then, the modified novel was then given to the participants who were asked to read for pleasure, in their own free time and at their own pace. Use of a dictionary was not allowed. They were given up to 4 weeks, but were told to let me know if they finished reading the book earlier or if they needed more time. The Thai participant read the book in only 4 days, the Polish participant took 4 weeks to finish the reading, whereas the Libyan participant needed an extra week, i.e. 5 weeks in total.

Finally, the immediate and delayed post-tests took place. The former were administered straight after each one of the participants read the novel, whereas the latter were given three weeks later.

6.3.6. Marking

The tests were marked in the following manner. A fully correct answer was given 2 points (e.g. *blue ribbon* - "the important one; compared to the others, this one is the best", a partially correct answer was awarded 1 point (e.g. *tie the knot* - "to become couple officially; just to be together" and a completely wrong answer (e.g. hit the roof - "be excited in a positive way, for example if I tell my husband that I passed my viva, he'll hit the roof in excitement; happy") or "I don't know" answer received 0 points.

Two raters (native speakers of English) with a strong applied linguistics background were asked to listen to the interviews and mark the participants' answers in the same way as described above. They had been previously provided with all target items and their literal and figurative meanings. They were asked to follow the definitions provided (Appendix 16). For example, the phrase *make noises* has two figurative meanings, "complain" and "talk about something that you might do, but not in a detailed or certain way". The raters were told to rate the participants' answers against the second definition because it was this definition that was used in the

novel. When there was a disagreement between the raters, I made the final decision (Table 34).

Table 34: Examples of interraters' agreement/disagreement

Duplex Collocation	Participant's response	Rater 1	Rater 2	Final decision
Hit the roof	"Reach the point that you cannot tolerate; when you are mad and if you hit the roof, you cannot bear with it anymore."	2	2	2
Drop the ball	"Miss the chance; missing the chance, missing an opportunity to find something."	0	1	1

6.3.7. Interrater reliability

The interrater reliability check was carried out to find the percentage of agreement between the raters. There were 268 items in total (across the three participants and three tests) and out of these items, the raters agreed on 216 cases or 80.60%. Although interrater reliability of greater than 80% would be desirable, judgements of partial knowledge are difficult to agree on, so the 80% figure can be seen as acceptable.

6.4. Results

Table 35 and Figure 8 show the mean score and the percentage of target words known before and learned after the reading treatment. The results show that incidental learning can occur from reading a single semi-authentic novel. This was in a context where a semi-authentic novel was read for pleasure, with no indication that the aim of the study was the learning of new vocabulary.

The target words were divided into frequency groups to test the effects of frequency on incidental acquisition. For Participant 1, there was relatively strong enhancement in both post-tests, with noticeable improvement in all frequency groups, except for the 1-3 frequency group in which fewer learning gains occurred. A considerable jump

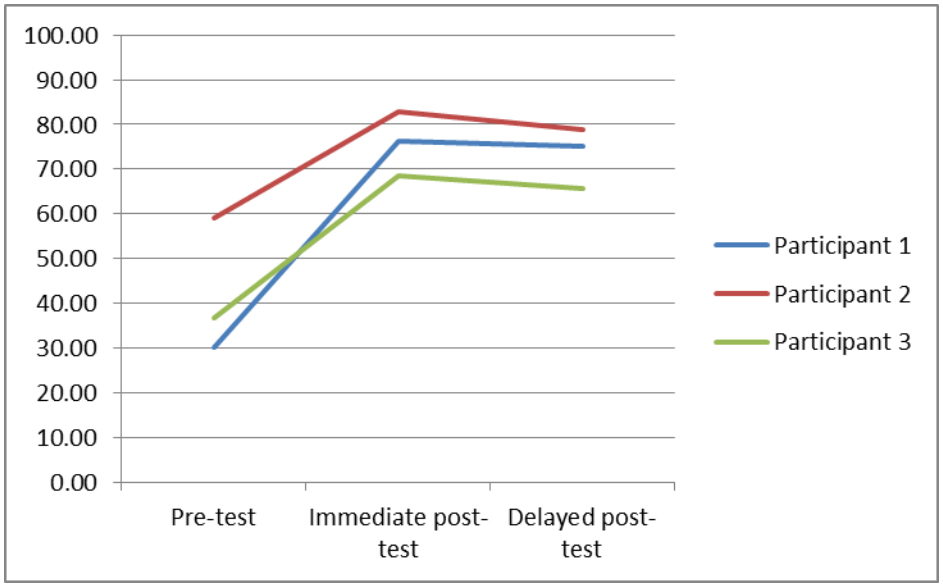
in knowledge occurred at the 5-8 frequency level (again in both post-tests). For all target words, Participant 1 earned 23 points out of possible 76 points in the pre-test (30.26%), moving up to 58 points (76.32%) in the immediate post-test and 57 points (75.00%) in the delayed post-test. For Participant 2, there is not a clear trend. Participant 2 showed less progress than the Participants 1 and 3 but this is probably due to the fact that her initial proficiency level was higher than that of the other two participants (see the Participants section) and therefore, she knew more items in the pre-test, so had half the chance to learn the new items. In the immediate post-test, there were two drops in knowledge, at the 5-8 and 20-25 levels. However, in the delayed post-test, only the drop at the 5-8 frequency level was sustained. She scored 45 (59.21%) points in the pre-test, 63 (82.89%) points in the immediate post-test and 60 points (78.95%) in the delayed post-test. Finally, Participant 3 showed steady increase in the first three bands, except for the last one (in both post-tests).There were noticeable gains in the 5-8 and 12-16 frequency groups. She earned 28 points (36.84%) in the pre-test, 52 points (68.42%) in the immediate post-test and 50 points (65.79%) in the delayed post-test.

Table 35: Scoring for collocations

	Number of occurrences	Pre-test Mean (%)	Immediate post-test Mean (%)	Delayed post-test Mean (%)
Participant 1	1-3 (7)[a]	.286 (14.29)	.857 (42.86)	1.000 (50.00)
	5-8 (13)	.846 (45.83)	1.539 (76.92)	1.539 (76.92)
	12-16 (11)	.636 (31.82)	1.727 (86.36)	1.636 (81.82)
	20-25 (7)	.429 (21.43)	2.000 (100)	1.714 (85.71)
	All target items (38)	.605 (30.26)	1.553 (76.32)	1.500 (75.00)
Participant 2	1-3 (7)	1.286 (64.29)	1.429 (71.43)	1.429 (71.43)
	5-8 (13)	1.077 (53.85)	1.385 (69.23)	1.308 (65.38)
	12-16 (11)	1.636 (81.82)	2.000 (100)	1.818 (90.91)
	20-25 (7)	.571 (28.58)	1.857 (92.86)	1.857 (92.86)
	All target items (38)	1.184 (59.21)	1.658 (82.89)	1.579 (78.95)
Participant 3	1-3 (7)	.286 (14.29)	.857 (42.86)	.714 (35.71)
	5-8 (13)	1.000 (50.00)	1.308 (65.38)	1.308 (65.38)
	12-16 (11)	.818 (40.91)	1.727 (86.36)	1.727 (86.36)
	20-25 (7)	.571 (28.57)	1.429 (71.43)	1.286 (64.29)
	All target items (38)	.737 (36.84)	1.368 (68.42)	1.316 (65.79)

[a] number of target items in frequency group

Figure 8: Participants' progress across the three tests



Because there were a small number of target items in each frequency group, it was not possible to run a statistical analysis of those subgroups. However, I was able to compare the improvement in mean scores for all target items for each of the three participants. The Shapiro-Wilk statistic showed a non-normal distribution of the data (Table 36).

Table 36: Test of normality for pre-test, immediate post-test and delayed post-test

		Statistic	df	Sig.
Participant 1	Pre-test	.732	38	.000
	Immediate post-test	.572	38	.000
	Delayed post-test	.594	38	.000
Participant 2	Pre-test	.703	38	.000
	Immediate post-test	.518	38	.000
	Delayed post-test	.577	38	.000
Participant 3	Pre-test	.705	38	.000
	Immediate post-test	.653	38	.000
	Delayed post-test	.720	38	.000

As a result, a non-parametric Friedman's ANOVA was conducted, which showed that, in case of Participant 1, the learning gains were statistically affected by the reading treatment ($\chi 2 = 42.54$, $p = .000$). The follow-up pairwise comparisons (Figure 9 and Table 37) with adjusted p-values showed that there was a statistically significant difference between the pre-test and the immediate post-test in (p=.000, r= -.67) as well as between the pre-test and the delayed post-test (p = .000, r = -.64). There was no statistically significant difference between the immediate post-test and the delayed post-test (p=1.000, r= .03).

Figure 9: Pairwise comparisons for Participant 1

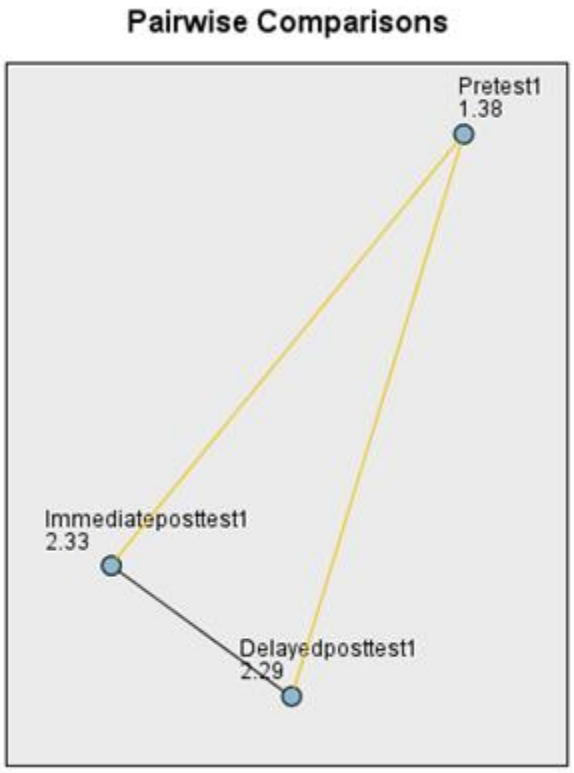


Table 37: Pairwise comparisons values

Tests	Test statistic	Std. Test Statistic	Significance	Adjusted Significance
Pre-test - Immediate post-test	-.908	-3.957	.000	.000*
Pre-test - Delayed post-test	-.947	-4.129	.000	.000*
Immediate post-test - Delayed post-test	.039	.172	.863	1.000

*p< .05

As for participant 2, initially, Friedman's ANOVA showed that the results were statistically different ($\chi 2=16.53$, $p=.000$). However, the subsequent pairwise comparisons (Figure 10 and Table 38) with adjusted p-value indicated that there was no statistically significant difference between the pre-test and the immediate post-test ($p=.117$, r= -.34), or between the pre-test and the delayed post-test ($p=.256$, r= -.28) or between the immediate post-test and the delayed post-test (p=1.000, r= .06).

Figure 10: Pairwise comparisons for Participant 2

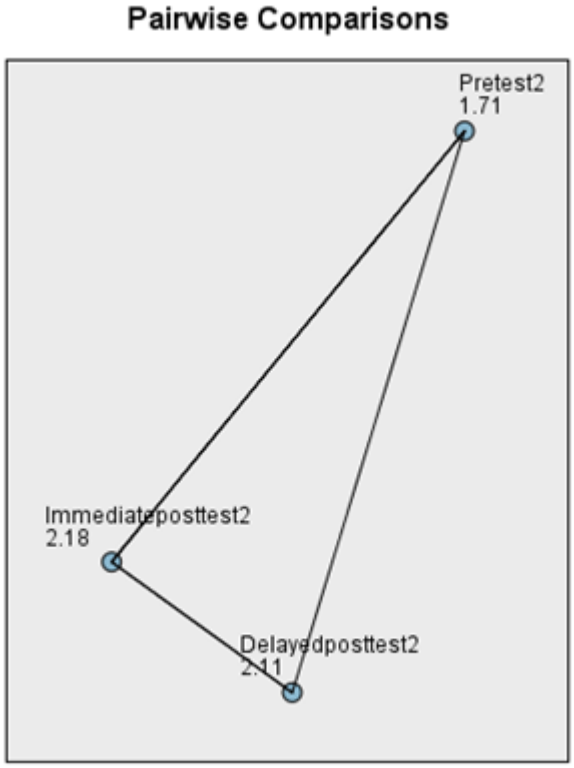


Table 38: Pairwise comparisons values

Tests	Test statistic	Std. Test Statistic	Significance	Adjusted Significance
Pre-test – Immediate post-test	-.474	-2.065	.039	.117
Pre-test – Delayed post-test	-.395	-1.721	.085	.256
Immediate post-test - Delayed post-test	.079	.344	.731	1.000

Lastly, regarding Participant 3, I found a statistically significant effect of the reading treatment on the overall gains ($\chi 2$ =18.35, p=.000). The following pairwise comparisons (Figure 11 and Table 39) demonstrated that, like in case of Participant 1, there was a statistically significant difference between the pre-test and the immediate post-test (p=.030, r= -.42) as well as between the pre-test and the delayed post-test (p=.048, r= -.39). No statistically significant difference was shown between the immediate post-test and the delayed post-test (p=1.000, r= .03).

Figure 11: Pairwise comparisons for Participant 3

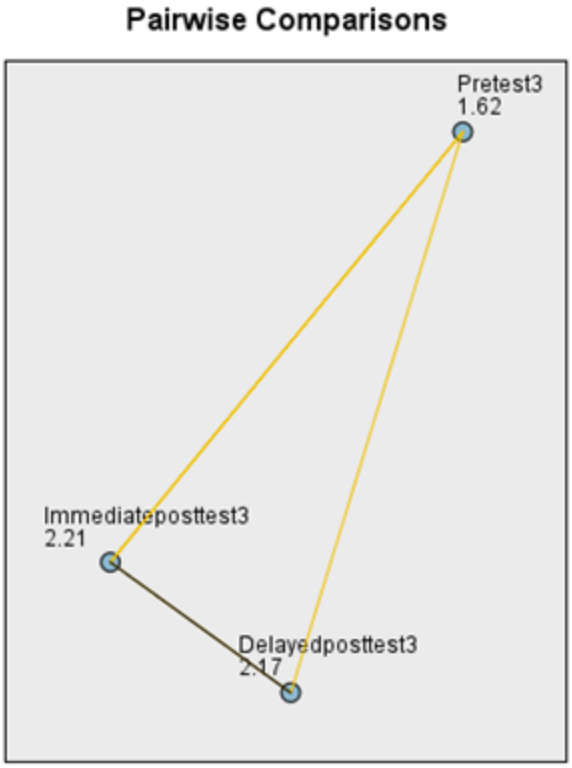


Table 39: Pairwise comparisons values

Tests	Test statistic	Std. Test Statistic	Significance	Adjusted Significance
Pre-test – Immediate post-test	-.592	-2.581	.010	.030*
Pre-test – Delayed post-test	-.553	-2.409	.016	.049*
Immediate post-test - Delayed post-test	.039	.172	863	1.000

*p< .05

Overall, there are clear gains from the treatment and they did not decay in the delayed post-test.

Regarding the differences between the immediate post-test and the delayed post-test, which were shown to be statistically non-significant, the possibility of test effect needs to be taken into account. Nevertheless, since the participants did not know the

content of the delayed post-test and they did not encounter the target items in the three weeks between the two testing sessions (this was later confirmed in the post-treatment interviews), the results are still a good indication of durable learning after three weeks of the first exposure to the treatment.

Next, I wanted to explore how many of the target words were enhanced in real terms. To do this, I eliminated all the words each participant knew (i.e., received 2 points) in the pre-test, because no further learning could be shown with my measurement instrument. Of the remaining words, I tallied how many were enhanced in the delayed post-test, having scores increasing from 0 → 1, 0 → 2 and 1 → 2. I did not include the participants' improvement from the pre-test to the immediate post-test because there was not any statistically significant difference between the two post-tests and I was interested in durable learning. Table 40 shows the results of this analysis. It can be concluded that a very considerable number of target items were enhanced either partially or fully.

Table 40: Number of collocations in which learning occurred

	Number of occurrences	Improvement	Delayed post-test	%
Participant 1		0 → 1	1	
	1-3	0 → 2	1	
		1 → 2	2	
		Total	4/7	57.14
		0 → 1	2	
	5-8	0 → 2	2	
		1 → 2	3	
		Total	7/9	77.78
		0 → 1	0	
	12-16	0 → 2	4	
		1 → 2	4	
		Total	8/10	80.00
		0 → 1	0	
	20-25	0 → 2	4	
		1 → 2	1	
		Total	5/6	83.33
	All items	0 → 1	3	
		0 → 2	11	
		1 → 2	10	
		Total	24/32	75.00
Participant 2		0 → 1	1	
	1-3	0 → 2	0	
		1 → 2	1	
		Total	2/4	50.00
		0 → 1	1	
	5-8	0 → 2	1	
		1 → 2	0	
		Total	2/6	33.33
		0 → 1	0	
	12-16	0 → 2	0	
		1 → 2	2	
		Total	2/3	66.67
		0 → 1	1	
	20-25	0 → 2	4	
		1 → 2	0	

		Total	5/5	100
	All items	0 → 1	3	
		0 → 2	5	
		1 → 2	3	
		Total	11/18	61.11
Participant 3		0 → 1	3	
	1-3	0 → 2	0	
		1 → 2	0	
		Total	3/6	50.00
		0 → 1	1	
	5-8	0 → 2	3	
		1 → 2	0	
		Total	4/7	57.14
		0 → 1	1	
	12-16	0 → 2	4	
		1 → 2	1	
		Total	6/8	75.00
		0 → 1	1	
	20-25	0 → 2	2	
		1 → 2	1	
		Total	4/6	66.67
	All items	0 → 1	6	
		0 → 2	9	
		1 → 2	2	
		Total	17/27	62.96

The above table shows that, in terms of the possible learning, all three participants made considerable progress. The number of items learned ranged from 11 to 24 (61.11% to 75%). Another interesting finding is the amount of full and partial knowledge. Of all the items, most of them were fully learned (24 “0 → 2” cases). This is quite an impressive finding that indicates that the learning that occurred was strong as well as durable. Fewer items were partially learned (12 “0 → 1” cases) or enhanced (15 “1 → 2” cases). These figures suggest that much vocabulary acquisition is incremental (Schmitt, 2010), both in terms of learning new words/phrases as well as enhancing those that are partially known. The table also shows that, in case of Participant 2, even though the results were not statistically significant, in terms of raw gains, she has also made quite a big improvement. These

figures are much higher than previous studies, although the difference may lie in the fact that the previous studies did not measure partial knowledge. Moreover, the results also do not seem to be consistent with a study that employed a similar methodology (Pigada & Schmitt, 2006), in which the participant scored only 20.2% in meaning recall. This might be because the target words were presented in a decontextualised manner, which may have affected recalling the meaning of these words.

Another component of vocabulary knowledge examined in this study was the degree of certainty of responses. Subjective certainty ratings have been used in vocabulary research before (e.g. Wesche & Paribakht, 2000), which has showed that the degrees of certainty vary across different aspects examined, with meaning recall indicating the lowest score (e.g. Pellicer-Sánchez, 2015). I investigated the certainty of participants' responses with regards to the meaning-recall aspect only because I wanted to see whether increased exposure would affect levels of confidence.

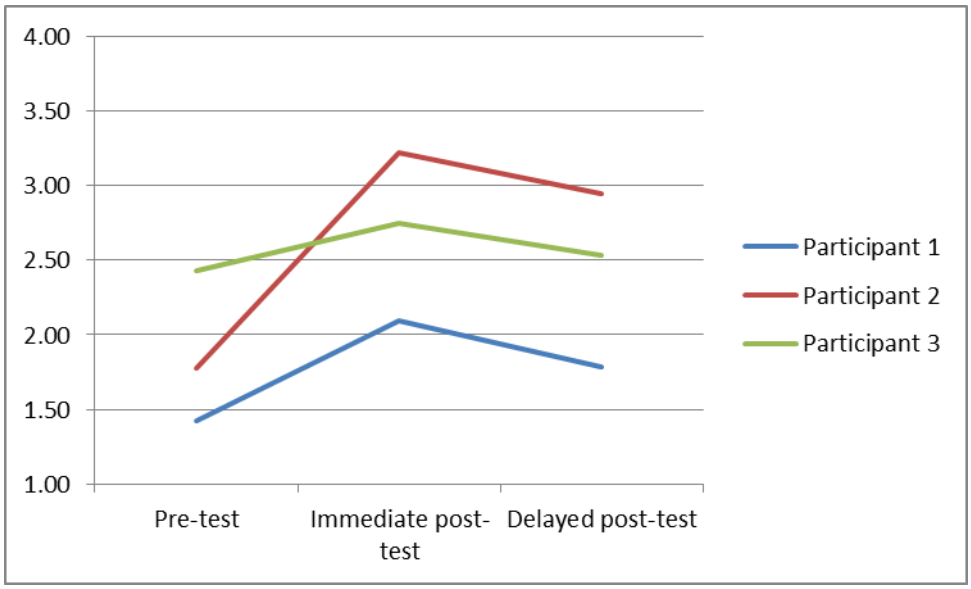
To do this, I removed all correct answers from the pre-test for each participant and analysed the level of certainty of all remaining responses (either partially known or not known) (Table 41 and Figure 12). For Participant 1, Friedman ANOVA showed that the results were statistically significant ($\chi2=15.06$, $p=.001$). The follow-up pairwise comparisons showed that there was a statistically significant difference between the pre-test and the immediate post-test ($p=.006$, r=-.54), but no such difference was shown between the pre-test and the delayed post-test ($p=.372$, r=.02) or between the immediate post-test and the delayed post-test ($p=.372$, r=.02). For Participant 2, the results of Friedman's ANOVA also showed a statistical significance ($\chi2=18.53$, $p=.000$). The subsequent pairwise comparisons indicated a statistically significant difference between the pre-test and the immediate post-test ($p=.003$, r=-.77) as well as between the pre-test and the delayed post-test ($p=.037$, r=-.59). There was no statistical difference between the immediate post-test and the delayed post-test ($p=1.000$, r=.18). Finally, in case of Participant 3, Friedman's ANOVA demonstrated no statistically significant results ($p=.137$).

Table 41: Degree of certainty in participants' responses (per participant)

	Type of test	M[a]	SD	Min	Max
Participant 1	Pre-test	1.48	.76	1	4
	Immediate post-test	2.18	.73	1	3
	Delayed post-test	1.85	.57	1	3
Participant 2	Pre-test	1.78	.88	1	4
	Immediate post-test	3.22	1.00	1	4
	Delayed post-test	2.94	1.21	1	4
Participant 3	Pre-test	2.43	.92	1	4
	Immediate post-test	2.75	1.08	1	4
	Delayed post-test	2.54	1.14	1	4

[a] 1=very uncertain, 4=very certain

Figure 12: Degree of certainty in participants' responses (per participant)



These results show that the participants' levels of confidence increased with the increased exposure, but when the exposure stopped, their confidence levels decreased even though their actual knowledge remained the same (as shown in the delayed post-test).

In the last section, I explored the participants' attitudes towards the reading and the study. The interviews showed several things. First, they all enjoyed reading the book very much and said they wanted to read other similar books. Second, they all reported that the level of the book was appropriate for their level of English and that they could follow the storyline. They found the book comprehensible, meaningful and

interesting. When asked if there were many unknown words, they all said there were a few and mentioned some of the target phrases. In addition, all of them had the feeling of having learnt new vocabulary and they gave some of the target items as examples. The reason they thought they had learnt them was because these were repetitive (e.g. *kick the bucket* and *fat ca*t). Finally, all participants said that they did not meet any of the target phrases in other contexts/situations either between the pre-test and the immediate post-test or between the two post-tests. They also reported that they did not use a dictionary or ask somebody what the target phrases meant.

6.5. Discussion

This study looked at incidental learning of the figurative meaning sense of Duplex Collocations and the effect of frequency on this knowledge. In three case studies, learners read a modified version of the authentic novel *Playing Dead* that included 38 collocations divided into different frequency bands. One week and three weeks after the reading, meaning recall of the target items was tested. The measurement procedure was a one-to-one interview that allowed a good indication of whether learning occurred and how much learning there was (partial versus full knowledge). The results presented in Table 40 clearly show that substantial improvement occurred in all three participants.

Learning gains ranged from 61.11% to 75.00% of the target words. This is very important if we consider that vocabulary acquisition is incremental and that any progress towards mastery counts. The high percentages of learning compare favourably with other studies on incidental acquisition of collocations from reading, which have shown much smaller amounts of learning (e.g. Webb et al. 2013, Pellicer-Sánchez, 2015). Nevertheless, I believe that this study may be a better reflection of the real vocabulary learning from reading for several reasons. First of all, I am truly confident that the gains came from the reading treatment, because there was no exposure to the target words other than in the novel (confirmed in the post-treatment interviews). Second, all participants said they enjoyed reading the novel very much, which would indicate that this is the type of novel they would read on their own. In fact, I lent the first participant another book from the same trilogy. Third,

this study reflects the real-life type of reading as the participants read for pleasure in their own time. Finally, by employing an in-depth interview methodology, I can be relatively confident that the results stem from valid measurements. Therefore, in response to the first research question, results of this study show that reading definitely enhances knowledge of the figurative meanings of Duplex Collocations. Additionally, results are in line with research indicating the effectiveness of reading for the incidental learning of individual words (Horst et al., 1998; Pellicer-Sánchez & Schmitt, 2010; Pigada & Schmitt, 2006; Webb, 2007, 2008).

The second research question asked how many exposures were necessary to enhance the meaning of the target items. The reported gains (61.11%, 62.96% and 75.00%) show that more than two-thirds of the target items that were unknown in the pre-test (32 items for Participant 1, 18 items for Participant 2 and 27 items for Participant 3) were enhanced to some extent in meaning. The data showed that even 1-3 exposures led to considerable enhancement of meaning recall (at least 50% of improvement for each participant). This is congruent with Bybee (2006), who claims that encountering collocations only one in the input leaves traces in learners' memory, which is in accord with usage-based theories of L2 learning. At the 5-8 frequency groups, there was more improvement only for Participants 1 and 3, whereas the 12-16 frequency band shows more improvement for all participants. Interestingly, 20-25 occurrences led to more gains for two participants only (Participant 1 and Participant 2).

The overall results suggest that there was a great deal of individual variation and the number of exposures needed for noticeable meaning uptake was not the same for all participants. For Participant 1, the real increase in learning started with the 5-8 frequency band and increased steadily along the frequency scale. For Participant 2, there was a greater jump both at the 12-16 and 20-25 bands whereas for Participant 3, a lot of uptake occurred between at the 12-16 level. Interestingly, there was a drop in improvement for Participant 2 at the 5-8 band and another drop for Participant 3 at the 20-25 level. This might be because the participants already had partial knowledge of some of the words from these frequency bands and this could have led to a ceiling effect, i.e. they had fewer chances to improve. At the same time, these findings confirm earlier studies (e.g. Szudarski & Carter, 2014; Pellicer- Sánchez,

2015) in that frequency is only one factor that affects word recognition and must be considered with reference to other factors as well.

Several explanations for the above high gains can be offered. One of them is unarguably the quality of context. When trying to understand figurative language, normally, language users search for contextual clues in order to arrive at the correct meaning. This is especially true in case of comprehension of phrases that have no L1 equivalents, in which case learners heavily rely on contextual support. One of the findings from the Webb's 2008 study indicate that context may be of greater importance for incidental vocabulary acquisition than the number of exposures to the target items. When inserting the phrases in the novel, I looked for contexts that were rich and informative enough. Although there was not any rating exercise to confirm whether some of the contexts were more or less rich, I am rather confident that it contributed to high scores to a great extent. Regarding the richness of contexts, Webb (2007) claims that even less informative contexts may lead to gains in knowledge.

Another possible explanation is motivation. All participants were PhD students and they came to England not only to do their degrees but also to improve their general English skills. It might be that their high level of motivation and desire to learn more resulted in more attention being paid to unknown phrases. In other words, they might have consciously tried to learn new vocabulary.

Yet another explanation is knowledge of meaning of the items that make up collocations that is likely to have a positive effect on learning the figurative meanings. In other words, even though the degree to which the figurative meaning can be inferred from the literal meanings of the component parts varies to some extent from person to person (as shown in the transparency task in Study 2), it can still be derived through knowledge of the individual words, if learners have an idea about metaphor structure (e.g. Boers, 2000). For example, while the ease with which the meanings of *dead duck* and *new blood* can be inferred may vary, their meaning can still be arrived at through knowledge of the individual words.

Overall, the results of this study seem to suggest that there is not a set frequency threshold at which learning accelerates and that more encounters with new vocabulary do not necessarily lead to more learning (Pellicer-Sánchez, 2015). It

might be that some of the low-frequency Duplex Collocations were easier for the participants for a number of reasons, such as morphology or salience of the item (e.g. Wulff, 2008; Bley-Vroman, 2002). Moreover, because the above learning rates were taken from the delayed post-test, the findings suggest that reading can contribute to the long-term retention of meaning.

It is interesting to note that the participants interpreted some target items incorrectly and that some of these wrong guesses were not rectified after the treatment. This result is congruent with an earlier study by Pigada and Schmitt (2006) and Haynes (1993), in which incorrect initial guesses were sustained even after the exposure. This was probably caused by cross-linguistic influence, i.e. by participants' L1s (Thai, Polish and Libyan). For example, the Polish participant interpreted the phrase *lay an egg* as "wait for something for a long time" (she said a similar phrase existed in her L1) but did not produce a correct answer in either of the post-tests.

The third research question asked if a lot of exposure would lead to increased certainty levels. Not surprisingly, in general it did. The reading treatment resulted in the participants being more certain of their responses and the highest level of certainty was shown in the immediate post-test. This certainty decreased in the delayed post-test. What is more interesting, though, is an individual variability. There was no statistically significant difference between the pre-test and the immediate post-test in case of Participant 3. This might be because Participant 3 was more certain of her answers at the beginning of the treatment that the other two participants. Therefore, her rather high initial confidence level may simply be the reason why there was no statistically reliable outcome. Overall, these results seem to indicate that the exposure increased confidence but when the exposure stopped, the participants' confidence levels decreased slowly even though their actual knowledge did not.

Finally, the participants' attitudes toward reading and the selected novel were very positive and turned out to be very similar. Because of this similarity, I did not look into the differential effects of these attitudes on overall improvement. However, the high gains in this study make me believe that there was a positive relationship between these attitudes and vocabulary acquisition.

6.6. Limitations and directions for future research

There are a number of limitations to this study. The nature of the novel did not allow me to have an equal number of items per frequency band. However, I feel that the study is a good indication of the word knowledge types I decided to focus on.

Also, prior knowledge of the words making up collocations may have had an effect on overall learning gains. In this study, the target collocations were made up of known words and this might have affected the degree to which the meaning of collocations was retained. Boers and Lindstromberg (2009) suggest that learners are more likely to learn collocations composed of unknown words (e.g. *wreak havoc*) or collocations that are non-compositional (e.g. *show someone the ropes*) because they are more noticeable in the input. If learners are familiar with the words comprising a chunk and if these chunks are semantically transparent, learners may fail to notice them (also see Arnaud & Savignon, 1997; Bishop, 2004). They give an example of *tell a lie* as a transparent word combination which learners fail to take notice of. As a consequence, learner may continue to use “un-idiomatic” substitutes like *say a lie*. On the other hand, when collocations are made up of known words, there may be more learning because the learner is not distracted by learning other word knowledge aspects (Webb et al., 2013). These contradictory views indicate the need for more research in this area.

Moreover, I did not control for the spelling or pronunciation of the target items because the participants came from three very different L1s and accounting for these differences would have greatly reduced the number of the target items. I also did not control the time it took the participants to read the novel.

Frequency of Duplex Collocations in this text was contrived and does not represent authentic text. Real encounters are, unfortunately, far less frequent. Boers and Lindstromberg (2009), for instance, examined a 120-page novel and found 90 instances of idioms (the term idiom was operationalised as a combination listed in the *Collins Cobuild Dictionary of Idioms*). Nevertheless, almost all of these expressions were only single occurrences of different idioms. This confirms that idioms or collocations (depending on the approach one adopts) are common as a class, but are infrequent individually (see also Moon, 1998). In short, unmodified

texts are not very likely to afford “enhanced opportunity” for incidental uptake (Boers & Webb, 2015, p. 373).

The results reported here are indicative of relatively advanced and highly motivated learners, who showed a high level of interest and engagement in the study. Therefore, it would be interesting to see if less proficient less motivated learners would obtain similar results.

I did not control for context of every single instance on which the target phrases appeared. The main reason was because I wanted to make the reading process as ecologically valid as possible. In other words, when reading, learners sometimes encounter new words and phrases in contexts that are sufficiently rich and supportive, however this is not always the case. One may be hopeful that the context will steer the learner toward a correct interpretation of a phrase, but a study by Boers, Eyckmans and Stengers (2007) suggests that learners usually fail to comprehend successfully idioms that were embedded in rich contexts. In future research, it might be interesting to explore this question by using manipulating the richness of context and checking what kind of context would lead to most learning.

6.7. Conclusion

The results of the present study indicate that reading can lead to a substantial amount of incidental learning of the figurative meanings of Duplex Collocations. The results support the recommendation of reading novels as a useful way of improving learners’ vocabulary knowledge. Reading becomes crucial if we think of vocabulary input that learners normally receive in real classroom contexts. It is normally very limited (Shin & Nation, 2008) and collocations in EFL textbooks do not recur enough for the learner to consolidate collocational knowledge (Tsai, 2014). Thus, the likelihood of encountering the same collocation several times in the same text is very small (Boers & Lindstromberg, 2009; Boers et al., 2014).

If we want to ensure that learners are exposed to collocations, a sufficient number of times that will result in learning, materials should therefore be modified to allow this repeated exposure. As Webb et al. (2013) propose, unless reading materials are designed to ensure sufficient exposure to collocations, the potential for learning the

majority of collocations incidentally is small. Modification of written texts should be a key design principle so that the chances of learning collocations incidentally are maximised both in and outside the classroom. Therefore, it might be feasible, in future research, to look into the adaptation of texts for pedagogical purposes.

The main issue in this study was whether more exposures would result in more learning of the figurative meanings of collocations and the results failed to show any effect of frequency of exposure. I have found conflicting evidence in the literature and I am still unsure about the role frequency plays. However, with this I do not want to claim that frequency is not important, but that other factors like salience, context and the degree of semantic transparency could have been the reason for the lack of the effect. However, for practical reasons of the time available with the students, such factors could not be accounted for. Further research should then be conducted to check whether these factors overshadow the frequency effect.

The most important finding of this study, I believe, is that the acquisition of the figurative language through reading is possible. Moreover, the learning gains were durable as shown in the post-test. In sum, these results should be seen as encouraging, as the study mirrored the real-life conditions of reading for pleasure which indicates that the measurement instrument I used is ecologically valid.

It is interesting to note that even though the percentages in this study are higher than in other studies on incidental acquisition of collocations from reading, intentional learning tasks produce higher gains. In a review of studies on explicit focus on vocabulary, Laufer (2005) found that the explicit exercises resulted in up to 86% of the words being retained. In addition, when reading only was compared to reading + explicit activity, the second condition always led to significantly better results (e.g. Szudarski, 2012; Sonbul & Schmitt, 2013; Szudarski & Carter, 2014). It can be therefore concluded that a substantial amount of learning can occur from reading but that, in order to maximise vocabulary gains, the most sensible approach is to combine both approaches (Schmitt, 2008). He points out that intentional vocabulary learning almost always results in higher gains and may even lead to productive levels of mastery.

There was a great deal of individual variation and learning sharply increased at different points for different individuals. However, due to time restrictions, I could not

investigate what factors were determining for each individual and whether there was a common factor that affected the knowledge of the figurative meaning senses of collocations in all three participants. Future research should be conducted before we make clear claims about the impact of other factors on the incidental acquisition of collocations from reading.

In conclusion, the results emphasise the complex process of acquiring L2 collocational knowledge and only future research can shed more light on different factors that influence this knowledge.

Chapter 7 - Summary, conclusions and suggestions for future research

In order to conclude this thesis, the present chapter aims to summarise the findings of the three studies I conducted, provides a general discussion of three issues that I believe are important for our existing knowledge of collocations and discuss the main limitations of this thesis together with some directions for future research.

7.1. Summary of main findings

The thesis attempted to address three main questions regarding the figurative nature of collocations, more specifically V+N and Adj+N collocations.

7.1.1. Study 1

The first question asked whether idiomaticity and polysemy were only atypical traits of a relatively few collocations, or whether a substantial percentage of the category of collocations possessed these characteristics. The latter case would necessitate a rethinking of collocation and an abandonment of the view that they are merely individual words which pattern together. For the purposes of this thesis, I used both the statistical approach (e.g. Sinclair, 1991) and the phraseological approach (e.g. Howarth, 1996) to define collocation. I argued that collocations could have additive, literal meanings, be purely figurative as well as polysemous (with literal and figurative meanings) and subsequently, proposed a threefold classification of collocations into Literal, Figurative and Duplex (Macis & Schmitt, 2016b). The results of Chapter 4 were obtained by performing a careful corpus search for the most frequent V+N and Adj+N collocations and a thorough analysis of numerous concordance lines that were tagged for their literal and figurative meanings.

The findings demonstrated that the majority of my sample collocations, unsurprisingly, did behave as partners as traditionally thought, but a large percentage (about one-quarter) was figurative in nature (Figurative and Duplex Collocations taken together).

In sum, these results suggest that we indeed should change the way we conceptualised collocations before and start approaching them as units that can also be idiomatic. The results of this study are especially important for EFL teachers who do not seem to think of collocations in this way. The new insight into the nature of collocation will certainly help them become more aware of the different characteristics of collocations and reach a better understanding of this important type of formulaic language.

7.1.2. Study 2

The second question addressed the factors that affect the knowledge of the figurative meanings of Duplex Collocations. In particular, Study 2 looked at the amount of knowledge and the effects of frequency, semantic transparency and language use factors like reading, watching TV, listening to music, socialising in English and spending time in an English-speaking country. The participants were asked to complete a) a receptive meaning-recall collocation test in which the target items were embedded in non-defining sentences and b) a questionnaire indicating the amount of their engagement with L2. The data was analysed by using mixed-effects modelling and results show several things.

First, the participants showed rather weak collocational knowledge, even though they were relatively proficient. Second, there was no relationship either between frequency and knowledge of the figurative meaning sense or between semantic transparency and this knowledge. Even though frequency has been shown to have a robust effect on the acquisition of individual words (e.g. Ellis, 2002), it appears it does not exert the same influence on formulaic sequences, especially the figurative meanings. As discussed earlier, I believe that frequency is only one factor that counts in acquisition and that other factors, such as salience, L1 congruency and familiarity might play a more determining role. Regarding semantic transparency, it seems that whenever intuitions are part of the measurement battery, we cannot neglect the fact that they are personal and subjective, can vary a great deal from person to person and will consequently, impact the results to a certain extent.

Study 2 also suggests that language use factors (reading and spending time abroad) had an effect. If learners are actively engaged with their L2, either abroad with native

speakers or with second language books in their L1 environments, then this personal language engagement seems to better predict L2 acquisition than frequency or transparency. In conclusion, the second study shows that the acquisition of L2 collocations is a complex process in which several factors interact with each other.

7.1.3. Study 3

The third question explored incidental acquisition of the figurative meanings of Duplex Collocations through reading. It investigated how frequency of exposure affected these meanings. In three case studies, learners read a semi-authentic novel in which target collocations were divided into different frequency bands. One week and three weeks after the reading, meaning recall of the target items was tested. The measurement procedure was a one-to-one interview that allowed a good indication of whether learning occurred and how much learning there was (partial versus full knowledge).

Results showed that the figurative meanings could be acquired incidentally from reading, that the point at which a substantial amount of learning occurred varied greatly among individuals and that more exposure did not always lead to higher gains. However, in general, frequency had a significant effect on long-term retention as the results were durable for at least three weeks after the treatment.

Overall, the study suggests that frequency (similar to Study 2) is only one factor that affects meaning recall and must be considered with reference to other factors as well. VanPatten, Williams and Rott (2004) state that frequency does not affect all aspects of language equally. Additionally, they claim that frequency might not occur if the form is not salient, is processed differently or is structurally complex and requires explicit learning. Furthermore, Laufer goes as far as to say that frequency does not matter at all (personal communication).

7.2. Main limitations and directions for future research

The limitations of each study are already addressed in the chapters presenting the studies. Therefore, in this section, I will focus on more general limitations that could

also be taken as directions for future studies. There are at least three main limitations.

The first limitation is the fact that all three studies focused on only one type of formulaic sequences, namely collocations. As mentioned in Chapter 2, formulaic language is composed of different categories, each one with its own behaviour and characteristics. Therefore, the obtained results cannot be generalised to all formulaic language. Rather, they are limited to V+N and Adj+N collocations. Whether they are similar to or different from other types of collocations, e.g. grammatical collocations, is an empirical question. In terms of processing, for example, Carrol (2015) and Vilkaite (2016b) show that their target items (Adj+N and N+N collocations in the former case and V+N collocations in the latter case) behave differently. Overall, more research on different categories of collocations would be necessary in order to understand which types of collocations are most idiomatic in nature.

The second limitation is that the thesis looked at the meaning-recall level only. Whereas learning the meaning is usually the first step towards acquiring new vocabulary, it is by no means the end of the learning process. When recognising and understanding vocabulary in listening or reading, or recalling and producing vocabulary in speaking and writing, people need to use all of the vocabulary knowledge they possess for a lexical item when engaging with it in a real life. That vocabulary knowledge requires the mastery at other levels as well: meaning-recognition, form-recall and form-recognition levels. Some researchers have already started looking at various levels simultaneously (e.g. Webb, 2005, 2007). Webb's studies are a clear example of the advantages of using a multi-test and multi-aspect approach to vocabulary research. However, more research is needed to address other aspects than the form-meaning link in vocabulary studies by using a variety of tests to: (a) measure different types of knowledge learned and (b) measure the duration of that knowledge.

The final main limitation is the lack of online measures of learning. Research on incidental acquisition (e.g. Waring & Takaki, 2003; Szudarski, 2014) has shown that L2 learners can acquire new words and collocations incidentally from reading, provided that they encounter the new vocabulary enough times within a limited time span. However, these previous studies assessed lexical knowledge using offline

tasks only. In treatments such as incidental acquisition, it is important to establish empirically what it is that learners pay attention to. When encountering unknown words in reading, L2 learners usually try to figure out their meaning via guessing from context (Bengeleil & Paribakht, 2004) and normally rely on context in trying to figure out the meaning of new words/phrases. Nevertheless, other studies have indicated low rates of success from lexical inferencing (e.g. Nassaji, 2003). What exactly happens when learners find unfamiliar collocations (their figurative meanings) while reading is still not completely clear. Psycholinguistic methods such as eye-tracking are promising in this regard as they can reveal whether a learner attend to a particular phrase or whether and how he/she attempts to infer the meaning. As Conklin and Pellicer-Sánchez (2016) point, "with eye-tracking technology the eye is thought to give researchers a window into the mind" (p. 1). Hence, the inclusion of such a measure in future studies would add to our understanding of the processes involved in the acquisition of collocations.

7.3. General conclusion

7.3.1. Collocations as figurative and polysemous phrases

One of the main aims of this thesis was to show that collocations (statistically-derived) can also be idiomatic and polysemous (i.e. have both literal and figurative meaning senses). The review of literature in Chapters 2 and 3 has revealed the lack of research on such collocations due to the fact that idiomaticity has normally been related to idioms. However, as Taylor (2004, 2006) has pointed out, idiomaticity is not only linked to idioms, but also to other types of formulaic sequences. I believed that until we examined the extent of idiomaticity in these other types, more specifically collocations, we would not be able to make strong claims and appropriate recommendations about second language learners' knowledge and acquisition of these phrases. This motivated me to choose this particular topic for my PhD and conduct my three studies.

The studies presented in this thesis have been an attempt to gain better understanding of the nature of collocations considering the fact that they are believed to be crucial for successful language comprehension and use (e.g. Wray, 2002). These phrases have been shown to cause difficulty for second language

learners in that they are typically underused, overused, misused or avoided by learners (e.g. Laufer 2000; Levitzky-Aviad & Laufer, 2013; Nesselhauf, 2005). Study 1 showed that collocations can indeed be figurative and have both literal and figurative meanings and it therefore justified the need of further investigating this characteristic of collocations. Study 2 indicated that learners struggled with figurative meanings whereas Study 3 showed that these meanings can be acquired incidentally through reading for pleasure. Although these are only initial findings in the area, I believe results of these studies provide a further step in the examination of figurative language and its intricacies.

Having acknowledged the importance of researching collocations, I would also like to reflect on the difficulties that researching collocations entails. One of them is undoubtfully the issue of defining collocations and idioms. In order to address this adequately, I have reviewed the literature on both types of formulaic sequences. The great deal of inconsistency in the terminology that I found made me ask myself the following questions. When is a collocation an idiom? When is an idiom a collocation? Could they be used interchangeably? Take the example of *a piece of cake*, which appears both in collocation and idiom dictionaries (*Collins Cobuild Idioms Dictionary* and *Longman Collocations Dictionary and Thesaurus*, respectively). The reality is that these idiomatic phrases exist in language and what they are called depends largely on the research perspective of the namer. Scholars from the phraseological school (e.g. Howarth, 1996; Moon, 1998) will identify such 2-word combinations as figurative idioms, based on this school's emphasis on semantics and combinability criteria (e.g. small potatoes - "something or someone insignificant"). Scholars from the frequency school (e.g. Durrant, 2014; Sinclair, 1991) might extract the same combinations from corpora, based on criteria of recurrence and statistical measures of co-occurrence and call them collocations.

In this thesis, I have treated collocations and idioms as being the same phenomenon because, after having conducted my PhD research, I am not sure if there are any key features that would allow us to claim that collocations are different from idioms. Having spent four years researching collocations (and to some extent, idioms as well), I started to think that we should not be so dependent on the terminology because one of our primary goals is to apply the results of our studies to the field of second language learning and teaching. Learners are exposed to all kinds of

formulaic language in their input, i.e. to phrases that have different degrees of semantic opacity, phrases that are polysemous or phrases that are very frequent in language. Whereas the question of terminology might exercise academic minds, what is probably most important is that some of the phrases from the input have an idiomatic meaning (i.e. it cannot be understood from the combined meanings of the component words) (e.g. Macis & Schmitt, 2016b)) and this is especially useful when it comes to teaching implications. From that standpoint, I believe we should be more concerned with helping learners amass enough figurative knowledge.

Nevertheless, I am also aware that the reality is that when teaching different types of formulaic sequences, the distinction is unfortunately made between idioms and collocations in all kinds of teaching materials. That being the case, I tried, with my research, to raise awareness of the existence of different types of collocations, one of them being very similar in characteristics to idioms. Even though I am still not sure whether this is the best way of dealing with idioms and collocations, I at least believe that it is something worth pursuing.

7.3.2. Reading

Research has consistently shown that reading facilitates both vocabulary knowledge (e.g. Horst et al., 1998) and overall language proficiency (Renandya et al., 1999). Results of Study 2 indicate that reading also facilitates the acquisition of figurative meanings of collocations. This is congruent with findings from studies focusing on other types of formulaic sequence. Schmitt and Redwood (2011) and González-Fernández and Schmitt (2015) found that the amount of reading was the strongest predictor of knowledge of phrasal verbs and collocations, respectively. Thus, results suggest not only that reading outside the classroom facilitates the acquisition of the figurative meanings of collocations, but also add to the converging evidence that it benefits the learning of formulaic language in general.

I believe that if collocation learning is facilitated by everyday engagement with language, teachers and material designers would do well to incorporate these types of activities into their syllabuses and materials as much as possible. Reading, especially extensive reading, is often recommended as a way of maximising this exposure outside the classroom (e.g. Day and Bamford, 1998). There are several

reasons why it is so attractive to develop vocabulary knowledge through extensive reading. It is considered a "pedagogically efficient" (Huckin & Coady, 1999, p. 182) approach, since two activities - vocabulary acquisition and reading - occur simultaneously. This approach facilitates learner autonomy, can be very pleasurable and motivating, provides learners with the opportunity to meet words in their context of use (Thornbury, 2002), increases sight vocabulary (e.g. Coady, 1997; Nagy et al., 1985; Nation & Coady, 1988) and can result in substantial vocabulary learning (as shown in Study 3). All this seems difficult to accomplish with explicit teaching methods during the relatively short “classroom” time. In fact, Nation (2001, p.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", especially in EFL contexts. Results of Study 3 provide further empirical evidence for the beneficial effect of reading and support and justify the need to implement an extensive reading component in language learning programmes, as claimed by Nation.

Considering the above, it seems that extensive reading should be an indispensable dimension of vocabulary teaching. This is especially important if we accept that vocabulary acquisition is incremental and that any movement towards mastery is beneficial. In that sense, extensive reading can be a very effective tool in promoting this process.

7.3.3. Incidental and intentional approaches

In vocabulary research, there seems to be a general consensus that the more engaged the method of instruction, the higher the learning gains (e.g. Schmitt, 2010). He claims that virtually anything that leads to more exposure, attention, manipulation or time spent on lexical items adds to their learning. Studies on incidental acquisition of both individual words and collocations from reading have demonstrated that this is an effective, but slow way of learning. Taking into account the gains produced from such learning, the majority of studies have argued for the benefits of intentional learning tasks.

I believe that both approaches are valid but that intentional learning is faster and learning gains from this approach are always greater. It has also been repeatedly claimed that the vast number of single words and collocations cannot be all learned

intentionally, highlighting the need to include incidental learning approaches in teaching programmes. Overall, research seems to suggest that the combination of both approaches, i.e. incidental learning activities accompanied by some sort of an explicit activity, appear to be the most effective methodology. I think this is especially important in case of figurative language. Some figurative phrases, Duplex Collocations for example, allow both literal and figurative interpretations. Second language learners tend to arrive at the figurative meaning of a phrase through creating an image based on the literal meanings of its constituent words. However, Boers and Webb (2015) argue that such practice may result in erroneous interpretations of the figurative meanings. This is what might happen when a learner encounter such a phrase in a text. Thus, a follow-up explicit activity, for example matching phrases with their correct figurative meanings or looking up the figurative meaning in a dictionary, might reduce these misinterpretations.

Regardless of the teaching method, studies have also shown that the frequency with which the new vocabulary is met is a determining factor in vocabulary acquisition. Studies on incidental learning of individual words suggest that in order for considerable learning to occur, a word has to be encountered 8-10 times (e.g. Pigada & Schmitt, 2006; Waring & Takaki, 2003). In case of collocations, I found conflicting evidence (e.g. Webb et al., 2013; Pellicer-Sánchez, 2015). Based on these previous findings, I suspected that in case of figurative language, factors other than frequency played a more important role, and I was right. In Study 3, more exposures did not necessarily lead to more learning. Research on idioms indicates that characteristics like salience, familiarity with the phrase, the degree of compositionality and context strongly predict the learning outcome (e.g. Conklin & Schmitt, 2008, Carrol et al., 2016). This seems to be a plausible explanation for the participants' learning gains.

However, previous research suffers from some important limitations regarding the effect of frequency on the acquisition of collocations that prevents us from making well-informed claims about the number of encounters required for successful vocabulary learning. It is mainly the fact that previous studies have used different methodologies and different target materials. Because of this diversity, it is hard to have any informed assumptions about the role of frequency of exposure.

Moreover, when conducting a study like Study 3 (and also Study 2), we cannot take into account all important factors, e.g. individual differences and previous experience with a second language. It is well known that factors like these, as well as many others, are equally crucial for successful language learning. By neglecting them, we miss important information that can provide a better indication of improvements in learners' vocabulary knowledge. At the same time, we have to make informed decisions as to which factors to include and which ones to exclude which will, in turn, affect the generalisability of our results. In other words, we have to be very cautious when making claims about the effectiveness of one approach and make sure that we acknowledge the possibility that, under different circumstances, in different conditions, with learners of different characteristics, we might also have different results.

To conclude, results of the three studies presented in this thesis should not be considered as conclusive, but as a further step in the investigation of figurative language (whatever the terminology) in vocabulary learning contexts. I hope they have raised some important questions as they have clearly shown that looking at and researching collocations in a different way merits further research.

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Appendices

Appendix 1: Examples of Literal Collocations

1	2012	NEWS	CSMonitor	an attribute that allowed the former supreme commander of Allied Forces in Europe to **avoid conflict** during eight years as commander-in-chief. # Ike ended the Korean quagmire he inherited from
2	2011	MAG	NatGeog	wildlife guide. " There's a high potential for injury, so they **avoid conflict** if they can. " Sidebar # With a pink salmon in its jaws,
3	2011	MAG	NGKids	few natural predators to defend against. " They're shy and tend to **avoid conflict**, " says Suzanne Braden of Pandas International. But two males will fight over
4	2011	ACAD	MusicEducJ	learning. 8 In other words, our pedagogical practices and music program policies should **avoid conflict** between home and school values. Religious observance should not come into direct conflict with
5	2010	SPOK	CNN_JohnKing	in public education today is that people have a sort of a desire to **avoid conflict**. They don't want to have arguments, they don't want to get
6	2010	MAG	Cosmopolitan	for herself and the best she can do is keep her head down and **avoid conflict**. But push her too far and her fuse will blow... and an irate
7	2010	MAG	Cosmopolitan	.... BIGGEST GUY INSIGHT One of the most common reasons dudes lie is to **avoid conflict**. That's why they say stuff like " I'll call " or "
8	2010	ACAD	Education	business to be done. " They also reported that they " try to **avoid conflict** which sucks the energy out of everyone " and try to " keep each other
9	2010	ACAD	Education	-- due to the legal employment rights possessed by teachers and the desire to **avoid conflict**. Also, principals are vulnerable, since they have virtually no rights to continued
10	2009	FIC	Bk:ReturnPolicy	. It's these kind of odd intersections that define our friendship. I **avoid conflict** at all costs where Doug goes looking for it. I found Jesus early,
11	2009	MAG	America	address the root causes of terrorism rather than relying solely on military means to **avoid conflict**, " Hubbard's letter urges renewed focus on diplomacy in Afghanistan and greater attention
12	2009	MAG	AmericanSpectator	who have been saying be nice to Iran, don't criticize Iran, **avoid conflict** with Iran, are making a military war more likely. Because if in the

13	2009	MAG	Cosmopolitan	a misdemeanor than a felony. Guys are terrible at breaking up because they **avoid conflict** with women at all costs. The result is that they periodically find themselves emotionally
14	2009	MAG	Essence	despite the naysayers is priceless. PISCES February 19 to March 20 LOVE: **Avoid conflict** now, even if the stagnant communication has you In a funk. Retreat and

Appendix 2: Examples of Figurative Collocations

1	2012	SPOK	CNN Newsroom	system failed us. UNIDENTIFIED-MALE: Timothy (INAUDIBLE), not guilty. UNIDENTIFIED-MALE: It's a **damn shame**. UNIDENTIFIED-MALE: (INAUDIBLE) Coon, not guilty. UNIDENTIFIED-MALE: The police force is not here
2	2012	FIC	SouthwestRev	and abandoned to its streets to learn from the gutter. It was a **damn shame**. Sometimes Danika said she was from Idaho. Other times she mentioned Texas.
3	2011	FIC	Bk:AfterDarkWithScoundrel	's pump. It appears we've missed most of the excitement. A **damn shame** if you ask me. "Bloody hell! It was the perfect ending to
4	2011	MAG	Esquire	Kmart will no longer exist as freestanding stores. And that will be a **damn shame**. # The smart money didn't care if the retailers recovered. They liked
5	2010	FIC	Analog	spoke, her Southern Black accent was especially thick. " It's a **damn shame** any of this had to happen, Miroslaw. Your family. My family.
6	2010	FIC	Analog	and fend off attacks like this new one. " " That's a **damn shame**. " I really meant it. There in the center of their community,
7	2009	SPOK	NPR_TellMore	to me if all we got out of this is, it's a **damn shame** and they didn't sell anymore records. IZRAEL: Ruben? NAVARRETTE: That
8	2009	FIC	Bk:AnOfficerMillionaire	said. " Annoyed, really. " # " Now that's a **damn shame**. " Hunter stopped directly in front of her and did his best to loom
9	2009	FIC	FantasySciFi	worst casualties, with three men killed, including Chilusky, which was a **damn shame**, and fourteen wounded. Two of those were iffy to make it, medical
10	2009	NEWS	SanFranChron	pro-Prop. 8 protester outside the state Supreme Court building " It's just a **damn shame** I have to do this after 40 years. ", who took part in
11	2008	SPOK	CBS_48Hours	. Mr-SHAVERS: Something need to be done about this. It's a **damn shame**. This is the third police shooting in three days. (Photo-of-Williams
12	2008	FIC	USAToday	on the dead woman, saying to no one in particular: // " **Damn shame**. She's so young. Barely even grown up. " // My mother
13	200	FIC	Bk:FrontPorchProphet	gallon of bourbon you have stashed in the stove. It would be a **damn shame** if the brethren found out about it! " The threat was clear. He

	8			
14	2008	FIC	Bk:DamnationFalls	turned serious. " I'm not going to beat around the bush. **Damn shame**, what happened to you. Tish and me, we've been talking about

Appendix 3: Examples of Duplex Collocations

1	2012	FIC	Bk:SnowChildNovel	the shotgun over the doorway, and a revolver that Jack kept in the **top drawer** of the bureau. She had never fired them, but that wasn't what
2	2012	FIC	Bk:GoneGround	handles. # Like iron filins to a magnet my hand reached for the **top drawer**. I glanced over my shoulder out to the front hallway, even though I
3	2012	FIC	Bk:DeathKitchenDiva	he also had a sweet tooth and kept a stash of candy in his **top drawer** alongside a bottle of bourbon. He was also boisterous and loud, almost as
4	2012	FIC	Bk:BrideWoreBlueNovel	resisted the temptation to stand and look out the window. He opened the **top drawer** of his desk and pulled out a file folder, then looked up. "
5	2012	FIC	Bk:Brand-newHuman	Owen's school. I'm up in his room, digging through his **top drawer** with one hand, balancing him awkwardly on my hip with the other. #
6	2012	FIC	Bk:Brand-newHuman	# " Julie, " I shout again. I give up on the **top drawer** and start in on the middle. " Sometimes in life we have to do
7	2011	SPOK	NBC_Today	I think because there are so -- still there are few women in the **top drawer** of management. GIFFORD: That's right. KOTB: So I think once you get
8	2011	SPOK	ABC_20/20	. PARENT-1FEMALE2-# I love you. Where's the razor? JUNE-1HOMELESS-TE# In my **top drawer** in the, in the bedroom. PARENT-1FEMALE2-# Thank you. I'm gon na
9	2011	SPOK	CBS_Early	dollar retirement fund to Madoff. LARRY-LEIF: The Securities and Exchange Commission said he was **top drawer** and now we're told that in twenty-five, thirty years, it was all
10	2011	FIC	Bk:PlainProposalDaughters	on the bed. She'd even slipped a sprig of lavender in the **top drawer** of the chest, one of two drawers she had cleaned out for Shelby to
11	2011	FIC	Bk:TakenByOthers	chair, rolling it back so I could riffle through the back of the **top drawer**. After rummaging through a scattering of old Post-it notes, paper clips, pens
12	2011	FIC	Commoneal	the glass-doored wall cabinet "? the shelves still held china, and the **top drawer** silverware "? he took out socks, underwear, and a shirt. From
13	201	FIC	MichiganQRev	add up to anything much. She found her American Express card in his **top drawer** and snatched it out. She ran upstairs to his closet and dug through his

	1			
14	2011	NEWS	AssocPress	is of innate elegance. # By day, the Gucci gentleman is into **top drawer** sportswear from the Equestrian theme with suede padding on trousers and shirts, jockey jackets

Appendix 4: Nation's 2000th frequency band (extract) (headwords)

ABOVE	BACKGROUND	CABINET
ABUSE	BAKE	CALCULATE
ACCENT	BAND	CALM
ACCESS	BANG	CAMERA
ACCIDENT	BATH	CAMP
ACCOMMODATE	BATHROOM	CAMPAIGN
ACCORDING	BATTERY	CANCEL
ACCURATE	BATTLE	CANDIDATE
ACID	BEAN	CAPABLE
ADEQUATE	BEER	CAPACITY
ADJUST	BEG	CAPITAL
ADOPT	BEHALF	CAREER
ADULT	BEHAVIOUR	CARPET
ADVANCE	BELL	CASH
ADVANTAGE	BELONG	CAST
ADVICE	BELOW	CATEGORY
ADVISE	BELT	CELEBRATE
AFFAIR	BEND	CELL
AFRAID	BESIDE	CENTURY
AFRICA	BEYOND	CHAIN
AGENDA	BID	CHALLENGE
AHEAD	BIKE	CHANNEL
AID	BIN	CHAPTER
AIM	BIND	CHARITY

AIRCRAFT	BIRD	CHASE
AIRPORT	BISCUIT	CHAT
ALARM	BITE	CHEER
ALIVE	BLAME	CHEESE
ALLOCATE	BLANK	CHEMICAL
ALONE	BLESS	CHEQUE
ALTER	BLIND	CHEST

Appendix 5: Pilot test (native speakers)

Test of Figurative Collocations

We are carrying out a study on knowledge of English vocabulary and expressions. The type of expressions we are particularly interested in is called a “collocation”. Colocations are sequences of words that co-occur more often than would be expected by chance (for example, *heavy smoker, meet the deadline* etc). These word combinations, however, can also be figurative, i.e. they can have an additional meaning that is totally different from the meanings of its component words. For example, *dirty laundry* literally means laundry that is not clean, but idiomatically it refers to personal matters that could be embarrassing if made public.

This test has two parts. In the first part you will find sentences with blank spaces. We want to know whether you can guess the missing phrase just from the sentence context. If not, just circle a). If you think you know what the phrase is, you can guess up to twice on b) and c).

In the second part, you will be given the same sentences with the target expressions inserted, and whose meaning you have to write in the spaces provided. Remember: you do not have to explain the whole sentences, only the phrase written in bold/italics.

At the end, the researcher will ask you some questions about your impressions of the test.

The test is **voluntary and completely confidential**, and the results will be used **only** for research purpose.

Part 1

1. She is the only _____ among us.

   a) Don’t know / I can´t guess

   b) _____

   c) _____

2. The project was a _____ from the start.

   a) I don´t know/ I can´t guess

   b) _____

   c) _____

3. I know my husband is going to _____ when I tell him about this.

   a) I don´t know/ I can´t guess

   b) _____

   c) _____

4. My boss _____ on this project.

   a) I don´t know/ I can´t guess

   b) _____

   c) _____

5. He is a _____ in this business.

   a) I don´t know/ I can´t guess

   b) _____

   c) _____

6. Because of her personality, she is known as the _____.

   a) I don´t know/ I can´t guess

   b) _____

   c) _____

7. We will not _____ our _____ to the new government.

   a) I don´t know/ I can´t guess

   b) _____

   c) _____

8. This business is full of _____.

   a) I don´t know/ I can´t guess

   b) _____

   c) _____

9. “It’s your turn now”, he shouted to her, so “_____!"

   a) I don´t know/ I can´t guess

   b) _____

   c) _____

10. They know you are a _____.

    a) I don´t know/ I can´t guess

    b) _____

    c) _____

11. This issue is a _____ for them.

a) I don´t know/ I can´t guess

b) _____

c) _____

12. The next month could be the _____ for lots of us.

a) I don´t know/ I can´t guess

b) _____

c) _____

13. I like him, he is an _____.

a) I don´t know/ I can´t guess

b) _____

c) _____

14. This task seems like _____ to us.

a) I don´t know/ I can´t guess

b) _____

c) _____

15. This job is a _____ to the good life.

a) I don´t know/ I can´t guess

b) _____

c) _____

16. After our meeting, he told me to _____.

a) I don´t know/ I can´t guess

b) _____

c) _____

17. His arguments don´t _____.

a) I don´t know/ I can´t guess

b) _____

c) _____

18. I need a _____ in this job.

a) I don´t know/ I can´t guess

b) _____

c) _____

19. That song is a bit _____ now.

a) I don´t know/ I can´t guess

b) _____

c) _____

20. The company tries to _____ on the prices.

a) I don´t know/ I can´t guess

b) _____

c) _____

21. She wants to buy a _____ car.

a) I don´t know/ I can´t guess

b) _____

c) _____

22. She was getting _____ about her date with Tom.

a) I don´t know/ I can´t guess

b) _____

c) _____

23. He is the _____ of our political party.

a) I don´t know/ I can´t guess

b) _____

c) _____

24. He works in the _____ sector.

a) I don´t know/ I can´t guess

b) _____

c) _____

25. He organised a _____ committee to study the issue.

a) I don´t know/ I can´t guess

b) _____

c) _____

26. It surprises me the _____ he gets in this company.

a) I don´t know/ I can´t guess

b) _____

c) _____

27. We need to plan for a _____.

a) I don´t know/ I can´t guess

b) _____

c) _____

28. We have to _____ very early in the morning.

a) I don´t know/ I can´t guess

b) _____

c) _____

29. The whole country _____ as it watched its news.

a) I don´t know/ I can´t guess

b) _____

c) _____

30. His life seems to be full of _____.

a) I don´t know/ I can´t guess

b) _____

c) _____

31. The talk about the new factory was a _____ to the neighbourhood.

    a) I don´t know/ I can´t guess

    b) _____

    c) _____

32. We are developing a new system with less _____.

    a) I don´t know/ I can´t guess

    b) _____

    c) _____

Part 2

1. She is the only ***fancy pants*** among us.
   _____
2. The project was a ***dead duck*** from the start.
   _____
3. My husband is going to ***hit the roof*** when I tell him about this.
   _____
4. My boss ***dropped the ball*** on this project.
   _____
5. He is a ***big wheel*** in this business.
   _____
6. Because of her personality, she is known as the ***queen bee.***
   _____
7. We will not ***bend*** our ***knee*** to the new government.
   _____
8. This business in full of ***fat cats***.
   _____
9. “It’s your turn now”, he shouted to her, so “***Break a leg***!"
   _____
10. They know you are a ***soft touch***.
    _____
11. This issue is a ***sore spot*** for them.
    _____
12. The next month could be the ***acid test*** for lots of us.
    _____

13. I like him, he is an ***old hand***.

_____

14. This task seems like ***small potatoes*** to us.

_____

15. This job is a ***one-way ticket*** to the good life.

_____

16. After our meeting, he told me to ***take a hike***.

_____

17. His arguments don´t ***hold water***.

_____

18. I need a ***thick skin*** in this job.

_____

19. That song is a bit ***old hat*** now.

_____

20. The company tries to ***hold the line*** on the prices.

_____

21. She wants to buy a ***top dr***a***wer*** car.

_____

22. She was getting ***cold feet*** about her date with Tom.

_____

23. He is the ***dark horse*** of our political party.

_____

24. He works in the ***white collar*** sector.

_____

25. He organised a ***blue ribbon*** committee to study the issue.

_____

26. It surprises me the ***free ride*** he gets in this company.

_____

27. We need to plan for a ***rainy day***.

_____

28. We have to ***hit the road*** very early in the morning.

_____

29. The whole country ***held its breath*** as it watched its news.

_____

30. His life seems to be full of ***brick walls***.

_____

31. The talk about the new factory was a ***red flag*** to the neighbourhood.

_____

32. We are developing a new system with less ***red tape***.

_____

Part 3

Interview

1. Was it easy to guess what the missing expressions were?
2. Is there anything misleading on the test?
3. Are there any awkward sentences?
4. Does the context allow literal or figurative meaning?
5. Does the context push you to figurative meaning?

Appendix 6: Interview

1. Did you know the target expressions? Or did you guess them?
2. Was there anything on the test that felt awkward to you?
3. Are there any awkward sentences?
4. Why did you leave blank spaces? Was it because you really did not know the expression or was there another reason?

Appendix 7: The collocation test

Information sheet

Hoja de información

As part of my PhD at the University of Nottingham, I am carrying out a study investigating students' knowledge of polysemous collocations in English. I am going to administer a test to voluntary participants from various backgrounds and with various English language proficiency levels, and then analyse and compare the scores of these tests.

Como parte de mi doctorado en la Universidad de Nottingham, estoy llevando a cabo un estudio sobre el conocimiento que presentan los estudiantes de las colocaciones polisémicas en inglés. Voy a administrar una prueba a voluntarios pertenecientes a varios estratos sociales y que presentan diferentes niveles de inglés, procediendo luego a analizar y a comparar los resultados de dichas pruebas.

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.

Me he acercado a usted porque estoy interesada en evaluar el conocimiento de los hablantes del inglés. Estaría muy agradecida de poder contar con su participación.

You will now be given a test with 32 items and a questionnaire. You have about 45 minutes.

Ahora le voy a pasar una prueba de 32 colocaciones más un cuestionario. Cuenta con 45 minutos aproximadamente.

You are free to withdraw from the study at any time. At every stage, your name will remain confidential. The data will be anonymised before the analysis and will be kept securely and used for academic purposes only.

Tiene la libertad de retirarse de este estudio en cualquier momento. En cada etapa, su nombre va a permanecer confidencial. Los datos van a quedar en el

anonimato antes del análisis y van a ser guardados de una forma segura y usados para propósitos académicos solamente.

Should you have any further queries about the study or if you are interested in receiving information about the results of this study, please feel free to email me at marijana.macis@nottingham.ac.uk

En caso de que tuviera más preguntas sobre el estudio o le interesara recibir información sobre los resultados del estudio, por favor tenga la bondad de contactarme al correo marijana.macis@nottingham.ac.uk.

University of Nottingham **Universidad de Nottingham**

Consent Form **Formulario de consentimiento**

Project title: **Second language learners' knowledge of polysemous collocations**

Título de proyecto: El conocimiento de las colocaciones polisémicas por parte de los aprendices de un segundo idioma

Put an X in the corresponding box!

Ponga una X en el recuadro adecuado!

1. I confirm that the purpose of the study has been explained and that I have understood it. ***Confirmo que el propósito de este estudio ha sido explicado y que lo he entendido.***	YES ☐	NO ☐
2. I have had the opportunity to ask questions and they have been successfully answered. ***He tenido la oportunidad de hacer preguntas y ellas han sido exitosamente respondidas***	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. ***Entiendo que mi participación en este estudio es voluntaria y que tengo la libertad de retirarme***	YES ☐	NO ☐

del estudio en cualquier momento, sin explicar el porqué y sin consecuencias.

4. I understand that all data are anonymous and that there will not be any connection between the personal information provided and the data.
   Entiendo que todos los datos son anónimos y que no habrá ninguna conexión entre la información personal entregada y los datos.

YES ☐ NO ☐

5. I understand that there are no known risks or hazards associated with participating in this study.
   Entiendo que no hay riesgos o peligros asociados a la participación en este estudio.

YES ☐ NO ☐

6. I confirm that I have read and understood the attached information and that I agree to participate in this study.
   Confirmo que he leído y entendido la información adjuntada y estoy de acuerdo en tomar parte en este estudio.

YES ☐ NO ☐

7. I have received a copy of this Consent Form and of the accompanying Information Sheet.
   He recibido una copia del formulario de consentimiento y de la hoja información anexada.

YES ☐ NO ☐

Participant name:

Nombre del participante

Date:

Fecha

Instructions

We are carrying out a study on Spanish speakers' knowledge of English vocabulary and expressions. The type of expressions we are particularly interested in is called a "collocation". Colocations are sequences of words that co-occur more often than would be expected by chance (for example, *heavy smoker, meet the deadline* etc). These word combinations, however, can also be polysemous, i.e. they can have an additional, figurative meaning that is totally different from the meanings of its component words. In this test, we are interested in the idiomatic meaning of these expressions.

Example: *dirty laundry*

1) Literal meaning: laundry that is not clean
2) Figurative meaning: personal matters that could be embarrassing if made public

In this test, you will be given 32 sentences that contain the target expressions, and whose meaning you have to write in the spaces provided. Next to each sentence, please mark with an *X* how well you know the collocation: (a) I know it, (b) I have some idea of the meaning, but I am not sure, or (c) I don't know it. If you do not know the collocation, please leave the space blank.

You do not have to explain the whole sentences, only the collocations written in bold/italics. Write the meaning of these phrases in your choice of Spanish or English.

Example

	I know it	**I have some idea, but I am not sure**	**I don't know it**
He is an ***open book*** to me. _____Very easy to understand what he is thinking_____.	*x*		

The test is **voluntary and completely confidential**, and the results will be used **only** for research purpose.

Good luck!

Instrucciones

Estamos llevando a cabo un estudio sobre el conocimiento de vocabulario y expresiones en inglés que poseen los hablantes del español. El tipo de expresión que nos interesa particularmente se llama “colocación”. Colocaciones son combinaciones de dos palabras que aparecen juntas con mucha frecuencia (por ejemplo, *heavy smoker, meet the deadline* etc). Sin embargo, dichas colocaciones también pueden ser polisémicas, es decir, pueden tener un significado adicional o figurativo, que no puede deducirse por el significado de las palabras constituyentes. En este estudio estamos interesados en el significado no literal o figurativo de estas expresiones.

Ejemplo: *ropa sucia*

1) Significado literal: ropa que no está limpia
2) Significado figurativo: asuntos personales que se deberían solucionar en privado

En este test, hay 32 oraciones con colocaciones cuyo significado tiene que escribir en los espacios en blanco. Al lado de cada oración, por favor marque con una X cuan tan bien conoce la colocación: (a) La conozco, (b) Tengo una idea de lo que puede significar, pero no estoy seguro/a, o (c) No la conozco. Si no conoce la colocación, deje el espacio en blanco.

No tiene que traducir las oraciones completas, solo las colocaciones marcadas en negrita y cursiva. Escriba el significado de estas frases en el idioma de su elección, ya sea inglés o español.

Ejemplo

	I know it	**I have some idea, but I am not sure**	**I don't know it**
He is an ***open book*** to me. _____Very easy to understand what he is thinking_____.	*X*		

El test es **absolutamente voluntario y confidencial**, y los resultados serán utilizados **solo** con propósitos de investigación.

¡Buena suerte!

	Target expressions	I know it	I have some idea, but I am not sure	I don't know it
1	Because of her personality, she is known as the ***queen bee***. _____ _____			
2	My boss ***dropped the ball*** on this project. _____ _____			
3	I need a ***thick skin*** in this job. _____ _____			
4	She is the only ***fancy pants*** among us. _____ _____			
5	That song is a bit ***old hat*** now. _____ _____			
6	His life seems to be full of ***brick walls***. _____ _____			
7	This issue is a ***sore spot*** for them. _____ _____			

8 After our meeting, he told me to ***take a hike***.

_____

_____

9 We will not ***bend our knee*** to the new government.

_____

_____

10 He organised a ***blue ribbon*** committee to study the issue.

_____

_____

11 We need to plan for a ***rainy day***.

_____

_____

12 The company tries to ***hold the line*** on the prices.

_____

_____

13 We have to ***hit the road*** very early in the morning.

_____

_____

14 The project was a ***dead duck*** from the start.

_____

_____

15 The whole country ***held its breath*** as it watched its news.

_____

_____

16 She was getting ***cold feet*** about her date with Tom.

_____

_____

17 This task seems like ***small potatoes*** to us.

_____

_____

18 He is the ***dark horse*** of our political party.

_____

_____

19 We are developing a new system with less ***red tape***.

_____

_____

20 This business is full of ***fat cats***.

_____

_____

21 My husband is going to ***hit the roof*** when I tell him about this.

_____

_____

22 His arguments don´t ***hold water***.

_____

_____

23 She wants to buy a ***top dr***a***wer*** car.

_____

_____

24 I like him, he is an ***old hand***.

_____

_____

25 “It’s your turn now”, he shouted to her, so “***Break a leg***!"

_____

_____

26 It surprises me the ***free ride*** he gets in this company.

_____

_____

27 The talk about the new factory was a ***red flag*** to the neighbourhood.

_____

_____

28 He works in the ***white collar*** sector.

_____

_____

29 He is a ***big wheel*** in this business.

_____

_____

30 The next month could be the ***acid test*** for lots of us.

_____

_____

Two excluded target collocations:

1. They know you are a ***soft touch***.

2. This job is a ***one-way ticket*** to the good life.

Appendix 8: Language use questionnaire

In order to help us to better understand, interpret and classify your answers, would you mind telling us more about your personal and language learning background? Please provide the following information by putting an X in the box or writing your response in the space.

Para ayudarnos a entender, interpretar y clasificar 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 una X en el recuadro o escribiendo tu respuesta en el espacio en blanco.

Gender: Male Female

Age: _____

How many years have you been studying English? _____

What year are you in at the moment? □1st □2nd □3rd □4th

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 cooperation! We appreciate your help and contribution to this study a lot. Thank you!

Finalmente, nos gustaría agradecerte mucho tu cooperación. Apreciamos muchísimo tu ayuda y contribución a este estudio. ¡Muchas gracias!

Appendix 9: Transparency task

We are carrying out a study on knowledge of English vocabulary and expressions. The type of expressions we are particularly interested in is called a "collocation". Collocations are sequences of words that co-occur more often than would be expected by chance (for example, *heavy smoker, meet the deadline* etc). These word combinations, however, can also be polysemous, i.e. they can have an additional, figurative meaning that is totally different from the meanings of its component words.

Example: *dirty laundry*

3) Literal meaning: laundry that is not clean
4) Figurative meaning: personal matters that could be embarrassing if made public

In this test, you will be given 32 target expressions with both their literal and figurative meanings. For each expression, you will be asked whether you knew its figurative meaning. Then, you will have to rate each target expression in terms of transparency, i.e. how easy/difficult it is to guess the figurative meaning of an expression based on the literal meaning of its component words.

Examples

Open book refers to a person who is easy to understand what they are thinking. This is similar to an open book that is easy to read. Therefore, you might rate it as quite transparent (1 2 3 (4)).

Big brother, on the other hand, refers to the government or a big organization that watches you. This is not very clear from the literal meanings of "big" and "brother", therefore it is difficult to guess and you might rate it as less transparent ((1) 2 3 4).

The test is **voluntary and completely confidential**, and the results will be used **only** for research purpose.

1. *Queen bee*

Literal meaning: the fertile female bee in a hive

Figurative meaning: a woman in a position of dominance or ascendancy over her peers or associates

I knew the figurative meaning Yes No

	Very difficult			**Very easy**
Transparency:	1	2	3	4

2. *Drop the ball*

Literal meaning: let the ball fall to the ground

Figurative meaning: to make a serious mistake

I knew the figurative meaning Yes No

	Very difficult			**Very easy**
Transparency:	1	2	3	4

3. *Thick skin*

Literal meaning: skin that is very thick

Figurative meaning: The ability to withstand criticism and show no signs of any criticism you may receive

I knew the figurative meaning Yes No

	Very difficult			**Very easy**
Transparency:	1	2	3	4

4. *Fancy pants*

Literal meaning: Pants that are posh and impressive

Figurative meaning: Someone who is dressed fancy or act in a fancy matter

I knew the figurative meaning Yes No

	Very difficult			**Very easy**
Transparency:	1	2	3	4

5. *Old hat*

Literal meaning: A hat that is not new

Figurative meaning: Old-fashioned, dated

I knew the figurative meaning Yes No

	Very difficult			**Very easy**
Transparency:	1	2	3	4

6. *Brick wall*

Literal meaning: A wall made of bricks

Figurative meaning: An obstacle

I knew the figurative meaning Yes No

	Very difficult			**Very easy**
Transparency:	1	2	3	4

7. *Sore spot*

Literal meaning: A spot that is painful

Figurative meaning: A subject which someone would prefer not to talk about because it makes them angry or embarrassed

I knew the figurative meaning Yes No

	Very difficult			**Very easy**
Transparency:	1	2	3	4

8. *Take a hike*

Literal meaning: To go on an extended walk for pleasure or exercise

Figurative meaning: To leave because one's presence is unwanted

I knew the figurative meaning Yes No

	Very difficult			**Very easy**
Transparency:	1	2	3	4

9. *Bend one's knee*

Literal meaning: To form a curve in one's knee

Figurative meaning: To submit to authority

I knew the figurative meaning Yes No

	Very difficult			**Very easy**
Transparency:	1	2	3	4

10. Blue ribbon

Literal meaning: A ribbon that is blue

Figurative meaning: Of superior or unmatched quality

I knew the figurative meaning Yes No

	Very difficult			**Very easy**
Transparency:	1	2	3	4

11. Rainy day

Literal meaning: A day when it rains

Figurative meaning: A time of need or trouble

I knew the figurative meaning Yes No

	Very difficult			**Very easy**
Transparency:	1	2	3	4

12. Hold the line

Literal meaning: Hold the phone line open

Figurative meaning: Not to exceed a certain limit regarding someone or something

I knew the figurative meaning Yes No

	Very difficult			**Very easy**
Transparency:	1	2	3	4

13. Hit the road

Literal meaning: To come into contact with the road forcefully

Figurative meaning: To set out, as on a trip; leave

I knew the figurative meaning Yes No

	Very difficult			**Very easy**
Transparency:	1	2	3	4

14. Dead duck

Literal meaning: A duck that is not alive

Figurative meaning: A person or thing doomed to death, failure, etc. esp. because of a mistake or misjudgment

I knew the figurative meaning Yes No

	Very difficult			**Very easy**
Transparency:	1	2	3	4

15. Hold one's breath

Literal meaning: To not exhale

Figurative meaning: To wait expectantly or anxiously

I knew the figurative meaning Yes No

	Very difficult			**Very easy**
Transparency:	1	2	3	4

16. Cold feet

Literal meaning: Feet that are cold

Figurative meaning: Fearfulness or timidity preventing the completion of a course of action; loss or lack of courage or confidence

I knew the figurative meaning Yes No

	Very difficult			**Very easy**
Transparency:	1	2	3	4

17. Small potatoes

Literal meaning: Potatoes that are small in size

Figurative meaning: Something or someone insignificant

I knew the figurative meaning Yes No

	Very difficult			**Very easy**
Transparency:	1	2	3	4

18. Dark horse

Literal meaning: A horse that is dark coloured

Figurative meaning: A competitor that is relatively unknown or that wins unexpectedly

I knew the figurative meaning Yes No

	Very difficult			**Very easy**
Transparency:	1	2	3	4

19. Red tape

Literal meaning: A tape that is red coloured

Figurative meaning: Obstructive official routine or procedure; time-consuming bureaucracy

I knew the figurative meaning Yes No

	Very difficult			**Very easy**
Transparency:	1	2	3	4

20. Fat cat

Literal meaning: A cat that is overweight

Figurative meaning: A very wealthy or influential person

I knew the figurative meaning Yes No

	Very difficult			**Very easy**
Transparency:	1	2	3	4

21. Hit the roof

Literal meaning: To come into contact with a roof forcefully

Figurative meaning: Get very angry and fly into a rage

I knew the figurative meaning Yes No

	Very difficult			**Very easy**
Transparency:	1	2	3	4

22. (Not) hold water

Literal meaning: Not be able to contain water

Figurative meaning: If an opinion or a statement does not hold water, it can be shown to be wrong

I knew the figurative meaning Yes No

	Very difficult			**Very easy**
Transparency:	1	2	3	4

23. Top drawer

Literal meaning: The uppermost drawer of a filing cabinet or a dresser

Figurative meaning: The highest level in status, excellence, or importance

I knew the figurative meaning Yes No

	Very difficult			**Very easy**
Transparency:	1	2	3	4

24. Old hand

Literal meaning: A hand that is old in age

Figurative meaning: Someone who is experienced at doing something

I knew the figurative meaning Yes No

	Very difficult			**Very easy**
Transparency:	1	2	3	4

25. Break a leg

Literal meaning: To fracture a leg

Figurative meaning: Good luck!

I knew the figurative meaning Yes No

	Very difficult			**Very easy**
Transparency:	1	2	3	4

26. Free ride

Literal meaning: A ride that costs nothing

Figurative meaning: Something acquired without the ordinary effort or cost

I knew the figurative meaning Yes No

	Very difficult			**Very easy**
Transparency:	1	2	3	4

27. Red flag

Literal meaning: A flag that is red coloured

Figurative meaning: A warning signal; something that demands attention or provokes an irritated reaction

I knew the figurative meaning Yes No

	Very difficult			**Very easy**
Transparency:	1	2	3	4

28. White collar

Literal meaning: A collar that is white coloured

Figurative meaning: Office workers in middle or upper classes

I knew the figurative meaning Yes No

	Very difficult			**Very easy**
Transparency:	1	2	3	4

29. Big wheel

Literal meaning: A wheel that is big in size

Figurative meaning: A very important person

I knew the figurative meaning Yes No

	Very difficult			**Very easy**
Transparency:	1	2	3	4

30. Acid test

Literal meaning: A test that measures the acidity of something

Figurative meaning: A decisive or critical test

I knew the figurative meaning Yes No

	Very difficult			**Very easy**
Transparency:	1	2	3	4

Excluded target collocations:

1. *Soft touch*

Literal meaning: Touch that is gentle

Figurative meaning: One who is easily persuaded or taken advantage of

I knew the figurative meaning Yes No

	Very difficult			**Very easy**
Transparency:	1	2	3	4

2. *One-way ticket*

Literal meaning: A ticket in one direction

Figurative meaning: An escape; an irrevocable action

I knew the figurative meaning Yes No

	Very difficult			**Very easy**
Transparency:	1	2	3	4

Appendix 10: Complete R analysis

Model 1 - The comprehensive model

Fixed effect	Estimate	Std. Error	*z*-value	*p*-value
(Intercept)	-2.093286	0.337756	-6.198	5.73e-10 ***
Year of EFL study	0.290050	0.069970	4.145	3.39e-05 ***
Time abroad	0.055516	0.026691	2.080	0.0375 *
Time reading	0.014561	0.007623	1.910	0.0561 .
TV	0.019717	0.012371	1.594	0.1110
Music	-0.007631	0.009497	-0.804	0.4217
Socialising	0.009825	0.010044	0.978	0.3280

Random effects	Variance
Subject	0.4265
Item	1.7118

Significance values are estimated by the R package lmerTest (version 2.0–11; Kuznetsova, Brockhoff & Christensen, 2014): ∗∗∗ p < .001, ∗∗ p < .01, ∗ p < .05, + p < .10

BACKWARDS ANALYSIS

1. Music eliminated

Fixed effect	Estimate	Std. Error	*z*-value	*p*-value
(Intercept)	-2.179336	0.321226	-6.784	1.17e-11 ***
Year of EFL study	0.304013	0.068004	4.471	7.80e-06 ***
Time abroad	0.054933	0.026750	2.054	0.0400 *
Time reading	0.014100	0.007617	1.851	0.0641 .
TV	0.017079	0.011946	1.430	0.1528
Socialising	0.007773	0.009738	0.798	0.4247

Random effects	Variance
Subject	0.4295
Item	1.7121

Significance values are estimated by the R package lmerTest (version 2.0–11; Kuznetsova, Brockhoff & Christensen, 2014): *** p < .001, ** p < .01, * p < .05, + p < .10

2. Socialising eliminated

Fixed effect	Estimate	Std. Error	*z*-value	*p*-value
(Intercept)	-2.1835	0.3217	-6.788	1.14e-11 ***
Year of EFL study	0.3061	0.0682	4.487	7.22e-06 ***
Time abroad	0.0574	0.0267	2.153	0.0314 *
Time reading	0.0156	0.0074	2.104	0.0354 *
TV	0.0194	0.0116	1.672	0.0945 .

Random effects	Variance
Subject	0.4341
Item	1.7118

Significance values are estimated by the R package lmerTest (version 2.0–11; Kuznetsova, Brockhoff & Christensen, 2014): *** p < .001, ** p < .01, * p < .05, + p < .10

3. TV eliminated (FINAL MODEL)

Fixed effect	Estimate	Std. Error	*z*-value	*p*-value
(Intercept)	-2.0407	0.3107	-6.568	5.09e-11 ***
Year of EFL study	0.2972	0.0689	4.319	1.57e-05 ***
Time abroad	0.0581	0.0270	2.152	0.0314 *
Time reading	0.0201	0.0070	2.881	0.0040 **

Random effects	Variance
Subject	0.4506
Item	1.7118

Significance values are estimated by the R package lmerTest (version 2.0–11; Kuznetsova, Brockhoff & Christensen, 2014): ∗∗∗ p < .001, ∗∗ p < .01, ∗ p < .05, + p < .10

Model that includes F Frequency and transparency and the above significant factors

Fixed effect	Estimate	Std. Error	*z*-value	*p*-value
(Intercept)	-1.687742	1.400531	-1.205	0.22818
LogFrequency	-0.197613	0.211146	-0.936	0.34932
Transparency	0.218842	0.374566	0.584	0.55905
Year of EFL study	0.297210	0.068809	4.319	1.56e-05 ***
Time abroad	0.058111	0.027012	2.151	0.03145 *
Time reading	0.020159	0.006996	2.881	0.00396 **

Random effects	Variance
Subject	0.4506
Item	1.6414

Significance values are estimated by the R package lmerTest (version 2.0–11; Kuznetsova, Brockhoff & Christensen, 2014): $***$ p < .001, $**$ p < .01, $*$ p < .05, + p < .10

Appendix 11: Pre-test

The following expressions can be both literal and figurative. For example, *dirty laundry* literally means “laundry that is not clean”, but figuratively refers to “personal matters that could be embarrassing if made public”.

Read the following sentences and pay attention to the word combinations marked in bold.

1. Say everything you know about the meaning of each word combination (no matter how trivial or vague it appears)

2. Indicate on a scale 1-4 how certain you are of your responses (1=Very uncertain; 4=Very certain)

1. **Big Brother** is always there.

2. He is an **open book**.

3. You are such a **wet blanket**.

4. After only 1 day at home, he started to **climb the wall**.

5. This will **open your eyes**.

6. He would **run a mile** if she was here.

7. I hope we don’t **drop the ball**.

8. That song is **old hat**.

9. We need some **new blood** here.

10. His life is full of **brick walls**.

11. This is a **sore spot** for them.

12. After our meeting, he told me to **take a hike**.

13. They know you are a **soft touch**.

14. I will not **bend my knee** to him.

15. This is a **blue ribbon** event.

16. We have to **hit the road** now.

17. That project is a **dead duck**.

18. The whole country **held its breath**.

19. This is **small potatoes** to us.

20. He is our **dark horse**.

21. We want a system with less **red tape**.

22. This place is full of **fat cats**.

23. My husband is going to **hit the roof**.

24. His ideas don´t **hold water**.

25. This is a **top drawer** car.

26. I like him, he is an **old hand**.

27. He shouted to her, **"Break a leg**!"

28. He gets a **free ride** here.

29. The talk about the new factory was a **red flag** to us.

30. He works in the **white collar** sector.

31. He is a **big wheel** here.

32. The next month is their **acid test**.

33. What he says will **carry weight**.

34. I had to **bite my tongue** when he told me that.

35. I wouldn't **miss the boat** if I were you.

36. You will need **deep pockets** to stay here.

37. They will soon **tie the knot**.

38. I guess I really **laid an egg**, huh?

39. Let’s think of the **big picture**.

40. He is the one who **pulls the strings**.

41. I think he is going to **kick the bucket** soon.

42. He finally **saw the light**.

43. She’s been **making noises** about a new job.

44. Our club tries to **build bridges** in our community.

Appendix 12: Reading attitudes questionnaire

1) How often do you read for pleasure in English on a weekly/monthly basis?

2) Have you enjoyed reading the book?

3) Who was your favourite character and why?

4) What character did you not like?

5) How long did it take you to read the book?

6) How often did you read?

7) Was the level of the book ok for you? In other words, did you find it difficult to understand? Was it difficult to follow the storyline? If yes, why?

8) Did you have to read some parts of the book more than once in order to understand?

9) Overall, was the book comprehensible, meaningful and interesting?

10) Would you read another book like this?

11) Were there many unknown words?

12) Which strategies did you use for dealing with unknown words?

13) Do you think you have learnt any of the unknown words?

14) Did you notice any of the phrases from the interview (pre-test) and were they salient?

15) Have you met any of these phrases in other contexts between the first (pre-test) and second interview (post-test) and during the reading time?

16) Have you consulted a dictionary or asked anybody what these phrases meant during the reading time?

Appendix 13: Target items and frequency bands

No	Target collocation	Number of occurrences
1	Make noises	1
2	Wet blanket	1
3	Free ride	2
4	Acid test	3
5	Bend one's knee	3
6	Build bridges	3
7	White collar	3
8	Lay an egg	5
9	Open book	5
10	Small potatoes	5
11	Soft touch	5
12	Old hat	6
13	Run a mile	6
14	Big Brother	7
15	Carry weight	8
16	Hold one's breath	8
17	New blood	8
18	Open one's eyes	8
19	Red tape	8
20	Tie the knot	8
21	Brick wall	12
22	Fat cat	12
23	See the light	12

24	Bite one’s tongue	13
25	Dead duck	14
26	Old hand	14
27	Pull the strings	14
28	Sore spot	14
29	Climb the wall	15
30	Not hold water	16
31	Red flag	16
32	Big wheel	20
33	Drop the ball	20
34	Kick the bucket	20
35	Take a hike	20
36	Hit the roof	23
37	Blue ribbon	25
38	Hit the road	25

Appendix 14: A sample of the reading speed task

The Mysterious Affair at Styles (Chapter 1)

By Agatha Christie

The intense interest aroused in the public by what was known at the time as "The Styles Case" has now somewhat subsided. Nevertheless, in view of the worldwide notoriety which attended it, I have been asked, both by my friend Poirot and the family themselves, to write an account of the whole story. This, we trust, will effectually silence the sensational rumours which still persist.

I will therefore briefly set down the circumstances which led to my being connected with the affair.

I had been invalided home from the Front; and, after spending some months in a rather depressing Convalescent Home, was given a month's sick leave. Having no near relations or friends, I was trying to make up my mind what to do, when I ran across John Cavendish. I had seen very little of him for some years. Indeed, I had never known him particularly well. He was a good fifteen years my senior, for one thing, though he hardly looked his forty-five years. As a boy, though, I had often stayed at Styles, his mother's place in Essex.

We had a good yarn about old times, and it ended in his inviting me down to Styles to spend my leave there.

"The mater will be delighted to see you again--after all those years," he added.

"Your mother keeps well?" I asked.

"Oh, yes. I suppose you know that she has married again?"

I am afraid I showed my surprise rather plainly. Mrs. Cavendish, who had married John's father when he was a widower with two sons, had been a handsome woman of middle-age as I remembered her. She certainly could not be a day less than seventy now. I recalled her as an energetic, autocratic personality, somewhat inclined to charitable and social notoriety, with a fondness for opening bazaars and

playing the Lady Bountiful. She was a most generous woman, and possessed a considerable fortune of her own….

Appendix 15: A sample of the grammar test

1. What year did you _____ university?
  a) graduate
  b) graduate from
  c) graduating
  d) graduating from

2. It seems to be getting worse. You had better _____ a specialist.
  a) consult
  b) consult to
  c) consult for
  d) consult by

3. Chicago is a large city, _____?
  a) aren't it
  b) doesn't it
  c) won't it
  d) isn't it

4. _____ some people like a great deal of variety in their lives, I am happier when my schedule is quite routine.
  a) Due to the fact that
  b) Whereas
  c) No matter what
  d) However

5. Do you enjoy _____?
  a) to swim
  b) swimming
  c) swim
  d) to swimming

6. I have trouble _____.

a) to remember my password

b) to remembering my password

c) remember my password

d) remembering my password

7. Do you have _____ to do today? We could have a long lunch if not.

a) many work

b) much work

c) many works

d) much works

8. While most people believe in ghosts, _____ who do not.

a) there are a few

b) are few

c) that are a few

d) there is a few

9. I cannot understand my neighbour's accent. I wish she would _____.

a) speak clearer

b) clearer speak

c) more clearly speak

d) speak more clearly

10. The board meeting was held _____.

a) at Tuesday

b) on Tuesday

c) with Tuesday

d) in Tuesday

Appendix 16: Definitions of the target Duplex Collocations

1. *Big brother*

Literal meaning: An older brother

Figurative meaning: A person or organisation exercising total control over people's lives

2. *Drop the ball*

Literal meaning: Let the ball fall to the ground

Figurative meaning: Make a serious mistake; mishandle things

3. *Old hat*

Literal meaning: A hat that is not new

Figurative meaning: Old-fashioned, dated

4. *New blood*

Literal meaning: Blood that is new

Figurative meaning: New people considered as a revitalising force, as in an organisation

5. *Brick wall*

Literal meaning: A wall made of bricks

Figurative meaning: An obstacle; a problem or situation that is very difficult to solve

6. *Sore spot*

Literal meaning: A spot that is painful

Figurative meaning: A subject which someone would prefer not to talk about because it makes them angry or embarrassed

7. *Take a hike*

Literal meaning: Go on an extended walk for pleasure or exercise

Figurative meaning: Leave because one's presence is unwanted; go away

8. *Soft touch*

Literal meaning: Touch that is gentle

Figurative meaning: One who is easily persuaded or taken advantage of

9. *Bend one's knee*

Literal meaning: Form a curve in one's knee

Figurative meaning: Submit to authority

10. *Blue ribbon*

Literal meaning: A ribbon that is blue

Figurative meaning: Of superior or highest quality

11. *Hit the road*

Literal meaning: Come into contact with the road forcefully

Figurative meaning: Set out, as on a trip; leave

12. *Build bridges*

Literal meaning: Construct bridges

Figurative meaning: Improve relationships between people who are very different or do not like each other

13. *Dead duck*

Literal meaning: A duck that is not alive

Figurative meaning: A person or thing doomed to death, failure, etc. especially because of a mistake or misjudgment

14. *Hold one's breath*

Literal meaning: Not exhale

Figurative meaning: Wait expectantly or anxiously; wait or delay until something special happens

15. *Small potatoes*

Literal meaning: Potatoes that are small in size

Figurative meaning: Something insignificant or unimportant

16. *Dark horse*

Literal meaning: A horse that is dark coloured

Figurative meaning: A competitor that is relatively unknown or that wins unexpectedly

17. *Red tape*

Literal meaning: A tape that is red coloured

Figurative meaning: Obstructive official routine or procedure; time-consuming bureaucracy

18. *Fat cat*

Literal meaning: A cat that is overweight

Figurative meaning: A wealthy and powerful person, especially a business person or politician

19. *Hit the roof*

Literal meaning: Come into contact with a roof forcefully

Figurative meaning: Get very angry and fly into a rage

20. *(Not) hold water*

Literal meaning: (Not) be able to contain water

Figurative meaning: (Not) appear to be valid, sound, or reasonable

21. *Top drawer*

Literal meaning: The uppermost drawer of a filing cabinet or a dresser

Figurative meaning: The highest level in status, excellence, or importance

22. *Old hand*

Literal meaning: A hand that is old in age

Figurative meaning: A person with a lot of experience in something

23. *Break a leg*

Literal meaning: Fracture a leg

Figurative meaning: Good luck!

24. *Free ride*

Literal meaning: A ride that costs nothing

Figurative meaning: Something acquired without the ordinary effort or cost; an opportunity or advantage that someone gets without having done anything to deserve it

25. *Red flag*

Literal meaning: A flag that is red coloured

Figurative meaning: A warning of danger or a signal to stop

26. *White collar*

Literal meaning: A collar that is white coloured

Figurative meaning: Refers to employees whose job entails, largely or entirely, mental or clerical work, such as in an office

27. *Big wheel*

Literal meaning: A wheel that is big in size

Figurative meaning: A very important person

28. *Acid test*

Literal meaning: A test that measures the acidity of something

Figurative meaning: A decisive or critical test or situation

29. *Open book*

Literal meaning: A book that is open

Figurative meaning: A person or thing without secrecy or concealment that can be easily known or interpreted

30. *Wet blanket*

Literal meaning: A blanket that is wet

Figurative meaning: A dull or depressing person who spoils other people's enjoyment

31. *Climb the wall*

Literal meaning: Go up a wall

Figurative meaning: Be very agitated, anxious, bored, or excited

32. *Open one's eyes*

Literal meaning: Not keep one's eyes closed

Figurative meaning: Become or make someone aware of the truth of a situation

33. *Run a mile*

Literal meaning: Move swiftly on feet for a mile

Figurative meaning: Do anything to avoid a particular situation

34. *Bite one's tongue*

Literal meaning: Cut or tear your tongue with the teeth

Figurative meaning: Stop yourself from saying something because it would be better not to, even if you would like to say it

35. *Carry weight*

Literal meaning: Hold or support weight while moving

Figurative meaning: Have influence to a specified degree

36. *Miss the boat*

Literal meaning: Be too late to catch a boat

Figurative meaning: Fail to take advantage of an opportunity

37. *Deep pockets*

Literal meaning: Pockets that are deep

Figurative meaning: A rich person; a good source of money

38. *Lay an egg*

Literal meaning: Produce and deposit an egg

Figurative meaning: Do something bad or poorly; fail

39. *Big picture*

Literal meaning: A picture that is big in size

Figurative meaning: The whole story of something; a complete view of something

40. Kick the bucket

Literal meaning: Strike a bucket with the foot

Figurative meaning: Die

41. Make noises

Literal meaning: Produce noises

Figurative meaning: Talk about something that you might do, but not in a detailed or certain way

42. Pull the strings

Literal meaning: Apply force to the strings so as to cause motion

Figurative meaning: Be in control of events or of other people's actions.

43. Tie the knot

Literal meaning: Fasten or secure a knot with or as if with a cord, rope, or strap

Figurative meaning: Get married

44. See the light

Literal meaning: Perceive the light with the eyes

Figurative meaning: Understand or realise something after prolonged thought or doubt.