



**Investigating Iraqi EFL University Students' Knowledge of  
Grammatical Collocations in English**

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## **Abstract**

This cross-sectional mixed-method study aimed to investigate the effects of grammatical collocations (GCs) frequency, their L1-L2 congruency and transparency, as well as L2 proficiency on Iraqi EFL university students' (IUSs') productive and receptive knowledge of GCs. The study also involved a comparison between IUSs' productive and receptive collocational knowledge as well as an attempt to explore how consciously aware IUSs and their teachers are of GCs and their different types. In addition, the study attempts to explore the way GCs tend to be learned and taught in the study setting. The study involved 112 participants with different L2 proficiency levels. The data collection instruments included a productive knowledge test, a receptive knowledge test (both innovatively designed by the researcher using the BNC and demonstrated good reliability and validity), the grammar part of the Oxford Placement Test (OPT), and semi-structured interviews. The findings of the study revealed that GC frequency, L1-L2 congruency, transparency and L2 proficiency have not only significant main effects on IUSs' collocational knowledge but also significant interaction effects and that L2 proficiency was the best predictor of IUSs' performance. It was also found that IUSs' receptive knowledge of GCs was significantly better than their productive one. Apart from the most common types of time, place and manner GCs, the participants showed that they did not have sufficient L2 explicit knowledge of GCs and their different types or the ability to use accurate terms to refer to them. Most participants' responses indicated that the type of teaching employed to teach GCs tends to be explicit and intentional, especially at the earlier stages. In addition, the vocabulary items comprising GCs often tend to be taught as individual words (i.e. not as part of the GCs). Moreover, explicit teaching tends to be associated with only the most common types of GCs.

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Adnan Zeidan Mkhelif

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## **List of Abbreviations**

BNC British National Corpus

CA Contrastive Analysis

EFL English as a foreign language

ESL English as a second language

GCs Grammatical collocations

IUSs Iraqi EFL university students

L1 Mother tongue or first language

L2 Second language (used in a broad sense to include both ESL and EFL, see Richard & Schmidt, 2002, p. 472)

NNS Non-native speaker

NS Native speaker

OPT Oxford placement test (the grammar part)

SLA Second language acquisition

SPSS Statistical Package for the Social Sciences

TL Target language

UG Universal (Generative) Grammar

## **Chapter One: Introduction**

### **1.1 Introduction**

This study focusses on investigating the effects played by four factors on IUSs' knowledge of GCs, namely the effects of L1-L2 congruency, learner's L2 proficiency, GCs frequency, and transparency, on the latter two of which there has been very little research. The study also aims to find out the main as well as the combined (i.e. interaction) effects of such factors on IUSs' knowledge. To the best of my knowledge, there has been no single study that has attempted to investigate the effects of all these factors put together. Thus, it is still not clear what the interaction effects of the above-mentioned factors on IUSs' collocational knowledge are and which of the four factors tends to be more important and which less important in relative terms. In addition, the study attempts to shed light on how GCs tend to be taught and learned in the present study setting and how consciously aware teachers and students are of them and of the factors influencing their learning.

### **1.2 Background and motivation of the study**

Due to its importance, increasing attention has been given to the study of collocations in recent years. As defined by McIntosh et al. (2009), "Collocation is the way words combine in a language to produce natural-sounding speech and writing. [Collocation] runs through the whole of the English language. No piece of natural spoken or written English is totally free of collocation" (p. v). Knowledge of collocation is essential for fluent and convenient language use (see Nation, 2001, p. 323). Without selecting the right collocation, L2 learners' spoken and written production does not sound native speaker-

like or natural (Pawley & Syder, 1983), and consequently this might affect comprehensibility (McIntosh et al., 2009, p. v). It is thus important for L2 learners to have a good knowledge of collocations in their target language (TL) and this has led to an increasing interest in conducting collocation studies, especially in the field of L2 language learning.

Collocations can be either lexical or grammatical. Lexical collocations contain various combinations belonging to open-class words: nouns, verbs, adjectives, and adverbs, for example, *take a look* (verb + noun), *storms rage* (noun + verb), *current account* (adjective + noun), *emergency door* (noun + noun), *totally absorbed* (adverb + adjective), *appreciate sincerely* (verb + adverb). Grammatical collocations (henceforth GCs; also called colligations, see Firth, 1957b, pp. 181-83) are word combinations including an adjective, a noun, or a verb followed by a closed-class word such as a preposition e.g. *adjacent to* (adjective+ preposition), *account for* (noun + preposition), *depend on* (verb + preposition), or a grammatical structure such as a clause or an infinitive, e.g. *to be afraid that* (adjective + that), *easy to do* (adjective + to infinitive), etc. (see Benson et al., 1997, pp. xv-xxxiii, 2010, pp. xix-xxx; Michael & Felicity, 2005, p. 12). Such GCs give support to much of the research on collocations (by e.g. Sinclair, 1991, 2004; Stubbs, 1996) which argues that collocation shows lexis and grammar to be far less discrete- and conversely far more *interconnected*- than previously thought. This shift in perspective is reflected in the rise in popularity of the term "lexicogrammar". The present study is concerned with GCs involving prepositions. Based on my experience as a teacher of English as a foreign language (EFL) and on some relevant previous studies (e.g. Alsulayyi, 2015; Alotaibi & Alotaibi, 2015), such GCs tend to be particularly difficult for L2 learners of English to master.

Although the importance of collocation was highlighted many years ago by Palmer (1933) and later by Firth (1957a, 1957b), it is not until more recently that the study of learners' L2 collocational knowledge and the factors affecting it have received a surge of attention by researchers (e.g. Biskup, 1992; Bahns & Eldaw, 1993; Caroli, 1998; Granger, 1998; Bonk, 2000; Nesselhauf, 2003; Koya, 2005; Durrant & Schmitt, 2010; Yamashita & Jiang, 2010; Mohammed & Mustafa, 2012; Shehata, 2008; Alsakran, 2011; Wolter & Gyllstad, 2011, 2013; Alsulayyi, 2015; Mkhelif, 2019). L1 has been found to play an important role in L2 learners' performance, both as a facilitator of acquisition when the collocations in the L1 and L2 are congruent, i.e. similar or equivalent and as an inhibitor when the collocations in the two languages are incongruent, i.e. different (e.g. Hussein, 1990; Elyildirm, 1997; Caroli, 1998; Granger, 1998; Koya, 2005; Shehata, 2008). Some studies have also revealed that L2 proficiency can play an important role in learners' collocational knowledge (e.g. Bonk, 2000; Mohammed & Mustafa, 2012; Alotaibi & Alotaibi, 2015). Other researchers have highlighted the influence context of learning and type of instruction followed can have on learners' performance on relevant L2 collocational tests (e.g. Hussein, 1990; Farghal & Obiedant, 1995; Laufer & Girsai, 2008; Lindstromberg et al., 2016; Szudarski & Carter, 2016).

Another influential factor identified in some recent studies is the frequency of L2 collocations (e.g. Durrant & Schmitt, 2010; Wolter & Gyllstad, 2013). Based on the results obtained from their study, Wolter & Gyllstad (2013) have drawn attention to the importance of making use of multiple second language acquisition (SLA) theoretical perspectives, including the linguistic ones (which mainly emphasise the role of the L1) and the usage-based ones (which highlight the role of the TL items frequency) to better understand the processes involved in L2 collocational acquisition (see Wolter & Gyllstad, 2013, pp. 22, 28; Gyllstad & Wolter, 2016, p. 5).

Few recent studies have shown an important effect of the transparency of collocations (i.e. whether the meaning of the collocation is clear or retrievable from the literal or non-extended senses of its constituents) on learners' collocational knowledge (e.g. Revier, 2009; Gyllstad & Wolter, 2016). As there is very little research involving transparency, Gyllstad & Wolter (2016, p. 318) have called for studies to investigate the learning of collocations varying in semantic transparency, which is among the main aims of the present study.

In short, it is evident from the above that previous studies tend to give only a partial picture of what is involved in the acquisition of L2 collocations by limiting themselves to the investigation of mainly one or two factors, making it difficult to identify and fully understand the sources behind learners' difficulties in acquiring them. L2 learners' performance on collocations can be accounted for not only by L1 interference, as many previous studies have shown (see section 2.6.1.3), but also by various other factors as shown in section 2.6.2. In addition, previous studies have been associated with some methodological limitations, which I will do my best to overcome in the present study (see section 3).

Furthermore, although many L2 collocation studies have been conducted in different parts of the world, collocational studies involving L1 Arabic learners of English have generally been limited in number (e.g. Hussein, 1990; Farghal & Obidat, 1995; Shehata, 2008; Ridha & Al – Riyahi, 2011; Alsakran, 2011). This is especially the case when it comes to the ones investigating GCs. The ones involving prepositions have been reported to be the most difficult types for learners despite their high frequency of occurrence in both written and spoken English (e.g., Alsulayyi, 2015). To the best of my knowledge, the only studies focusing mainly on GCs involving prepositions and EFL learners whose L1 is Arabic are Mohammed & Mustafa's (2012), Alsulayyi's (2015) and Alotaibi &

Alotaibi's (2015) studies, which were conducted in three different Arab countries (Iraq, Saudi Arabia, and Kuwait) following different educational systems and policies and speaking different varieties of Arabic. Furthermore, these studies were mainly concerned with the effect of learners' L1 on their knowledge of GCs and, thus, have not included all the factors that might be relevant, as discussed above.

It is thus evident that L1 Arabic EFL learners' knowledge of GCs has not been given due attention and still needs to be further investigated from other relevant angles and perspectives to help better understand the processes involved in learning GCs. The present study attempts to investigate and account for Iraqi EFL learners' performance on GCs tests in terms of L1-L2 congruency, frequency, transparency, and learners' L2 proficiency. The relevant linguistic and usage-based cognitive perspectives will be considered as complementary to each other in accounting for the acquisition of the L2 GCs under investigation. It is my belief that adopting only a linguistic perspective, emphasising the role of the first language on learners' acquisition, as in most previous relevant studies, can give only a partial picture of understanding what is involved in the process of acquiring GCs. This, in turn, cannot reliably identify the sources of difficulties learners encounter, and consequently cannot effectively contribute to helping teachers and students overcome such difficulties.

### **1.3 Context of the study**

The present study involves Iraqi EFL university students majoring in English and learning in formal contexts in Iraq. In these educational settings, the teaching of grammar of the TL tends, based on my personal experience of 10 years as a teacher of English, to be given priority at the expense of teaching and learning vocabulary, which tends to be

almost incidental. The participating students are training to be EFL teachers at secondary and pre-secondary schools in the future, where general English and accuracy in language use are given priority, and British English native speakers are regarded as the model to be followed and imitated. Among the problems such students still face, and which the present study aims to address, is learning and mastering GCs.

#### **1.4 Study aims and questions**

The present study aims to investigate the effects of four factors, namely frequency of L2 GCs, their L1-L2 congruency and transparency, as well as IUSs' L2 proficiency on their knowledge of GCs. In addition, it attempts to find out the main as well as the combined effects of such factors on IUSs' knowledge. Furthermore, the study attempts to shed light on how GCs are taught and learned in the study setting and how consciously aware teachers and students are of them and of the factors affecting their learning. Moreover, the study involves a comparison between IUSs' receptive and productive collocational knowledge (see section 2.2).

The present study seeks to answer the following six research questions:

1. To what extent does IUSs' receptive knowledge of GCs differ from their productive knowledge?
2. To what extent do the following factors influence IUSs' knowledge of GCs:
  - a) Frequency of GCs,
  - b) L1-L2 congruency,
  - c) Transparency of GCs,

d) IUSs' L2 proficiency

3. What are the main and combined effects of the above-mentioned four factors on IUSs' knowledge of GCs? And which factor has the strongest impact in the presence of the others?

4. How consciously aware are IUSs and their teachers of GCs and their different types?

5. In what ways do GCs tend to be learned/taught in class?

6. According to participants, what factors contribute to making some types of GCs easier or more difficult to learn and teach?

### **1.5 Significance of the study**

The present study focuses on more factors affecting learners' knowledge of GCs than previously investigated and more than in the past on the interactions of such factors. In addition to establishing evidence of what factors might be relevant to learning GCs and the main and interaction effects of such factors, it is hoped that the findings will contribute to more effective methods of teaching that can help better address and overcome the problems Iraqi EFL learners encounter in learning GCs. The present study is thus hoped to have significant theoretical as well as pedagogical implications for researchers, syllabus designers, and teachers of English as a foreign/second language.

### **1.6 Organisation of the thesis**

This chapter has introduced the background and motivation of the study, its context, aims, and research questions, as well as its significance. Chapter two reviews the literature



available on the topic, providing a brief overview of what is involved in vocabulary knowledge and describing the pervasiveness and significance of formulaicity and collocations, the way collocations are defined, as well as the methods of determining them. In addition, it presents a review of the empirical studies investigating the factors influencing learners' L2 collocational knowledge and provides a summary of the tests used to investigate this knowledge. Moreover, it concludes by explaining the shortcomings associated with relevant earlier studies and justifying the need for conducting the present study, as well as the basis for the study research questions. The methodology of the study is presented in Chapter three, where the study's methodological framework, its research design, target population, and quantitative and qualitative data collection tools are described and discussed. In addition, the chapter explains the procedures of data collection and analysis and discusses the validity and reliability of both the quantitative and qualitative parts of the study, as well as the relevant ethical issues and the limitations of the study. Chapter four presents the quantitative findings of the study, and Chapter five displays its qualitative ones. Chapter six discusses the study findings, and Chapter seven summarises the overall study findings, presents their pedagogical implications, the study's significance, and suggests further future research.

## **Chapter Two: Literature Review**

### **2.1 Introduction**

This chapter comprises six sections presenting different relevant topics. Section 2 briefly presents what is understood by vocabulary knowledge. Section 3 shows how researchers have differently defined collocations. Section 4 reviews the methods involved in determining whether a word combination can be considered a collocation or not. Section 5 briefly and critically reviews empirical studies on L2 collocational knowledge, including studies that investigate such knowledge mainly in terms of L1 (5.2.1), other factors (5.2.2), as well as studies involving L1 Arabic learners of English (5.2.3). Section 6 presents a critical summary of the tests used in previous studies to investigate L2 collocational knowledge.

### **2.2 Knowledge of the target vocabulary items**

#### **2.2.1 Vocabulary knowledge**

Vocabulary knowledge has to do with what is involved in knowing (a) word(s). Different categorisations have been presented to describe vocabulary knowledge including binary divisions like breadth and depth or receptive and productive (see the paragraphs following Table 2.1 below), which are regarded as too simple to adequately cover what is involved in word knowledge (Milton, 2009, p. 14). The more detailed and comprehensive categorisation by Nation (2001, p. 27) divides word knowledge into three main areas: (1) form, (2) meaning, and (3) use. The following is a summary of Nation's (2001) discussion of his categorisation.

Knowledge of word form involves knowing the word's phonological and spelling forms as well as the word's family and its parts (i.e. the word's base form and its affixes); for example, the base form *visit* has affixes including the underlined suffixes in *visits*, *visited*, *visiting*, *visitor*. It also includes understanding that the opposites of many words can be made by the addition of the prefix *in-* at the beginning of words: *direct* and *indirect*.

Knowledge of meaning involves three components:

(1) Form and meaning: this involves the ability to make a link between a word form and its concept (i.e. core meaning). In the case of a foreign language, this often involves making a link between a TL word and its translation in the learner's L1 (Milton, 2009, p. 14),

(2) Concepts and referents: this has to do with what is included or involved in the concept (i.e. the mental representation of a word's meaning) which usually refers to the core meaning and what entity or item the word refers to, for example, the word *teacher* has a mental representation (a person whose job is teaching) and refers to teachers in general.

(3) Associations: these refer to the semantic relations that are involved in the other words that a word makes us think of, as well as the other words we could use instead of the word itself, e.g., *strong-weak*; *table-furniture*.

Knowledge of use includes the following three parts:

(1) Grammatical functions: this involves knowing the part of speech to which the word belongs as well as the grammatical structures in which it can be used.

(2) Collocational knowledge: this has to do with knowing the words that commonly co-occur with a word, for example, *strong* collocates with *argument* to form *strong argument* and *look* collocates with *at* to produce *look at*.

(3) Constraints of use: these refer to the restrictions that are relevant to the appropriateness of a word use, such as frequency and register. In other words, they have to do with how often, when and where a word can be used or met (see Table 2.1 below).

Table 2.1 What is involved in word knowledge (source: Nation, 2001, p. 27).

Note: R=receptive, P=productive

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

As far as the distinction of breadth and depth is concerned, the former has to do with how many words a person knows, whereas the latter has to do with how thoroughly he or she knows them. Breadth of vocabulary may involve only word recognition (i.e. the pure recognition of a word form without recognising or knowing the meaning of the word) or recognition as well as understanding of the meaning of the word. Unlike vocabulary

breadth, vocabulary depth might involve other aspects of word knowledge including knowledge of a word's collocations, GCs, and associates (see discussion in Milton, 2009, pp. 13-14) as well as encyclopedic or additional knowledge associated with the word (Schmitt, 2000, p.27). As stated by Milton (2009, p. 16), vocabulary breadth includes the Form category of Nation's (2001) categorisation and might also include the subcategory of "form and meaning" belonging to the Meaning category. Vocabulary depth, on the other hand, would include the remaining sections in Table 2.1 above.

As shown in Table 2.1 above, Nation (2001) divided each subdivision into receptive and productive knowledge. As the current study aims to investigate this distinction, it needs to be defined.

Receptive/passive knowledge of vocabulary has to do with the recognition of a word, i.e. the ability to recognise the written or spoken word. It includes the words a person can recognise when he or she reads or hears them. There are levels of receptive/passive knowledge. For example, a word might be recognised at the form level, i.e. in the sense that I know I have seen it or heard it before, but I do not know what it means. Or, it might be recognised at the meaning level as well when its meaning can be remembered. Productive/active knowledge of vocabulary has to do with the production of the word, i.e. the ability to write or say a word accurately and appropriately. It includes the words "that can be called to mind and used in speech or writing" (Milton, 2009, p.13). As with receptive knowledge, productive knowledge involves degrees, where one level of word knowledge or more might be involved. For instance, a word might be produced at the form level, i.e. in the sense that I know its pronunciation and how it is written, but I do not know what it means. Or, its production might involve the meaning level as well when

the meaning it expresses is also known. Receptive/productive collocational knowledge falls within the level of use, as shown in Nation's (2001) categorisation above. Receptive collocational knowledge essentially involves recognising the words that commonly co-occur with a specific given word, whereas productive collocational knowledge involves producing the words that commonly co-occur with that specific given word (i.e. producing the correct collocations in the appropriate context). In addition to investigating participants' productive and receptive knowledge of GCs and the factors affecting it, the present study attempts to investigate their explicit knowledge of GCs, which is the concern of the following section.

### **2.2.2 L2 Explicit knowledge**

Many researchers have recently been concerned with L2 explicit knowledge and its potential role in the field of L2 learning and teaching (see e.g. DeKeyser, 2003; R. Ellis, 2004, 2005, 2006; Hulstijn, 2005; Roehr & Gánem-Gutiérrez, 2009a, 2013; N. Ellis, 2005; Roehr, 2006, 2008a, 2008b, 2014). This section attempts to shed some light on L2 explicit knowledge with the aim of understanding its potential benefits and limitations in L2 learning contexts. Section 2.2.2.1 presents a definition of L2 explicit knowledge and its key characteristics. Section 2.2.2.2 shows the potential benefits associated with L2 explicit knowledge in the context of L2 learning. Section 2.2.2.3 presents the potential limitations of this knowledge.

### 2.2.2.1 L2 Explicit knowledge: Definition and characteristics

As stated by R. Ellis (2004, p. 227), explicit knowledge is a construct that differs from both L2 proficiency as well as language aptitude. It refers to "the conscious awareness of what a language or language in general consists of and/or of the roles that it plays in human life...[It] is knowledge *about* language and *about* the uses to which language can be put" (p. 229). He adopts viewing explicit knowledge as separate from implicit knowledge without implying that each type cannot be rendered to the other. The key characteristics of explicit knowledge may be summarised as follows (see R. Ellis, 2004, pp. 235-40):

- 1- It is conscious (i.e. involving conscious awareness).
- 2- It is declarative as it comprises knowledge of facts relevant to the L2.
- 3- An L2 learner's declarative knowledge is often inaccurate and imprecise.
- 4- A learner's explicit knowledge development can take place on two dimensions involving both breadth (accumulating more facts about language) and depth (refining existing knowledge).
- 5- Explicit knowledge can be generally accessed through controlled processing.  
There are different views concerning whether it can be automatised and changed from declarative knowledge to procedural knowledge, i.e. implicit knowledge (see Krashen, 1982; DeKeyser, 2003; N. Ellis 2005).
- 6- It tends to be naturally exploited in situations where a learner finds difficulty with a language task.
- 7- It can be potentially verbalised.
- 8- It is learnable at any age.

#### **2.2.2.2 Potential benefits associated with explicit knowledge about the L2**

As stated by R. Ellis (2004, p. 227), L2 explicit knowledge has an important role that is acknowledged by a number of L2 acquisition theories. Such a role has been regarded as important by some L2 acquisition theories (see e.g. Krashen, 1981; Bialystok, 1994; R. Ellis, 1994; Hulstijn, 2002). The role played by explicit knowledge in L2 learning has been viewed differently by different researchers. Krashen (1981), for example, regards it as playing only a monitoring role in the production of the L2 with no interface existing between it and implicit knowledge. R. Ellis (1994), on the other hand, considers it as indirectly contributing to implicit knowledge acquisition by making it easier to notice language forms in the input. Other researchers see it as an L2 proficiency component that is "needed to engage effectively in context-free language use" (R. Ellis, 2004, p. 228).

Mitchel et al. (2013, pp. 138-39) have outlined several roles where this type of knowledge is supposed to be helpful to achieve:

1. noticing or registering a new language form, especially for those forms that are not salient or necessary for meaning understanding,
2. analysing input into its component parts,
3. reducing the learner's potential hypotheses by narrowing the number of the potential relevant rules that might be in operation,
4. formulating correct output which may then be analysed for its constituent parts,
5. explicitly registering the problematic strings, where comprehension fails, in memory, or calling on existing knowledge to help analyse the input.



Roehr (2008b, p. 83) states that "conscious processing involving the higher-level mental faculty of analytic reasoning allows the cognitively mature individual to apply a problem-solving approach to language learning." Robinson's (1995) study aims to investigate the relationship between language aptitude (i.e. the ability to learn an L2 successfully in a short time (see e.g. Celic & Yavuz, 2020 p. 44; Huang et al., 2020, p.1)) and learning under different conditions measured by grammatical judgement tests (GJTs). The findings of the study suggest that L2 learners' ability measured by means of Words in Sentences Test tends to be more strongly related to explicit learning (i.e. learning making use of explicit knowledge and involving focusing attention to form) rather than to implicit learning (i.e. learning involving focusing on meaning).

It is for its important role that L2 explicit knowledge has received special attention in recent years, for it makes learning potentially efficient and fast from minimal input. It is learnable and can be made use of by learners of any age, particularly by cognitively mature L2 learners (Roehr, 2008b). Moreover, it has been found that L2 learners' use of explicit knowledge when performing on form-focused L2 tasks is associated with systematic and consistent performance (see e.g. Roehr, 2006; Swain, 1998). As stated by Roehr (2014), "the potentially facilitative effects of explicit knowledge on L2 performance for cognitively mature learners receiving explicit instruction are by now well established" (p.776). Relevant studies have shown that L2 explicit knowledge tends to correlate positively and significantly with L2 proficiency aspects. The positive relationships between L2 explicit knowledge in instructed L2 adult learners and written measures of proficiency in the L2 have been described as ranging from moderate (see e.g. Elder et al., 1999) to strong (see e.g. Roehr, 2008a). Explicit knowledge of the L2 in these studies has been typically operationalised to mean mainly the ability to correctly describe

L2 forms. It may also involve the ability to correct and explain erroneous L2 forms on the part of L2 learners. Positive correlations have also been recently identified between explicit knowledge about the L2 and oral measures of proficiency in the L2, i.e. fluency and accuracy of speech (see e.g. Absi, 2014). Such cumulative findings have been confirmed not only by relevant meta-analyses involving large data, but also by more recent research (see e.g. Roehr, 2014).

#### **2.2.2.3 Potential limitations of explicit knowledge about the L2**

The relative usefulness of explicit knowledge in L2 learning is influenced by a range of learner-external and learner-internal variables. This fact is to be expected, for "language is necessarily learned and used by specific individuals in specific contexts" (Roehr, 2008b, p. 80). First of all, the role of explicit knowledge in L2 learning is at least partially determined by a learner's current proficiency level of the L2 (Butler 2002). Second, an L2 learner's use of explicit knowledge is supposed to be influenced by situation-specific variation, as both the L2 task requirements and the targeted L2 structure(s) play a part in deciding whether and how explicit knowledge is to be employed (R. Ellis 2005). For example, explicit knowledge might not be readily available in situations requiring spontaneous L2 use where it is difficult to get enough time for careful on-line planning (R. Ellis, 2004). Thus, timed L2 tasks in general and oral L2 task modalities in particular might prevent an L2 learner from allocating sufficient attention resources to controlled processing with explicit knowledge, whereas untimed L2 tasks in general and written L2 task modalities in particular might have the opposite effect, encouraging the use of explicit knowledge (Roehr, 2008b). Third, the typological distance between L2 and L1 might have a part to play (Elder & Manwaring 2004; Roehr, 2014). Fourth, type of prior exposure to the instruction of the L2 and the length of instruction experienced have been

found to influence the L2 learner's level as well as the use of explicit knowledge (Roehr 2008b). Finally, individual differences in aptitude, strategic preferences, and learning and cognitive style may influence an L2 learner's use of explicit knowledge (DeKeyser 2003; Roehr, 2005; Roehr, 2008b). For example, individual differences among L2 learners in declarative memory abilities "mean that not all L2 learners can make effective use of explicit rules, and sole reliance on the declarative system cannot lead to entirely L1-like proficiency" (Mitchell et al., 2013, p. 133).

In sum, it is evident from the above that L2 explicit knowledge plays an important role in the context of L2 learning, and it might play even a more effective role once it is more accurately and comprehensively researched and better exploited. There are, however, some limitations that stem from the different factors influencing its usefulness. Thus, further research and careful planning and instruction are still needed to arrive at more effective methods that can better exploit such knowledge and reduce the effects of its limitations and consequently arrive at more promising teaching approaches that can be more fruitful in terms of outcome.

The present study attempts, in part, to explore how aware the participants involved are of GCs and their different types. In other words, it aims to find out whether participants have sufficient L2 explicit knowledge of GC, including knowledge of metalinguistic terminology, which is regarded as a component of L2 explicit knowledge (see R. Ellis, 2004). As indicated above, recent research findings have revealed that L2 learners' explicit knowledge (i.e. knowledge which can be readily articulated, codified, accessed and verbalised) of an L2 tends to correlate positively with their performance on relevant tests. Thus, the present study involves investigating not only the productive and receptive

knowledge of GCs (i.e. language skills), but also declarative knowledge such as the knowledge of metalanguage and classifications. The reasons why the latter is important is that recent research has shown that this kind of declarative knowledge is linked to the quality of performance. *Teachers* need this kind of knowledge, for it is linked to the issue of how GCs are taught, and hence the reason why the students might not have this declarative knowledge.

### **2.3 Formulaicity and collocation: Pervasiveness and significance**

Formulaic sequences, within the framework of which collocations fall (see section 2.4), simply refer to any word string that is processed as a single holistic unit or entity without any recourse to the constituent parts of which it is composed (Wray, 2002). However, things are not as straightforward as this, for the phenomenon of formulaicity can take so many forms (Schmitt & Carter, 2004). That is probably why there has been disagreement among researchers when it comes to defining formulaic sequences as well as coining terms to refer to such sequences (Wray, 2009). Wray (2002) listed fifty terms used in the relevant literature to refer to them, including *chunks*, *collocations*, *frozen metaphors*, *idioms*, *multiword items/units*, *ready-made expressions*, *binominals* and *routine formulae*. Then, she defined what she calls a "formulaic sequence" as follows:

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).

Her definition seems to be in line with Moon's (1997) three gradable criteria of formulaic language that differentiate them from other strings. These criteria are institutionalisation (i.e. holistic status in a language), fixedness (i.e. sequence frozenness), and non-

compositionality (i.e. unanalysable, unitary meaning). Formulaic sequences can be classified in terms of certain relevant criteria (see section 2.5) into different categories, among which is the collocation category (Howarth, 1998a, 1998b).

In recent years, formulaicity, has received increasing attention as a promising area of research. Data obtained from corpus research has revealed formulaicity as being a pervasive phenomenon in language (Howarth, 1998a, 1998b; Foster, 2001; Wray, 2002; Nizonkiza, 2017). Pawley & Syder (1983) emphasised that sounding native is no longer related only to the knowledge of the grammatical rules of languages; it also involves knowledge of which grammatically correct word sequences are acceptable.

Thus, for L2 learners to reach native-like fluency, they need to have control over not only grammatical rules, but also L2 formulaic sequences, including collocations. Human's phraseological competence (i.e. knowledge of formulaic units) to a large extent shapes their ability to communicate fluently in real-time (Pawley & Syder, 1983; Sinclair, 1991; Wray, 2002; McEnery et al., 2019). Such competence has to do with their ability to store, access, as well as produce language prefabricated chunks, such as lexico-grammatical frames (e.g. as far as something is concerned) or multiword expressions (e.g. would like to). It also represents an important aspect of communicating in an effortless, nativelike, and error-free manner (N. Ellis, 2002; Erman, et al., 2016). As N. Ellis (1997) puts it, "speaking natively is speaking idiomatically using frequent and familiar collocations" (p. 129). Adequate use of formulaic strings, such as collocations has been shown to enable L2 learners to approximate a native-like proficiency in speech (Boers et al., 2006) and writing (Dai & Ding, 2010). Unless collocations are used properly, serious communication problems may eventually arise. Thus, conformity with collocational restrictions is essential not only for stylistic elegance but also for effective

communication (Howarth, 1998b). Given that they are stored and retrieved as wholes, formulaic sequences help language users process language with more ease compared to word-by-word processing. It is this processing efficiency that can account for why such sequences are made use of to realise the interactional functions they are associated with (Schmitt & Carter, 2004).

It is evident from the above that formulaic sequences, including collocations, have three main functions in language: saving processing effort, enhancing fluency when they are memorised as wholes, as well as achieving interactional, communicational effectiveness or acceptability (Wray, 2000).

This is also the case when it comes to L2 collocations, viewed as being a type of formulaic sequences, as they are considered a necessary component of L2 lexical competence. They are regarded as especially important for L2 learners to acquire to improve both their spoken and written L2 proficiency and use of the L2 in a more precise and concise way. Thus, for L2 learners, mastering collocations is looked at as the gateway to higher levels of English and to gaining native-like competence (Henriksen & Stæhr, 2009).

The focus of the present study is on GCs, one of the two main types of the collocation category, which in turn represents only one type of formulaic language. The following sections will present more details relevant to defining collocations, approaches to identifying them, and the difficulties associated with their learning on the part of L2 learners, as well as relevant studies investigating the factors affecting their acquisition.

## 2.4 Defining collocations

Collocation has been defined differently by researchers and its use as a linguistic term is still subject to considerable variation (see e.g. Nation, 2001, p. 328; Nesselhauf, 2005, p. 11; Gyllstad, 2009, p. 154; Barnbrook et al., 2013, p.3; Gyllstad & Wolter, 2016, p. 297-98; Nizonkiza, 2017, p. 265) as indicated by the following definitions, intended to help illustrate the point rather than provide an exhaustive list of all available relevant definitions.

A restricted definition of the term collocation was presented by Palmer (1933, cited in Nation, 2001, p.317) many years before Firth, with whom many associate the term collocation. Palmer's definition focussed mainly on items the meaning of which is not evident from their parts: "Each [collocation] ... must or should be learnt, or is best or most conveniently learnt as an integral whole or independent entity, rather than by the process of piecing together their component parts" (p. 4). For Cowie (1991, cited in Barfield & Gyllstad, 2009, p. 6), collocations are regarded as associations of two lexemes or more occurring within a restricted range of grammatical constructions. Such restricted collocations are viewed as "word-combinations in which one element (usually the verb) [has] a technical sense, or a long-established figurative sense which [has] lost most of its analogical force" (p. 102). Like Palmer's (1933) definition above, Cowie's definition has more to do with phraseological criteria, such as semantic opacity (i.e. the extent to which the meaning of the collocation can be understood from the meanings of its constituent parts) rather than with frequency (see section 2.5). The present study has made use of such phraseological criteria as a basis for item selection (see sections 2.5 and 3.4.1).

According to Hoffmann et al. (2008, p. 264), collocation is "the habitual co-occurrence of words/linguistic items in close proximity to one another." For Firth (1957a),

collocation is an important "mode" or aspect of meaning whereby the meaning of a word is known from the habitual (i.e. frequent co-occurrent) company it keeps with its neighbouring words. He summarised his view in his famous statement, "You shall know a word by the company it keeps" (Firth, 1957b, p. 179). He argues that the lexical meaning of a word is achieved by making statements of its meaning at various levels including not only the orthographic, syntactic, phonological and phonetic, but also the collocational level, as well as the context of situation (1957a, p. 192). Firth (1957b, pp. 181-83) also distinguished between collocations and GCs, that is, words having syntagmatic grammatical relations, e.g., *manage* and *agree* colligate with the to-infinitive construction, as in *He will manage to do it*. Unlike Palmer's (1933) and Cowie's (1991) definitions above, Firth's (1957a) and Hoffmann et al. 's (2008, p. 264) definitions were based on frequency (see section 2.5). The present study has made use of such frequency-based criteria for item selection (see sections 2.5 and 3.4.1).

In "the idiom principle" proposed by Sinclair (1991), collocations were viewed as constituting an essential stock that is available to the language user and provides him or her with "a large number of semi-preconstructed phrases that constitute single choices, even though they might appear to be analysable into segments" (p. 110). This stock of phrases complements another stock consisting of individual items, i.e. "the open-choice principle" or the "slot-and-filler" model, which views language text as being the result of complex choices of individual lexical items. His view is that the idiom principle takes priority over the open-choice one and that the production of language text is constantly limited by the collocational restrictions existing among words and phrases. Compliance with such restrictions is important for effective communication, for without them, serious communication problems may ultimately occur (Howarth, 1998b). The priority given to



the idiom principle is due to the various interactional functions associated with its use (see section 2.3 above).

Thus, the more collocational knowledge a language user has, the more it will contribute to processing ease and efficiency, fluency of language use, as well as communication effectiveness, as indicated in section 2.3 above.

It has been suggested (Benson et al., 1986, pp. 252-53) that collocations exist on a continuum from free combinations at one end and idioms at the other. For example, the pair *commit murder* is not regarded as an idiom, for the meaning of the collocation as a whole can be understood from the meanings of its constituents. In addition, this collocation differs from free combinations in that it has only one synonym, *perpetrate*, which can replace the verb *commit*. In addition, the use of *murder* with *commit* is more frequent than it is with *perpetrate*. Unlike the above-mentioned definitions, which were confined either to frequency-based criteria or phraseological ones and confined the term collocation within the boundaries of lexical items, Benson et al. (1986) made use of both frequency and phraseological criteria and classified collocations into lexical as well as grammatical types (GCs, see section ). It is thus this definition that more readily suits the present study, as it made use of both criteria for defining and classifying collocations which included prepositions within their constituents (see section 2.5).

It is evident from the above that there is no definition of *collocation* agreed upon by researchers. Definitions vary depending on the researcher's field and purpose of study, as well as the criteria adopted for defining and classifying collocations, which generally fall within the scope of one of two different approaches: the frequency-based approach and the phraseological one as shown in the following section.

## 2.5 Methods of determining collocations

Word groups tending to function as units have been described by different terms (e.g. *collocations*, *chunks*, *lexical bundles*, see section 2.3) and classified in terms of various criteria (see e.g. Biber et al., 1999, pp. 990-1036; Nation, 2001, pp. 328-32; Koya, 2005, pp. 9-25; Nizonkiza, 2017), including:

- semantic opacity, i.e. the extent to which the meaning of the word combination as a whole can be understood from the meanings of its constituents,
- collocational restriction, i.e. the extent to which a constituent in the word combination can be replaced by another synonymous word,
- frequency of occurrence,
- adjacency.

The criteria depend on the types of word groups being investigated and the purpose or reasons why they are being focussed on (see Nation, 2001, p. 328; Nesselhauf, 2005, pp. 1, 25). For example, if the purpose behind the investigation is to make a distinction between collocations and idioms, then semantic opacity could be a sufficient criterion to help achieve this purpose. However, if the purpose is to make a distinction not only between collocations and idioms, but also between them and other words in free combinations, then collocational restriction will also be required as an important relevant criterion to serve the purpose (see Nation, 2001, pp. 328-32; Koya, 2005, pp. 9-10). As stated by Barfield & Gyllstad (2009, pp. 2-7), L2 studies on collocation have commonly been conducted within two major conceptual understandings or traditions: the frequency-based tradition and the phraseological one.

### **2.5.1 The frequency-based approach**

In the frequency-based view or tradition, collocations are generally viewed as being units comprising words co-occurring within a certain frequency span. Frequencies and their relevant statistics (e.g. Log-likelihood, see section 3.4.1) are regarded as essential ingredients in analysing relevant textual instantiations of collocations. In addition, a distinction is generally made between frequently co-occurring words and infrequently co-occurring ones, and frequency bands may be referred to. Examples of pioneering researchers within the frequency-based tradition include Firth (1957a), Halliday (1966), Sinclair (1991), and Biber, et al. (1999) (see Barfield & Gyllstad, 2009, pp. 3-5; Gyllstad & Wolter, 2016, p. 297). As far as the present study is concerned, both frequency and adjacency as frequency-based criteria will be taken into account in deciding which GC items to be involved (see section 3.4.1).

### **2.5.2 The phraseological approach**

In the phraseological tradition, on the other hand, collocations are treated as a matter of word combinations showing different degrees of fixedness (i.e. collocational restrictions). Unlike adherents of the frequency-based tradition, adherents of this view are rather less interested in frequencies and their statistical significance. Instead, they are more concerned with the word combinations and the decontextualised classification of such combinations in terms of the substitutability of the words comprising them and their degree of opacity, i.e. how transparent the words within the combinations are (see Barfield & Gyllstad, 2009, pp. 5-6; Gyllstad & Wolter (2016, p. 297). Researchers within this tradition (e.g. Cowie 1991; Howarth, 1998a, 1998b; Nesselhauf, 2005) present such word combinations as having categories analysable on a continuum scale, ranging from

non-transparent and formally fixed idioms (e.g. *blow the gaff*) at one end to transparent and substitutable collocations, albeit with some arbitrary choice limitations (e.g. *blow a fuse*) at the other end (see Barfield & Gyllstad, 2009, p. 6). Next to collocations is the position of free combinations whose meanings are transparent, and where words are freely substitutable (e.g. *blow a trumpet*). Considered together, the three-word categories (i.e. idioms, collocations, and free combinations) can be presented as extending along a continuum where the boundaries between them are not clearly set (see Benson et al. 1986, pp. 252-53). When it comes to the GCs of the present study, they represent a range from the boundary between idioms and collocations (i.e. less transparent GCs) to the boundary between collocations and free combinations (i.e. more transparent GCs).

In their rather different typology, Benson et al. (1986; 2010), who drew on both the phraseological tradition and the frequency-based one (see 2.4), have divided collocations in English into two types: (1) lexical collocations where there are various combinations of open-class words (nouns, adjectives, verbs, and adverbs) e.g., *withdraw an offer* and (2) GCs where there is a dominant word (a noun, an adjective, or a verb) combined with a preposition (e.g. *interested in*) or a grammatical structure, such as a to-infinitive or a that-clause (see table 2.2 below).

Table 2.2 Grammatical collocations (source: Benson et al., 1986; 2010)

Type	Pattern	Example
G1	Noun + preposition	<i>admiration for</i>
G2	Noun + to-infinitive	<i>It was a pleasure to do it.</i>
G3	Noun + that-clause	<i>She took an oath that she would do her duty.</i>
G4	Preposition + noun	<i>by chance</i>
G5	Adjective+ preposition	<i>good at</i>
G6	Adjective + to-infinitive	<i>It was necessary to stay there.</i>
G7	Adjective + that-clause	<i>It was nice that she did that.</i>
G8	Verb+ preposition	<i>look at</i>

It is with GCs which include prepositions that the present study is concerned, for they tend to be particularly difficult for L2 learners of English to master as indicated by some recent relevant studies (e.g. Alsulayyi, 2015; Alotaibi & Alotaibi, 2015) as well as my experience as a teacher of English as a foreign language (EFL). Unlike what might be assumed, the prepositional constituents of prepositional GCs can express a number of meanings including not only place, time, and manner to which many textbooks have been confined, but also several other meanings, such as direction, agent, instrument, reason, source, etc. (see e.g. Zughouli, 1979). In other words, the prepositional constituents can have, in addition to their core or literal senses, other extended senses which might contribute to their opacity and add to their learning difficulty (see Roehr & Gánem-Gutiérrez, 2009b). This in turn indicates that it is not enough to make use of only relevant frequency-based criteria such as frequency and adjacency when it comes to investigating learners' knowledge of GCs and consequently deciding which GCs items need to be involved in the present study. In other words, other relevant criteria such as semantic

transparency and collocational restriction (i.e. fixedness) from the phraseological tradition also need to be taken into account (see section 3.4.1).

## **2.6 Empirical studies on L2 collocational knowledge**

Having recognised the importance of L2 collocational knowledge, many researchers have conducted empirical studies to investigate learners' performance on relevant L2 collocational tests and the factors affecting it. Such studies can be divided in terms of the main factors they aimed to investigate into two groups: (1) those investigating L2 collocational knowledge mainly in terms of L1 transfer and (2) those investigating it in terms of other factors. In addition to presenting such studies and their findings that are most relevant to the present study, sections 2.6.1 and 2.6.2 also present a discussion of the main factors impacting learners' L2 collocational knowledge. Section 2.6.3 is devoted to presenting studies involving L1 Arabic learners.

### **2.6.1 L1 transfer**

Of the factors affecting learners' L2 knowledge, L1 was the first to be studied and the one most frequently referred to in the literature, where many studies highlight its role and different hypotheses and accounts are presented. Its interaction effects and the extent to which it affects learners' L2 knowledge compared with other factors, however, are still not clearly understood, especially in relation to frequency and transparency (see section 2.6.2).

L1 effects on learners' L2 knowledge involve influence of the L1 system on the L2 system (Mitchell et al., 2013, pp. 16, 299). This sort of phenomenon is called language transfer which can be positive, when an L1 pattern identical with an L2 pattern is transferred, or

negative when an L1 pattern different from an L2 pattern is transferred. Theorists today generally accept that L1 transfer plays an important role in learners' L2 knowledge on all linguistic levels from phonology to discourse (Ortega, 2009, pp. 31-54). Identifying what effects L1 has on learners' L2 knowledge are among the most important questions still being raised by SLA researchers (Myles, 2010, p. 227; Mitchell et al., 2013, p. 49). The following sections present an overview of how different linguistic approaches and cognitive approaches have accounted for L1's role. Such accounts will be referred to later when discussing the findings of the study in Chapter 6.

#### **2.6.1.1 Linguistic approaches**

##### **A. The structural approach**

Structural models of language and behaviourist learning theory were dominant during the 1950s-1960s which witnessed the emergence of Contrastive Analysis (henceforth CA) with its strong version hypothesis, namely that all L2 learners' errors in areas where the L2 differs from the learners' L1s could be traced to L1 transfer. L1 transfer was accounted for in terms of L1 "habits" that were tenacious and deeply rooted (Mitchell et al., 2013, p. 16). In its strong version, CA involves predicting errors on the part of L2 learners on the basis of a priori analysis comparing L1 and L2.

Influenced by behaviourist learning theory, CA claimed that the prevention of errors was more important than their identification (R. Ellis, 1985, p.51). CA was based on the prediction that differences between L1 and L2 would present learning difficulties, while L2 constructions that were similar to learners' L1s would be easy to learn. However, it has been found that L2 constructions that are different from learners' L1s are not necessarily difficult and that constructions that are similar in both languages are not

necessarily easy. Moreover, it has been found that L1 transfer is selective: only some properties transfer but others do not (Mitchell, et al., 2013, pp. 35, 49), and that transferrable properties tend to transfer one way rather than the other. For example, unstressed object pronouns in English are placed after the verb (*Peter paints it*) but in French they occur before the verb (*Peter la peint*). It has been found out that French L2 learners of English do not transfer French placement and do not produce (*Peter it paints*). English L2 learners of French, however, go through a stage at which they erroneously produce postposed object pronouns in French L2 (*Peter peint la*) (see Myles, 2013, p.63; Mitchell et al., 2013, p. 35). Furthermore, Error Analysis research studies have shown that the majority of L2 learners' errors could not be attributed to L1 transfer, and according to Mitchell et al. (2013, pp. 35-36), a majority of research studies have reported that the errors that could be traced back to L1 do not exceed a third of all L2 learners' errors. Study findings arrived at by interlanguage researchers and theorists following in the 1970s and whose primary concern was discovering developmental sequences and patterns in SLA, led them consequently to understate the importance of L1 influence (p. 16). Such findings have resulted in the demise of the CA hypothesis and in maintaining, instead, a weakened version which starts with actual L2 learner errors and attempts to account for them on the basis of a CA of L2 and L1 (Larsen-Freeman & Long, 1990, p. 57). Thus, L1 influence, although downplayed by interlanguage researchers and not even mentioned in Krashen's (1985) Natural Order Hypothesis, has remained one of the important sources to which L2 learners' errors could be attributed in the challenging task of explaining SLA.



## B. The universal grammar approach

In addition to the establishment of some views about SLA based on the belief that language learners have innate linguistic knowledge that guides them, Universal grammar (UG) has presented insightful explanations to account for such views. Its explanations have consequently contributed to understanding what is involved in the process of SLA, including the role played by L1 in SLA, which is among the main factors the present study aims to investigate. It has enabled SLA researchers to theorise L1 transfer in a somewhat a novel way, "in terms of principles and parametric variation" (Mitchell et al., 2013, p. 96). "Principles" refer to the invariant features common to all human languages, e.g. the phrase structure principle- that all human languages are made up of phrases. Human languages are, to a large extent, the same. Their grammatical systems follow the same principles of UG. Parametric variation (parameter-settings) refers to the limited amount of variation that is possible within the UG principles, e.g. the head parameter that all human languages are made up of phrases, but that their ordering varies from one language to another. All human languages differ in terms of parameters in highly limited ways. Parameters are set based on the primary linguistic data (PLD). UG has been hypothesised in terms of availability to L2 learners to be:

- (1) Not accessed: proponents of this view argue for the presence of a "critical period" for the acquisition of language during a child's early development. Based on this hypothesis, they argue for the unavailability of UG to adult L2 learners. However, proponents of this argument have been challenged by evidence compatible with continuing UG availability (see Hawkins, 2001; White, 2003). As is stated by Mitchell et al. (2013, p. 90), "most studies conducted within a generative framework would argue very strongly that L2 grammars are UG constrained."

(2) Fully accessed: i.e. UG principles and parameters are entirely available to L2 learners. Different hypotheses and accounts have been presented within this view concerning the initial state of L2 learners' grammars and the involvement of L1 transfer:

- A- No L1 transfer: an example of a proponent adopting this position is Flynn (1996, cited in Mitchell et al., 2013, p. 91) who has claimed that adult Japanese learners of English are able to reset the head-direction parameter successfully from head-last to head-first, regarding that as evidence supporting this view. "However, more recent research which argues for full access to UG usually acknowledges that the L1 is involved in shaping initial hypotheses at least" (p. 91).
- B- Partial transfer of only some L1 parameters which are taken as starting points while other L2 parameters are directly reset (p. 92).
- C- Full L1 transfer where L2 learners, assuming initially the L1 and L2 to have the same settings, start by transferring their L1 grammar and all its parameter settings and to subsequently make revisions to their initial hypotheses when the L2 does not conform to their L1 settings. Then they formulate new hypotheses constrained by UG principles and parameters. An example of evidence supporting this position is Ionin et al.'s (2008, pp.554-76) study of Russian and Spanish learners' acquisition of English articles. The researchers have found that Spanish learners of English whose L1 article system expresses specificity and definiteness in the same way as in English transfer the settings of their L1. However, Russian learners whose L1 lacks articles have access to the semantic universals of specificity and definiteness, but initially they fluctuate between them before they could adopt the setting that is correct in English. These findings suggest that L2 learners have full access to the universal features that their L1 lacks.

- (3) Partially accessed: some parts of UG are not accessible to L2 learners any longer, whereas others can be accessed to instantiate the L2. For instance, functional features that are not available in the learners' L1 might not be learned. This implies that both UG and the L1 are the sources of hypotheses. L2 grammars, in this view, are UG-constrained in the sense that they do not violate UG principles and parameters, but learners "might not be able to reset parameters, and therefore continue to operate with L1 settings for some parts of the new language" (Mitchell et al., 2013, p. 83).
- (4) Indirectly accessed: advocates of this view claim that L2 learners have access to UG only via their L1s. L2 learners have previously accessed the range of UG principles applicable to their L1 and set parameters to their L1 values, and this will be the basis for their development in the L2. This implies that only one instantiation of UG will be available with the learner's language parameters already fixed to the settings of the L1. If the L2 has parameter-settings different from those of the learners' L1, "they will have to resort to other mechanisms in order to make L2 data fit their internal representations. These mechanisms will be rooted in general problem-solving strategies, rather than UG-based" (p. 93).

Thus, it is evident that the role of L1 in SLA, as is accounted for in terms of the access and transfer hypotheses presented by UG perspectives above ranges from affecting "only the more peripheral areas of L2 development" (if there is continuing direct access to L2 learners' underlying universal grammar) to "lying at the heart of L2 learning" if L2 learners indirectly access UG via their L1s (Mitchell et al., 2013, p.17).

There is more than one reason why UG account of the effects of the L1 is likely to be relevant to IUSs' acquisition of GC. Taking into account that much of the research

on collocations (by e.g. Sinclair, 1991, 2004; Stubbs, 1996) shows lexis and grammar to be far more *interconnected* than previously thought (see section 1.2), it follows then that UG account of L1 transfer is likely to be plausible when it comes to the acquisition of GCs. In addition, there is a current view that looks at the collocation as a whole as being one entity consisting of the node and the collocate. In the case of GCs, the grammatical collocate often behaves in a suffix-like way and is sometimes attached as a suffix to the lexical item as is the case in Arabic where several prepositions can be attached to nouns (see e.g. Rahman, 1990; Almahammed, 2016; Husni & Zaher, 2020), and all prepositions can be attached to pronouns. Last but not least, levels of language that UG aims to account for are no longer restricted to the levels of morphology and syntax, as was traditionally the case. Rather, UG current accounts of SLA aim to be inclusive, encompassing all aspects of language (see Myles, 2000, p.79). The findings of the present study might provide evidence in support of the UG account of L1 transfer as will be shown in Chapter 6.

#### **2.6.1.2 Cognitive approaches**

Unlike linguistic approaches that focus on language within the mind of individual learners, cognitive approaches focus on learning within the mind of individual learners. Moreover, they do not believe in the existence of innately guided linguistic knowledge. Some perspectives within cognitive approaches believe that SLA is determined by implicit cognitive mechanisms accessible to every normal learner. "Learning" is viewed as the extraction of meaningful patterns and structures from the L2 input and use rather than being innate. Thus, grammatical rules emerge from L2 usage and experience (see Mitchell et al., 2013, pp. 98-99). According to such usage-based/emergentist models, SLA is determined by input-related factors including frequency, saliency, and

redundancy as well as learner-related factors including associative learning and language transfer. Thus, emergentist cognitive perspectives have viewed L1 transfer as being among the important learner-related factors that determine SLA. Moreover, the role of L1 has been accounted for in terms of overshadowing, in areas where L1 and L2 differ, and there is a processing failure of a feature which is redundant, i.e. when it is possible to extract the meaning satisfactorily without it. Such overshadowing is likely to happen as a result of another more salient feature in the input (e.g. a content word, such as *yesterday* is more salient than *-ed* in: Yesterday, I visited my friends). It might also happen when a certain feature has been activated in the L1 many more times before. Such overshadowing leads ultimately to learned selective attention, commonly referred to as attention blocking. In other words, "overshadowing and attention blocking are thought to affect L2 because an L1 is already established" (p.105). N. Ellis & Sagarra (2011) conducted an experiment which included L2 learners from different L1s. The researchers used Latin to investigate to which extent inflectional morphology can be attended to. They trained the participants on verb morphology in different ways. They found that learners whose L1s have no verb morphology, such as Malay and Chinese were less sensitive to verb cues than the other L2 learners whose L1s have verb morphology. They concluded that sensitivity to such cues is "a matter of degree" (p. 611).

This account seems to compete with the one suggested by UG (see section 2.6.1.1 above). The UG and usage-based perspectives might be regarded as being complementary to each other, for they both contribute to our understanding of what is involved in SLA, and consequently get us to the whole image. The findings of the present study might help lend support to such accounts, as will be shown in Chapter 6.

L1 transfer has also been accounted for in terms of learning capacities and processing limitations by O'Grady et al. (2009, p. 83): 'the preferred interpretation in the L1 will be

favoured in the L2 if and only if it does not have a greater processing cost in the L2', making a basic prediction, namely that an L2 learner transfers the dominant processing routine of his/her L1 unless there is a competing routine that is less costly (see Mitchell et al., 2013, pp. 120-23).

Memory systems and conscious learning perspectives within the cognitive approach have also recognised the role of L1 and accounted for it in terms of memory storage and online processing differences between L1 and L2, leading consequently to limiting, to some extent, what can be learned in areas where L1 and L2 differ. L1 has been viewed as being one of the sources distracting the L2 learner as it "sometimes 'gets in the way' of processing the L2" (p. 155). Their accounts, however, have ranged from regarding L1's role as marginal (i.e. L1 does not have a significant influence on SLA) to considering it relatively important (p. 134). Juffs & Harrington (2011, p. 151, cited in Mitchell et al., 2013, p. 153) have concluded that the role played by L1 in processing L2 sentences is much more important than the role played by L2 learners' working memory.

It is evident from the above overview that, although L1's role has been recognised earlier than the factors affecting learners' L2 knowledge, it has been accounted for differently. Influenced by behaviourists' theories, structural linguists have looked at it as a matter of habit formation that is deeply rooted. UG advocates have accounted for it in terms of UG principles and parametric variation by presenting a number of access and transfer hypotheses. Cognitive approaches, on the other hand, have viewed it as being among the important factors that determine input processing. Memory systems and conscious learning perspectives have accounted for it in terms of memory storage and online processing differences between L1 and L2. Although recognised earlier and accounted for by researchers, L1's role, however, still seems relatively too complex to be more clearly understood. Thus, further research is still needed before it is possible to more

clearly understand its effects. Determining whether or not L1 transfer is one of the influential factors affecting IUSs' knowledge of GCs is among the main aims of the present study.

### **2.6.1.3 Relevant collocation studies**

As far as the acquisition of L2 collocations is concerned, research showed that L1-L2 congruency is a factor which tends to lead to L1 transfer in the sense that the similarity between L1 and L2 collocation items tends to lead to L1 positive transfer which facilitates the acquisition of such collocations, whereas the differences between them tend to cause negative transfer, as has been shown and stressed by many researchers (e.g. Biskup, 1992; Bahns & Eldaw, 1993; Elyildirm, 1997; Caroli, 1998; Granger, 1998; Nesselhauf, 2003). Biskup's (1992) and Bahns & Eldaw's (1993) studies aimed to investigate the effect of learners' L1 on their production of L2 lexical collocations, and both involved a translation task. The former study included two groups of advanced L2 learners: an L1 German group and an L1 Polish group. The latter study involved an advanced L1 German group. The findings of both studies showed that there appeared to be a strong L1 effect on the production of the L2 collocations made by all groups. In both studies, however, the criteria for item selection were not clear, and nothing was mentioned concerning the frequency and transparency of the L2 items involved, which might have potential confounding effects on learners' performance, as suggested by more recent studies (see section 2.6.2), making it difficult to attribute all the effects noticed to L1 transfer only.

Elyildirm's (1997) study included L1 Turkish tenth-grade learners studying at upper secondary schools and aimed to investigate their comprehension and production of collocations in English. The study covered two types of lexical collocations: adjective-

noun collocations and verb-noun collocations. The data collection instruments included a fill-in-the-blank test, a translation test, and a correct/incorrect test, of which the validity, reliability, and criteria for item selection were not referred to. The findings of the study showed that learners' performance was characterized by a tendency to resort to L1 negative transfer and overgeneralization when they had limited knowledge of the collocability of L2 items. In addition, Elyildirm's (1997) study showed that congruent collocations were easier for learners than incongruent ones.

Unlike Biskup's (1992) and Bahns & Eldaw's (1993) studies above, Caroli's (1998) study involved upper secondary school learners of English whose L1 was Italian and included a receptive knowledge test with multiple-choice items and a productive one with fill-in-the-blank items. Each of the tests consisted of 15 congruent lexical collocations and 15 incongruent ones. Like Elyildirm's (1997) study, the results of the study showed that learners' performance on the congruent collocations was better than on the incongruent ones and that their receptive knowledge of collocations outweighed their productive knowledge. Like the above-mentioned studies, however, the criteria for item selection were not clear, and nothing was mentioned concerning reducing the effects of any potential confounding variables or concerning the validity and reliability of the tests.

Granger's (1998) and Nesselhauf's (2003) studies were based on more naturalistic data. The former study was based on corpus analysis and investigated the difference in productive collocational knowledge between native speakers of English and French learners of English. The researcher focused attention on amplifiers functioning as adjective premodifiers, such as *highly* and *totally*. She found that congruent amplifiers, such as *totally* and *completely* had much higher frequencies in learners' corpus than the incongruent ones. She attributed this finding to the important role of the positive transfer of learners' L1, which functions as a facilitator of the acquisition of L2 amplifiers similar



to the learners' L1. Nesselhauf's (2003) study was based on free written production involving the use of verb-noun collocations that were incongruent to learners' L1. The study involved advanced university learners of English whose L1 is German. Students' writing was assessed in terms of acceptability involving consulting native speakers of English, making use of the British National Corpus (BNC) as well as checking dictionaries. As in the previous studies, her study showed that L1 influence on learners' productive collocational knowledge was rather high. Including a corpus or a written task can add to the reliability and validity of a study by providing more naturalistic data, larger size, and greater representativeness. Like the researchers above, however, the researchers mentioned nothing about the effects of potential confounding variables, such as the frequencies of the targeted items, which might affect the accuracy of the results.

In sum, the studies mentioned above showed the important role played by learners' L1 in their acquisition of the L2 collocational knowledge. However, although these studies gave us useful insights concerning the role of L1 transfer, what is involved in learners' collocational knowledge is too broad to be accounted for in terms of only one factor. In addition, since the researchers mentioned nothing about reducing the effects of potential confounding variables, such as the frequency and transparency of L2 collocations, it is likely that what was thought of as an effect of L1 transfer only might be a combined effect involving other factors as well.

### **2.6.2 Other factors**

In addition to L1 transfer, some studies (e.g. Elyildirm, 1997; Gitsaki, 1999; Bonk, 2000; Koya, 2005; Durrant & Schmitt, 2010; Wolter & Gyllstad, 2013; Gyllstad & Wolter, 2016) have ascribed the deficiency in learners' knowledge of L2 collocations to other

factors including frequency of the L2 collocations, their semantic transparency, overall L2 proficiency, as well as the context of learning/teaching. The following sections are devoted to these factors, where relevant background knowledge and studies are presented.

### **2.6.2.1 Frequency**

In addition to L1-L2 congruency effects viewed in section 6.2.1, frequency also has effects at all language representation levels from phonology and morphemes to clausal structures (N. Ellis, 2002; Tomasello, 2003; Siyanova-Chanturia et al., 2011).

With respect to first language (L1) acquisition, studies have demonstrated that language users tend to be sensitive to language frequency effects (e.g. Mitchell et al., 1995; Hare et al., 2001). The importance of frequency as a factor affecting language acquisition has been emphasised by the emergentist or usage-based models, a group of closely related models of language acquisition (e.g. MacWhinney, 2000; Bybee & Hopper, 2001; Tomasello, 2003; Goldberg, 2006; Bybee, 2007). In these usage-based models, language learning is viewed as "a predominantly inductive and experience-driven process, and the frequency with which structures occur in use plays a pivotal role in the emergence of the language system" (Wolter & Gyllstad, 2013, p. 452).

The majority of theoretical and empirical work on usage-based or emergentist models has been conducted with respect to L1 acquisition, and consequently less attention has been paid to whether or not such models can also be effectively applied to L2 acquisition. In recent years, however, there is small but growing body of empirical evidence that is indicative of the strong effects of L2 input frequency that tend

to include not only the single-word level but also extend to larger grain sizes as well (e.g. Durrant & Schmitt, 2010; Siyanovao-Chanturia et al. 2011; Wolter & Gyllstad, 2013; Gyllstad & Wolter, 2016).

Durrant & Schmitt's (2010) study aimed to investigate the effects of input frequency on higher proficiency learners' retention of novel L2 collocational patterns involving adjective-noun combinations. The learners belonged to various L1 backgrounds and were involved in a training session where they were exposed to the L2 collocational patterns. A cued fill-in-the-blank test was the data collection instrument involved in the study. The results showed that learners' performance on the collocational patterns involving adjective-noun combinations that had co-occurred during the training session was better than their performance on the combinations that had not. Based on their study findings, the researchers concluded that any deficiency in learners' L2 collocational knowledge was likely to be the outcome of limited exposure to the L2 rather than being a language learning process seen as fundamentally different from that of native speakers (see Wray, 2002). Their conclusion seems to contradict that of other researchers who suggest that L1 negative transfer is a major factor contributing to learning difficulties (see section 2.6.1) while Durrant & Schmitt's (2010) place more importance on exposure to the L2 input or teaching.

Siyanova-Chanturia et al. (2011) also showed that higher proficiency L2 learners tend to be sensitive to L2 frequency effects at the collocational level. The L2 learners involved had various L1 backgrounds. The researchers used an eye-tracking technique using binomials (e.g. bride and groom, heart and soul) and their reversed forms (e.g. groom and bride, soul and heart) as target items embedded in sentence contexts that were identical for both types. They found that the highly proficient L2 processed the binomials significantly faster than the lower frequency reversed formulations of the binomials (e.g.

*groom and bride*). As these binomials involved the same words, the researchers concluded that it was the frequency related to the entire phrase that was vital, leading to a faster processing of the binomials compared with their reversed forms. Their findings, however, indicated that this processing ability was closely associated with higher L2 proficiency.

Another study involving advanced L2 learners of English is Wolter & Gyllstad (2013). This study aimed to investigate the effects of two item-related variables, namely frequency and congruency on the processing of L2 adjective-noun collocations. The study involved an acceptability judgment task where the learners were instructed to judge whether the provided combinations were commonly used in the L2 or not. It was found that learners' performance on L2 collocations processing was influenced not only by L1-L2 congruency, but also by how frequent L2 collocations are. The results showed that the learners were highly sensitive to the frequency effects for the L2 collocations and that such frequency effects seem to be strengthened by higher congruency.

These findings have called attention to the importance of making use of multiple theoretical perspectives to account for SLA (see sections 1.2 and 3.4.1). They are important not only for L2 acquisition theory but also for more practical teaching perspectives. However, in the item selection process of the above-mentioned studies, semantic transparency, which is very likely to affect learners' performance on collocations as suggested by recent research (see section 2.6.2.2), was not taken into account, making it difficult to get closer to a more complete understanding of what is involved in the acquisition of L2 collocations.

### 2.6.2.2 Transparency

As stated by Gyllstad & Wolter (2016), "most studies have defined collocation along the lines of the frequency-based tradition, and consequently factors like semantic transparency in word combinations have not been taken into account" (p.302). At the same time, however, there has been a recent line of research investigating noun compound processing and suggesting the importance of the semantic transparency of the compound constituents as a potential indicator of the compound difficulty (e.g. Frisson et al., 2008; El-Bialy et al., 2013). In these studies, semantic transparency is often manipulated in terms of how compound constituents straightforwardly contribute to the compound meaning. In such studies, items conditions are typically used as follows: fully transparent items (TT), (e.g. *eyesight*); partially opaque items (OT/TO), (e.g. *eyetooth/sugarcane*, where the opaque or non-transparent constituent comes first or last); and fully non-transparent items (OO), (e.g. *catwalk*). (p. 302). In these compound processing studies, it has been found that transparent items were read/processed faster than the opaque or partially opaque ones. Such findings were relevant enough to inform researchers' predictions as far as collocations are concerned (see Gyllstad & Wolter, 2016, pp. 302-303).

Koya's (2005) study aimed to investigate L1 Japanese university students' collocational knowledge of basic verb-noun collocations. The researcher classified the collocations into three transparency levels: transparent, half-transparent, and opaque collocations. The researcher, however, did not make it clear on what basis the classification was performed. Data collection instruments included a translation test, as well as a multiple-choice test, the collocations of which were the same as those included in the translation test, and the validity and reliability of the tests were not referred to. The study involved a comparison between learners' receptive knowledge of collocations and their productive knowledge.

Unlike congruency, which was found to have significant effects on both students' receptive and productive collocational knowledge, semantic transparency did not have significant effects on students' receptive knowledge of collocations, which was found to be generally larger than their productive collocational knowledge. However, transparency effects on students' productive knowledge were significant when it came to comparing the students' performance on transparent collocations with that on the half-transparent collocations and the opaque ones: their performance on the transparent collocations was significantly better than on the half-transparent collocations and the opaque ones. Their performance on the half-transparent collocations, however, was not significantly better than on the opaque collocations.

Revier's (2009) study aimed to test the effect of transparency on Danish EFL learners' knowledge of lexical collocations involving verbs + nouns by piloting a newly introduced collocational knowledge test, the CONTRIX, a modified version of the sentence-cloze format (see section 2.7). The learners belonged to three English classes representing three different education levels (10<sup>th</sup> and 11<sup>th</sup> graders, as well as 1<sup>st</sup>-year university students), which was taken to serve as an indicator of learners' different L2 proficiency levels (see section 2.6.2.3). Collocations were divided into three equal groups (each group included 15 items): (1) transparent, where both constituent words forming the collocation are used in their core or literal sense, as in *make tea*; (2) semi-transparent, where the verb constituent is used in an extended or non-literal sense, as in *make a complaint*; and (3) non-transparent, where both constituents are used in a non-literal sense, as in *run the show*. The Oxford Advanced Learner's Dictionary, 7<sup>th</sup> ed (OALD; 2005) was primarily relied on in establishing the semantic property of each constituent word, assuming that the literal senses of a given word are generally presented before the extended ones. However, there was no clear division between literal and extended meanings, making it

necessary to consult native speakers or to replace a less clear item with a clearer one. The frequency of the combination in the BNC ranged from .04 to .47 occurrences per million. The mean frequencies of the items in the three groups were .21, .20, and .19 for transparent, semi-transparent, and non-transparent items, respectively. In other words, matching the mean frequencies of the three item groups was managed by manipulating and keeping the mean frequencies close to each other, and consequently eliminating the effect of frequency as a confounding variable. The results showed that learners' performance on transparent items was significantly better than on the other types of items, suggesting an important role played by transparency on learner's collocational knowledge. Unlike Koya's (2005) study above, which did not clearly show the criteria followed in determining semantic transparency, this study explained the relevant transparency criteria followed, made use of corpus data, and paid particular attention to the frequency matching of the test items. However, nothing was mentioned about matching the test items in terms of L1-L2 congruency. Unless the test items were well-matched in this respect, then congruency might be at play as a confounding variable affecting the accuracy of the study results, a limitation which has been taken into account in the present study (see Chapter 3).

Informed by insights from research findings relevant to noun compound processing, Gyllstad & Wolter (2016) conducted a study to investigate the effects of transparency on the processing of word combinations consisting of verbs + nouns and involving transparent free combinations (e.g. *write a letter*) as well as partially transparent collocations, where the verb constituent is used in an extended sense (e.g. *run a risk*). Both groups of items were matched in terms of frequency to eliminate the possible effects of it as a confounding variable. In addition, to eliminate the possible effects of congruency as a confounding variable and because the focus in their study was the effects of semantic

transparency rather than congruency or cross-linguistic influence, all items included in both conditions were congruent. The study involved a group of highly proficient Swedish EFL learners as well as a group of native speakers. The researchers used a semantic judgment task, where participants were requested to press the "yes" key if an item was felt to be natural and meaningful in English or the "no" key if the item did not seem to be natural and meaningful in English. The participants were also instructed to respond as quickly as possible.

It was predicted that learners would process the partially transparent collocations slower than the transparent free combinations, for the lower transparency level in the collocations involved would come with a cost. The researchers found that transparency affected the processing of the word combinations for both groups, namely when defined along the phraseological tradition lines, in that the partially transparent collocations were processed more slowly than the transparent free combinations and that error rate values relevant to the former were significantly higher than those on the latter. The study findings supported Howarth's (1996, 1998a) Continuum Model, which is based on the word combination typologies of the phraseological tradition (see section 2.5.2). The researchers also supported a previous call made by Webb et al. (2013) for future studies that aim to investigate the acquisition of collocations varying in semantic transparency, which is among the main objectives of the present study. In addition, they highlighted the need for future collocational studies that should take into account learners' L2 proficiency as well, which is also among the variables the present study aims to investigate.



### **2.6.2.3 L2 proficiency**

In addition to investigating one of the item-related factors mentioned in sections 2.6.1.3, 2.6.2.1 and 2.6.2.2 above or the role of the type of learning/teaching mentioned in section 2.6.2.4 below, some recent studies have also aimed to investigate the effects of L2 proficiency on learners' collocational knowledge (e.g. Gitsaki, 1999; Bonk, 2000; Revier, 2009, Alotaibi & Alotaibi's, 2015; Nizonkiza, 2017). A common question in previous studies has been whether L2 collocational knowledge develops alongside learners' general L2 proficiency (Barfield & Gyllstad, 2009). Gitsaki (1999), Bonk (2000), Gyllstad (2007), Revier (2009), and Nizonkiza (2017) all claim a positive correlation between learners' general L2 proficiency and their performance on relevant collocational tests, whereas Howarth (1996, 1998a, 1998b) and Barfield's (2006) studies did not lend support to such a position. Unlike the first set of studies above, for example, Revier's (2009) study, where the test items used were matched in terms of some of the other variables involved such as frequency, no reference to such matching was made in Howarth and Barfield's studies above. This may account for the reason why the latter studies did not lend support to the more common position. In other words, there are likely effects of confounding variables that might be at play in the latter studies.

Gitsaki's (1999) study included both lexical collocations and GCs. The study involved L1 Greek learners of English with different proficiency levels, including post-beginner, intermediate as well as post-intermediate learners. Data collection instruments of the study included translation, essay writing as well as a fill-in-the-blank test, of which the item selection criteria were not clear. The findings of the study showed that the learners' development of L2 collocational knowledge was influenced by several factors including L1 transfer, L2 proficiency, instruction (i.e. exposure to the L2 collocations), maturation, and saliency of the L2 collocations (i.e. how easy they are to notice and remember).

Bonk's (2000) study aimed to investigate Hawai'i university students' knowledge of L2 collocations including verb-object collocations as well as verb-preposition GCs. The students' L1s were mostly East-Asian, and their English proficiency levels varied from low intermediate to highly proficient. Three tests were used in the study: two fill-in-the-blank tests as well as a multiple-choice test, of which the criteria for item selection were not clear. The findings of the study showed that learners' L2 collocational knowledge correlated strongly with their L2 proficiency, which served as a good predictor of the learners' collocational knowledge. Unlike previous studies which mentioned nothing about validity and reliability of the data collection instruments used, Bonk's study showed concern for validating the tests as well as calculating their reliability estimates. Two of the three tests involved in the study, namely the ones testing verb-object collocations, were reported as having good reliability and validity, whereas the one testing verb-preposition GCs was reported as having low reliability (.47), making it difficult to regard the findings concerning prepositional GCs as reliable.

Nizonkiza's (2017) study aimed to investigate learners' productive collocational knowledge and identify the effects of L2 proficiency on their knowledge. The study participants were undergraduates majoring in English and belonging to three different educational classes, namely 1<sup>st</sup>-, 3<sup>rd</sup>- and 4<sup>th</sup>-year students. The collocations involved consisted of verbs + nouns. Two tests were administered to the participants: a TOEFL test to determine their L2 proficiency levels and a productive knowledge test involving a fill-in-the-blank task. The participants were instructed to provide the missing part of the underlined word, of which the first two letters were already provided. On the basis of the TOEFL scores, the participants were divided into three proficiency levels. The findings showed that the same L2 proficiency levels were reflected in participants' scores on the productive collocational knowledge test. It was also found that the performance of the

participants belonging to the third level (i.e. the highest one) on the collocational knowledge test was significantly better than that of the participants belonging to the first level and the second one. However, although the performance of the participants belonging to the second level was also better than that of those belonging to the first level, their mean scores were too close to each other to be significant. This led the researcher to conclude that although productive L2 collocational competence increases with L2 proficiency level, the gain is not always the same and is not always significant. The study, however, might be criticised for involving participants from different educational classes/years as the effect shown by their performance might be attributable in part to the effects of some possible confounding variables, such as maturation or the period of exposure to the L2 input.

In some studies, proficiency is tested by selecting classes representing different education levels (e.g. Revier, 2009, p. 138; Mohammed & Mustafa, 2012). Other studies have used relevant general proficiency tests, such as the OPT (e.g. Shabanpour & Marzban, 2015; Solati-Dehkordi & Salehi, 2016). As far as the present study is concerned, the OPT is opted, for choosing different classes with different educational levels might make it possible for the effects of some confounding variables, such as maturation and period of exposure to the L2 input to be at play.

In short, it is evident from the above-mentioned studies that learners' L2 collocational knowledge might be influenced not only by L1 transfer to which some previous studies were confined (see section 2.6.1.3), but also other factors including frequency of the L2 collocations, their transparency, L2 proficiency, as well as the method of teaching/learning. It is these factors taken together that the present study aims to investigate as far as IUSs' knowledge of GCs is concerned.

#### **2.6.2.4 Learning/teaching method**

Despite the recent growing interest in formulaic sequences, relatively little research has been conducted on how formulaic sequences, of which collocations constitute a type, should be taught in the language classroom (Szudarski & Carter, 2016, p. 246). Some studies (e.g. Hussein, 1990; Farghal & Obiedant, 1995; Laufer & Girsai, 2008; Lindstromberg et al., 2016; Szudarski & Carter, 2016) have indicated an important role of the learning/teaching method in learners' L2 collocational knowledge. The following paragraphs briefly present some relevant studies, which are intended to serve as examples to help illustrate the point rather than provide an exhaustive list. Reference will be made to such studies later when making some relevant pedagogical recommendations (see section 7.2).

Laufer & Girsai's (2008) study aimed to investigate the acquisition of L2 collocations by three groups of high school EFL learners of the same L1 (Hebrew). The study involved three different conditions: (1) contrastive form-focused instruction (where explicit contrastive analysis comparing collocational patterns in participants' L1 and L2 and translation were involved to draw learners' attention to the targeted L2 items), (2) meaning-focused instruction (where reading comprehension and group discussion were involved), and (3) non-contrastive form-focused instruction (where two tasks highlighting collocational patterns were involved). The results showed that explicit contrastive analysis comparing collocations in learners' L2 and L1 was the most effective method of enhancing learners' L2 collocational knowledge.

Lindstromberg et al. (2016) have shown an important role of type of instruction in L2 learners' performance in the production of formulaic sequences, among them collocations were included. The study participants were Dutch-speaking advanced EFL learners majoring in English at Ghent University, Belgium. The study was an experimental investigation involving two groups: a treatment group and a control group. The treatment group was exposed to the targeted formulaic items by means of a modified dictogloss exercise (a dictation activity where learners hear a text read out several times, take notes, and produce the target language), where repetition, "focus on form", and "pushed output" (i.e. a learning activity where there are ample opportunities to produce the target language) were involved. "Focus on form", which has to do with targeting particular L2 forms within their meaningful co-text (i.e. the text around the target L2 form), was achieved by means of input enhancement techniques, such as underlining and italicising to help direct L2 learners' attention to the targeted formulaic items, which were presented in a journal abstract. The control group was exposed to the targeted items by making use of standard dictogloss where no highlighting of the targeted formulaic sequences was involved. Following the treatment, participants in both groups were instructed to write reconstructions of the journal abstract they were exposed to. The findings of the study showed that the learners belonging to the modified dictogloss group did significantly better than those of the standard dictogloss group as the targeted formulaic items used by the former were significantly more than those used by the latter.

Szudarski & Carter's (2016) study aimed to investigate the role of two instruction types, namely input flood only vs. input flood with underlining enhancement in Polish EFL learners' acquisition of infrequent adjective-noun and verb-noun collocations in English. The learners were in their last grade of secondary school. The researchers used delayed

tests to examine the learners' receptive and productive collocational mastery. The findings showed that the input flood with underlining input enhancement yielded better results than input flood only.

It is evident from the above-mentioned studies that, in addition to the item-related factors and L2 proficiency mentioned in sections 2.6.1.3 and 2.6.2.1-3 above, IUSs' L2 knowledge of GCs might be influenced by the method of teaching/learning followed in the study setting as well. The present study aims to investigate the effects of the four factors above (frequency of GCs, their L1-L2 congruency and transparency, as well as IUSs' L2 proficiency) on participants' knowledge of GCs. Besides, the study attempts to explore how GCs tend to be taught and learned in the study setting and how consciously aware the participants are of them and of the factors affecting their learning.

### **2.6.3 L1 Arabic learners**

Collocation studies involving L1 Arab learners of English have been limited in number, and most of them have focused on learners' knowledge of lexical collocations (e.g. Hussein, 1990; Farghal & Obidat, 1995; Ahmed, 2008; Shehata, 2008; Ridha & Al – Riyahi, 2011).

Hussein's (1990) and Farghal & Obiedant's (1995) studies investigated Jordanian university students' knowledge of lexical collocations in English. The former involved participants taking a multiple-choice test. The latter involved university students majoring in English and language teachers of English and used a fill-in-the-blank test as well as a translation test. The validity, reliability, and item selection criteria of the tests were not referred to. The findings of the studies revealed that learners' performance on

all the tests was generally not satisfactory. The researcher attributed learners' collocational deficiencies not only to L1 negative transfer, overgeneralization, and avoidance, but also to the context of learning and teaching practices followed, which overemphasise teaching grammar at the expense of vocabulary, leading consequently to unfamiliarity with L2 collocations.

Shehata's (2008) and Alsakran's (2011) studies investigated advanced learners' receptive and productive knowledge of collocations. The former tested both adjective-noun and verb-noun collocations and involved a group of L1 Arabic university students studying in the USA and another studying in Egypt. The data collection instruments of the study included two fill-in-the-blank tests, a recognition test, an appropriateness judgement test, and a self-report questionnaire. Alsakran (2011), in contrast, examined verb-noun and adjective-noun collocations, as well as verb-preposition GCs. Like Shehata's (2008) study, it involved the comparison of two groups: one studying in an ESL learning environment in the USA and another studying in an EFL learning environment in their country, KSA. The researcher adopted, with some modifications, Shehata's (2008) data collection instruments for testing the lexical collocations as well as Bonk's (2000) instrument for testing verb-preposition GCs although it had been reported by Bonk (2000) as having low reliability (.47). The findings of both Shehata (2008) and Alsakran (2011) revealed that, in addition to the significant role played by L1-L2 congruency on participants' performance, the learning environment had an important role to play in the acquisition of L2 collocations and that there was a significant positive correlation between the amount of exposure to the TL in the USA and ESL learners' knowledge of collocations. In addition, learners' performance on the receptive knowledge tests outstripped their performance on productive knowledge. Nothing was mentioned concerning validity, reliability, and criteria for item selection in either study.

Furthermore, comparing participants from different countries, following different educational systems and speaking different varieties of Arabic, with another group belonging to one country, Egypt, is a limitation that might to some extent affect the accuracy of the results in Shehata's (2008) study.

Ridha & Al-Riyahi's (2011) study aimed to investigate the sources of lexical collocational errors made by Iraqi third-year university students majoring in English. The data collection instrument was free writing, assigned as homework for the participants. Overgeneralisation and negative L1 transfer were found to be the major sources behind learners' errors. Depending on homework assignments, however, might be problematic and could affect the accuracy of the results as learners might resort to strategies such as using the Internet, checking dictionaries, and getting their homework proofread by others.

Mohammed & Mustafa's (2012) study aimed to test Iraqi university students' knowledge of GCs. It involved the comparison of two groups of undergraduates majoring in English: second- and fourth-year students. Three types of GCs involving prepositions were tested: noun-preposition, verb-preposition, and adjective-preposition GCs. The data collection instruments were a multiple-choice test, a fill-in-the-blank test, as well as a translation test. Unlike most of the above-mentioned studies which showed no concern for test reliability, the study reported the receptive knowledge test (i.e. the multiple-choice test) and the productive knowledge tests (i.e. the fill-in-the-blank and translation tests) to have reliability coefficients ( $\alpha$ ) of .64 and .78, respectively. The results of the study showed that participants' collocational knowledge was insufficient as they were not able to provide the correct responses in the majority of cases and that, as in the studies mentioned above, their receptive collocational knowledge was significantly better than



their productive collocational knowledge. In addition, fourth-year students' performance was found to be significantly better than second-year students' performance. L1 transfer and overgeneralisation were reported to be the major sources of learners' errors. The study did not include all the types of GCs involving prepositions which the present study aims to cover. Furthermore, the criteria on the basis of which the test items were chosen were not stated. In addition, many of the items included in the tests belong to word bands beyond the first 3000, making it difficult for participants to know the meanings of not only the GCs, but also of the individual words forming them. Moreover, nothing was stated concerning reducing the effects of potential confounding variables, such as the effects of frequency and transparency of the GCs items.

Alsulayyi's (2015) study investigated KSA university students' knowledge of GCs and included most types of GCs (but only some including prepositions). It compared two groups of upper-intermediate proficiency learners majoring in English: a group learning English in an L2 environment in the UK and another one learning in the KSA. The researcher depended on essays previously written by the participants as the data for the study. The study aims included finding out which group could perform better as well as finding out the causes behind participants' errors. The results of the study showed that the group studying in the UK performed better than the one in the KSA, suggesting a possible role of exposure to the TL in an ESL environment on participants' performance. L1 negative transfer was reported as the main cause for learners' errors. Based on error frequencies and percentages, the GCs involving prepositions were found to be more difficult for the participants than the other types. The study, however, tested only learners' productive knowledge and included only five participants in each of the two groups, making it difficult to generalize the research findings. In addition, like Ridha & Al-Riyahi's (2011) study mentioned above, depending on homework assignments could be

problematic as it might affect the reliability of the results arrived at, for learners might resort to other strategies, such as checking dictionaries, using the Internet, and getting their assignments proofread by others.

Alotaibi & Alotaibi's (2015) study aimed to investigate Kuwaiti EFL learners' receptive and productive knowledge of all the types of GCs in English except the ones involving verb + preposition. The participants involved in the study belonged to two L2 proficiency levels, including advanced as well as intermediate proficiency learners. The data collection instruments included a multiple-choice test and a fill-in-the-blank test. The findings of the study revealed that advanced learners' performance on the receptive and productive knowledge tests was significantly better than the performance of the intermediate proficiency group. Like the findings of Alsulayyi's (2015) study, of the seven types of GCs involved, the ones involving prepositions were reported to be more problematic for the participants. Learners' erroneous performance on GCs was attributed mainly to L1 negative transfer and their limited exposure to the GCs. GCs limited frequency in everyday life situations was also referred to as being a factor that might have affected learners' performance. Although the study aimed to test seven types of GCs, the number of items included in each of the two tests was only 14, i.e. only two items were specified for testing each of the seven types of GCs. Such a small number of test items is evidently too limited to accurately measure learners' performance on each type, making it difficult to draw firm and far-reaching conclusions. In addition, the validity, reliability, and item selection criteria of the tests used were not discussed.

In sum, the findings of the above-mentioned studies showed that L1 Arabic learners demonstrated weak knowledge of L2 collocations and that their L1 was the major source or among the major sources of their errors. It is also evident that research investigating L1 Arabic learners' knowledge of GCs has been limited both in number and as regards

the number of factors considered (see 2.6.2), a gap which the present study aims to address.

## 2.7 Summary of the tests used to examine L2 collocational knowledge

Table 2.3 below summarises the different types of data collection instruments used to examine L2 collocational knowledge in previous studies.

Table 2.3 Tests used to examine L2 collocational knowledge

No.	Year	Researcher	Collocations tested	Data collection instruments
1.	1990	Hussein	Lexical collocations	Multiple-choice test
2.	1992	Biskup	Lexical collocations	English translation test
3.	1993	Bahns & Eldaw	15 verb-noun collocations	Translation and cloze tests
4.	1995	Farghal & Obiedat	22 common lexical collocations	Fill-in-the-blank test and a translation test
5.	1997	Elyildirm	Verb-noun, adjective-noun collocations	Correct or incorrect test, translation test and fill-in-the-blank test
6.	1998	Caroli	30 verb-noun Collocations	Fill-in-the-blank and multiple-choice tests
7.	1998	Granger	Adverbial collocations	Corpus study
8.	1999	Gitsaki	37-type collocations including both lexical and GCs	Free writing, translation test and fill-in-the-blank test
9.	2000	Bonk	Verb-object collocations, and one type of the GCs involving prepositions: verb-preposition GCs	Two blank-filling tests and a multiple-choice test.
10.	2003	Nesselhauf	Verb-noun collocations	Free writing task
11.	2005	Koya	Verb-noun collocations	A translation test and a multiple-choice test
12.	2008	Ahmed	Lexical collocations	A multiple-choice test
13.	2008	Shehata	Adjective-noun and verb-noun collocations	Two blank-filling tests, a recognition test, an appropriateness judgement test, and a self-report questionnaire
14.	2009	Revier	Verb-noun	CONTRIX: fill-in-the-blank test
15.	2010	Durrant & Schmitt	Adjective-noun combinations	A cued blank-filling test
16.	2011	Ridha & Al-Riyahi	Lexical collocations	Free writing
17.	2011	Alsakran	Adjective-noun, verb-noun collocations, and one type of the	Three gap-filling tests and an appropriateness judgment test

			GCs involving prepositions: verb-preposition GCs	
18.	2012	Mohammed & Mustafa	3 types of GCs involving prepositions: noun-preposition, verb-preposition and adjective-preposition GCs	A multiple-choice test, a fill-in-the-blank test, as well as a translation test
19.	2013	Wolter & Gyllstad	Adjective-noun collocations	An acceptability judgment task
20.	2015	Alsulayyi	GCs, including three of the ones involving prepositions:	Essay writing
21.	2015	Alotaibi & Alotaibi	GCs, including three of the ones involving prepositions:	A multiple-choice test and a fill-in-the-blank test
22.	2017	Nizonkiza		A fill-in-the-blank test

As shown in Table 2.3 above, different types of data collection instruments have been used to test learners' L2 collocational knowledge in previous studies including multiple-choice tests, fill-in-the-blank tests, translation tests, correct or incorrect tests, free writing tasks, translations, cloze tests, and acceptability judgment tasks. However, studies that reported estimates of reliability and validity or at least showed concern for them are very few (see Gyllstad, 2009, p. 153), making it difficult to draw firm and far-reaching conclusions applicable to populations other than the ones tested in the studies. Moreover, most of the tests used in the above-mentioned studies have lacked principled criteria for item selection (see Durrant, 2014). Furthermore, many of the tests used have involved collocation items of which the constituent words belong to word bands beyond the first 3000, making it likely that many participants do not know the meanings of the collocations as wholes, or the meanings of individual words forming the collocations. In addition, some test experts in the field of collocation research have criticised most of these tests in their traditional form where a collocation is regarded as if it were two or more individual separate words rather than regarding the whole as one unit (see Revier, 2009, p. 125).

Dissatisfaction with data collection instruments used in previous studies has yielded better alternatives designed by experts in the field including Gyllstad's (2009) COLLEX (collocating lexis) and COLLMATCH (collocate matching) for testing receptive collocational knowledge and Revier's (2009) CONTRIX (constituent matrix), a modified version of the sentence-cloze format, for testing productive collocational knowledge. These tests have demonstrated good reliability, validity and capacity to discriminate among learners belonging to different L2 proficiency levels.

The COLLEX test is a multiple-choice task. A sample item from it is the following, where participants are asked to tick the word sequence they think is the most commonly used by native speakers of English (Gyllstad, 2009, p. 157):

	a	b	c
a. drive a business    b. run a business    c. lead a business	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

The COLLMATCH test is a yes/no test. A sample item from the COLLMATCH test is the following, where participants are asked to show whether they think the sequence presented is a commonly used word combination in English or not:

catch a cold      Yes ☐    No ☐

A sample item from the CONTRIX test is the following, where participants are asked to select the combination that best completes the sentence (Revier, 2009, p. 129):

The quickest way to win a friend's

trust is to show that you are able to

tell	a/an	joke
take	the	secret
keep	—	truth

The tests of the present study have followed the COLLEX and CONTRIX tests as far as depending on clear criteria for item selection and highlighting or involving the GC as a whole are concerned.

## 2.8 Summary

Humans' ability to communicate effectively, fluently, confidently and effortlessly, depends to a large extent on their knowledge of formulaic units (McEnery et al., 2019), including collocations, of which GCs constitute a subtype. Based on my experience as an EFL teacher and on some relevant earlier studies (e.g. Mohammed & Mustafa, 2012), GCs involving prepositions tend to be particularly problematic for Iraqi students to master, even at the university level. To help better understand and address this problem, and consequently help IUSs overcome it, it is important to identify its sources and find out their main and interaction effects. The present study aimed to investigate the effects of GCs frequency, their L1-L2 congruency and transparency, as well as L2 proficiency on IUSs' productive and receptive knowledge of GCs and providing more focus than in the past on the interactions of such factors.

Unlike the effects of L1-L2 congruency which have received relatively greater attention in relevant previous studies, those of transparency and frequency as item-related variables have not received due attention. Most earlier studies tended to be confined to the

investigation of one or two factors, without considering the effects of the other relevant factors which might be at play as confounding variables. This, in turn, makes it difficult to draw firm and far-reaching conclusions. To help achieve its objectives, the present study attempted to avoid the shortcomings associated with the relevant earlier studies (see 2.6) not only by depending on clearer criteria for item selection, but also by making use of more appropriate data collection instruments, as will be shown in the following chapter, which presents the methods used to achieve the objectives of the present study and address its research questions.

## **Chapter Three: Methodology**

### **3.1 Introduction**

This chapter is devoted to the presentation of the methodology involved in the present study. It starts by presenting details relevant to the paradigmatic stance and the research design followed to achieve the objectives of the present study (see section 3.2). It also presents a detailed description of the participants involved, the data collection instruments used, the way such instruments were designed and piloted, as well as an explanation of the procedure followed for data collection. Moreover, it includes sections relevant to presenting detailed information about the data analysis procedure, the validity and reliability of the study tools, the data analysis procedure followed, the ethical issues taken into consideration, as well as the limitations of the present study.

### **3.2 Paradigmatic stance, research design and questions**

As highlighted by Denzin & Lincoln (2003, p. 33), research is "guided by a set of beliefs and feelings about the world and how it should be understood and studied." The researcher's epistemological and ontological beliefs, as well as his/her methodological premises may be referred to as a paradigm (i.e. a framework or perspective).

As far as epistemology is concerned, it may be defined as "the science of knowing" (Babbie, 2017, p. 4). It is also used in the sense of the researcher's stance on what constitutes knowledge and how knowledge is created. It refers to "a fundamental branch of philosophy that investigates the possibility, limits, origin, structure, methods and validity (or truth) of knowledge" (Delanty & Strydom, 2003, pp. 4-5). Methodology is a



subfield of epistemology and can be defined as "the science of finding out" (Babbie, 2017, p. 4).

Ontology means "the theory of the nature of reality" (Delanty & Strydom, 2003, p. 6), where certain assumptions and arguments are made concerning the nature of social reality and whether it might be observable and objective or not. In social sciences, there are different research paradigms, each of which is characterized by its own set of assumptions, beliefs and principles. An example of a research paradigm is positivism, within which my research falls. This paradigm involves deduction as its approach to data analysis and relies mainly on quantitative methods. Its epistemological position is that of objectivism, where researchers are regarded as objective observers, not affecting what is being observed, measured, and studied. In other words, positivists argue for the existence of an objective reality that is independent of the observers and is not mediated by their senses. Another example of a research paradigm is interpretivism, which involves induction and the use of qualitative methods. Unlike positivists, interpretivists argue for the importance of the subjective and multiple interpretations made by the researcher, the participants involved as well as other researchers of the phenomenon under study. Besides, they believe that reality is multi-layered, socially constructed, and mediated by our senses, which makes it too complex to know it as it really is (see Cohen, et al., 2011, p. 17).

As the present study involves investigating the effects of different factors highlighted by different L2 acquisition perspectives (see Chapter 2) on learners' knowledge of GCs, a positivist paradigm might be more appropriate as it highlights the testing of theories (see Denzin & Lincoln, 2003, pp. 14-15). Such a paradigm makes use of quantitative methods, such as survey questionnaires, through which the quantified data obtained can help operate more objective results. In addition, it makes use of qualitative methods, as

appropriate (see e.g. Su, 2018, pp. 18-19), which can be "richer in meaning and detail than are quantified data" (Babbie, 2017, p. 25). They can help expand the scope of research, extend its depth, and enrich its context, which in turn can help the researcher gain deeper insights into the phenomena under investigation. They are essential for exploring dynamic phenomena such as social processes and contextual fields and can be readily combined with quantitative methods (see Creswell, 2009, p. 175; Bryman, 2012, p. 408; Su, 2018, p. 19).

Thus, unlike relevant earlier studies, which involved only quantitative research methods (see section 2.6), the present study is based on a mixed-method approach including both quantitative and qualitative research methods, where the latter can help not only triangulate the findings arrived at by means of the quantitative methods, but also explore what other things are involved in the learners' knowledge of GCs (i.e. their explicit knowledge of GCs and the way they tend to be taught and learned). As indicated in Chapter 2, the current study makes use of multiple SLA perspectives and the factors they highlight, including not only the L1-based ones, to which relevant earlier studies were confined (see section 2.6.1.3), but also the frequency-based perspectives (see section 2.6.2.1), as well as the transparency-based ones (see section 2.6.2.2) to help better understand what is involved in the acquisition of L2 GCs. In other words, the study takes into account all the relevant factors presented in Chapter 2 and their related SLA perspective, looking at them as being complementary to each other and contribute to bringing us closer to a holistic view of what is involved in the acquisition of L2 GCs. This is also the case when it comes to the methods of determining the GCs involved in the present study, where a complementary approach has been opted to straddle both of the two traditions involved in earlier research on collocations (see section 2.5), making use of the frequency and adjacency criteria from the frequency-based tradition as well as

semantic transparency/opacity and collocational restriction (i.e. fixedness) criteria from the phraseological tradition.

The quantitative part of the study involves administering a productive knowledge test, a receptive knowledge test (see section 3.4.1), as well as the Oxford placement test to the participants, Iraqi university students (IUS; see section 3.3), after they have filled in a consent form (see section 3.9). The qualitative part involves interviewing a sample of student participants as well as their teachers to help gain deeper insights into the phenomena under study.

The above-mentioned methods aim to address the following six research questions:

1. To what extent does IUSs' receptive knowledge of GCs differ from their productive knowledge?
2. To what extent do the following factors influence IUSs' knowledge of GCs:
  - a) Frequency of GCs,
  - b) L1-L2 congruency,
  - c) Transparency of GCs,
  - d) IUSs' L2 proficiency
3. What are the main and combined effects of the above-mentioned four factors on IUSs' knowledge of GCs? And which factor has the strongest impact in the presence of the others?
4. How consciously aware are IUSs and their teachers of GCs and their different types?
5. In what ways do GCs tend to be learned/taught in class?

6. According to participants, what factors contribute to making some types of GCs easier or more difficult to learn and teach?

RQ1 above, which aims to determine to what extent IUSs' receptive knowledge of GCs differs from their productive knowledge, requires involving two different quantitative tools to address it, one of which tests the learners' productive knowledge and the other one tests their receptive knowledge. These two tools are the productive and receptive knowledge tests. Section 3.4.1 below presents further details about them.

RQ2.a-c, which aims to separately test the effects of each of the variables involved, requires research tools that can be subdivided in such a way as to ensure testing the effects of the three item-related variables (i.e. frequency of the GCs involved, their L1-L2 congruency and transparency) after getting them all well-matched. The productive and receptive knowledge tests were designed in such a way that they meet this condition, for they were selected on the basis that they not only allow the inclusion of all the three item-related variables under investigation, but also make it possible to get each one of them well-matched and balanced in terms of the other relevant variables (see section 3.4.1).

RQ2.d is addressed by means of the Oxford Placement Test (OPT), which aims to test the effects of participants' L2 proficiency on their performance on the collocational knowledge tests. This test is considered reliable and efficient enough to help divide the participants in terms of their L2 proficiency (see section 3.4.2 below for more details on the test).

RQ3 aims to find out the main and interaction effects of the above-mentioned four factors (frequency, congruency, transparency, and L2 proficiency) on IUSs' knowledge of GCs. It also involves determining which factor has the greatest effect compared with the rest of the factors involved. This research question is addressed by the above-mentioned

collocational knowledge tests, where the effects of the item-related variables are taken into account, as well as the OPT, which aims to determine the effect of the participants' L2 proficiency.

RQ4, which seeks to explore whether IUSs and their teachers have sufficient L2 explicit knowledge of GCs, is addressed qualitatively by means of the semi-structured interviews involved in the present study, where there is a set of items linked to this research question. Such an interview type is flexible enough to allow the interviewer to further pursue a relevant theme by probing/prompting participants where more details are needed. More relevant details about how appropriate this type of interviews are presented in section 3.4.3 below.

RQ5 aims to investigate how GCs tend to be learned/taught in class (i.e. incidentally, intentionally, explicitly, or implicitly) and whether their learning/teaching involves making use of input enhancement techniques, such as highlighting, underlining, bolding, and slanting. This research question is also addressed by means of the semi-structured interviews involved, where a different set of items is devoted to the question (see section 3.4.3).

RQ6 aims to find out whether IUSs and their teachers think that such potential factors as GCs frequency, their L1-L2 congruency and transparency, as well as L2 proficiency and method of teaching GCs might affect learners' knowledge of GCs and to what extent. This research question is also addressed qualitatively by means of a set of interview items of the semi-structured type (see section 3.4.3). The findings arrived at might help provide evidence in support for or against the ones obtained by means of the quantitative methods involved in the present study (i.e. the above-mentioned language tests).

Table 3.1 below presents an overview of the study research design including research questions, their relevant data collection instruments, participants involved, and data analysis methods.

Table 3.1 Overview of the study research design including research questions, data collection instruments, and data analysis methods

Research Question	Data Collection Instrument and Participants Involved	Data Analysis Method
1. To what extent does IUSs' receptive knowledge of GCs differ from their productive knowledge?	A productive collocational knowledge test and a receptive knowledge one; IUS participants	Statistical analysis using SPSS 24.0 software <ul style="list-style-type: none"> <li>• paired-samples t-test</li> </ul>
2. To what extent do the following factors influence IUSs' knowledge of GCs: a) Frequency of GCs, b) L1-L2 congruency of GCs, c) Transparency of GCs, d) IUSs' L2 proficiency	The productive and receptive collocational knowledge tests; IUS participants  Oxford Placement Test (OPT); IUS participants	Statistical analysis using SPSS 24.0 software <ul style="list-style-type: none"> <li>• paired-samples t-test</li> <li>• one-way repeated-measures ANOVA</li> <li>• independent-samples t-test</li> <li>• Pearson correlations</li> </ul>

3. What are the main and combined effects of the above-mentioned four factors on IUSs' knowledge of GCs? And which factor has the strongest impact in the presence of the others?	The productive and receptive collocational knowledge tests as well as the OPT; IUS participants	Statistical analysis using SPSS 24.0 software <ul style="list-style-type: none"> <li>• three-way repeated-measures ANOVA</li> </ul>
4. How consciously aware are IUSs and their teachers of GCs and their different types?	Semi-structured interviews; IUS participants and their teachers	Analysis of transcription from the interview recordings
5. In what ways do GCs tend to be learned/taught in class?	Semi-structured interviews; IUS participants and their teachers	Analysis of transcription from the interview recordings
6. According to participants, what factors contribute to making some types of GCs easier or more difficult to learn and teach and to what extent?	Semi-structured interviews; IUS participants and their teachers	Analysis of transcription from the interview recordings

The following sections present more details about the participants and the research methods involved in the current study.

### **3.3 Participants**

The study involved recruiting a sample of third-year IUSs of both sexes from the Department of English Language and Literature, College of Education at a provincial university in the middle east of Iraq. The number of participants was 112 (85 females and 27 males), which is sufficiently enough not only to do relevant statistical tests for significance (Cohen et al., 2011), but also to do analysis of subgroups of students (e.g. higher proficiency, lower proficiency). Their ages span from 21 to 23, with a mean age of 21.24 years. The choice of third-year IUSs is based on the assumption that proficiency in using GCs in English requires long-term exposure to English, a condition which such participants are supposed to more readily meet. The L1 of all participants is Iraqi Arabic, and the study did not include bilinguals. This requirement is to minimise distortions arising from any possible side-effect due to the differences in the participants' linguistic background. The informed consent form included relevant items about participants' L1s and whether they are bilinguals (see Appendix 7). In addition, I checked for other potentially influential factors, such as the number of years spent in the departments of English, attending additional English courses other than the learners' formal instruction in Iraq, amount of time spent in an English-L1-speaking country, either as a visitor or a student. Four students were excluded from the study, for they spent more than one year in the same class. This is to ensure as far as possible that the participants form a reasonably homogeneous and consistent sample as far as their L1, stage of development, ages are concerned (see R. Ellis, 1985; Cohen et al., 2011). Based on the results of the OPT (see further, section 3.4.2), the participants could be divided into two L2 proficiency groups: a higher proficiency group and a lower proficiency one. The number of participants in the higher proficiency group is 53, while the number in the lower



proficiency one is 59. So, they are reasonably well balanced. All participants voluntarily agreed to participate in the study.

In addition, the study involved 8 Iraqi Arabic-speaking teachers of EFL, all of whom voluntarily agreed to participate in the study, and they were all involved in teaching the students who participated in the study. These participants were interviewed (see section 3.4.3) to find out about their conscious awareness of GCs and their different types, and (if applicable) how they teach them, as well as what factors they think might contribute to making some types of GCs easier or more difficult to learn and teach and to what extent (see Table 3.1 above). To the best of my knowledge, no other study on the topic has included teacher participants to be interviewed.

Moreover, to help test the validity and reliability of the productive and receptive knowledge tests (see section 3.8.1), a group of undergraduate native speakers of English involving 25 students (16 females and 9 males) from different departments at the University of Leicester have also been requested to participate in the collocational knowledge tests. Their ages span from 19 to 30, with a mean age of 23.24 years. The inclusion of native speakers is thought to be important for test validation, for if the language test is valid, native speakers of English should obtain perfect or near-perfect scores due to their extremely high proficiency (see Gyllstad, 2009).

### **3.4 Data collection instruments**

Four different data collection instruments were used in conducting the present study:

- a. A productive knowledge test
- b. A receptive knowledge test

c. The Oxford Placement Test

d. Interviews

The present study attempts to avoid the shortcomings of previous relevant studies (see 2.6) not only by depending on clearer criteria for item selection, but also by making use of more suitable data collection instruments for addressing the study research questions, and consequently help better achieve its goals. As has already been stated, the present study aims to find out, in addition to the effects of L2 proficiency as a subject-related variable, the effects of three different item-related variables, namely (1) frequency of the relevant GCs, (2) L1-L2 congruency of the GCs, and (3) transparency of the GCs. It follows then that there is a need to employ data collection instruments of the type that not only allows the inclusion of all such variables, but also makes it possible to make them all better-matched and balanced in terms of the other relevant variables, a condition which can be more readily met with the productive and receptive knowledge tests of the present study. The following section, which is based in part on my recently published article, Mkhelif (2019), presents more details about each of the collocational knowledge tests.

### **3.4.1 Design of the productive and receptive knowledge tests**

To achieve the objectives of the present study and address its relevant research questions (Q1, Q2. a-c, and Q3; see Table 3.1 above), a written test was constructed, consisting of two parts: (1) a productive knowledge test where there are blanks to be filled in with the missing components of the GCs and (2) a receptive knowledge test with multiple-choice items. The multiple-choice items include three options: the correct option (i.e. the correct GC in the given context) and two distractors. The sentences presenting the tests items were taken from the British National Corpus (BNC), 1994 edition. Each sentence was

selected on the basis that it should be sufficiently representative of the context in which a GC item is more commonly used. In addition, the sentences should be relatively short and consist of familiar words to the participants to ensure that they are sufficiently easy for them to understand (see Appendices 1 and 2). Presenting the targeted test items within such a linguistic context is intended to make the task more authentic and natural (see Gyllstad, 2009, p. 156). As stated by Wolter & Gyllstad (2013, p.7), "a sufficiently large and adequately representative corpus can give us an indication of the types and regularity of input a language user is likely to have been exposed to". The BNC is a 100-million-word sample containing spoken and written texts of recent British English. It is designed to be representative of a wide range of modern British English. Although the corpus has some limitations, such as the absence of certain text types (e.g. text messages and social media discourse) and its datedness as it was compiled between 1991 and 1994 (see Hoffmann et al., 2008; Gabrielatos et al., 2012; McEnery & Hardie, 2012), it is nevertheless suitable for the present study, for the English syllabus materials IUSs have been exposed to were mostly compiled between the 1970s to 1990s. The corpus and its software, BNCweb, enables selective analysis/searching, such as retrieval of words belonging to different sections of the corpus: spoken or written, by males or females, in books or other sources, in academic texts or other texts, preceded or followed by other words belonging to specific parts of speech.

In each of the GCs selected, the individual words forming the GC belong to the New General Service List (NGSL) developed by Brezina & Gablasova (2015). The reason behind selecting the NGSL rather than academic English vocabulary is that the NGSL can more readily serve the purpose of the present study than academic vocabulary, the acquisition of which on the part of the learners comes at a later stage. In addition, the study participants are training to be EFL teachers at secondary and pre-secondary schools,

where the focus is mainly on general English, and they are more likely to have learned the kind of vocabulary found in the NGSL than academic English vocabulary (see section 1.3). This list has been chosen as it is regarded as more reliable and up-to-date than West's (1953) original General Service List (GSL). It is based on four corpora of standard English (LOB, BNC, BE06, and EnTenTen12) totalling over 12 billion running words, which contributes to its representativeness. It contains 2494 items and "covers between 80.1 and 81.7 percent of the text in the source corpora" (Brezina & Gablasova, 2015, p. 1). To ensure that all the individual component words of the GCs belong to the NGSL, I have made use of the list relevant software available at <http://corpora.lancs.ac.uk/vocab/> by using the "Analyse" or "Search" options. Figure 3.1 below displays a screen image of how the NGSL software appears.

Figure 3.1 A screen image of how the NGSL software appears



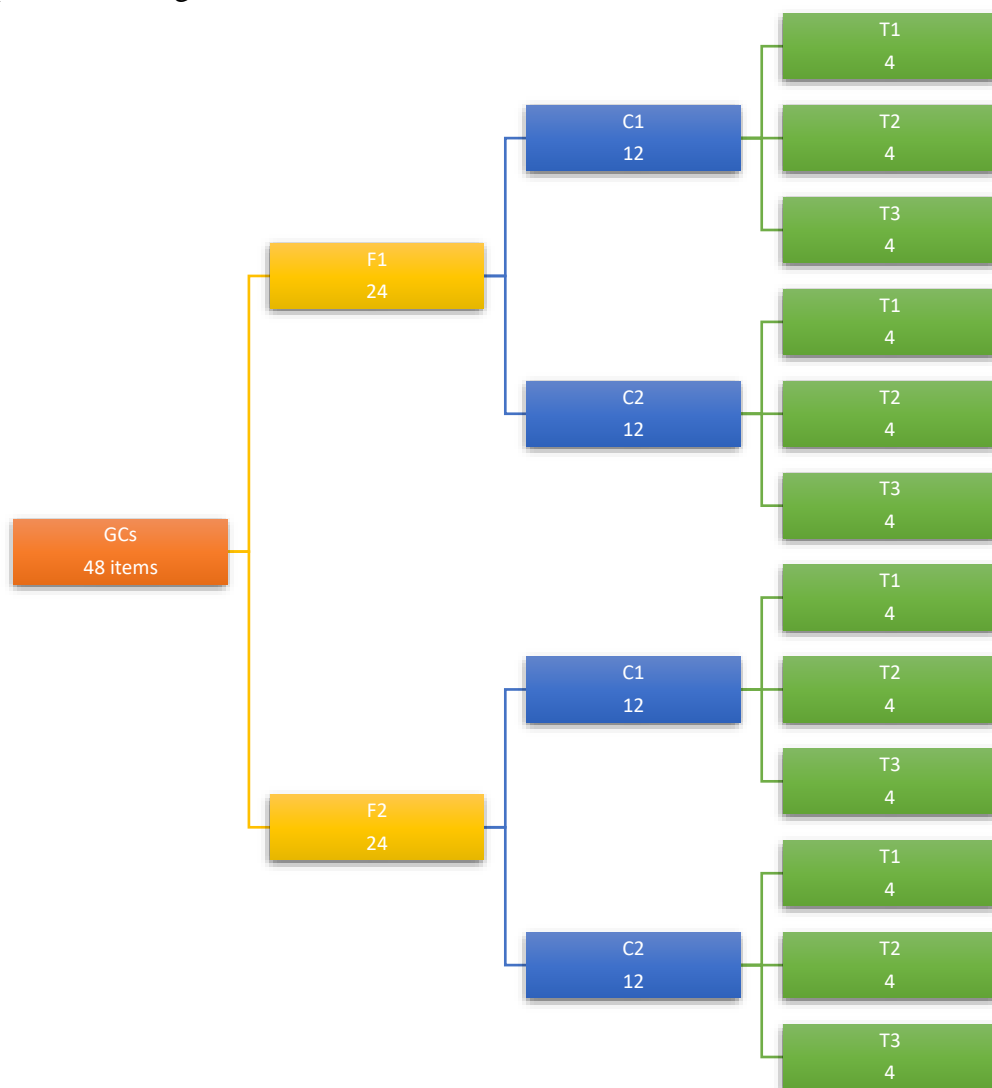
Moreover, all the individual words forming the GCs as well as the words used in the sentences presenting such GCs were selected from among the 3000 most frequent words of the BNC. This is to ensure, as far as possible, that participants were already familiar with them in the sense that they may know the word form and at least some of its

meanings, which in turn might make it easier for the participants to comprehend the sentences containing the GCs. This can be achieved by copying and pasting all the sentences for the tests in the "VocabProfiler" software tool in the Compleat Lexical Tutor website, <http://www.lextutor.ca/vp/comp/>, using the BNC word frequency bands by selecting the "BNC 1-20k" option. This software colour codes words in terms of the BNC frequency band they come from. Words that are shown by the "VocabProfiler" software tool to belong to word bands lower than the first 3000-word bands were replaced by more frequent ones belonging to the first 3000 word bands. In this respect, the present study has followed the rare studies that have used corpora for the selection and development of the content of the collocational knowledge tests (see Eyckmans, 2009, p. 142). Each group of GC items involved was intended to serve a purpose, and so contribute to testing the effects of the factors affecting learners' knowledge of GCs. In other words, each group of GC items is selected on the basis of the relevant criteria of frequency, congruency, transparency, and their matching requirements, as will be further explained in the following paragraphs.

As shown in Appendix 1. and Table 3.2 below, each of the productive and receptive knowledge tests includes GC items representing higher-frequency GCs, congruent (i.e. having an equivalent L1 construction) GCs, and more transparent GCs, and, in contrast, other GCs items in the same tests representing lower-frequency GCs, incongruent (i.e. not having an equivalent L1 construction) GCs, and semi/less transparent GCs, respectively. The total number of items in each of the tests is 48. They are arranged in descending order in terms of their frequencies (as GCs) in the BNC. When it comes to frequency and testing its effects, each of the tests can be divided into two equal halves that are only different in terms of frequency: higher frequency items (no. 1 to no. 24) and lower frequency ones (no. 25 to no. 48). Each of these halves, in turn, consists of an equal

number of congruent items (12 items) and incongruent ones (12 items). In addition, the items within each frequency half include an equal number of more transparent items (8 items), semi-transparent items (8 items), and less transparent ones (8 items). (See below for discussion of examples and issues pertaining to congruency and transparency). In other words, each of the frequency halves is matched or balanced in terms of congruency and transparency. Figure 3.2 below shows the two frequency halves with their subdivisions in the productive and receptive knowledge tests.

Figure 3.2 The two frequency halves with their subdivisions in the productive and receptive knowledge tests



F1 = Higher frequency, F2 = Lower Frequency; C1 = Congruent, C2 = Incongruent;  
T1 = More transparent, T2 = Semi-transparent, T3 = Less transparent

The effect of frequency can thus be tested by comparing the participants' performance (scores) on both halves, assuming that the two halves are well-matched and balanced in terms of other variables, such as congruency and transparency. To test the effects of congruency, each of the tests can also be divided into two equal halves in terms of L1-L2 congruency: 24 congruent items and 24 incongruent ones. All other things being equal, the effect of congruency can be tested by comparing learner's performance on the two item types. When it comes to testing the effects of transparency, the test items in each of the productive and receptive collocational knowledge tests can be divided into three equal thirds: more transparent items (16 items), semi-transparent ones (16 items), as well as less transparent items (16 items). The reason why there are three values for transparency but only two for the other item-related variables (frequency and congruency) is that there are numerous examples, such as *on holiday* and *at speed* that cannot be easily classified as either transparent or non-transparent. Therefore, classifying them as semi-transparent would be more appropriate. Classifying GCs items into more frequent and less frequent or congruent and non-congruent, however, is more straightforward; therefore a middle value is not required. Assuming that the number of items within each transparency level is sufficient and that they are well-matched and balanced, the effects of transparency can be tested by comparing learners' performance on each transparency type. When it comes to frequency matching, I did my best and managed to get the two congruency item types to have as close/equal average raw frequencies as possible to each other (1857.83 in both cases). This is almost also the case when it comes to the three transparency item types involved, as shown in the last row of Appendix 1. This was among the hardest and most time-consuming tasks for me as it had taken so long to get each item type well-matched and balanced in terms of the other variables involved.

The frequency of each GC was obtained by searching the BNC using the software at <http://bncweb.lancs.ac.uk/>. In this study, GCs having raw frequencies equal to or higher than 1000 in the BNC were regarded as having higher frequency, whereas the ones having frequencies below that were considered as having lower frequency. The GCs involved in the present study were delimited to prepositional grammatical collocates that are immediately adjacent to and following their nodes in the case of verb/adjective nodes or preceding/following their nodes in the case of noun nodes to help exclude words that do not have a collocational relationship. Moreover, the nodes of the lexical words in the GCs searched for were lemmas rather than other word forms to ensure that all the relevant inflectional forms of the GCs under investigation are included and taken into consideration in obtaining the frequency estimates. For example, when it comes to calculating the frequency of the GC *look at*, the frequency estimate obtained takes into account the base form of the verb constituent as well as all of its different inflectional forms (i.e. *look/looks/looked/looking at*). In addition, the "Log-likelihood" were involved as a statistical measure of collocational strength, where a Log-likelihood value more than 10.83 was looked for, as it shows that the probability that a given grammatical collocate occurred by chance is less than .001 (see Hoffmann et al., 2008, p.85).

When it comes to congruency, in addition to making use of my knowledge of Arabic as my L1, I consulted a jury of four Iraqi PhD experts in Arabic and translation, all of whom were university academic staff members in Iraqi. Although some can be translated in a different way (see Rahman, 1990), GCs in English can often have Arabic corresponding counterparts in which the lexical constituents are similar or congruent to those in the former (i.e. can be regarded as direct word-for-word translation equivalents of the lexical constituents within the GCs in English). When it comes to the prepositional constituents within the corresponding GCs in the two languages, however, they can be either



congruent to each other or incongruent (i.e. cannot serve as direct translation equivalents of each other). It is too hard to find a GC in English that has a counterpart in Arabic with both lexical and prepositional constituents being different from those in the former. As the lexical constituents within GCs often tend to be equivalent in the two languages, it has been agreed by the jury that if the prepositional constituent of an English GC is also congruent to the prepositional constituent in the Arabic counterpart of that GC, then that GC would be classed as congruent, as in *depend on*, which is congruent to its Arabic counterpart, /ja9tamid 9la/. Otherwise, the GC would be considered relatively incongruent, as in *good at*, which is not congruent to its Arabic counterpart, /Jayyid fii/, for the preposition *at* is not the same as or equivalent to the one in its Arabic counterpart, /fii/ (in). After replacing very few GCs items with other more appropriate ones, as recommended by the members of the jury, I managed to get the final refined list approved by them as being suitable for the intended purpose, i.e. testing L1-L2 congruency effects as well as getting item types matched in terms of congruency. The few GCs items that were replaced were the ones of which the Arabic counterparts tend to be flexible concerning which preposition the GC may involve as its prepositional constituent. That is, the preposition constituent within such GCs in Arabic can be replaced by another preposition that is also acceptable in the same context but is different in terms of congruency. In other words, the preposition constituent in such GCs involves two options, both of which can be used in the same context and denote the same sense in Arabic, but one of which is congruent and the other one is incongruent, making it difficult to classify such GCs items as being congruent or incongruent to their counterparts in English. For example, the Arabic counterpart of the English GC item *at noon* may consist of the Arabic lexical item /dahirat/ (noon), which is congruent to *noon*, and can be preceded by either the preposition /fii/ (in), which is incongruent to its English counterpart *at*, or by the

preposition /9inda/ (at), which is congruent to its English counterpart *at*. In addition to being difficult to classify in terms of congruency, such instances tend to be too few to be further investigated, and that is probably why they were overlooked in previous relevant studies. Following the experts' advice, I have replaced such few instances by other more appropriate ones, yet this might be considered a limitation (see section 3.10) that needs to be addressed in future research.

As far as transparency is concerned, this has to do with the extent to which the meaning of the GC is clear, or straightforwardly predictable, from the literal senses of its constituents (see Revier, 2009, p. 127). The GCs of each test are classified into three major groups: more transparent GCs (where both constituents forming the GC are used in their literal sense, as in *on Sunday*), semi-transparent GCs (where one constituent is not used in its literal sense, as *on holiday*, where *on* is not used in its literal sense), and less transparent (where neither word is used in its literal sense, as in *by birth*).

In addition to the BNC, I have made use of some dictionaries, such as the BBI Combinatory Dictionary of English (2010) and the Oxford Advanced Learner's Dictionary, 9<sup>th</sup> edition (OALD, 2015) when it comes to searching the meanings of the individual words involved in the GCs as well as the meanings of the GCs themselves. As stated by Revier (2009, p. 127), "the senses of a given lexical entry in the OALD are generally organised such that the literal come before the extended". I have also made use of the expertise of experts in the field (including my supervisors), three of whom are native speakers of English, to work out a clear system for distinguishing literal from non-literal senses. I have classified items in the top half of senses as literal and the ones not belonging to the top half as extended. The following citation is an example of an entry listing the different senses and situations associated with the preposition *on*, as presented in the OALD (2015):

on preposition

BrE /ɒn/

NAmE /ɑːn/ , /ɔːn/

For the special uses of on in phrasal verbs, look at the entries for the verbs. For example turn on somebody is in the phrasal verb section at turn.

1 in or into a position covering, touching or forming part of a surface

- a picture on a wall
- There's a mark on your skirt.
- the diagram on page 5
- Put it down on the table.
- He had been hit on the head.
- She climbed on to the bed. This could also be written: onto the bed

2 supported by somebody/something

- She was standing on one foot.
- Try lying on your back.
- Hang your coat on that hook.

3 used to show a means of transport

- He was on the plane from New York.
- to travel on the bus/tube/coach
- I came on my bike.
- a woman on horseback

4 used to show a day or date

- He came on Sunday.
- We meet on Tuesdays.
- on May the first/the first of May
- on the evening of May the first
- on one occasion
- on your birthday

5 immediately after something

- On arriving home I discovered they had gone.
- Please report to reception on arrival.
- There was a letter waiting for him on his return.

6 about something/somebody

- a book on South Africa
- She tested us on irregular verbs.

7 being carried by somebody; in the possession of somebody

- Have you got any money on you?

8 used to show that somebody belongs to a group or an organization

- to be on the committee/staff/jury/panel
- Whose side are you on (= which of two or more different views do you support)?

9 eating or drinking something; using a drug or a medicine regularly

- He lived on a diet of junk food.
- The doctor put me on antibiotics.

10 used to show direction

- on the left/right
- He turned his back on us.

11 at or near a place

- a town on the coast
- a house on the Thames
- We lived on an estate.

12 used to show the basis or reason for something

- a story based on fact
- On their advice I applied for the job.

13 paid for by something

- to live on a pension/a student grant

- to be on a low wage
  - You can't feed a family on £50 a week.
  - Drinks are on me (= I am paying).
- 14 by means of something; using something
- She played a tune on her guitar.
  - The information is available on the Internet.
  - We spoke on the phone.
  - What's on TV?
  - The programme's on Channel 4.
- 15 used with some nouns or adjectives to say who or what is affected by something
- a ban on smoking
  - He's hard on his kids.
  - Go easy on the mayo! (= do not take/give me too much)
- 16 compared with somebody/something
- Sales are up on last year.
- 17 used to describe an activity or a state
- to be on business/holiday/vacation
  - The book is currently on loan.
- 18 used when giving a telephone number
- You can get me on 020 7946 0887.
  - She's on extension 2401.

Taking into account the transparency criteria presented above and turning back to the above-mentioned GC examples, it is evident that the grammatical collocate *on* in the GC *on Sunday* is used in a literal sense corresponding to the one indicated by number 4 (out of 18) in the preposition entry above, and so is its node, *Sunday*, which is used in a literal sense corresponding to number 1 (out of 2), as indicated in its relevant entry in the OALD (2015):

Sun·day noun  
 BrE /'sʌndeɪ/ , /'sʌndi/  
 NAmE /'sʌndeɪ/ , /'sʌndi/  
 (abbreviation Sun.)  
 1 [countable, uncountable] the day of the week after Saturday and before Monday, thought of as either the first or the last day of the week  
 To see how Sunday is used, look at the examples at Monday.  
 2 [countable, usually plural] (British English, informal) a newspaper published on a Sunday

As each of the constituent words forming the GC, *on Sunday*, is used in a literal sense (i.e. belonging to the top half of senses), this GC item is regarded as more transparent (T1).

The same preposition, *On*, in the GC *on business*, however, is not used in a literal sense, for it corresponds to the sense indicated by number 17 (out of 18) of the preposition entry above, whereas its node, *business*, is used in a literal sense corresponding to the one indicated by number 2 (out of 8), as indicated in its relevant entry in the OALD (2015):

busi·ness noun

BrE /'bɪznəs/

NAmE /'bɪznəs/

138 30

trade

1 [uncountable] the activity of making, buying, selling or supplying goods or services for money

→ **SYNONYM** commerce, trade

- business contacts/affairs/interests
- a business investment
- It's been a pleasure to do business with you.
- She has set up in business as a hairdresser.
- When he left school, he went into business with his brother.
- She works in the computer business.
- They were both in the same line of business.

 **Wordfinder**

→ **SEE ALSO** agribusiness, big business, show business

 **Culture**

work

2 [uncountable] work that is part of your job

- Is the trip to Rome business or pleasure?
- a business lunch
- He's away on business.

3 [uncountable] the amount of work done by a company, etc.; the rate or quality of this work

- Business was bad.
- Business was booming.
- Her job was to drum up (= increase) business.
- How's business?
- If we close down for repairs, we'll lose business.

company

4 [countable] a commercial organization such as a company, shop/store or factory

- to have/start/run a business
- business premises
- She works in the family business.
- They've got a small catering business.
- He wanted to expand the export side of the business.

 **Collocations**

► Wordfinder

responsibility

5 [uncountable] something that concerns a particular person or organization

- It is the business of the police to protect the community.
- I shall make it my business to find out who is responsible.
- My private life is none of your business (= does not concern you).
- It's no business of yours who I invite to the party.

important matters

6 [uncountable] important matters that need to be dealt with or discussed

- the main business of the meeting
- He has some unfinished business to deal with.

event

7 [singular] (usually with an adjective) a matter, an event or a situation

- That plane crash was a terrible business.
- I found the whole business very depressing.
- The business of the missing tickets hasn't been sorted out.

being a customer

8 (especially North American English) (also British English, formal cus-tom)

[uncountable] the fact of a person or people buying goods or services at a shop/store or business

- We're grateful for your business.

As only one word (*business*) of the two constituent words forming the GC, *on business*, is used in a literal sense (i.e. belonging to the top half of senses), this GC item is regarded as semi-transparent (T2).

Table 3.2 below presents a sample list of the GC test items (arranged in descending order in terms of their frequencies in the BNC) for both the receptive and productive knowledge tests of the present study. The full list of the GC items is presented in Appendix 1.

Table 3.2 A sample list of the GC test items (arranged in descending order in terms of their frequencies in the BNC) for both the receptive and productive knowledge tests

No.	GCs Items	*Transparency levels			*Congruency levels		Frequency in the BNC		
		T1	T2	T3	C1	C2	Raw	Per million	*Log-likelihood
1.	think of I can't <i>think of</i> a way to do it.			3		2	11349	115.44	9681.41
2.	increase in They reported an <i>increase in</i> sales compared with last year.		2		1		8072	82.1	31398.6
3.	interest in His <i>interest in</i> mathematics developed at high school.		2		1		7444	75.72	24463.40
4.	aware of He was <i>aware of</i> the danger at the time he attempted the rescue.	1				2	6288	63.96	31551.01
5.	focus on The discussion will <i>focus on</i> the youngest children.	1			1		3551	36.12	24390.66
6.	in place They are held <i>in place</i> by wooden boards			3	1		3508	35.68	3372.50
7.	on Saturday I think they want to sell the papers <i>on Saturday</i> .	1				2	3495	35.55	25052.08
8.	suffer from Does he <i>suffer from</i> any serious illness or disability?		2		1		3344	34.01	23176.02
9.	arrive at She was the first to <i>arrive at</i> the restaurant.	1				2	3299	33.56	20500.25
10.	in June She wanted to spend a long weekend there <i>in June</i> .	1			1		3155	32.09	11192.92

\*Loglikelihood is the probability of the two words collocating with each other.

\*T1 = More transparent, T2 = Semi-transparent, T3 = Less transparent,

\*C1 = Congruent, C2 = Incongruent

### 3.4.2 The Oxford Placement Test (OPT)

The OPT was used to measure participants' L2 proficiency, and this in turn helps to answer RQ2.d and RQ3 of the present study (see Table 3.1 above). The OPT is considered a sufficiently reliable and efficient instrument for appropriately placing students in terms of their L2 proficiency levels. In a previous evaluation study (Wistner et al., 2009), the test was found to have a good reliability coefficient of .809, and the results of the study supported its use as an appropriate test for measuring L2 English proficiency.

An important issue in this connection is the extent to which the OPT itself tests for collocational knowledge relevant to the GCs involved in the present study. This might have a confounding effect on the study findings resulting from participants remembering GCs already provided with the choice options of the OPT items or included within the sentences of the OPT items. To help avoid any possible confounding effects on the study results, I have checked the OPT for the presence of items already included to be tested in the productive and receptive knowledge tests. As a result, two OPT items were slightly modified. These were items 37 and 95 of the OPT, containing the GCs *dependent on* and *on holiday, respectively* (which were already included within the items to be tested in the productive and receptive collocational knowledge tests). They were replaced with other more appropriate words, namely *relying on* and *there, respectively* (which are not involved in the items of the collocational knowledge tests).

The mean score for the participants (as one group) on the OPT in the main study was 48.29%. Based on the results of the OPT, participants could be divided into two proficiency groups: a higher proficiency group (53 participants), where participants obtained higher scores than the OPT mean score (48.29) and a lower proficiency group (59 participants), where participants got lower scores than the OPT mean score. In



addition to helping address RQ 2.d and RQ3, which aim to test the effects of L2 proficiency on IUSs' performance on each of the productive and receptive knowledge tests (see Table 3.1), the data obtained from the OPT might help test the validity of both tests (see section 3.8.1). It is thus clear that the OPT has been used for multiple purposes in the present study, as shown in Table 3.3 below, which briefly summarises its uses.

Table 3.3 Uses of the OPT in the present study.

Uses of the OPT in the study	
1.	The OPT is used as an indicator of IUSs' L2 proficiency as a subject-related variable. It serves as an independent explanatory variable to test the effects of L2 proficiency on IUSs' performance on the collocational knowledge tests. This, in turn, helps to answer RQ2.d and RQ3 of the study, as shown in Table 3.1 above. It is used as a categorical variable, as in 2 below, and as a continuous variable, as in 3 and 4.
2.	It is used as a group divider on the basis of which IUSs participants can be divided into two proficiency groups/levels (a higher proficiency group and a lower proficiency one) and their performances can be compared, which is one way of testing the effects of L2 proficiency as a categorical variable on IUSs' performance on the collocational knowledge tests (see sections 4.2.2.1.D and 4.2.2.2.D).
3.	It is also used as a correlate of IUSs' performance on the collocational knowledge tests (see sections 4.2.2.1.D and 4.2.2.2.D) and their different item types (see Tables 4.31 and 4.37), which is another way of testing the effects of L2 proficiency as a continuous variable on participants' performance on the collocational knowledge tests.
4.	It is used as a continuous predictor variable (covariate) in the repeated-measures ANOVA (see Tables 4.30, 4.36, and 4.40) to help determine how much of the variance can be explained or accounted for by L2 proficiency (i.e. how strong its main effects are) compared to the other three item-related variables involved in the analysis, and whether or not it has interactions (i.e. combined effects) with them (see Larson-Hall, 2010; Leal, 2018).
5.	In addition to the above, it contributed to helping indicate how valid the collocational tests were (see section 3.8.1).

These uses will be further discussed in Chapter 4.

### **3.4.3 Interviews**

Following the administration of the language tests, a sample of students (18) and their teachers (9) were interviewed to help answer RQs 4, 5 and 6 (see Table 3.1 above). The interviews were carried out to help elicit relevant insights not only from the student participants whose collocational knowledge was under investigation, but also from their teachers. This is to help carry out the investigation of IUSs' collocational knowledge not only on the basis of the quantitative data obtained from the language tests, but also by exploring learners and teachers' own perceptions about the factors affecting learners' performance on the collocational knowledge tests. This approach helped open multiple perspectives on the factors affecting learners' collocational knowledge.

Conducting interviews with participants has a number of advantages which motivate researchers to make use of this important data collection tool. In the current study, for example, they are designed to help me find out more about participants' perspectives on the learning and teaching of GCs in the Iraqi higher education context and on the factors affecting the learning of GCs. The most important aspect of an interview is flexibility, which makes it different from other research tools (Burns, 2000; Cohen et al., 2011). Questions can be raised about a relevant topic, such as learner's understanding and use of GCs, in more depth, and misunderstandings, if any, can be cleared up by repeating the questions, or explaining their meanings to participants (Burns, 2000). Interviews enable respondents to express exactly how they consider a particular situation from their own points of view (Burns, 2000; Cohen et al., 2011). Another advantage is that face-to-face interaction can help create a higher level of motivation among participants than a questionnaire as they can express their views using language, which is natural to them (Burns, 2000). Therefore, interviews as a research tool differ from questionnaires, where it is likely that a response is not complete or not provided at all for some items. An

interview can thus help gain a deeper understanding than is expected from a questionnaire and obtain richer and more useful data (Drever, 1995).

Based on their format, there are three types of interviews: structured, unstructured, and semi-structured. Structured interviews are guided by a predetermined framework and are controlled to the maximum extent by the researcher. They can lead to predictable results and thus limit the possibility of obtaining detailed and in-depth information (Wellington, 1996). That is why this interview type was not selected in this study. Unstructured interviews are very flexible and are guided by the interviewee. They tend to yield unpredictable results which might be difficult to analyse (Coleman, 2012; Carey, 2013). Semi-structured interviews are flexible, predetermined, and are somewhat controlled by the interviewer (Wellington, 1996). Moreover, they allow the interviewer to pursue the same basic themes, but probe where more details are needed. Furthermore, they can help reduce researcher bias if the relevant interview guide is followed (Hamilton & Corbett-Whittier, 2013). That is why this type of interview was selected and employed in the present study, where it "sets up a general structure by deciding in advance what ground is to be covered and what main questions are to be asked" (Drever, 1995, p. 1).

As shown in Appendix 5, the semi-structured interview conducted in the present study included a guide of a pre-determined set of mostly open-ended questions about different relevant topics, allowing the interviewer to further probe/prompt participants and explore responses and details (Cohen et al., 2011; Drever, 1995).

On searching the literature, no relevant interview guide could be found for identifying learners' perceptions of the factors affecting their collocational knowledge. Having reviewed the literature available, the interview questions were written, ensuring that each set of items in the interview guide was linked to a relevant research question, and avoiding

as far as possible the use of unclear words and acronyms, or the inclusion of too many questions (Carey, 2013). Moreover, the interview questions (see Appendix 5) were ordered in such a way as to help not only elicit responses and details in a gradual, comfortable manner, but also form a logical sequence ensuring the natural flow of the interviews (Drever, 1995). Items 1 and 2 address RQ 4. In other words, they aim to find out whether learners and their teachers have explicit knowledge about prepositional GCs and their types. Items 3-6 address RQ 5. They aim to find out the way(s) GCs tend to be learned/taught in class (i.e. incidentally, intentionally, explicitly, or implicitly) and whether there are input enhancement techniques associated with their learning/teaching, such as highlighting, underlining, bolding, and slanting. The findings arrived at by means of these interview items might help account for the ones obtained by the productive and receptive collocational tests of the present study; for example, they might help find out what (and why) certain types of GCs items in the above-mentioned tests proved to be easier/more difficult than others. Items 7-11 address RQ 6. They are related to the rationale for the difficulty/ease of the GCs items in the collocational knowledge tests, and this is the section where learners are stimulated to recall/reconstruct the causes and cognitive processes that ultimately led to the answers provided on the tests. They ultimately seek to find out whether participants think that such potential factors as (a) GCs transparency, (b) their frequency, (c) their L1-L2 congruency (d) L2 proficiency, and (e) method of teaching GCs might have their own effects on learners' knowledge of GCs and to what extent. The findings arrived at by means of this last set of interviews items might help provide support for the ones obtained by the study language tests, or they might provide important qualifications or even counter-evidence to those findings. While conducting the interview, the interview questions were partially and occasionally reformatted, reworded, or amended, according to the participants' responses.

### 3.5 Piloting data collection instruments

The data collection instruments of the present study were first piloted with 22 participants, including 3 undergraduate native speakers of English (1 female and 2 males) from the University of Leicester in the UK, 17 IUSs participants (5 males and 12 females), and 2 of IUSs' teachers (1 male and 1 female) from a provincial university in the middle east of Iraq. The L1 of all the IUSs participants was Arabic. Their ages span from 21 to 23, with a mean age of 21.29 years. The sampling proportions (by age, gender, speakers' L1) of the pilot study approximated, to a large extent, the sampling proportions in the main study (see section 3.3). Table 3.4 below displays more details about the participants.

Table 3.4 Demographic information relevant to the pilot study participants

Group	Number	Gender		Study discipline
		Males	Females	
IUSs	17	5	12	English
Natives	3	2	1	Physics
IUSs' teachers	2	1	1	English

The IUSs participated in the collocational knowledge tests as well as the OPT. Both IUSs' teachers and four of the IUSs participated in the interviews. The native speakers involved participated only in the collocational knowledge tests, as in the main study.

The administration of the pilot study to IUSs took place in the teaching classes of the Department of English, College of Education for Humanities, which belongs to a provincial university in the middle east of Iraq. The OPT, the productive and receptive collocational knowledge tests were administered during two separate sessions on two different days. The participants started by filling in the consent and the demographic information forms. Then, the OPT was administered to them during the first session to help divide them later into groups in terms of their L2 proficiency and decide which ones to be interviewed. It took IUSs about 50 minutes to answer the OPT test. The participants' mean score of the OPT test was 59.8%, and their scores ranged from 51% to 68%. Based on the results of the OPT, the IUSs participants were divided into two proficiency groups: a higher proficiency group (8 participants with OPT scores ranging from 61% to 68%) and a lower proficiency group (9 participants with OPT scores ranging from 51% to 60%).

The productive knowledge test was administered to the participants during the second session, and five days later than the first session as the Department of English opens only two days a week during the summer period, within which the pilot study was conducted, namely Sunday and Tuesday. Then, directly after completing the productive knowledge test, the receptive knowledge test was administered. The reason why the receptive knowledge test was administered after the productive knowledge one was to minimise distortions arising from any possible test effects resulting from participants remembering the choice options provided with the items of the receptive knowledge test. It took IUSs about 30 minutes to complete the productive knowledge test and 20 minutes to answer the receptive knowledge test, whereas it took native speakers about 15 minutes to answer the items of both tests.

No problem was reported during the pilot administration of the tests, and all participants assured that the test instructions were clear to them, and consequently no modifications were made to the instructions of the tests. As far as validity and reliability (see section 3.8) of the pilot study are concerned, both tests were able to distinguish between the two different L2 proficiency groups, which were significantly different from each other. This can be regarded as initial evidence indicative of the validity of both tests (see section 3.8.1). Using Cronbach's alpha option, the reliability for the productive and receptive knowledge tests as a whole (48 items) and for the IUS participants as a whole ( $N = 17$ ) = .723 and .769, respectively. As highlighted by Field (2009, p. 679), reliability estimates within the range of .7 to .8 are often the ones often looked for.

Following the administration of the language tests, four IUSs and two of their teachers were interviewed to help answer RQs 4, 5 and 6 (see Table 3.1 above), and consequently get relevant insights from the participants about the factors affecting IUSs' knowledge of GCs. The interviews were conducted in similar conditions as far as place, lighting and timing are concerned. In the light of the pilot study insights, I did my best to further refine my test items to get them well-matched in terms of frequency and transparency (see section 3.4.1). For example, the following test item was included in the collocational knowledge tests in the pilot study:

We met ----- **accident** at the airport.

But it was replaced later (see section 3.6), for the participants tend to fill in the blank with irrelevant items, such as the indefinite article *an* rather than with the prepositional constituent *by* of the GC item, *by accident*.

Some interview questions were also further refined or replaced with other more appropriate ones. For example, the following interview question was included in the pilot study:

If you had to order the following factors in terms of priority for teaching/learning, which one would you say is the most important? Second? Third? Fourth?

- a. Clarity of meaning
- b. How often they are used
- c. L2 proficiency level
- d. Method of teaching them
- e. Similarity to L1

But later it was replaced with another more appropriate one (see section 3.6), for it tends to be relatively more difficult to understand on the part of the participants.

### **3.6 Data collection procedure of the main study**

As is the case with the pilot study, the administration of the main study to IUSs took place in the teaching classes of the Department of English, College of Education for Humanities, University of Wasit, Iraq. The language tests (i.e. the OPT, the productive and receptive collocational knowledge tests) were administered during two sessions on two different days. After filling in the consent and the demographic information forms, the OPT was administered to IUSs during the first session to help group them later in terms of their L2 proficiency and decide which ones to be selected to participate in the interviews. It took IUSs about 50 minutes to answer the OPT test.

The productive knowledge test was administered to the participants during the second session. Then, directly after completing the productive knowledge test, the receptive knowledge one was administered. The reason why the productive knowledge test was administered before the receptive knowledge one was to eliminate any potential test effects resulting from participants remembering the options provided with the items of



the receptive knowledge test. As in the pilot study, it took IUSs participants about 30 minutes to answer the productive knowledge test and 20 minutes to answer the receptive knowledge test, whereas it took native speakers about 15 minutes to answer the items of both tests. Unlike the situation with the pilot study administration where some items in the collocational knowledge test tend to be responded to with irrelevant words not involving GCs (see section 3.5 above, the answers provided during the main administration of the tests tend to be relevant. This is to be expected, for the problematic items were further refined and replaced with more appropriate ones. For example, the test item mentioned in section 3.5 above was replaced with the following item, where irrelevant replies, such as articles are less likely to occur.

He is German ----- birth but has lived in Britain for the last 20 years.

Following the administration of the language tests, 18 IUSs and eight of their teachers were interviewed. The aim of involving participants from both groups is to compare their insights into their knowledge of GCs, the way GCs tend to be taught/learned as well as the factors influencing IUSs' knowledge of GCs. The interviews took place in a face to face setting, where interviewees' facial expressions and their body language may be at play to help shed light on their responses (Coleman, 2012). Such a setting combined with semi-structured interview format is very likely to allow participants to speak of what is significant to them more freely using their own words (Hobson & Townsend, 2010; Carey, 2013). For IUSs, the interviews were conducted in the classroom at break times, where it was quiet. For teachers, the interviews were conducted in their office rooms. Privacy was thus ensured, for the classroom or office room was empty, except for the interviewee and the researcher (King & Horrocks, 2010). The interviews were conducted within the most appropriate times for the interviewees, and they did not exceed 20 minutes. While conducting the interviews, I presented each interviewee with a copy of

his/her answer sheet and the questions guide to help provoke them to recall the original situation in which their knowledge of GCs was being tested and to encourage them to focus on the topic of the interview (Bernard, 2013). In addition, the interviews were audio-recorded to ensure getting a full record of everything said by the participants (Wellington, 1996). Moreover, to help lessen the potential inhibiting effect of recording on the participants as highlighted by Carey (2013), I did my best to encourage them to be relaxed and frank in expressing their views.

Unlike the case with the pilot study administration where some interview questions tended to be not easy enough to be sufficiently understood (see section 3.5 above), in the main study administration, the interview questions tended to be easy to understand. This is due to the refinement made to some of the interview questions following the pilot administration. For example, the interview question mentioned in section 5.3 above was replaced with the following one, which is far easier, and helps better address its relevant research question (see section 3.2):

Can you rate the above-mentioned factors on a scale from 1 to 5, where 1 means it is the least important in making such combinations easier or more difficult to learn/teach and 5 means it is the most important?

- a. Clarity of meaning
- b. How often they are used
- c. L2 proficiency level
- d. Method of teaching them
- e. Similarity to L1

### **3.7 Data analysis methods**

#### **3.7.1 Analysis of the language tests**

Data collected using the collocational knowledge tests and the OPT were converted into numbers for the analyses related to their scores. For scoring purposes, test items were

scored dichotomously, i.e. each correct answer received one point, whereas an incorrect answer received no points. When two answers are provided or when no answer was provided, no point was given.

The data obtained were then put into SPSS (24). Relevant descriptive statistics and assumption tests for the data required to answer each of the research questions of the quantitative part of the study (i.e. RQ1-3) will be referred to in chapter 4 as appropriate. Parametric statistical tests were used in analysing the data of the quantitative part since normality tests showed that the data obtained do not differ significantly from a normal distribution. Different parametric tests were used, including t-tests, repeated-measures ANOVA, and correlation, depending on the requirement of each research question and what it aims to achieve. For example, to test whether the difference between the productive and receptive knowledge tests was significant, a paired-samples t-test was conducted because the data was normally distributed, and there were only two repeated measures involved. A one-way repeated-measures ANOVA was conducted to test how significant the effect of transparency on IUSs' performance was because the data was normally distributed, but there were three repeated measures involved.

As far as the qualitative part of the study is concerned, its data analysis was presented in terms of numbers, percentages, and means, making use of Word/Excel graphs as appropriate.

### **3.7.2 Interview analysis**

Various methods can be used to conduct qualitative data analysis, and there is no standard approach to it (Punch, 2009; Cohen et al., 2011). The general procedures involve three stages. In the first stage, the data is transcribed from the audio recording and organised

for analysis. In the second, the data is reduced into relevant themes through a process involving coding and condensing codes, and the final stage involves representing or reporting the data (Creswell, 2012).

In the present study, thematic analysis was used, guided by the purpose of the study, its research questions, and the approach adopted (Cohen et al., 2011). It is a method for "identifying, analysing and reporting patterns (themes) within data" (Braun & Clarke, 2006, p. 79). It can be used as a means of getting closer to the data and consequently developing a deeper appreciation of its content (Braun & Clarke, 2006). Moreover, it is widely used (Bryman, 2012) and is appropriate for questions related to people's perceptions and views (Namey et al., 2008).

In this study, although participants were encouraged to use Arabic, many of them preferred using English or a mixture of English and Arabic. Participants' interviews were transcribed, and the ones in Arabic were translated into English, taking into consideration that the meaning of every utterance must be retained as accurately as possible during the translation process (Bazeley, 2013). The translation was based on meaning and excluded utterances irrelevant to the interview guide and research questions. Having done that, I began the interview analysis by reading the interview transcripts many times to get a sense of the entire data involved, and consequently become more familiar with their content. This, in turn, helped better prepare the researcher to code the raw data, which is an important means of exploring categories of data features (Gibson, 2010; Carey, 2013). This process led ultimately to the formation of themes, depending on the frequency of data features relevant to the research questions (King & Horrocks, 2010). The coding process was conducted manually using Microsoft Word. It also involved going back and forth between reading, exploring, coding, reflecting, connecting, reviewing and refining (Bazeley, 2013). However, the limitation of this type of analysis is its low validity and

inter-rater reliability (Boyatzis, 1998). A remedy to help overcome the effect of this is to go back and forth over the original interview transcripts and recordings, which I did. Moreover, a post-graduate researcher was requested to review a sample of the interviews' translation and coding.

### **3.8 Validity and reliability of data types**

#### **3.8.1 The quantitative part**

As highlighted by Milton (2009, p. 17), two important characteristics need to be taken into consideration in designing any language test: validity and reliability. Validity has to do with the degree or extent to which a language test can successfully (i.e. accurately) measure what it is intended to measure (see Milton, 2009, p. 18; Schmitt, 2010, p. 181). One way of obtaining evidence for the validity of a language test involves determining whether the test in question can distinguish among participants belonging to different language proficiency levels (as established independently by a professionally made test) by comparing their mean total scores (see Revier, 2009, pp. 133-134). If the different proficiency groups involved in the comparison prove to be significantly different from each other in the same order on the test in question, then this can be regarded as evidence for the latter test's validity.

As far as the productive and receptive knowledge tests of the present study are concerned, the results obtained (see sections 4.2.2.1.D and 4.2.2.2.D) indicate that they are able to distinguish between the two different proficiency groups (as determined by the OPT), since i) participants' performances on the tests are significantly different from one another, and ii) they differ in the expected order according to their L2 proficiency. Moreover, to help achieve the same purpose of establishing validity, as mentioned in

section 3.3, a group of 25 undergraduate native speakers of English from the University of Leicester were also invited to participate in the collocational knowledge tests. The inclusion of native speakers is thought to be important for test validation since due to their extremely high proficiency, they should obtain perfect or near-perfect scores if the language test is valid. Their mean scores on both tests were in fact not only far better than the ones obtained by the learners belonging to the higher proficiency group, but also very close to the maximum possible scores. Thus, we appear to have another positive indicator of the validity of the productive and receptive knowledge tests (cf. Gyllstad, 2009, pp. 159, 161, 166).

Another way of obtaining evidence for the validity of a language test has to do with the test internal construct in the sense that if the test consists of different sections representing different subcomponents of the relevant factors to be tested, then obtaining such evidence can be achieved by conducting a set of comparisons where participants' performances on the different relevant subcomponents of the test are compared. If such comparisons show that participants' performances on such subcomponents differ significantly, then that can be regarded as preliminary evidence for the validity of the test internal construct (see Revier, 2009, p.134), a condition which the present productive and receptive knowledge tests have already met (see Chapter 4).

The validity of the collocational knowledge tests was also supported by having experts in the field (e.g. my supervisors) judge the test items for appropriacy to the target constructs (see section 3.4.1). In addition, I have conducted a pilot study, and in the light of its insights, I did my best to further refine my test items (see section 3.5) so as to strengthen the validity of the instrument.

The other important characteristic of a language test is reliability, which has to do with the extent to which a language test measures something consistently (see Milton, 2009, p. 17). In SPSS, different reliability analyses can be conducted, of which Cronbach's alpha is regarded as the default option for tests with multiple items designed to measure the same construct (Field, 2013, p. 711). Using Cronbach's alpha, the reliability for each of the productive and receptive knowledge tests (48 items), and for the subsets of item types (see Appendix 1.) fall within the range of .7 to .9, as shown in Table 3.5 below.

Table 3.5 Reliability values of the productive and receptive knowledge tests and their subsections

Item types involved	Number of items within each test	Cronbach's Alpha for the productive knowledge test	Cronbach's Alpha for the receptive knowledge test
Whole test items	48	.953	.923
Higher frequency items	24	.883	.835
Lower frequency items	24	.939	.886
Congruent items	24	.894	.797
Incongruent items	24	.935	.900
More transparent items	16	.810	.710
Semi-transparent items	16	.874	.815
Less transparent items	16	.916	.842

As is stated by Field (2009, p. 679) "values in the range of .7 to .8 (or thereabouts)" are the ones often looked for. Reliability values at .9 or over are regarded as excellent (DeVellis, 1991, p. 85). Thus, the present tests can be regarded as having good estimates of reliability. The relatively lower reliability values for the test subsections are to be expected since alpha is affected not only by the homogeneity of each subset of items, which is the essence of reliability, but also by the number of test items (i.e. test length), and the heterogeneity of the test participants involved (see Bachman, 1990, p. 220; Revier, 2009, p. 132).

### **3.8.2 The qualitative part**

Due to the different nature of qualitative research compared to quantitative, the meaning of validity and reality is slightly different. In qualitative studies, "trustworthiness" is the criterion on the basis of which the data is judged. It has to do with the extent to which what the interviewees say, and the means of analysis used by the researcher, yield a true picture of the interviewees' actual knowledge, beliefs, and opinions. Trustworthiness involves relevant aspects of data, including credibility (acceptability to others), transferability (generalisation of results), and dependability (researcher's accuracy or reliability) (Lincoln & Guba, 1985; Bryman, 2012; Bush, 2012).

Credibility can be achieved by ensuring that the research is conducted within the norms of good research. This was achieved by adopting certain relevant strategies, including (1) making use of the supervisors' constructive feedback on the interview questions; (2) piloting the interview, where feedback was obtained from the participants themselves about the difficulties experienced with the questions, which in turn helped the researcher to have the opportunity to improve his interviewing expertise; (3) gaining the benefit of peer and expert feedback by presenting part coded data a number of times at relevant PhD research workshops, where valuable feedback was obtained; (4) triangulating the research data (Bryman, 2012) through member (participant) checking by requesting participants in the study setting later to read printed copies of the interview transcripts and analysis and check them for accuracy to ensure that the interpretations the researcher arrived at truly match what they believed.

Transferability was achieved through providing rich and detailed descriptions of the participants involved, the setting where the interviews were conducted, as well as the themes covered. This, in turn, enables the reader "to transfer information to other settings



and to determine whether the findings can be transferred because of the shared characteristics" (Creswell, 2012, p. 252).

Dependability refers to reliability and the researcher's accuracy (Merriam, 1988; Bogdan & Biklen, 2006; Bush, 2012). It has to do with the reader's confidence in the research results arrived at and is another aspect of data trustworthiness (Richards, 2015). To help enhance the reader's ability to evaluate the interviews reliability, several strategies have been used in the present study, including

(1) explaining the relevant assumptions and theories behind the study, as well as the researcher's stance on them; (2) describing the participants involved and how they were selected; (3) describing the research process and the results arrived at; (4) triangulating the interview findings and how decisions were made by means of member checking to enhance reliability (Merriam, 1988); (5) revising and confirming the coding process to enhance its dependability; (6) requesting another post-graduate student to code a sample of 10% of the transcribed data of the interview, using the same final coding system which the researcher previously arrived at, to see if the sample would be coded in the same way. Percentage agreement between the two analysts was then calculated, which would be ideally above 70%. For the present study, it was 95%, which in turn could add to the validity of the results arrived at (King & Horrocks, 2010; Bazeley, 2013), (7) consistently asking direct, clear, and unbiased questions, while conducting the interviews, giving participants enough time to help them better express their views, prior to feeding their ideas and views back to them. This helps the interviewer to better check their own understanding of the participants' statements, or give them the chance to expand, as appropriate. Sometimes, the researcher even adopted reformulating the same interview question in different ways to ensure full understanding on the part of the participant.

### **3.9 Ethical issues**

The present study was conducted in line with the British Educational Research Association's *Ethical Guidelines for Educational Research* (2011) and the University of Leicester's *Research Ethics Code of Practice* (2014). Respectful treatment and welfare of participants were of primary consideration throughout all the stages of the proposed study. I also contacted the institutions I wished to collect the data from and obtained their consent (see Appendix 9). Voluntary informed consent was obtained from all involved participants (BERA article 10-13; UoL article IIIa), and they were informed of their rights to withdraw at any time or stage of the research process (BERA article 15; UoL article IIIa). Participants' names and other relevant identifiable details were anonymised using pseudonyms (BERA article 25; UoL article IIIc). All relevant data will be used and stored in line with the Data Protection Act (1998) (BERA article 27-28; UoL article IIIc). All these details were communicated to the study participants, both verbally and in writing. I also completed the University's ethical approval application and obtained the Ethics approval letter (see Appendix 9).

### **3.10 Limitations of the study**

The present study has some limitations, and consequently caution is required in generalizing its results. First, although choosing adjacent word pairs is useful as it helps exclude words that do not have a collocational relationship and has been adopted by some experts in the field (e.g., Revier, 2009), it might lead to the exclusion of genuine GCs extending within the span of 2-4 words (see Durrant, 2014). An alternative way is to extend the span between the node and its grammatical collocates further to 3 or 4, for example. This alternative, however, requires conducting additional statistical analyses

(e.g., the "mutual information" (MI) and the "t-score" statistics, see Durrant, 2014), the application of which would be time-consuming and was too difficult to achieve, given the time and space constraints associated with conducting the present study. Second, the test did not include fillers to distract participants from guessing the intention of the present study. It was difficult to avoid this limitation, for the two tests were too long to include any additional items. Including fillers make the tests extremely long, and consequently might negatively influence participants' motivation and performance. Third, as mentioned in section 3.4.1 above, few GCs items, namely those whose Arabic counterparts have two acceptable prepositional constituents that differ in terms of congruency, were replaced by other more appropriate ones to ensure that the test items are well-matched as far as congruency is concerned. The items replaced were not only difficult to classify in terms of congruency, but also too few to be further investigated. However, this might be regarded as a potential limitation that needs to be addressed in future research. Finally, attempting to look at all the three item-related variables (i.e. frequency, congruency, and transparency) at the same time and getting them well-matched and balanced in each of the productive and receptive knowledge tests might have limitations to the examination of transparency. In other words, matching the GCs items in terms of frequency and congruency may lead at times to compromises in the choice of items for analysis, leading ultimately to a situation where, for example, "think of" counts as a category 3 level of transparency (i.e. less transparent), and there are clearly far less transparent combinations in English than this.

### **3.11 Summary**

To help better address its research questions and consequently achieve its goals, the present study involved data collection instruments that are capable not only of allowing the inclusion of all the three item-related variables under investigation, but also of

enabling all the variables to be better matched and balanced in terms of the other relevant variables. This, in turn, helps eliminate the possible effects of confounding variables that might be at play, a condition which most relevant earlier studies failed to achieve. These instruments are the productive and receptive collocational knowledge tests, which were both designed by the researcher using the BNC. Both tests were constructed depending on clearer criteria for item selection, and they both demonstrated good estimates of reliability and validity. In addition, the OPT was involved to measure participants' L2 proficiency.

Moreover, to help explore participants' own perceptions about the factors affecting learners' performance on the collocational knowledge tests, the study involved conducting semi-structured interviews, which are flexible enough to allow the researcher to probe and prompt where more details are needed. Like the collocational knowledge tests, the semi-structured interviews demonstrated good estimates of reliability and validity and were thus apt to provide deeper insights into the factors affecting IUSs' knowledge of GCs. All the data collection instruments involved were piloted prior to the main study administration, and some items were further refined in the light of the pilot study insights.

The findings obtained by means of the above-mentioned data collection instruments will be reported in Chapters 4 and 5. Chapter 4 is devoted to presenting the quantitative results obtained from the language tests, and Chapter 5 is concerned with presenting the qualitative findings obtained from the semi-structured interviews.

## **Chapter Four: Results of the Quantitative Part**

### **4.1 Introduction**

This chapter, which is based in part on my recently published article, Mkhelif (2019), is devoted to the presentation and statistical analysis of the data collected by means of the quantitative data collection instruments of the present study (i.e. the productive and receptive knowledge tests, as well as the OPT). Relevant descriptive statistics and inferential tests for the data required to answer each of the research questions of the quantitative part of the study (i.e. RQ1-3) will be referred to as appropriate. Normality tests were conducted using the Shapiro-Wilk normality test as it has proved to be more powerful to detect deviations from a normal distribution than the K-S normality test (see Field, 2013, p. 188). Data of the quantitative part of the study were then analysed using relevant statistics involving t-tests, repeated-measures ANOVA, and correlation, depending on the requirement of each research question and what it aims to achieve. Details of the results of the relevant statistical tests with their relevant tables are then presented following the order of the research questions.

### **4.2 Presentation of results**

**4.2.1 Research question 1:** To what extent does IUSs' receptive knowledge of GCs differ from their productive knowledge?

Table 4.1 below presents the descriptive statistics of the data required to answer this research question concerning IUSs' performance on the receptive and productive knowledge tests. For clarity, all scores are also given as percent correct (out of the total of 48 items in each test). In addition, it may be worth mentioning that the percent mean

scores given in Table 4.1 above and the rest of this chapter also represent the average facility value (FV) for the group of items it represents. Facility value (or item facility/difficulty) is an assessment device used to assess learners' performance on the items of a test. It is an index which shows the proportion (or percentage) of the number of examinees who answer a test item correctly and indicates how difficult or easy a test item (or a group of items) was for test-takers (Richards & Schmidt, 2002, p.277). If the facility value of an item is lower than 0.3 (or 30%), the item is too difficult; and if it is higher than 0.85 (85%), then the item is too easy (see Bailey, 1998). The following formula is used to show the facility value for each test item: Item Facility (IF)=R/N where R= number of correct answers; N= number of test-takers (Richards & Schmidt, 2002, p.277). This formula indicates that the lower the ratio of R/N is, the more difficult the test item tends to be (Richards & Schmidt, 2002).

Table 4.1 Descriptive statistics of IUSs' scores on the receptive and productive knowledge tests

Descriptive statistics	Productive test scores	Receptive test scores
Mean (% =FV)	17.02 (35%)	23.22 (48%)
Std. deviation (%)	4.648 (10%)	4.046 (8%)
Minimum (%)	7 (15%)	14 (29%)
Maximum (%)	31 (65%)	37 (77%)
N	112	112

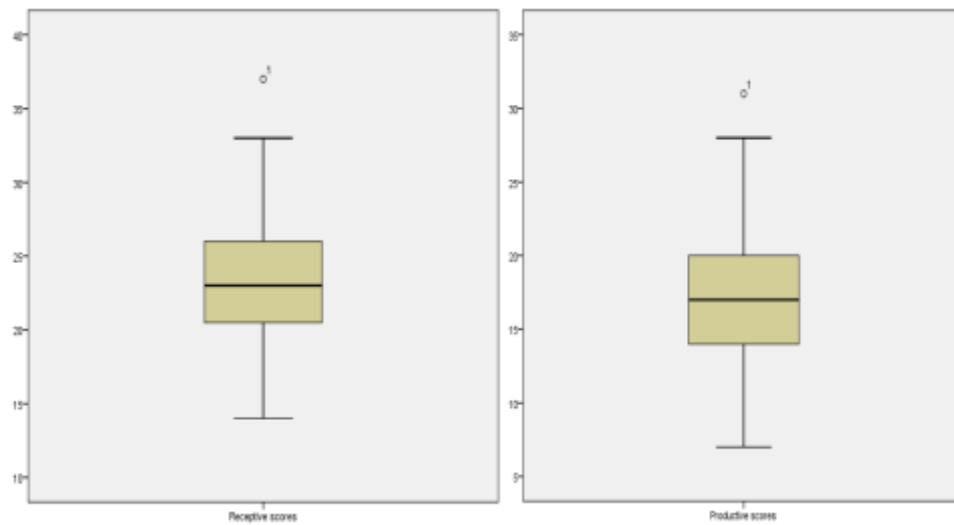
It is evident from Table 4.1 above that IUSs' performance on the productive knowledge test is different from that on the receptive knowledge test, and their mean scores are far

from being too extreme. It is worth mentioning that for research purposes, tests need to be moderately hard, so scores do not fall at the extremes. Otherwise, it is hard to reveal significant differences between the different types of items and participants involved. Based on this, it is evident that the percent mean scores (= average FVs) of the productive and receptive knowledge tests are neither too difficult nor too easy. This, in turn, is good for the purpose of the present study, which seeks to reveal significant differences in participants' performances on the collocational knowledge tests and on their items' different types.

As shown in Table 4.1 above, the mean percentage of correct scores on the productive knowledge test was 35% with a standard deviation (SD) of 10. The mean score was 17.02, with an SD of 4.648. The maximum percentage was 65% and the minimum 15%.

IUSs' performance on the receptive knowledge test was better than it is on the productive one. Their mean percentage of scores on the receptive test was 48% with a standard deviation (SD) of 8. The mean score was 23.22, with an SD of 4.046. The maximum percentage was 77% and the minimum 29%. Figures 4.1 below shows the spread of scores for the receptive and productive knowledge tests and the score differences between them. Their relevant histograms are presented in Appendix 11.

Figure 4.1 Spread of scores of the receptive and productive knowledge tests



c. Receptive - Productive



Table 4.2 displays the normality test results of the data obtained from both tests.

Table 4.2 Normality test results of IUSs' scores on the receptive and productive knowledge tests as well as the differences between the tests scores

Test/data type	Shapiro-Wilk normality test		
	Statistic	df	Sig.
Receptive test scores	.985	112	.246
Productive test scores	.989	112	.486
Receptive – productive scores	.977	112	.053

Normality test results show that the data obtained from both tests are not significantly different from a normal distribution, and thus can be regarded as approximately normally

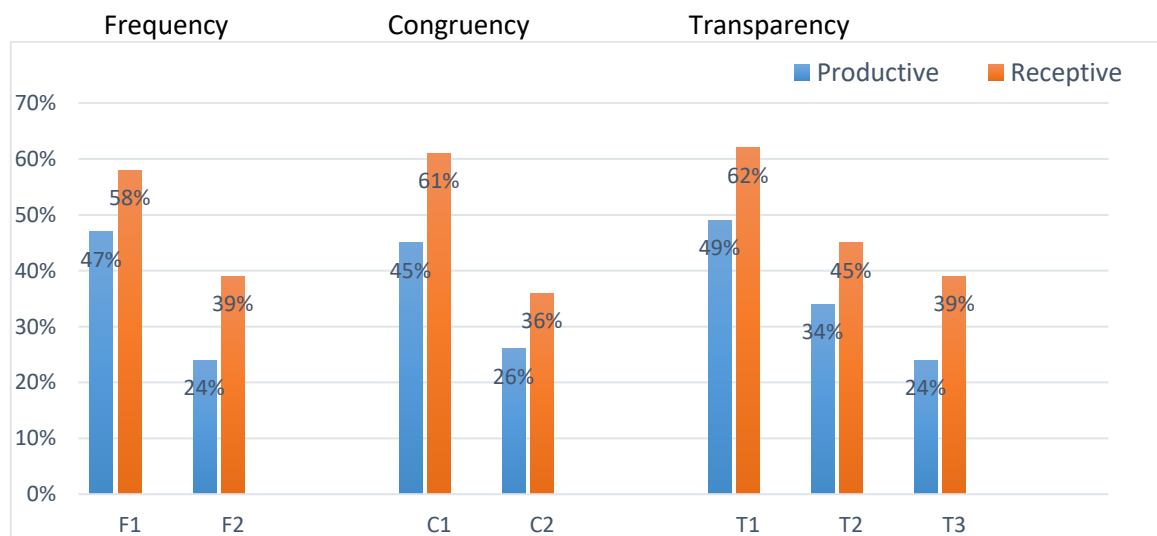


distributed as indicated by the  $p$  values in Table 4.2 and Figure 4.1 above. Therefore, parametric inferential tests were deemed appropriate for testing differences as required by RQ1.

To test whether the difference between the productive and receptive knowledge tests was significant, a paired-samples  $t$ -test, of which the relevant assumptions were met, was conducted to compare IUSs' performance on both tests. The results show that IUSs' performance on the receptive knowledge test ( $M = 23.22$ ,  $SE = .382$ ) differs significantly from their performance on the productive knowledge one ( $M = 17.02$ ,  $SE = .439$ ),  $t(111) = 23.215$ ,  $p < 0.001$ , with an effect size of  $d = 1.33$ , which is considered large (see e.g. Larson-Hall, 2010; Field, 2013).

It might be worth mentioning here that all the items types within the receptive knowledge test tend to be easier for the participants than their counterparts in the productive knowledge test, as indicated in Figure 4.2 below. These findings will be further discussed in Chapter 6.

Figure 4.2 Facility values/Percent mean scores of the items' subcategories within the productive and receptive knowledge tests



F1 = Higher frequency, F2 = Lower Frequency; C1 = Congruent, C2 = Incongruent; T1 = More transparent, T2 = Semi-transparent, T3 = Less transparent

Based on their facility values in Figure 4.2, it is evident that lower frequency items, incongruent items, as well as the less transparent ones in the productive and receptive knowledge tests tend to be more difficult for the participants. This indicates that the effects of frequency, congruency and transparency as item-related variables on the participants' performance on the tests might be at play. The following sections are devoted to investigating such item-related effects as well as the effects of L2 proficiency on the participants' performance.

**4.2.2 Research question 2:** To what extent do the following factors influence IUSs' knowledge of GCs:

- a) Frequency of GCs,
- b) L1-L2 congruency,
- c) Transparency of GCs,
- d) IUSs' L2 proficiency?

#### **4.2.2.1 Results of the productive knowledge test**

A. As far as the effect of frequency is concerned, Table 4.3 below presents the descriptive statistics of the data required to answer research question 2.a, where IUSs' performance on the higher frequency GCs is compared with their performance on the lower frequency ones.

Table 4.3 Descriptive statistics of IUSs' scores on the higher vs. lower frequency GCs in the productive knowledge test

Descriptive statistics	Lower frequency GCs scores	Higher frequency GCs scores
Mean (%)	5.84 (24%)	11.18 (47%)
Std. deviation (%)	2.228 (9%)	3.338 (14%)
Minimum (%)	0 (0%)	3 (13%)
Maximum (%)	12 (50%)	19 (79%)
N	112	112

It is evident from Table 4.3 above that IUSs' performance on the lower frequency GCs was different from that on the higher frequency ones. Their mean percentage of scores on the lower frequency GCs was 24% with a standard deviation (SD) of 9. The mean score was 5.84, with an SD of 2.228. The maximum percentage was 12% and the minimum 0%.

IUSs' performance on the higher frequency GCs was better than it was on the lower frequency ones. Their mean percentage of scores on the higher frequency GCs was 47% with a standard deviation (SD) of 14. The mean score was 11.18, with an SD of 3.338. The maximum percentage was 79% and the minimum 13%. Table 4.4 below displays the normality test results of the data obtained from both item types.

Table 4.4 Normality test results of IUSs' scores on the higher and lower frequency GCs in the productive knowledge test as well as the differences between their scores

Test/Data type	Shapiro-Wilk normality test		
	Statistic	df	Sig.
Higher frequency GCs scores	.985	112	.261
Lower frequency GCs scores	.978	112	.066
Higher – lower frequency GCs scores	.982	112	.137

Normality test results show that the data obtained from both tests are not significantly different from a normal distribution, and thus can be regarded as approximately normally distributed as indicated by the p values in Table 4.4 above.

To test how significant the difference between the two types of GCs items is, a paired-samples t-test (of which the relevant assumptions have been met, see Table 4.4 above) was conducted. The findings show that IUSs' performance on the higher frequency GCs in the productive knowledge test ( $M = 11.18$ ,  $SE = .315$ ) is significantly better than their performance on the lower frequency ones in the same test ( $M = 5.84$ ,  $SE = .211$ ),  $t(111) = 17.352$ ,  $p < 0.001$ , with a large effect size,  $d = 2.4$ . This result will be further discussed in Chapter 6.

B. When it comes to testing the effect of congruency on IUSs' performance on the productive knowledge test, Table 4.5 below presents the descriptive statistics of the data relevant to answering research question 2.b, where IUSs' performance on congruent GCs is compared with their performance on the incongruent ones.

An example of a higher frequency GC item is the item *on Saturday*. Its mean score was 81%. An example of a lower frequency GC is the item *famous for*. Its mean score was 9%. However, not all higher frequency GC items scored high. For example, the mean score obtained on the GC item *think of* was only 35% although it was the highest frequency item in the test (see Appendix 1). This indicates that other item-related variables might be at play, as will be demonstrated in the following sections.

Table 4.5 Descriptive statistics of IUSs' scores on the congruent vs. incongruent GCs in the productive knowledge test

Descriptive statistics	Incongruent GCs scores	Congruent GCs scores
Mean (%)	6.29 (26%)	10.73 (45%)
Std. deviation (%)	2.319 (10%)	3.539 (15%)
Minimum (%)	1 (4%)	3 (13%)
Maximum (%)	13 (54%)	20 (83%)
N	112	112

It is clear from Table 4.5 above that IUSs' performance on the incongruent GCs differed from that on the congruent ones. Their mean percentage of scores on the incongruent GCs was 26% with a standard deviation (SD) of 10. The mean score was 6.29, with an SD of 2.319. The maximum percentage was 13% and the minimum 1%.

IUSs' performance on the congruent GCs was better than it is on the incongruent ones. Their mean percentage of scores on the congruent GCs was 45% with a standard deviation (SD) of 15. The mean score was 10.73, with an SD of 3.539. The maximum percentage was 83% and the minimum 13%. Table 4.6 below displays the normality test results of the data obtained from both item types.

Table 4.6 Normality test results of IUSs' scores on the congruent and incongruent GCs as well as the differences between their scores

Test/data type	Shapiro-Wilk normality test		
	Statistic	df	Sig.
Congruent GCs scores	.986	112	.272
Incongruent GCs scores	.978	112	.059
congruent – Incongruent GCs scores	.987	112	.373

Normality test results show that the data obtained from both tests are not significantly different from a normal distribution, and thus can be regarded as approximately normally distributed as indicated by the *p* values in Table 4.6 above.

To test how significant the difference between the two types of GCs items is, a paired-samples *t*-test (of which the relevant assumptions have been met, see Table 4.6 above) was conducted. Its results show that IUSs' performance on the congruent GCs in the productive knowledge test ( $M = 10.73$ ,  $SE = .334$ ) is significantly better than their performance on the incongruent ones in the same test ( $M = 6.29$ ,  $SE = .219$ ),  $t(111) = 12.490$ ,  $p < 0.001$ , with a large-sized effect,  $d = 1.91$ . This result will be further discussed in Chapter 6.

C. When it comes to testing the effect of transparency on IUSs' performance on the productive knowledge test, Table 4.7 below presents the descriptive statistics of the data relevant to answering research question 2.c, where IUSs' performance on more transparent GCs is compared with their performance on both the semi-and the less transparent ones.

Table 4.7 Descriptive statistics of IUSs' scores on the transparency levels of GCs in the productive knowledge test

Descriptive statistics	Less transparent GCs scores	Semi-transparent GCs scores	More transparent GCs scores
Mean (%)	3.79 (24%)	5.40 (34%)	7.83 (49%)
Std. deviation (%)	1.988 (12%)	1.970 (12%)	2.147 (13%)
Minimum (%)	0 (0%)	1 (6%)	3 (19%)
Maximum (%)	9 (56%)	10 (63%)	12 (75%)
N	112	112	112

Table 4.7 above shows that IUSs' mean scores on GCs differed depending on the transparency levels to which the GCs belong. Their mean percentage of scores on the less transparent GCs was 24% with a standard deviation (SD) of 12. The mean score was 3.79, with an SD of 1.988. The maximum percentage was 9% and the minimum 0%.

IUSs' performance on the semi-transparent GCs was better than it is on the less transparent ones. Their mean percentage of scores on the semi-transparent GCs was 34% with a standard deviation (SD) of 12. The mean score was 5.40, with an SD of 1.970. The maximum percentage was 63% and the minimum 6%.

IUSs' performance on the more transparent GCs was the best compared with the other transparency levels. Their mean percentage of scores on the more transparent GCs was 49% with a standard deviation (SD) of 13. The mean score was 7.83, with an SD of 2.147. The maximum percentage was 75% and the minimum 19%. Table 4.8 below presents Mauchly's test for the sphericity assumption, which is required for conducting a one-way repeated-measures ANOVA to test how significant the effect of transparency on IUSs' performance is.

Table 4.8. Mauchly's test of sphericity in the productive knowledge test

Within-Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.
Transparency	.994	.703	2	.704

As a rule, sphericity is assumed if  $p > 0.05$ . For the transparency data of the productive knowledge test,  $p = 0.704$ , so the assumption of sphericity is met here. Table 4.9 below presents the outcome of conducting the one-way repeated-measures ANOVA.

Table 4.9 Tests of within-subjects effects in the productive knowledge test

Measure: Transparency Levels						
Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Transparency	928.435	2	464.217	177.002	.000	.615
Error(Transparency)	582.232	222	2.623			

The results show that the effect of transparency on IUSs' performance on the productive knowledge test is statistically significant:  $F(2, 222) = 177, p. < .001$ . Table 4.10 below shows that all transparency level comparisons proved to be significant.

Table 4.10 Pairwise comparisons of the transparency levels in the productive knowledge test

Measure: Transparency Levels						
(I) Transparency	(J) Transparency	Mean Difference (I-J)	Std. Error	Sig. <sup>b</sup>	95% Confidence Interval for Difference <sup>b</sup>	
					Lower Bound	Upper Bound
1	2	2.429*	.217	.000	1.999	2.859
	3	4.045*	.223	.000	3.602	4.487
2	1	-2.429*	.217	.000	-2.859	-1.999
	3	1.616*	.209	.000	1.203	2.029
3	1	-4.045*	.223	.000	-4.487	-3.602
	2	-1.616*	.209	.000	-2.029	-1.203

Based on estimated marginal means

\*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Least Significant Difference (equivalent to no adjustments).

D. As explained in Chapter 3, to test the effect of proficiency on learners' performance on the collocational knowledge tests, IUSs were divided into two proficiency groups, based on their performance on the Oxford Placement Test (OPT). Table 4.11 below displays the descriptive statistics of the data obtained from the OPT.

Table 4.11 Descriptive statistics of IUSs' scores on the OPT

Descriptive statistics	OPT scores
Mean (%)	48.29 (48%)
Std. deviation (%)	9.853 (10%)
Minimum (%)	26 (26%)
Maximum (%)	73 (73%)
N	112



The mean score for the participants (as one group) on the OPT was 48.29 with a standard deviation (SD) of 10. So, learners who obtained higher scores than the OPT mean score (48.29) are regarded as relatively higher proficiency ones and those who obtained lower scores are regarded as relatively lower proficiency ones. Table 4.12 below presents the descriptive statistics of the data obtained from the proficiency groups performance on the productive knowledge test.

Table 4.12 Descriptive statistics of IUSs proficiency groups performance on the productive knowledge test

Descriptive statistics	Lower proficiency group	Higher proficiency group
Mean (%)	14.03 (29%)	20.34 (42%)
Std. deviation (%)	3.253 (7%)	3.600 (8%)
Minimum (%)	7 (15%)	13 (27%)
Maximum (%)	22 (46%)	31 (65%)
N	59	53

As shown in Table 4.12 above, the mean percentage of scores obtained by the lower proficiency group on the productive knowledge test was 29% with a standard deviation (SD) of 7. The mean score was 14.03, with an SD of 3.253. The maximum percentage was 22% and the minimum 7%.

The performance of the higher proficiency group on the productive knowledge test was better than that of the lower proficiency group. Their mean percentage of scores on the productive knowledge test was 42% with a standard deviation (SD) of 8. The mean score was 20.34, with an SD of 3.600. The maximum percentage was 65% and the minimum 27%. Table 4.13 below displays the normality test results of the data obtained from the performance of both proficiency groups on the productive knowledge test. Figure 4.3 below shows the spread of scores for the productive knowledge test.

Figure 4.3 Spread of the proficiency groups scores for the productive knowledge test

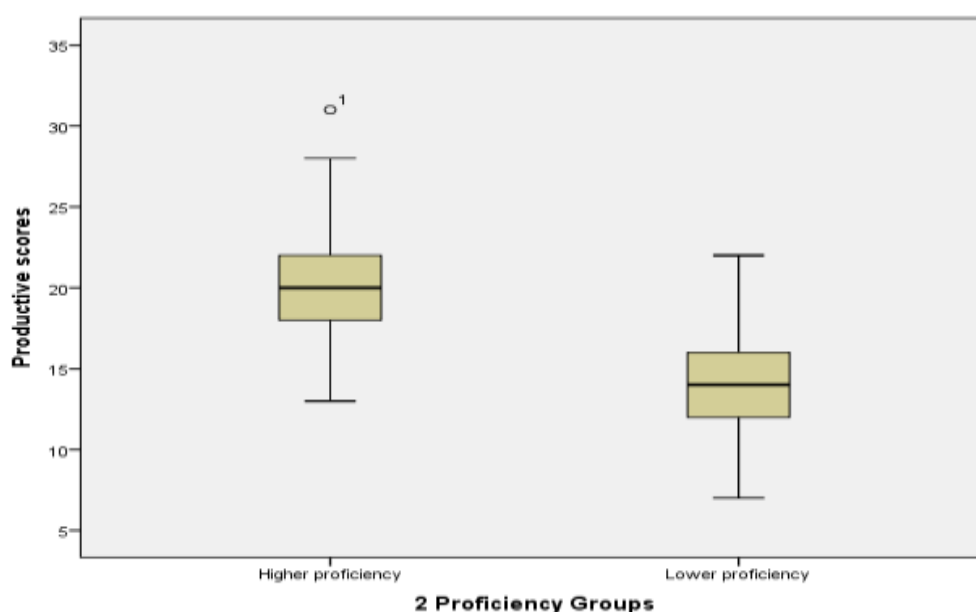


Table 4.13 Normality test results of IUSs' proficiency groups performance scores on the productive knowledge test

Test/data type	Shapiro-Wilk normality test		
	Statistic	df	Sig.
Higher proficiency group	.968	53	.168
Lower proficiency group	.987	59	.760

To test how significant the effect of L2 proficiency on the performance of the two groups on the productive knowledge test is, an independent-samples t-test (of which the relevant assumptions have been met, see Tables 13 and 14) has been conducted. The findings show that the performance of the higher proficiency group on the productive knowledge test ( $M = 20.34$ ,  $SE = .494$ ) is significantly better than the performance of the lower proficiency group on the same test ( $M = 14.03$ ,  $SE = .424$ ),  $t(110) = 9.74$ ,  $p < 0.001$ , and represents a large-sized effect,  $d = 1.94$ .

Table 4.14 Relevant results of the independent-samples t-test comparing the proficiency groups performance on the productive knowledge test

Levene's test for equality of variances					
	F	Sig.	t	Df	Sig. (2-tailed)
Equal variances assumed	.156	.694	9.738	110	<.001

The effect of proficiency on IUSs' performance on the productive knowledge test is also clearly indicated by the highly significant positive correlation between their scores on the OPT and the ones on the productive knowledge test, as shown in Table 4.15 below.

Table 4.15 Pearson correlations of IUSs' OPT scores with the productive knowledge ones

		OPT	Productive knowledge test
OPT	Pearson Correlation	1	.855**
	Sig. (2-tailed)		<.001
	N	112	112
Productive Knowledge test	Pearson Correlation	.855**	1
	Sig. (2-tailed)	.000	
	N	112	112

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

As shown in Chapter 3, the results obtained on RQ2 can be regarded as a positive indicator of the validity of the productive knowledge test.

#### 4.2.2.2 Results of the receptive knowledge test

A. As far as the effect of GCs frequency on IUSs' performance on the receptive knowledge test is concerned, Table 4.16 below presents the descriptive statistics of the data required to answer research question 2.a, where IUSs' performance on the higher frequency GCs is compared with their performance on the lower frequency ones.

Table 4.16 Descriptive statistics of IUSs' scores on the higher vs. lower frequency GCs in the receptive knowledge test

Descriptive statistics	Lower frequency GCs scores	Higher frequency GCs scores
Mean (%)	9.34 (39%)	13.88 (58%)
Std. deviation (%)	2.103 (9%)	3.204 (13%)
Minimum (%)	4 (17%)	6 (25%)
Maximum (%)	15 (63%)	23 (96%)
N	112	112

It is evident from Table 4.16 above that IUSs' performance on the lower frequency GCs differed from that on the higher frequency ones. Their mean percentage of scores was 39% with a standard deviation (SD) of 9. The mean score was 9.34, with an SD of 2.103. The maximum percentage was 63% and the minimum 17%.

IUSs' performance on the higher frequency GCs was better than it is on the lower frequency ones. Their mean percentage of scores on the higher frequency GCs was 58% with a standard deviation (SD) of 13. The mean score was 13.88, with an SD of 3.204. The maximum percentage was 96% and the minimum 25%. Table 4.17 below displays the normality test results of the data obtained from both item types:

Table 4.17 Normality test results of IUSs' scores on the higher and lower frequency GCs in the receptive knowledge test as well as the differences between their scores

Test/data type	Shapiro-Wilk normality test		
	Statistic	df	Sig.
Higher frequency GCs scores	.989	112	.492
Lower frequency GCs scores	.977	112	.053
Higher – lower frequency GCs scores	.987	112	.378

Normality test results show that the data obtained from both tests are not significantly different from a normal distribution, and thus can be regarded as approximately normally distributed as indicated by the *p* values in Table 4.17 above.

To test how significant the difference between the two types of GCs items is, a paired-samples *t*-test (of which the relevant assumptions have been met, see Table 4.17 above) was conducted. The findings show that IUSs' performance on the higher frequency GCs in the receptive knowledge test ( $M = 13.88$ ,  $SE = .303$ ) is significantly better than their performance on the lower frequency ones in the same test ( $M = 9.34$ ,  $SE = .199$ ),  $t(111) = 13.336$ ,  $p < 0.001$ , and represents a large effect size,  $d = 2.16$ .

B. To test the effect of L1-L2 congruency of GCs on IUSs' performance on the receptive knowledge test, Table 4.18 below presents the descriptive statistics of the data relevant to answering research question 2.b, where IUSs' performance on congruent GCs is compared with their performance on the incongruent ones.

Table 4.18 Descriptive statistics of IUSs' scores on the congruent vs. incongruent GCs in the receptive knowledge test

Descriptive statistics	Incongruent GCs scores	Congruent GCs scores
Mean (%)	8.70 (36%)	14.53 (61%)
Std. deviation (%)	2.301 (10%)	2.809 (12%)
Minimum (%)	3 (13%)	9 (38%)
Maximum (%)	15 (63%)	22 (92%)
N	112	112

It is clear from Table 4.18 above that IUSs' performance on the incongruent GCs differed from that on the congruent ones. Their mean percentage of scores was 36% with a standard deviation (SD) of 10. The mean score was 8.70, with an SD of 2.301. The maximum percentage was 63% and the minimum 13%.

IUSs' performance on the congruent GCs was better than it is on the incongruent ones. Their mean percentage of scores on the congruent GCs was 61% with a standard deviation (SD) of 12. The mean score was 14.53, with an SD of 2.809. The maximum percentage was 92% and the minimum 38%. Table 4.19 below displays the normality test results of the data obtained from both item types.

Table 4.19 Normality test results of IUSs' scores on the congruent and incongruent GCs in the receptive knowledge test as well as the differences between their scores

Test/data type	Shapiro-Wilk normality test		
	Statistic	df	Sig.
Congruent GCs scores	.978	112	.061
Incongruent GCs scores	.982	112	.128
congruent – Incongruent GCs scores	.984	112	.194

Normality test results show that the data obtained from both tests are not significantly different from a normal distribution, and thus can be regarded as approximately normally distributed as indicated by the p values in Table 4.19 above. To test how significant the difference between the two types of GCs items is, a paired-samples t-test (of which the relevant assumptions have been met, see Table 4.19 above) was conducted. The findings show that IUSs' performance on the congruent GCs in the receptive knowledge test ( $M = 14.53$ ,  $SE = .265$ ) is significantly better than their performance on the incongruent ones in the same test ( $M = 8.70$ ,  $SE = .217$ ),  $t(111) = 19.514$ ,  $p < 0.001$ , and the effect size is large,  $d = 2.53$ .

C. As far as the effect of transparency is concerned, Table 4.20 below presents the descriptive statistics of the data relevant to answering research question 2.c, where IUSs' performance on more transparent GCs is compared with their performance on both the semi-and the less transparent ones in the receptive knowledge test.

Table 4.20 Descriptive statistics of IUSs' scores on the transparency levels of GCs in the receptive knowledge test

Descriptive statistics	Less transparent GCs scores	Semi-transparent GCs scores	More transparent GCs scores
Mean (%)	6.22 (39%)	7.13 (45%)	9.88 (62%)
Std. deviation (%)	1.799 (11%)	1.927 (12%)	2.063 (13%)
Minimum (%)	2 (13%)	3 (19%)	6 (38%)
Maximum (%)	12 (75%)	12 (75%)	14 (89%)
N	112	112	112

It is clear from Table 4.20 above that IUSs' performance on GCs was influenced by the transparency levels of the GCs items involved. Their mean percentage of scores on the less transparent GCs was 39% with a standard deviation (SD) of 11. The mean score was 6.22, with an SD of 1.799. The maximum percentage was 75% and the minimum 13%.

IUSs' performance on the semi-transparent GCs was better than it is on the less transparent ones. Their mean percentage of scores on the semi-transparent GCs was 45% with a standard deviation (SD) of 12. The mean score was 7.13, with an SD of 1.927. The maximum percentage was 75% and the minimum 19%.

IUSs' performance on the more transparent GCs was the best compared with the other transparency levels. Their mean percentage of scores on the more transparent GCs was 62% with a standard deviation (SD) of 13. The mean score was 9.88, with an SD of 2.063. The maximum percentage was 89% and the minimum 38%. Table 4.21 below presents Mauchly's test for the sphericity assumption, which is required for conducting a one-way repeated-measures ANOVA to test how significant the effect of transparency on IUSs' performance is.

Table 4.21 Mauchly's test of sphericity in the receptive knowledge test

Within-Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.
Transparency	.965	3.943	2	.139

Sphericity is assumed if  $p > 0.05$ . For the transparency data of the receptive knowledge test,  $p = 0.704$ , so the assumption of sphericity is met here. Table 4.22 below presents the outcome of conducting the one-way repeated-measures ANOVA.

Table 4.22 Tests of within-subjects effects in the receptive knowledge test

Measure: Transparency Levels

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Transparency	810.554	2	405.277	140.996	.000	.560
Error(Transparency)	638.113	222	2.874			

The results show that the effect of transparency levels on learners' performance on the receptive knowledge test is statistically significant:  $F(2, 222) = 141, p < .001$ . Table 4.23 below shows that all transparency level comparisons proved to be significant.

Table 4.23 Pairwise comparisons of the transparency levels in the receptive knowledge test

Measure: Transparency Levels

(I) Transparency	(J) Transparency	Mean Difference (I-J)	Std. Error	Sig. <sup>b</sup>	95% Confidence Interval for Difference <sup>b</sup>	
					Lower Bound	Upper Bound
1	2	2.750*	.245	.000	2.155	3.345
	3	3.652*	.225	.000	3.104	4.200
2	1	-2.750*	.245	.000	-3.345	-2.155
	3	.902*	.208	.000	.396	1.407
3	1	-3.652*	.225	.000	-4.200	-3.104
	2	-.902*	.208	.000	-1.407	-.396

Based on estimated marginal means

\*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Least Significant Difference (equivalent to no adjustments).

D. When it comes to testing the effect of L2 proficiency on the performance of IUSs' two groups on the receptive knowledge test, Table 4.24 below presents the descriptive statistics of the data obtained from the proficiency groups performance on the test.



Table 4.24 Descriptive statistics of IUSs proficiency groups performance on the receptive knowledge test

Descriptive statistics	Lower proficiency group	Higher proficiency group
Mean (%)	20.83 (43%)	25.89 (54%)
Std. deviation (%)	2.955 (6%)	3.389 (7%)
Minimum (%)	14 (29%)	18 (38%)
Maximum (%)	27 (56%)	37 (77%)
N	59	53

As shown in Table 4.24 above, the mean percentage of scores obtained by the lower proficiency group on the productive knowledge test was 43% with a standard deviation (SD) of 6. The mean score was 20.83, with an SD of 2.955. The maximum percentage was 56% and the minimum 29%.

The performance of the higher proficiency group on the receptive knowledge test was better than that of the lower proficiency group. The mean percentage of the former's scores was 54% with a standard deviation (SD) of 7. The mean score was 25.89, with an SD of 3.389. The maximum percentage was 77% and the minimum 38%. Table 4.25 below displays the normality test results of the data obtained from the performance of both proficiency groups on the receptive knowledge test. Figure 4.4 below shows the spread of scores for the receptive knowledge test.

Figure 4.4 Spread of the proficiency groups scores for the receptive knowledge test

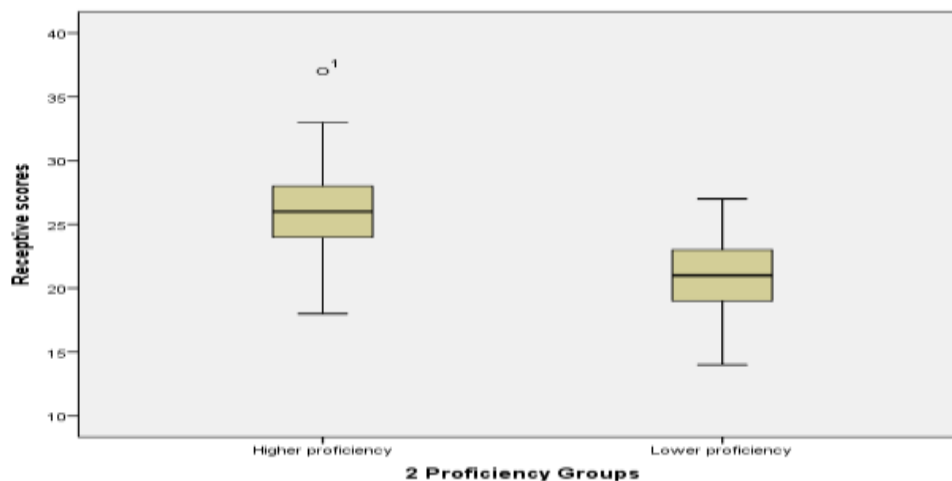


Table 4.25 Normality test results of IUSs' proficiency groups scores on the receptive knowledge test

Test/Data type	Shapiro-Wilk normality test		
	Statistic	df	Sig.
Higher proficiency group	.965	53	.126
Lower proficiency group	.974	59	.249

To test how significant the effect of L2 proficiency on the performance of the two groups on the receptive knowledge test is, an independent-samples t-test (of which the relevant assumptions have been met, see Tables 4.25 and 4.26) has been conducted. The findings show that the performance of the higher proficiency group on the receptive knowledge test ( $M = 25.89$ ,  $SE = .466$ ) is significantly better than the performance of the lower proficiency group on the same test ( $M = 20.83$ ,  $SE = .385$ ),  $t(110) = 8.44$ ,  $p < 0.001$ , and represents a large effect size,  $d = 1.71$ .

Table 4.26 Relevant results of the independent-samples t-test comparing the proficiency groups performance on the receptive knowledge test

Levene's test for equality of variances		F	Sig.	t	df	Sig. (2-tailed)
Receptive	Equal variances assumed	.221	.639	8.435	110	.000

The effect of proficiency on IUSs' performance on the receptive knowledge test is also clearly indicated by the highly significant positive correlation between their scores on the OPT and the ones on the receptive knowledge test, as shown in Table 4.27 below.

Table 4.27 Pearson correlations of IUSs' OPT scores with the receptive knowledge ones

		OPT	Receptive
OPT	Pearson Correlation	1	.782**
	Sig. (2-tailed)		.000
	N	112	112
Receptive	Pearson Correlation	.782**	1
	Sig. (2-tailed)	.000	
	N	112	112

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

As mentioned in Chapter 3, the results obtained on RQ2 can be regarded as a positive indicator of the validity of the receptive and productive knowledge tests.

#### 4.2.2.3 Comparison between the results of the productive and receptive knowledge tests

It is evident from section 4.2.2.2 above that the results obtained from the receptive knowledge test corroborated the ones obtained from the productive knowledge test. As is the case with the productive knowledge test, IUSs' performance on the higher frequency GCs in the receptive knowledge test was found to be significantly different and better than their performance on the lower frequency ones. In addition, IUSs' scores on the congruent GCs in the receptive test differed significantly and exceeded the ones on the incongruent ones. Furthermore, IUSs' scores on the more transparent GCs in the receptive test significantly outweighed their scores on the semi-transparent GCs, which in turn was significantly better than the ones on the less transparent ones. Moreover, the higher proficiency group did significantly better than the lower proficiency one in the receptive test, indicating a highly significant role of L2 proficiency on the IUSs' knowledge of GCs, and making it a potentially highly reliable predictor of their performance as well.

**4.2.3 Research question 3:** What are the main and combined effects of the above-mentioned four factors on IUSs' knowledge of GCs? Which factor has the strongest impact in the presence of the others?

#### 4.2.3.1 Results of the productive knowledge test

To answer this research question, a three-way repeated-measures ANOVA (of which Mauchly's test of sphericity has been met, see Table 4.28 below) was conducted. The OPT scores were initially included as a covariate in the analysis, for they serve as a continuous predictor variable representing IUSs' L2 proficiency, with the main effects and interactions of which the present study is also concerned (see sections 2.6.2.2-3 and Table 3.3 above for more details). Table 4.29 below presents the descriptive statistics of the repeated-measures ANOVA. For the ANOVA analyses, the data is in the wide form of one row per participant, a column for OPT, and 12 columns for the repeated-measures combinations (2 frequency categories x 2 congruencies x 3 transparencies). Each of the 12 combined conditions is represented by a mean score over the 4 relevant items, i.e. there is one column for scores on higher frequency, congruency, and semi-transparency items, whose mean for each participant is based on the four items with that combination of the factors tested.

Table 4.28 Mauchly's test of sphericity of the data obtained from the productive knowledge test

Within-Subjects Effect	Mauchly's W	Approx.			Sig.
		Chi-Square	df		
T	.994	.639	2		.727
F * T	.992	.870	2		.647
C * T	.971	3.233	2		.199
F * C * T	.987	1.461	2		.482

F= Frequency, C= Congruency, and T= Transparency

Table 4.29 Descriptive statistics of the three-way repeated-measures ANOVA conducted on the productive knowledge test

	Mean	Std. Deviation	N
F1C1T1	.6674	.26718	112
F1C1T2	.5625	.25446	112
F1C1T3	.4531	.29927	112
F1C2T1	.5513	.19318	112
F1C2T2	.3504	.24991	112
F1C2T3	.2098	.21891	112
F2C1T1	.4621	.25159	112
F2C1T2	.3616	.22967	112
F2C1T3	.1763	.18876	112
F2C2T1	.2768	.20783	112
F2C2T2	.0759	.14566	112
F2C2T3	.1071	.15273	112

F= Frequency, C= Congruency, and T= Transparency;  
1,2 and 3= Their levels

To make it clearer, the 12 combined conditions can be represented by a graph, as shown in Figure 4.5 below, to which reference will be made later as appropriate. Table 4.30 below presents the results of the repeated-measures ANOVA.

Figure 4.5 Score percentages of the productive knowledge test, by item types

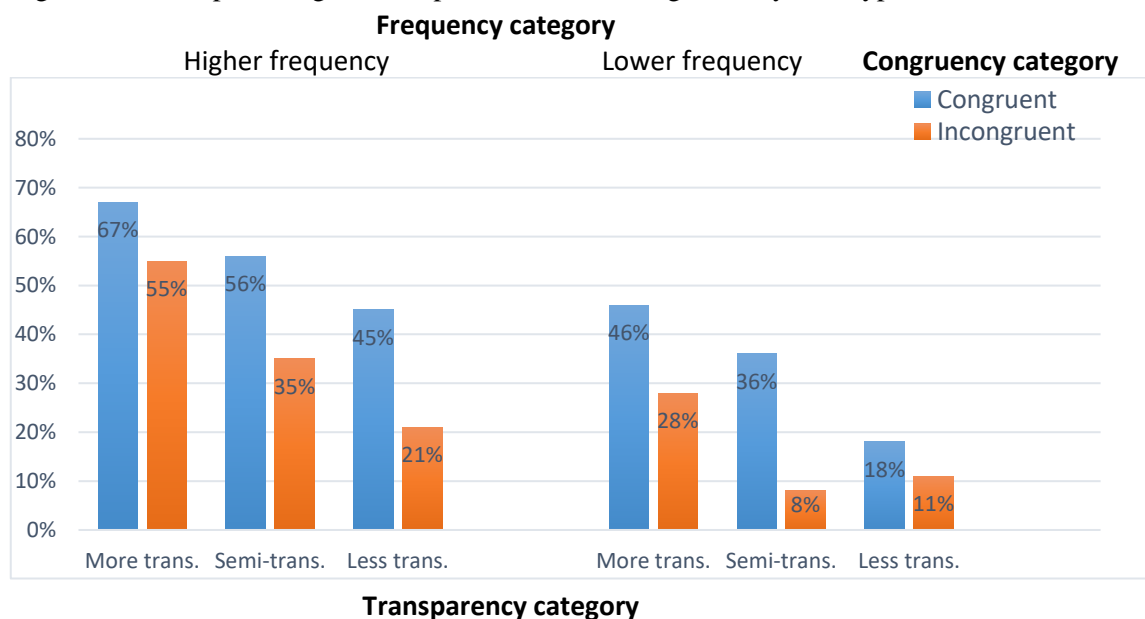


Table 4.30 Results of the repeated-measures ANOVA conducted on the productive knowledge test, with OPT entered as a covariate.

Source	F	Sig.	Partial Eta Squared
OPT	298.955	<.001	.731
F	.333	.565	.003
F * OPT	19.303	<.001	.149
C	1.994	.161	.018
C * OPT	17.290	<.001	.136
T	4.218	.016	.037
T * OPT	.472	.624	.004
F * C	.043	.837	.000
F * C * OPT	.014	.907	.000
F * T	1.727	.180	.015
F * T * OPT	1.457	.235	.013
C * T	.233	.793	.002
C * T * OPT	.319	.727	.003
F * C * T	.412	.663	.004
F * C * T * OPT	.065	.937	.001

OPT= Oxford Placement Test, F= Frequency, C= Congruency, and T= Transparency

As shown in Table 4.30 above, when participants' OPT scores are included, they eclipse the main effect of frequency and congruency as item variables on IUSs' scores. The main effect of transparency, however, is still significant but is far less in effect size than the effect of L2 proficiency and its interaction effects with frequency and congruency. This indicates that what score a participant gets is overwhelmingly predictable from their L2 proficiency, way above the effect of anything else. 73% of the variation in scores is due to IUSs' L2 proficiency as measured by OPT.

Another notable finding is that it is not only the main effect of OPT that is highly significant. Its interaction effects with frequency and congruency are also highly significant. This means that although the effect of L2 proficiency works across all the categories of items tested in the productive knowledge test in the sense that better L2 proficiency, in general, helps a participant do better, its effect on the participants'

performance on the test items is not a completely independent one. In other words, although the tasks of the productive knowledge test seem to call heavily upon learners' L2 proficiency, its interaction effects with frequency and congruency, as well as the independent effect of transparency, also have an impact on productive test scores.

Table 4.31 below shows that the OPT effects on participants' performance on the productive knowledge test are also confirmed by its correlations with the scores on the subsets of the test items. The correlations are in the range of .56 to .78, and are all positive, showing that higher general L2 proficiency indeed leads to better performance on all the item types.

Table 4.31 Pearson correlations of OPT scores with the scores relevant to the item subcategories in the productive knowledge test

Level	Frequency	Congruency	Transparency
High	.784	.758	.674
Semi			.640
Low	.609	.557	.637

When the repeated-measures ANOVA is conducted omitting OPT, however, a rich range of the effects of item types can emerge, as shown in Table 4.32 below.

Table 4.32 Repeated-measures ANOVA of the productive knowledge test, without OPT.

Source	F	Sig.	Partial Eta Squared
F	301.087	<.001	.731
C	155.990	<.001	.584
T	177.002	<.001	.615
F * C	.214	.645	.002
F * T	2.158	.118	.019
C * T	8.540	<.001	.071
F * C * T	13.539	<.001	.109

F= Frequency, C= Congruency, and T= Transparency

All three of the item variables now have a highly significant effect on scores and, as the effect sizes (eta squared) show, frequency has the greatest effect, followed by transparency, and then congruency. The 3 main effects were already calculated separately above (see section 4.2.2.1). The point here is that even when the three item-related variables are considered in one analysis where the interrelations between them are taken into account, (but not the effect of L2 proficiency), they are still each highly significant in main effect. Thus, they are independent characteristics of the items, each with its own effect. It is not the case, for example, that congruent items are easier only because they are also more frequent.

As can be seen in Figure 4.5 above, these effects mostly tend to take the form that one would expect, in that higher frequency, congruency and transparency are associated with higher scores. The mean scores for the higher frequency subsets of items are all higher than those for the corresponding sets of lower frequency items. Congruent items all yield higher scores than their non-congruent counterparts. Furthermore, with only one exception, mean scores fall in succession across higher, semi and lower item transparency in each subset. Table 4.33 below displays the means for the simple overall comparisons between the values of each item variable.

Table 4.33 Overall means for each of the three item variables in the productive knowledge test

Level	Frequency		Congruency		Transparency	
	Mean	SD	Mean	SD	Mean	SD
High	.47	.139	.45	.147	.49	.134
Semi					.34	.123
Low	.24	.093	.26	.097	.24	.124



#### 4.2.3.2 Results of the receptive knowledge test

To answer research question 3 as far as the receptive knowledge test is concerned, a three-way repeated-measures ANOVA (of which Mauchly's test of sphericity has been met as shown in Table 4.34 below) was again conducted, with OPT entered as a covariate. Table 4.35 below presents the relevant descriptive statistics. As is the case with the productive knowledge test above, the data for the ANOVA analyses is in the wide form of one row per participant, a column for OPT, and 12 columns for the repeated-measures combinations (2 frequency categories x 2 congruencies x 3 transparencies). Each of the 12 combined conditions is represented by a mean score over the 4 relevant items, i.e. there is one column for scores on higher frequency, congruency, and semi-transparency items, whose mean for each participant is based on the four items with that combination of the factors tested.

Table 4.34 Mauchly's test of sphericity of the relevant receptive knowledge data

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.
T	.965	3.909	2	.142
F * T	.963	4.093	2	.129
C * T	.998	.231	2	.891
F * C * T	.995	.573	2	.751

F= Frequency, C= Congruency, and T= Transparency

Table 4.35 Descriptive statistics of the three-way repeated-measures ANOVA conducted on the receptive knowledge data

	Mean	Std. Deviation	N
F1C1T1Mean	.7232	.23093	112
F1C1T2Mean	.6875	.24082	112
F1C1T3Mean	.6741	.27843	112
F1C2T1Mean	.6696	.23301	112
F1C2T2Mean	.4286	.26936	112
F1C2T3Mean	.2879	.24479	112
F2C1T1Mean	.6004	.25876	112
F2C1T2Mean	.5134	.22720	112
F2C1T3Mean	.4330	.24426	112
F2C2T1Mean	.4754	.24878	112
F2C2T2Mean	.1518	.18792	112
F2C2T3Mean	.1607	.17064	112

F= Frequency, C= Congruency, and T= Transparency;  
1,2 and 3= Their levels

To make it clearer, the 12 conditions involved can be represented by a graph, as shown in Figure 4.6 below, to which reference will be made later as appropriate. Table 4.36 below presents the results of the repeated-measures ANOVA.

Figure 4.6 Score percentages of the receptive knowledge test, by item types

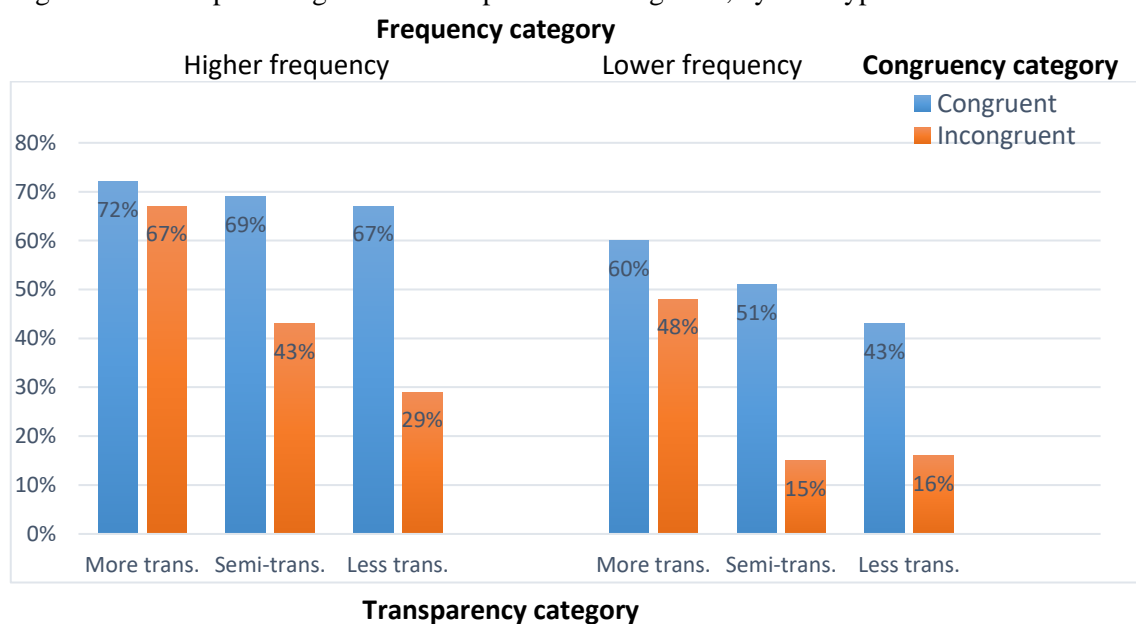


Table 4.36 Results of the repeated-measures ANOVA conducted on the scores of the receptive knowledge test, with OPT entered as a covariate

Source	F	Sig.	Partial Eta Squared
OPT	173.164	<.001	.612
F	1.993	.161	.018
F * OPT	19.022	<.001	.147
C	5.606	.020	.048
C * OPT	2.479	.118	.022
T	5.220	.006	.045
T * OPT	.067	.936	.001
F * C	.016	.900	.000
F * C * OPT	.084	.772	.001
F * T	.111	.895	.001
F * T * OPT	.239	.788	.002
C * T	.725	.485	.007
C * T * OPT	.195	.823	.002
F * C * T	1.345	.263	.012
F * C * T * OPT	.526	.592	.005

OPT= Oxford Placement Test, F= Frequency, C= Congruency, and T= Transparency

As Table 4.36 above shows, when participants' OPT scores are included, they eclipse only the main effect of frequency as an item-related variable on IUSs' scores on the receptive knowledge test. The main effects of congruency and transparency, however, are still significant but are far less in size than that of L2 proficiency and its interaction effects with frequency. This shows that what score a participant gets can be best predicted from their L2 proficiency, as to which 61% of the variation in scores is attributed.

Another noteworthy finding is that, in addition to its highly significant main effect, L2 proficiency also has significant interaction effects with frequency. This means that although better L2 proficiency generally helps a participant do better in the receptive knowledge test, its effect on the participants' performance on the test items is not completely independent. In other words, although frequency has no main effect in the presence of L2 proficiency, it does have a significant effect (interaction effect) that varies depending on the L2 proficiency of the participants. In addition, the independent effects

of the other item-related factors tested (i.e. congruency and transparency) are also to be taken into consideration. Table 4.37 below shows that the effects of the OPT on participants' performance on the receptive knowledge test are also confirmed by its correlations with the scores on the subsets of the test items. The correlations are in the range of .42 to .71, and are all positive, showing that higher general L2 proficiency leads to better performance on all the item types.

Table 4.37 Pearson correlations of OPT scores with the scores relevant to the item subcategories in the receptive knowledge test

Level	Frequency	Congruency	Transparency
High	.710	.647	.524
Semi			.522
Low	.423	.586	.598

When the repeated-measures ANOVA is conducted omitting OPT, however, a rich range of the effects of item types can emerge, as shown in Table 4.38 below.

Table 4.38 Repeated-measures ANOVA of the receptive knowledge test, without OPT

Source	F	Sig.	Partial Eta Squared
F	177.845	<.001	.616
C	378.714	<.001	.774
T	140.832	<.001	.560
F * C	.557	.425	.006
F * T	2.146	.107	.020
C * T	37.427	<.001	.253
F * C * T	6.981	.001	.058

F= Frequency, C= Congruency, and T= Transparency

All of the three of the item-related variables now have highly significant main effects on IUSs' scores and, as the effect sizes (eta squared) show, congruency has the greatest

effect, followed by frequency, and then transparency. So, even when the three item variables are considered in one analysis where the interrelations between them are taken into account, (but without the effect of L2 proficiency), they are still each highly significant in main effect. Thus, they are independent characteristics of the items, each of which has its own effect.

As can be seen in Figure 4.6 above, these item-related effects mostly tend to take the form that one would expect, in that higher frequency, congruency and transparency are associated with higher scores. The mean scores for the higher frequency subsets of items are all higher than those for the corresponding sets of lower frequency items. Congruent items all yield higher scores than their non-congruent counterparts. Furthermore, with only one exception, mean scores fall in succession across higher, semi and lower item transparency in each subset. Table 4.39 below displays the means for the simple overall comparisons between the values of each item variable.

Table 4.39 Overall means for each of the three item variables in the receptive knowledge test.

Level	Frequency		Congruency		Transparency	
	Mean	SD	Mean	SD	Mean	SD
High	.58	.134	.61	.117	.62	.129
Semi					.45	.120
Low	.39	.088	.36	.096	.39	.112

#### **4.2.3.3 Comparison between the results of the productive and receptive knowledge tests**

As is the case with the results obtained from the productive knowledge test, those obtained from the receptive knowledge test showed that of all the variables involved, L2 proficiency was the best predictor of IUSs' performance on the test. Its effect was the highest, as indicated by its effect size (eta squares) in Table 4.40 below. In other words, what score a participant gets is predictable from their L2 proficiency, way above the effect of anything else. 61% of the variation in scores in the receptive knowledge test is due to learners' L2 proficiency as measured by OPT. As indicated by Table 4.40 below, when participants' L2 proficiency scores as a subject-related variable are included with the item-related variables (frequency, congruency, and transparency) in the repeated-measures ANOVA, they eclipsed the effect of frequency and congruency on the learners' scores in the productive knowledge test. In the receptive knowledge test, however, they eclipsed only the effect of frequency as their effect size (.61) tends to be less than it is in the productive knowledge test (.73). This might be attributed to the nature of the receptive knowledge test, where the effectiveness of the choices provided in the test might be at play. This, in turn, gives the participants more chance of getting the right answer by means of, for example, "test-wiseness", and consequently enabling the effect of congruency on IUSs' performance to approach significance, as indicated by the p value in Table 4.40 below.

Table 4.40 Results of the repeated-measures ANOVA conducted on the productive and receptive knowledge tests, where the effects of OPT are compared with the ones of the item-related variables

Source	F	Sig.	Partial Eta Squared	F	Sig.	Partial Eta Squared
	Productive knowledge test			Receptive knowledge test		
OPT	298.955	<.001	.731	173.164	<.001	.612
F	.333	.565	.003	1.993	.161	.018
F * OPT	19.303	<.001	.149	19.022	<.001	.147
C	1.994	.161	.018	5.606	.020	.048
C * OPT	17.290	<.001	.136	2.479	.118	.022
T	4.218	.016	.037	5.220	.006	.045
T * OPT	.472	.624	.004	.067	.936	.001
F * C	.043	.837	.000	.016	.900	.000
F * C * OPT	.014	.907	.000	.084	.772	.001
F * T	1.727	.180	.015	.111	.895	.001
F * T * OPT	1.457	.235	.013	.239	.788	.002
C * T	.233	.793	.002	.725	.485	.007
C * T * OPT	.319	.727	.003	.195	.823	.002
F * C * T	.412	.663	.004	1.345	.263	.012
F * C * T * OPT	.065	.937	.001	.526	.592	.005

F= Frequency, C= Congruency, and T= Transparency

Another noteworthy finding is that, in addition to its highly significant main effect, L2 proficiency as measured by OPT also has significant interaction effects with frequency. This means that although L2 proficiency generally helps a participant do better in the receptive knowledge test, its effect on the participants' performance on the test items is not completely independent.

As shown in the table above, in addition to its highly significant main effect, L2 proficiency as measured by OPT also has significant interaction effects with frequency in both tests and with congruency in the productive knowledge test. This means that although the effect of L2 proficiency are at play across all the categories of items tested

in both the productive and receptive knowledge tests in the sense that better L2 proficiency, in general, helps participants do better, its effect on the participants' performance on the tests items is not a completely independent one. That is, its interaction effects with the other factors tested as well as the independent effects of these other factors are also to be taken into consideration. As indicated by the p values in Table 4.40 above, transparency in both tests has significant independent effects on participants' performance. Congruency, however, has a significant independent effect only in the receptive knowledge test, where relevant choices including ones based on L1-L2 congruency are provided.

When conducting the repeated-measures ANOVA with OPT omitted, however, a rich range of item type effects in each of the productive and receptive knowledge tests can emerge, as shown in Table 4.41 below.

Table 4.41 Repeated-measures ANOVA of the productive and receptive knowledge tests, where only the effects of the item-related variables are compared with one another

Source	F	Sig.	Partial Eta Squared	F	Sig.	Partial Eta Squared
	Productive knowledge test			Receptive knowledge test		
F	301.087	<.001	.731	177.845	<.001	.616
C	155.990	<.001	.584	378.714	<.001	.774
T	177.002	<.001	.615	140.832	<.001	.560
F * C	.214	.645	.002	.557	.425	.006
F * T	2.158	.118	.019	2.146	.107	.020
C * T	8.540	<.001	.071	37.427	<.001	.253
F * C * T	13.539	<.001	.109	6.981	.001	.058

F= Frequency, C= Congruency, and T= Transparency

As indicated in Table 4.41 above, all three of the item-related variables now have a highly significant effect on IUSs' scores on both the productive and receptive knowledge tests. As the effect sizes (eta squared) of the item variables in the productive knowledge test show, frequency has the greatest effect, followed by transparency, and then congruency.



In the receptive knowledge test, however, it is congruency that has the greatest effect, followed by frequency, and then transparency as displayed in Table 4.42 below. These results will be compared later with the ones obtained from the participants' interviews in the discussion chapter.

As shown in the last two rows in Table 4.41 above, it is not only the main effects of the three item-related variables that are highly significant. Their interaction effects in both tests are also highly significant. This means that their effects on the participants' performance on the tests are not completely independent. That is, their interaction effects are also to be taken into consideration.

Table 4.42 Comparison of the results obtained from the productive and receptive knowledge tests

No.	Instrument	Factors in terms of strength
1.	productive	1.frequency, 2. transparency, 3. congruency
2.	Receptive	1.congruency, 2. frequency, 3. transparency

As can be seen in Figures 4.5 and 4.6 above, in both collocational tests item variable effects mostly tend to take the form that one would expect in that higher frequency, congruency and transparency are associated with higher scores. The mean scores for the higher frequency subsets of items are all higher than those for the corresponding sets of lower frequency items in both the productive and receptive knowledge tests. Congruent items all yield higher scores than their non-congruent counterparts in both tests. Furthermore, with only one exception, mean scores fall in succession across higher, semi and lower item transparency in each subset.

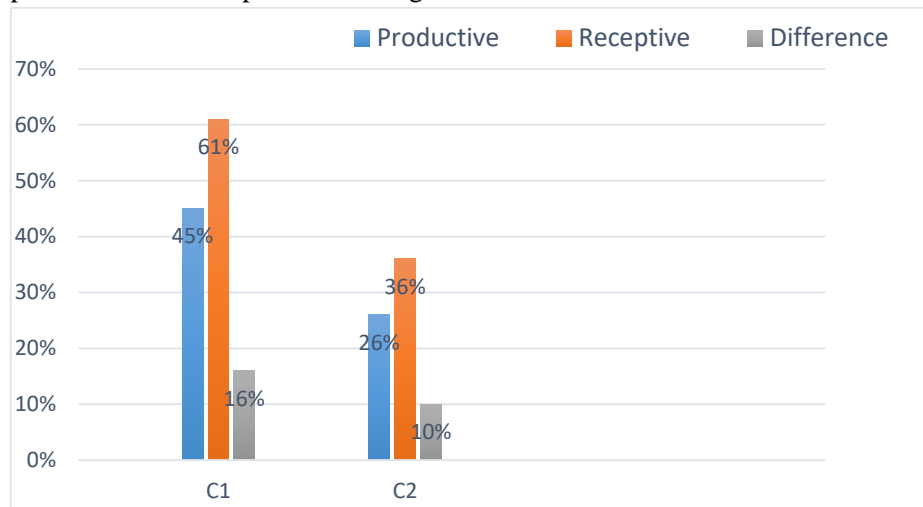
It is evident from Figure 4.6 above that all columns representing the score percentages of item types in the receptive knowledge test tend to take the form expected based on the findings of RQ1 above when compared with their counterparts in the productive knowledge test. In other words, all score percentages of these columns tend to be higher than their counterparts in the productive knowledge test. Another notable finding is that the higher amount of differences in percent correct scores between receptive and productive item types tends to be associated with the columns of the congruent categories, which in the receptive knowledge test also tend to be closer to each other compared with the situation of the incongruent subcategories, as indicated in Table 4.43 below. This higher amount of difference in percent correct scores in the congruent subcategories might be attributed to the effectiveness of the congruent choices included within the multiple choices provided in the receptive knowledge test, which by virtue of their presence tend to play a facilitative role, making it easier for participants to recognise the correct options.

Table 4.43 Average difference in percent correct scores of the congruent/incongruent subcategories in the productive and receptive knowledge tests

	Average of incongruent score percentages	Average of congruent score percentages
Productive	26%	45%
Receptive	36%	61%
Average difference in percent correct scores	10%	16%

Such differences may be more clearly displayed by a graph, as shown in Figure 4.7.

Figure 4.7 Differences in percent correct scores on congruent/incongruent subcategories in the productive and receptive knowledge tests



C1 = Congruent, C2 = Incongruent

This matter will be further discussed in chapter 6.

### 4.3 Summary

Having analysed the quantitative data obtained from the language tests (collocational knowledge tests and the OPT), it was evident that all the variables under investigation (i.e. GCs frequency, their L1-L2 congruency and transparency, as well as IUSs' L2 proficiency) proved to have significant independent main effects on IUSs' productive and receptive knowledge of GCs. In addition to their independent main effects, the above-mentioned variables have interaction (combined) effects on IUSs' knowledge of GCs. It was also found that of all the variables involved, L2 proficiency was the best predictor of IUSs' performance on the collocational knowledge tests. Moreover, the findings showed that IUSs' receptive knowledge of GCs was significantly better than their productive knowledge. These findings will be further discussed in Chapter 6. The following Chapter is devoted to displaying the findings obtained from the qualitative part of the study.

## **Chapter Five: Results of the Qualitative Part**

### **5.1 Introduction**

In the previous chapter, quantitative data (obtained from the productive and receptive knowledge tests and the OPT) were analysed using relevant SPSS procedures. The chapter utilised the positivist approach adopted in this study (see section 3.2) to help provide deeper insights, as highlighted in Chapter 3. The same approach continues to be evident here where qualitative data is used to help provide further insights on the study research questions, including the ones relevant to the roles played by item-related factors (congruency, transparency, and transparency) as well as L2 proficiency and the teaching method in IUSs' collocational knowledge. This chapter is devoted to the presentation and analysis of the data collected from participants by means of the semi-structured interviews used in the present study. Relevant descriptive statistics and graphs of the results will be referred to as appropriate. The results are presented in terms of main themes and sub-themes, following the order of the relevant qualitative research questions (i.e. RQ4-6) they aim to address.

### **5.2 Presentation of interview results**

Participants' responses to the questions of the semi-structured interviews were classified into three major themes: (1) participants' conscious awareness of GCs and their different types, (2) ways GCs tend to be learned/taught in class, and (3) factors contributing to the ease/difficulty of learning/teaching GCs as perceived by participants. Each of these major themes, in turn, has its own relevant sub-themes, as displayed in Table 5.1 below. The following sections present these major themes and their relevant sub-themes, starting

with the results obtained from the teachers involved, then the ones obtained from the learners, and ending with relevant graphs comparing the results obtained from both groups.

**Table 5.1 Main themes and sub-themes in participants' interviews**

Main interview themes	Relevant sub-themes
• Participants' conscious awareness of GCs and their different types	• Ability to speak of GCs using relevant term(s),  • Ability to speak about relevant GCs types
• Ways GCs tend to be learned/taught in class	• Using explicit teaching, • Giving more time/attention to more common GCs, • Giving less time/attention to less common GCs, • Adapting teaching method to learners' levels, • Providing relevant feedback on learners' errors
• Factors contributing to the ease/difficulty of learning/teaching GCs as perceived by participants	• Factors' strength/importance as perceived by participants, • Other factors perceived to contribute to the ease/difficulty of GCs

### **5.2.1 Participants' conscious awareness of GCs and their different types**

As shown in section 3.4.3, the first two questions in the interview guide (see Appendix 5) aimed to address research question 4: How aware are IUSs and their teachers of GCs and their different types? In other words, they aimed to find out whether participants have sufficient L2 explicit knowledge, including knowledge of metalinguistic terminology, a component of L2 explicit knowledge (see R. Ellis, 2004). From each of these interview questions, a sub-theme emerged:

#### **5.2.1.1 Ability to speak of GCs using relevant term(s)**

As shown in Appendix 5, the first interview question sought to investigate the interviewees' ability to provide relevant term(s) when referring to GCs. None of the eight teachers involved was able to provide the most accurate term "grammatical collocations" when speaking about GCs. Of the eight teachers interviewed, only one (12.5%) was able to provide the general term "collocation". The rest of the teachers (87.5 %) provided inaccurate terms, such as "phrasal verbs".

Like the teachers, no learner was able to provide the most accurate term "grammatical collocations". They (100 %) only provided inaccurate terms, such as "prepositions", "compound prepositions", "compound", "combinations", and "structures of prepositions". Figure 5.1 below displays a summary of the results of participants' L2 explicit knowledge of GCs and their types.

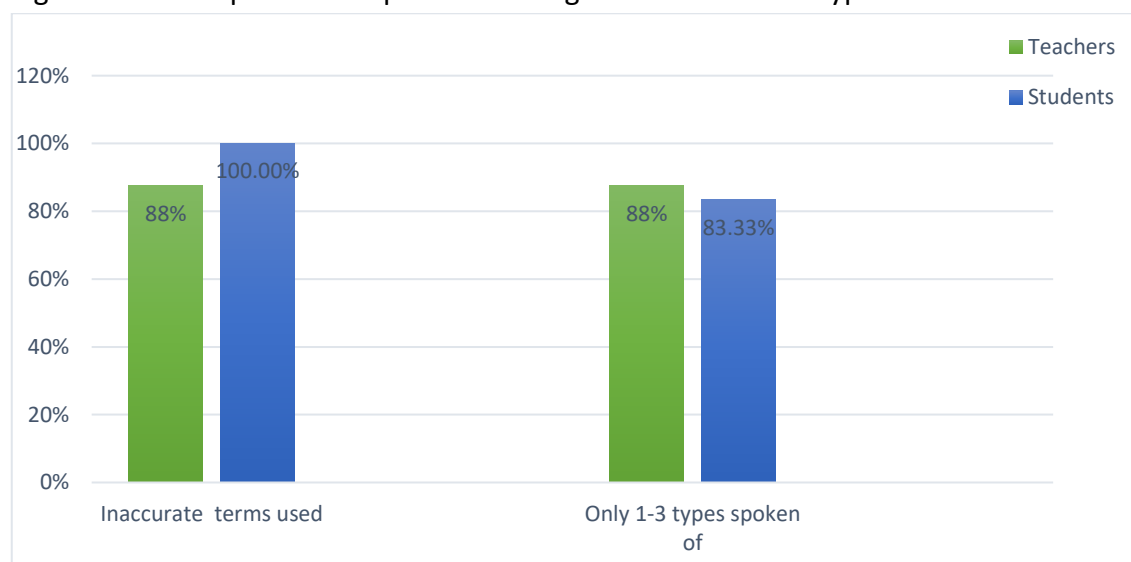
#### **5.2.1.2 Ability to speak about relevant GCs types**

The second interview question (see Appendix 5) aimed to explore whether interviewees were able to mention the relevant types of GCs. Seven of the teachers interviewed (88%) were able to mention only 1-3 types, such as "time", "place". The rest (12%) could not provide relevant answers. As far as the learners are concerned, fifteen of them (83.33%) were able to mention only 1-3 types, such as "time", "place", and "manner" types. The rest (16.67%) could not provide any relevant answer.

This indicates that, apart from the common types of time, place and manner GCs, neither the teachers nor the learners tend to have sufficient L2 explicit knowledge when it comes to their awareness of the existence of GCs belonging to different types and their ability

to pick them out in text. This is also the case when it came to speaking about the different types of GCs and the accurate terms used to refer to them (i.e. knowledge of metalinguistic terminology). Relevant research has revealed that L2 learners' explicit knowledge (i.e. knowledge which can be readily articulated, codified, accessed and verbalised) of a certain L2 area tends to correlate positively with their performance on tests relevant to that area, as will be discussed in the discussion chapter.

Figure 5.1 Participants' L2 explicit knowledge of GCs and their types



### 5.2.2 Ways GCs tend to be learned/taught in class

As shown in section 3.4.3, questions 3-6 in the interview guide (see Appendix 5) aimed to address research question 5 In what ways do GCs tend to be learned/taught in class? From interviewees' responses to these interview questions, the following five sub-themes emerged:

### 5.2.2.1 Using explicit teaching

Five of the teachers interviewed (63 %) mentioned that they often use explicit teaching including the presentation of relevant (textually enhanced) explanations and rules/notes, where the focus is often on the use of the prepositional constituent of the GC rather than on the GC as a whole as a vocabulary item. As far as the types of materials used in class are concerned, two of the teachers (25%) mentioned that the main teaching material is the textbook relevant to each academic class, as indicated in the following responses:

*Teacher 1: We read authentic texts ... we explain the topic on the board ... highlighting is used with 1<sup>st</sup>-year students to focus on important notes, but not with the advanced ones.*

*Teacher 2: Only the textbook is always focussed on ... the whiteboard, the marker, and colouring are used too.*

*Teacher 4: We tend to teach them [GCs] explicitly in the deductive approach ... we teach them individually without context according to old methods.*

*Teacher 8: They are taught explicitly according to the textbooks taught in Iraq. They are taught individually and it's rare to be associated with a context.*

When it came to the learners, fourteen of them (77.78%) think that the main teaching material involved in teaching GCs is the textbook, where explicit rules/notes relevant to the use of GCs are presented. Ten of them (55.57%) mentioned that prepositions are often taught to them as individual words (i.e. not as part of the GCs):



*H Student 2: They are learned by the explanation of the teacher in class, depending on the textbook by explaining its rules ... the focus on the textbook is more than on the board.*

*H Student 5: We most often depend on the textbook; we do not use other materials ... they [GCs] are most often presented individually.*

*L Student 1: Sometimes clarifying rules are presented with examples.*

*L Student 3: Most of the time the teacher depends on the textbook...the teacher often presents the material orally. The board is rarely used.*

It is thus evident that most teachers and learners agreed about the type of teaching used and the way GCs are presented, as shown in Figure 5.2 below. Explicit explanations and notes, however, tend to be relevant to the single word, often the preposition, rather than to the combination (GC), making it difficult for the learners to notice the unity of the combination and consider it as being one entity as will be further discussed in the following chapter. In addition, only the most common types of GCs tend to be taught, as explained in the following section.

#### **5.2.2.2 Giving more time/attention to more common GCs**

All of the teachers interviewed thought that the time devoted to GCs involving different prepositions is not the same. Six of them (75%) mentioned that more time or attention is often given to GCs involving time and place prepositions, as displayed in Figure 5.2 below. According to them, the main reason is that they are more common or more productive.

*Teacher 1: Time and place prepositions are given more time as they are more common.*

*Teacher 2: Prepositions of time and place are given more time as they are always frequent there.*

*Teacher 6: Sure, the most common need more effort and examples to stick in the student's mind ... There are others that are rarely used ... There is no need to focus on them at the expense of the common ones ... The textbook also focuses on the most common.*

*Teacher 7: Surely, not the same time ... some of them are rare and are used with rare expressions, and some are used with more expressions. So, sure time [spent on them] is different.*

Like teachers, most of the learner interviewees (88.89%) think that GCs types are not given an equal amount of time (see Figure 5.2 below). For most of them (66.67%), the ones involving time and place prepositions were often given more time and attention than the other relevant types:

*H Student 1: Time and place are given more time, depending on their difficulty.*

*H Student 5: It depends on the types: there are types like time and place combinations, for example, at night, on July are given more time, focus, and attention than the rest ...*

*L Student 9: Some prepositions take more time, the ones we often use with place and time. We use them more than others because they are common; we use them more during the lectures.*

### 5.2.2.3 Giving less time/attention to less common GCs

Other less frequent GCs, especially the ones belonging to types other than time and place, often tend to be given less focus and are learned without explicit explanations and rules highlighting their use, as indicated by the responses below. In other words, they tend to be learned incidentally and implicitly by the learners. The main reasons why such types are given less time and attention is that they are less frequent, less productive, or more difficult.

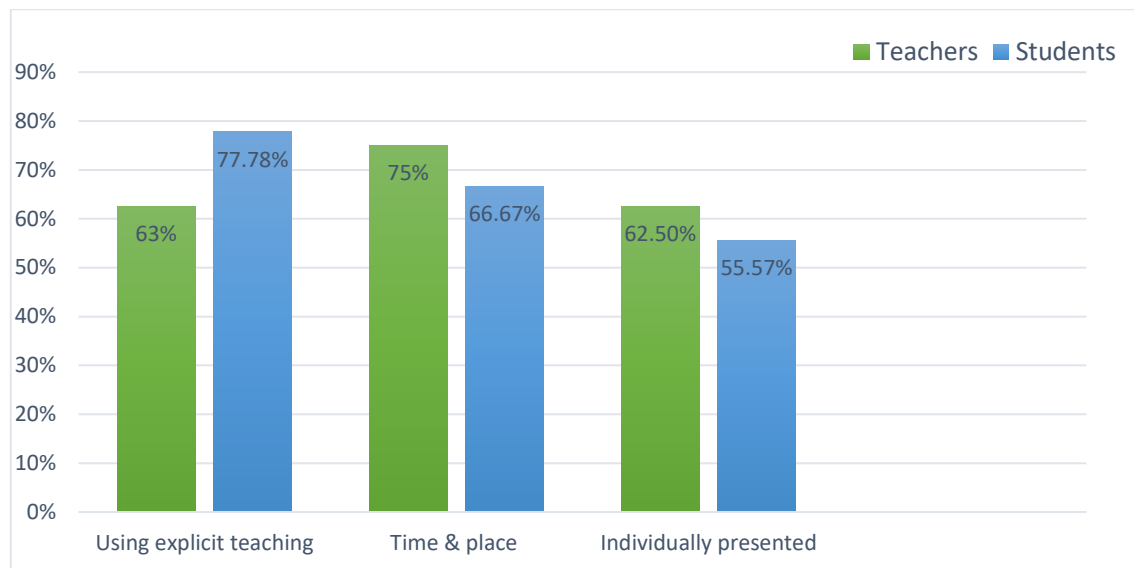
*Teacher 1: Some types involving verbs are difficult to teach ... We focus on the easier ones and leave the ones that are rare or difficult.*

*Teacher 6: ... There are others [GCs] that are rarely used ... There is no need to focus on them at the expense of the common ones ... The textbook also focuses on the most common.*

*H Learner 8: ... whereas the rest [GCs other than time and place ones] are not explained by the teacher and are referred to very briefly.*

It is, thus, evident from the above that most teachers and learners agree that GCs involving time and place prepositions are the ones often focussed on, and consequently relevant explicit rules and explanations on the part of the teachers often tend to be associated with the teaching/learning of the common items of such types. In other words, the learning/teaching of the common types of GCs often tends to be explicit and intentional, especially at the earlier stages, as shown in the following section.

Figure 5.2 What is involved in the teaching/learning of GCs in the study setting



#### 5.2.2.4 Adapting teaching method to learners' levels

Five of the teachers interviewed (63 %) mentioned that they adapt their teaching method to the learners' stages of development, as indicated in the following responses:

*Teacher 1: We explain the topic on the board ... highlighting is used with 1<sup>st</sup>-year students to focus on important notes, but not with the advanced ones.*

*Teacher 5: Yes, my method of teaching them [GCs] differs according to the learners' stage [level] ... they [GCs] are often taught to 1<sup>st</sup>-year students by presenting rules about their function and form.*

Eight learners (44.44%) also mentioned that teachers adapt their teaching method to the learners' stages of development, as indicated below:

*H Learner 2: Yes, I think it [teaching method] differs from stage to stage; 1<sup>st</sup> stage students ... are given more examples and clarification, unlike 4<sup>th</sup>-year students.*

*L Learner 5: Most often, the teacher modifies his/her method depending on the stage. For example, with first stage, he presents them in a simpler way and clearer examples.*

#### **5.2.2.5 Providing relevant feedback on learners' errors**

Seven of the teachers interviewed (87.5 %) mentioned that they provide relevant feedback on learners' errors related to the use of GCs. Most of them (63%) indicated that the feedback they provide on GCS errors tends to be indirect, as shown in Figure 5.3 below.

*Teacher 1: As far as I am concerned, ... I let them [the learners] go and corrections are left to the end.*

*Teacher 6: We always say we should not focus on error, but this happens ... We try to lessen such errors by repeating the sentence correctly ... I should refer to it directly although I like to refer to it indirectly, but it doesn't work as the same errors will continue if I use an indirect way.*

*Teacher 7: ... I prefer correcting errors immediately and directly ...*

*Teacher 8: They [errors] are corrected gently [indirectly] in all cases.*

All the learners (100 %) mentioned that they receive relevant feedback on their errors in using GCs. 83% of them indicated that the type of feedback they receive on their GCs errors tends to be indirect, as displayed in Figure 5.3 below.

*H Learner 5: In writing, the teacher only underlines the error without correcting it ... In conversation, the teacher does not interrupt the learner. The learner is given feedback after they finish.*

*H Learner 9: In writing, most often the error is just circled or underlined; in speaking, only sometimes they focus on the errors.*

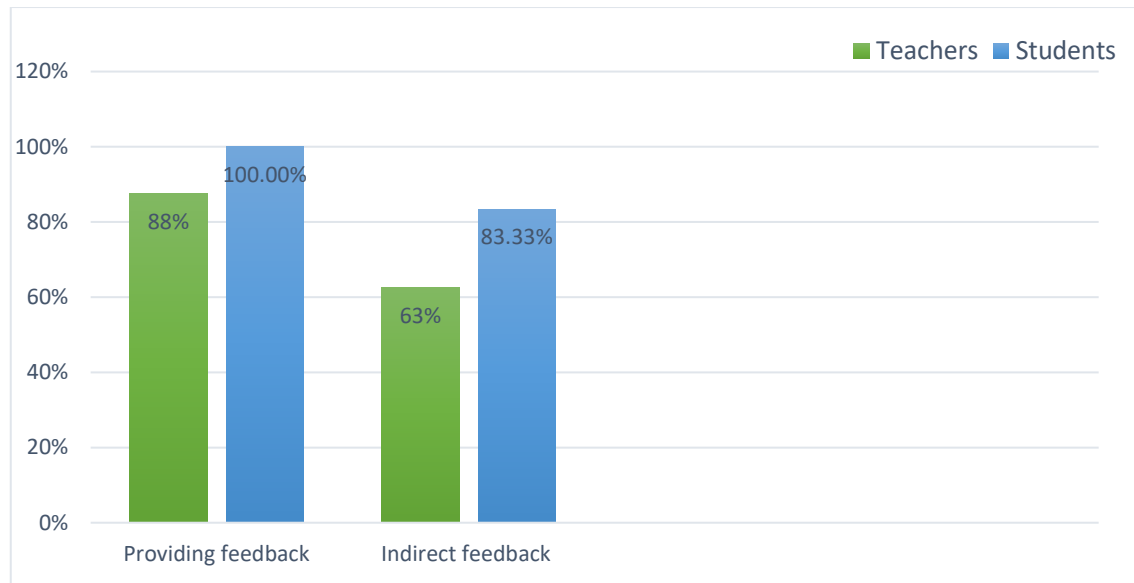
*L Learner 3: In speaking, it [the error] is corrected if the teacher has enough time. In writing, just underlining or a circle.*

*L Learner 4: If oral, sometimes focusses on them and sometimes leaves them; in exam, only a line or a circle is put without correction.*

*L Learner 7: Sometimes, with oral errors, the teacher corrects errors, but most often no, the teacher overlooks them. On the paper, the focus is only on circling or underlining the error without correcting it.*

Most participants mentioned that relevant feedback is normally provided and that it most often tends to be indirect (recast in speaking and underlining/circling in writing). The implication of providing types of feedback will be further discussed in Chapter 6.

Figure 5.3 Providing feedback on learners' errors related to GCs in the study setting



### 5.2.3 Factors contributing to the ease/difficulty of learning/teaching GCs as perceived by participants

As shown in section 3.4.3, the last five questions in the interview guide (see Appendix 5) aimed to address research question 6 According to participants, what factors contribute to making some types of GCs easier or more difficult to learn and teach and to what extent? From participants' responses to these interview questions, the following two sub-themes emerged.

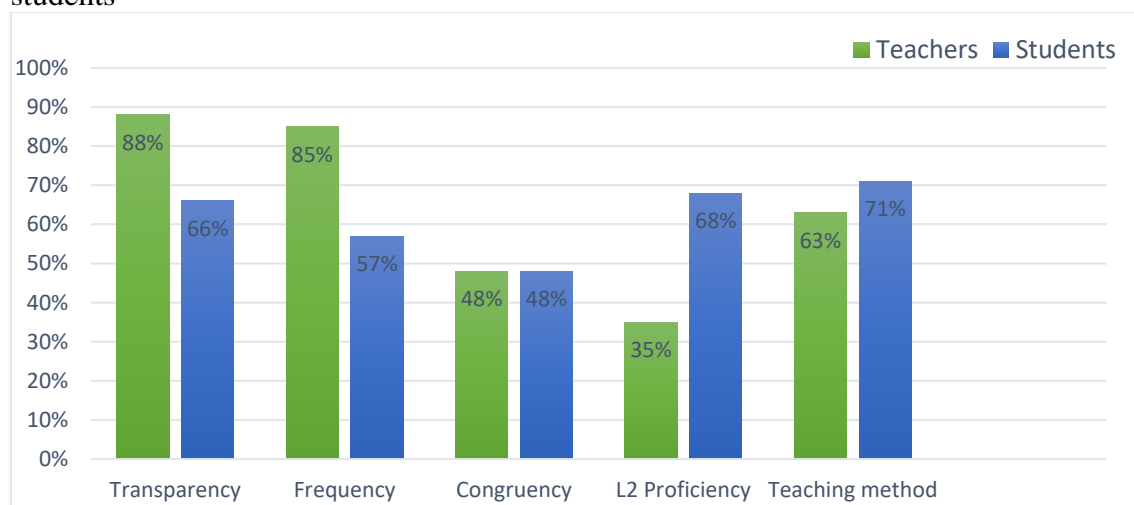
#### 5.2.3.1 Factors' strength/importance as perceived by participants

All teachers and learners agreed that there are GCs that tend to be easier or harder to learn and teach than others. Each of the factors was rated on a scale ranging from 1 (the least important) to 5 (the most important) in terms of the strength of their effect on learners' knowledge of GCs. They attributed the level of difficulty to several factors, including not

only the ones they rated as shown in Figure 5.4 below, but also other potential factors, as shown in the next section. Figure 5.4 displays how teachers and learners rated the different relevant factors. The data is represented by a percentage and there is one column each for scores on transparency, frequency, congruency, L2 proficiency, and teaching method.

The findings displayed in Figure 5.4 help triangulate the ones already tested by means of the language tests (see section 4.2.3). The similarities and differences between the quantitative findings and the participants' perceptions will be further discussed in Chapter 6.

Figure 5.4 Item-related factors and the participant-related ones as rated by teachers and students



### 5.2.3.2 Other factors perceived to contribute to the ease/difficulty of GCs

In addition to the factors rated above by the teacher interviewees, they ascribed the ease and difficulty of learning/teaching GCs to other potential factors, including the structure of the GC (whether it starts with a preposition or includes a verb), its length and type, as



well as IUSs' opportunities to practise GCs. The following are examples from teachers' responses to the relevant questions in the interview guide:

*Teacher 1: Some types involving verbs are difficult to teach. Others that start with prepositions are easy. We focus on the easier ones and leave the ones that are rare or difficult ... Morphological structure and their [GCs'] length have a role in memorisation, meaning and ease ...*

*Teacher 6: Surely, especially with phrasal verbs or verb plus particle or preposition, which are difficult ... and need more emphasis.*

*Teacher 7: Sure, the ones [GCs] that are ... not used by them [IUSs]... are difficult for them.*

From the above extracts, four potential factors are presented: structure and length of GCs, their types, as well as the amount of practising them, which are worth investigating in further research.

When it comes to learner interviewees, other potential factors were also mentioned, including learners' interest or motivation (three learners), their intelligence levels (2 learners), and how often they attend classes (one learner):

*Learner L 3: Learner's interest to learn them ...*

*Learner H 2: Yes, there is a student who has little or slow comprehension, another with different or quick comprehension. This effects how learning happens. The one with slow comprehension will need more time to learn them and will face difficulty ...*

*Learner L 5: For example, learner's level, according to it, there is a learner who is clever, another who is moderate, etc.*

*Learner L 9: ...presence and absence of the learner...*

Other factors perceived by learner interviewees include ease of memorisation and the types that follow fixed rules or tend to be limited in number, as indicated in the following responses:

*H Learner 5: Yes, there are types [that] are quicker to memorise and are common and hold in memory, like "at night" ... others are difficult to memorise.*

*H Learner 8: The ones relevant to time are easy as they follow a fixed rule.*

*L Learner 6: The first ones [time and place GCs] are easier than the rest because they are limited.*

It is thus evident that the results obtained from the interviewees not only corroborated the ones already obtained in the quantitative part (see 4.2.3) concerning the effects of the factors under investigation, as will be discussed in more detail in Chapter 6, but also provided further insights, which are worth further research.

### **5.3 Summary**

In this chapter, the qualitative data obtained from the participants' responses to the semi-structured interviews were thematically analysed, where (1) the participants' knowledge of GCs and their different types, (2) the way GCs tend to be learned/taught, and (3) the participants' perceptions of the factors affecting IUSs' knowledge of GCs were revealed. When it came to investigating the effects of the relevant factors on IUSs' knowledge of GCs, the findings obtained from the interviewees not only corroborated the ones already obtained from the quantitative part of the study (see 4.2.3), as will be further discussed in Chapter 6, but also provided further insights that are worth further investigation.

In the following chapter, a discussion of the findings obtained from this chapter and the previous one will be presented, where an in-depth analysis will be attempted to address the study research questions.

## **Chapter Six: Discussion**

### **6.1 Introduction**

The purpose of the present study was to empirically investigate issues relevant to IUSs' performance on the receptive and productive collocational knowledge tests relating to GCs. The study investigated (1) the extent to which IUSs' receptive collocational knowledge differs from their productive collocational knowledge concerning GCs, (2) the roles played by GCs frequency, their L1-L2 congruency, and transparency on IUSs' performance, (3) the role played by IUS' L2 proficiency in their performance, and (4) the specific as well as the interaction (combined) effects of the above-mentioned factors on IUSs' knowledge. Furthermore, the study attempted to shed light on how GCs were taught and learned and how consciously aware teachers and students were of them and of the factors affecting their learning. This chapter discusses these issues based on the findings of the empirical data presented in Chapters 4 and 5. These findings are summarised in Table 6.1 below.

Table 6.1 Summary of the study findings

Research Question	Findings
1. To what extent does IUSs' receptive knowledge of GCs differ from their productive knowledge?	IUSs' receptive knowledge is significantly better than their productive knowledge.
2. To what extent do the following factors influence IUSs' knowledge of GCs: a) Frequency of GCs,  b) L1-L2 congruency of the GCs,  c) Transparency of the GCs,	IUSs' performance on the more frequent GCS is significantly better than on less frequent ones.  IUSs' performance on the congruent GCs is significantly better than on the incongruent ones.  The effect of transparency on IUSs' performance is statistically significant: all transparency level comparisons proved to be significant, and the differences take the form that more transparency is associated with more correct responses.
d) IUSs' L2 proficiency	There is a significant difference and a highly significant positive correlation between IUSs' scores on the OPT and the ones on the collocational tests.
3. What are the main and combined effects of the above-mentioned four factors on IUSs' knowledge of GCs? And which factor has the strongest impact in the presence of the others?	There are significant main (relevant to a specific factor on its own) and interaction effects of frequency, congruency and transparency. L2 proficiency has the strongest impact.
4. How consciously aware are IUSs and their teachers of GCs and their different types?	Apart from the common types of, for example, time and place GCs, the teachers and the learners tended to have little L2 explicit knowledge when it came to speaking about GCs and their different types.
5. In what ways do GCs tend to be learned/taught in class?	The most common types of GCs, namely the ones involving time and place prepositions, tend to be learned/taught explicitly and intentionally. Explicit explanations, however, tend to be of the preposition as an individual word, rather than of the whole combination of the GC.
6. According to participants, what factors contribute to making some types of GCs easier or more difficult to learn and teach as perceived by participants and to what extent?	The participants' ranking of factors contributing to ease or difficulty of learning GCs was as follows: A. Item-related variables: 1. transparency, 2. frequency, 3. congruency; B. Other variables: 1. teaching method and 2. L2 proficiency

This discussion deals in more depth with the above-mentioned research questions. The first part of the discussion, where responses to the first three research questions are obtained, includes an interpretation of the quantitative data results. The second part, where the last three research questions (RQ4-6) are addressed, is devoted to discussing the findings obtained from the qualitative part of the study. It presents an interpretation of the qualitative data obtained from the participants' interviews. Comparisons between the results obtained from the receptive and productive collocational knowledge tests will be made wherever appropriate. When it comes to the effects of the factors affecting learners' collocational knowledge, a comparison is also made between the results obtained from the quantitative part and the ones obtained from the qualitative part, where results were based on participants' perceptions. Reference will also be made to the literature presented in Chapter two, on the basis of which relevant comparisons between the present study results and the ones obtained from previous research will be made as appropriate.

## **6.2 Discussion of results**

### **6.2.1 Research question 1**

Research question 1 aimed to determine the extent to which IUSs' receptive knowledge of GCs differed from their productive knowledge. The results showed that IUSs' receptive collocational knowledge was significantly different from and broader than their productive collocational knowledge. This result is in line with the findings of previous relevant studies (e.g. Biskup, 1992; Elyildirm, 1997; Caroli, 1998; Granger, 1998; Koya, 2005; Nesselhauf, 2005; Henriksen & Staehr, 2009; Alsakran, 2011; Mohammed & Mustafa, 2012; Henriksen, 2013) and with what is generally expected about the nature of vocabulary receptive/productive

learning and learners' receptive/productive knowledge. That is, receptive mastery of vocabulary tends to be generally easier to achieve than productive mastery and learners' receptive knowledge is larger than their productive knowledge, and generally, though not always, the former comes earlier than the latter at the different stages of language learning (see Melka, 1997; Nation, 2001, p. 28; Milton, 2009, p. 13).

It might also be worth mentioning here that it was not only the receptive knowledge test, taken as a whole, that scored higher and was easier for the participants than the productive knowledge test. Each item subcategory was easier for the participants than the corresponding part in the productive knowledge test. This might be attributed in part to the format of the receptive knowledge test, where multiple-choice items might help the participants get the correct choice by involving, for example, "test-wiseness" skills. Such skills, however, are not the only reason why the effect of congruency on IUSs' performance on the receptive knowledge test approached significance, even with the inclusion of the OPT scores in the ANOVA analysis, where the effects of L2 proficiency were also at play.

Another relevant finding that deserves attention is the greater difference in scores on the same category between the productive and receptive knowledge tests, which tends to be associated with the congruent/incongruent categories. It may be ascribed in particular to the effectiveness of the congruent choices included within the multiple-choice options of the receptive knowledge test, which by virtue of their presence tend to play a more prominent facilitative role, making it easier for participants to recognise the correct choices. This suggests that the facilitative effect of L1 transfer is more likely to be at play with the presence of the correct

congruent choices in the receptive knowledge test, where the participants had more chance of getting the right answer. This is especially the case with the more frequent and more transparent subcategories of GCs, as indicated by the congruent columns in Figure 6.1 below, of which the percent correct scores on those belonging to the receptive knowledge test were far higher than their counterparts in the productive knowledge test and tend to be very close to each other. This, in turn, lends support to Kellerman's (1979) hypothesis which highlights the importance of unmarked item-related features, such as transparency and frequency, with which L1 transfer is more likely to happen.

### **6.2.2 Research question 2**

Research question 2.a aimed to determine the effect of the frequency of the L2 GCs on IUSs' performance. Frequency effect, as an item-related variable, was completely neglected in earlier relevant studies (see section 2.6.1.3). Even in the very little recent research available, its effect on L2 collocational knowledge tends not to be properly investigated in terms of the research instruments involved, for most of them have not taken into account the effects of other confounding variables that might be at play. In other words, the items devoted to testing frequency effects were not well-matched and balanced in terms of the other relevant variables, such as transparency effects, to which no reference was made in the majority of studies available (see e.g. Wolter & Gyllstad's, 2013). The present study has attempted to overcome the shortcomings associated with earlier studies by matching the test items devoted to testing the effects of frequency in terms of the relevant variables that might be at work (see section 3.4.1 for more details).



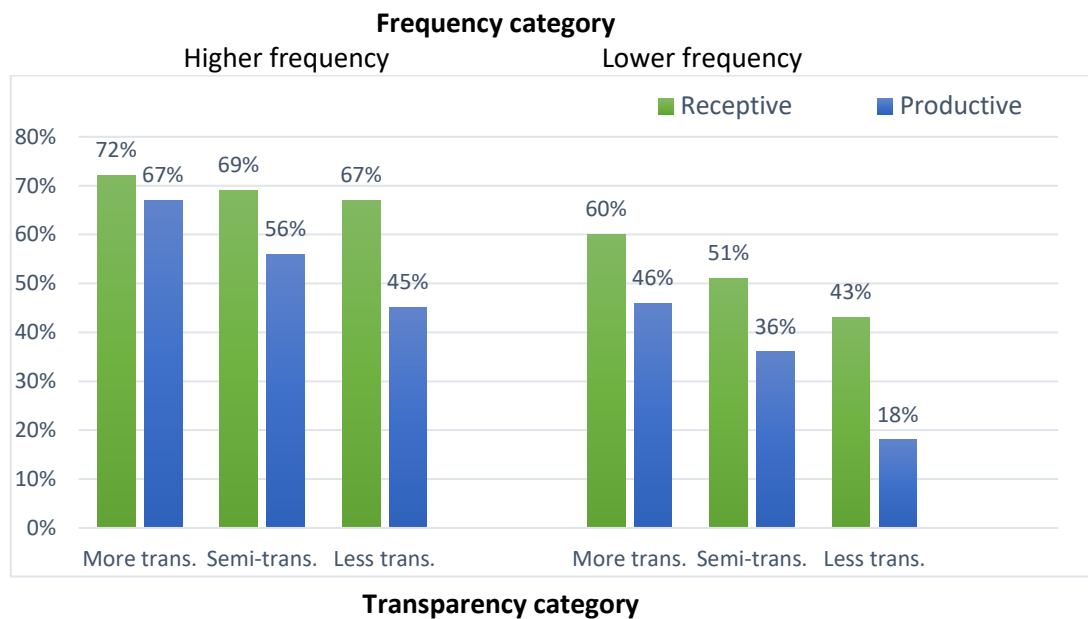
IUSs' performance on the higher frequency GCs was found to be significantly different and better than their performance on the lower frequency ones in each of the receptive and productive knowledge test. It follows, then, that frequency can be regarded as an essential component in accounting for L2 collocational acquisition. This finding lends support to the usage-based (emergentist) cognitive approaches to SLA (see sections 2.6.1.2 and 2.6.2.1), where SLA is believed to be determined by implicit cognitive mechanisms and 'Learning' is viewed as the extraction of meaningful patterns and structures from the L2 input and use. In such approaches, the effect of frequency as an input-related factor is expected to be at play (see Mitchell et al., 2013, pp. 98-99), and this finding is thus consistent with their predictions. In other words, frequent GCs are more likely to be entrenched (i.e. frequently encountered by the participants, and consequently more likely to be considered as correct L2 items than the less frequent ones). The study finding is also in line with the findings arrived at in Wolter & Gyllstad's (2013) study, which showed that the L2 learners involved in the study were highly sensitive to the effects of frequency of the L2 collocations. Such findings have called attention to the importance of making use of multiple SLA perspectives, including the usage-based ones, to help better understand the processes involved in the acquisition of L2 collocations. Such findings may also have pedagogical implications that might be utilised in teaching/learning L2 items, including GCs, as will be shown in section 7.2.

Research question 2.b aims to compare IUSs' performance on the congruent L2 GCs (i.e. the ones that have L1 equivalents) with their performance on the incongruent L2 GCs (i.e. the ones that have no L1 equivalents) in each of the receptive and productive knowledge tests. Unlike in previous relevant studies (see

2.6.1.3), the test items devoted to the effect of congruency in the present study were matched in terms of the other relevant variables, such as frequency and transparency (see 3.4.1). The results of the present study confirmed the findings of previous studies (e.g. Hussein, 1990; Elyildirm, 1997; Caroli, 1998; Granger, 1998; Koya, 2005; Shehata, 2008) as it was found that IUSs' scores on the congruent GCs in each of the two tests significantly exceeded those on the incongruent ones. This shows the important facilitative role of L1 transfer in learning congruent L2 GCs, which are easier to acquire by L2 learners as they place less of a cognitive burden on them than the incongruent GCs. Figure 6.1 below indicates that the facilitative (positive) L1 transfer tends to be more prominent in the receptive knowledge test than the productive one, as it is easier for participants to recognise the right choices than to produce them. In other words, seeing an item that looks a lot like the corresponding one in L1, the learner will assume that it is correct. Conversely, however, the learner tends not to assume that items in their L1 are directly translatable into L2. In addition, it tends to be influenced by the frequency and transparency levels of the congruent items in both tests. In other words, there is evidence indicative of an effect of frequency and transparency not only on participants' performance on the collocational knowledge tests, but also on the degree of the positive L1 transfer associated with item types as well. The more frequent and transparent congruent test items are, the more likely and the greater L1 positive transfer will be involved. Although they do not initially assume that items are directly translatable from L1 to L2, if they are exposed to such items, they will easily recognise them and, given repeated exposure to them, incorporate them into their interlanguage. This, in turn, provides further evidence in support of Kellerman's (1979) hypothesis which highlights the role of unmarked features, such

as frequency and transparency, together with which L1 transfer is more likely to be at play, as opposed to the marked ones, such as opacity and infrequency, with which it is less likely to be at work.

Figure 6.1 Percent mean scores of the congruent subcategory items in the receptive and productive knowledge test, by frequency and transparency types.



In the case of the incongruent GCs, and with the lack of sufficient L2 collocational knowledge, IUSs tend to resort to previous linguistic knowledge, including negative L1 transfer when answering the items of the receptive and productive knowledge tests, which usually means they get the wrong answer. An example of incongruent GCs items where negative L1 transfer might be at play is the following item from the receptive knowledge test:

He was \_\_\_\_\_ sports.

- a. good at      b. good in      c. good of

This item includes three options: the correct option, "good at", as well as two distractors, of which "good in" is relevant to negative L1 transfer, i.e. it is the literal English translation of its counterpart in IUSs' L1, Arabic. This distractor was chosen by 72 of IUSs (64%) in the receptive knowledge test. Thus, the majority of the responses (64%) to this item were wrong and attributable to the effect of L1 negative transfer. The same is true when it comes to the productive knowledge test where most of IUSs' responses (70%) to the same GC item were also wrong and ascribable to the effect of L1 negative transfer.

The study findings, thus, seem to lend support to the Full Access/Full Transfer Hypothesis proposed by adherents of Universal Grammar (section 2.6.1.1) who stress that UG principles and parameters are entirely available to L2 learners. In other words, L2 learners, assuming initially the L1 and L2 to have the same settings, start by transferring their L1 grammar and all its parameter settings. Then they keep revising their initial hypotheses when the L2 does not conform to their L1 settings and ultimately formulate new hypotheses constrained by UG principles and parameters.

A more plausible account, however, is the one presented by emergentist cognitive perspectives (see section 2.6.1.2). They account for L2 learners' wrong answers, in areas where L1 and L2 differ, in terms of associative learning processes, namely overshadowing and attention blocking, where there is a failure on the part of the learner to notice a redundant or a less salient L2 feature in the input. Overshadowing is more likely to happen as a result of another more salient feature in the input or as a result of the activation of a more deeply rooted L1 feature. Such overshadowing leads eventually to attention blocking, where the learner fails to attend to the L2

feature. The pedagogical implications of the effects of L1-L2 congruency will be referred to in section 7.2 below.

Research question 2.c sought to investigate the effect of the transparency of the L2 GCs on IUSs' performance.

As is the case with the effects of frequency, transparency, as an item-related variable, tends to be entirely neglected in previous relevant studies (see section 2.6.1.3). When it comes to the very little recent research available, it seems that the research tools employed have not taken into account the effects of the other relevant factors that might also be involved. In other words, the items devoted to testing transparency effects were not well-matched and balanced in terms of the other relevant variables, such as frequency in Koya's (2005) study and congruency in Revier's (2009) study. Hence, other relevant item related variables, such as frequency or congruency, might be at play, and consequently the accuracy of the findings arrived at may be affected, a limitation which was taken into account in the present study (see section 3.4.1). The present study aimed in part to contribute to addressing recent researchers' (e.g. Webb et al., 2013, Gyllstad & Wolter, 2016) call for studies that aim to investigate the acquisition of L2 collocations varying in with different semantic transparency (see section 2.6.2.2). The results arrived at confirmed the findings of the recent research available (e.g. Revier, 2009; Gyllstad & Wolter, 2016) as the IUSs' scores on the more transparent GCs in each of the collocational tests significantly outweighed their performance on the semi-transparent GCs, which in turn was significantly better than their performance on the less transparent ones. The study findings also provide further evidence in support of the descriptive classifications of Howarth's (1996, 1998a) Continuum Model, which is based on the word combination typologies of the phraseological tradition (see section 2.5.2), and suggest that degrees of GCs transparency together with their frequency and how congruent they are to

participants' L1 play an important role in L2 collocational learning. The pedagogical implications of such findings will be presented in section 7.2 below.

Research question 2.d aims to investigate the effects of IUSs' L2 proficiency on their performance on the productive and receptive collocational knowledge tests. In this respect, the study attempted in part to contribute to addressing Gyllstad & Wolter's (2016) call for further collocational studies taking into account learners' L2 proficiency (see section 2.6.2.2). The results of the study showed that the two proficiency groups involved differed significantly. The higher proficiency group did significantly better than the lower proficiency one, indicating a highly significant role of L2 proficiency on the IUSs' knowledge of GCs and making it a potentially highly reliable predictor of their performance as well. This finding is also consistent with the findings of previous relevant studies (e.g. Bonk, 2000; Revier, 2009; Mohammed & Mustafa, 2012; Alotaibi & Alotaibi, 2015; Nizonkiza, 2017) which showed a strong correlation between learners' L2 proficiency and their performance on the collocational knowledge tests. In the following section, the impact of L2 proficiency as a subject-related variable will be compared with the item-related effects, namely the effects of GCs frequency, their L1-L2 congruency and transparency.

### **6.2.3 Research question 3**

Research question 3 aims to determine the main and combined (i.e. interaction) effects of the above-mentioned four variables (frequency, congruency, transparency, and proficiency) on IUSs' knowledge of GCs as indicated by their performance on each of the productive and receptive knowledge tests. Having

managed to avoid the shortcomings of earlier relevant studies (see sections 2.7 and 3.4.1), the current study thus focussed on more variables affecting learners' knowledge of GCs than previously investigated and provided more focus than in the past on the main and interaction effects of such variables. The results of the present study showed that of all the variables involved, IUSs' L2 proficiency was the best predictor of IUSs' performance on each of the collocational knowledge tests as its effect was the highest as indicated by its effect size (see section 4.2.3.3). In other words, the score a participant gets can be predicted from their L2 proficiency as measured by the OPT, way above the other variables involved. 73% of the variation in scores in the productive knowledge test and 61% of this variation in the receptive knowledge test is due to learners' L2 proficiency. This finding concerning the important role of L2 proficiency as a predictor of the learners' performance is in line with the findings arrived at in Bonk's (2000) study, where L2 proficiency was compared with only one other subject-related variable, namely learners' exposure to the target language in an ESL community. Bonk's study, however, did not take into consideration the effects of item-related factors as the present study did.

As shown in section 4.2.3.3, it is not only the main effect of OPT that is highly significant. The independent effects of the other variables involved as well as their interactions effects with L2 proficiency and with one another are also significant and need to be taken into consideration. This means that although better L2 proficiency, in general, helps a participant do better, its effect is not completely independent. All three of the item-related variables have a highly significant effect on IUSs' scores on both the productive and receptive knowledge tests. As the effect sizes (eta squared) of the item-related variables in the productive knowledge test show, frequency has the greatest effect, followed by

transparency, and then congruency. In the receptive knowledge test, however, it is congruency that has the greatest effect, followed by frequency, and then transparency. This indicates a more prominent facilitative role of positive L1 transfer being activated in the receptive knowledge test, which has already been accounted for in sections 6.2.1 and 6.2.2 above. These findings will be further compared later with the ones obtained from the participants' interviews, as displayed in Table 6.2 below.

Tables 4.40 and 4.41 in section 4.2.3.3 also show that it is not only the main effects of L2 proficiency and the three item-related variables that are highly significant. In both tests, the interaction between proficiency and frequency, and between frequency, congruency and transparency was significant. In the productive knowledge test, proficiency also interacted significantly with congruency. This means that the effects of such variables on the participants' performance on the tests are not completely independent and that their interaction effects also need to be taken into consideration.

#### **6.2.4 Research question 4**

Research question 4 aimed to explore whether participants have sufficient conscious awareness of GCs and their different types. In other words, it sought to find out whether they have sufficient L2 explicit knowledge of them (i.e. knowledge which can be readily articulated, codified, accessed and verbalised). If participants have such knowledge, then they are expected to have an awareness of the existence of GCs and ability to identify them accurately, speak of them and their types using accurate terminology. It was evident from the participants' responses that their explicit knowledge of GCs tends to be confined to the most common types, namely the ones involving time and place prepositions. This is because the teaching/ learning of such types tends to be more explicit and intentional,



as they generally tend to be more frequent, transparent and productive, as indicated in section 6.2.5 below.

Apart from the most common types of time, place and manner GCs, neither the teachers nor the learners tend to have sufficient L2 explicit knowledge when it comes to their awareness of the existence of GCs belonging to different types, their ability to pick them out in text, as well as their ability to speak of them and of their different types and to use their accurate terms (i.e. knowledge of metalinguistic terminology). Recent relevant research has shown that L2 learners' explicit knowledge tends to correlate positively and significantly with their performance on related tests (see e.g. Elder et al., 1999; Roehr, 2007, 2008a, 2015).

#### **6.2.5 Research question 5**

Research question 5 aimed to explore ways GCs tend to be learned/taught in class. Most participants' responses indicated that the type of teaching followed in presenting GCs tends to be explicit, involving the presentation of relevant explanations and rules/notes highlighting the use of GCs. Explicit explanations, however, tend to be relevant to the single word, often the preposition, rather than to the whole combination (GC). This, in turn, makes it difficult for the learners to notice the combination unity and consider it as being one entity, and that can be regarded as a failing, especially with the more transparent uses of prepositions that tend to be in effect lexical. Moreover, explicit teaching tends to be associated with only the most common types of GCs, namely the ones involving time and place prepositions. This is especially the case at the earlier stages, where teaching/ learning GCs tends to be more explicit and intentional. According to participants, the main reasons why such types were given more attention was that they were more common and more productive. In addition, GCs indicating time and place tend

to be more transparent than other GCs, which was probably among the reasons why such types received more attention.

Most participants also mentioned that relevant feedback was normally provided by teachers and that it most often tended to be indirect (recasts in speaking and nonverbal feedback involving underlining/circling in writing), making it difficult for the learners to notice the correct forms. In other words, learners do not necessarily understand them as error correction, and so they often do not result in 'uptake'. Feedback, especially the more explicit kind, can contribute to L2 development as it induces noticing and noticing the gap (see Schmidt, 1990; Swain, 1995; Long, 1996; Mackey, 2007). More recent studies have also demonstrated the positive effects of corrective feedback on learners' performance (see e.g. Storch & Wigglesworth, 2007; Lyster & Saito, 2010).

#### **6.2.6 Research question 6**

Research question 6 aimed to explore what factors participants think may contribute to making some types of GCs easier or more difficult to learn/teach and to what extent.

All participants agreed that there are GCs that tend to be easier or harder to learn and teach than others. They attributed this to several factors including, in addition to the ones already tested by means of the language tests, the teaching method, structure and length of GCs, their types, the learners' intelligence levels, how often they attend classes, ease of memorisation, and whether they follow fixed rules and are limited in number, which are worth investigating in further research. Figure 6.2 displays participants' ratings of the factors under investigation in terms of their effect strength expressed in percentages. Table 6.2 below shows the order of the item-related factors as indicated by the quantitative findings (the first two rows) and compares it with the one as indicated by participants' perceptions and ratings of these factors (the last row).

Figure 6.2 Factors effects as rated by teachers and students

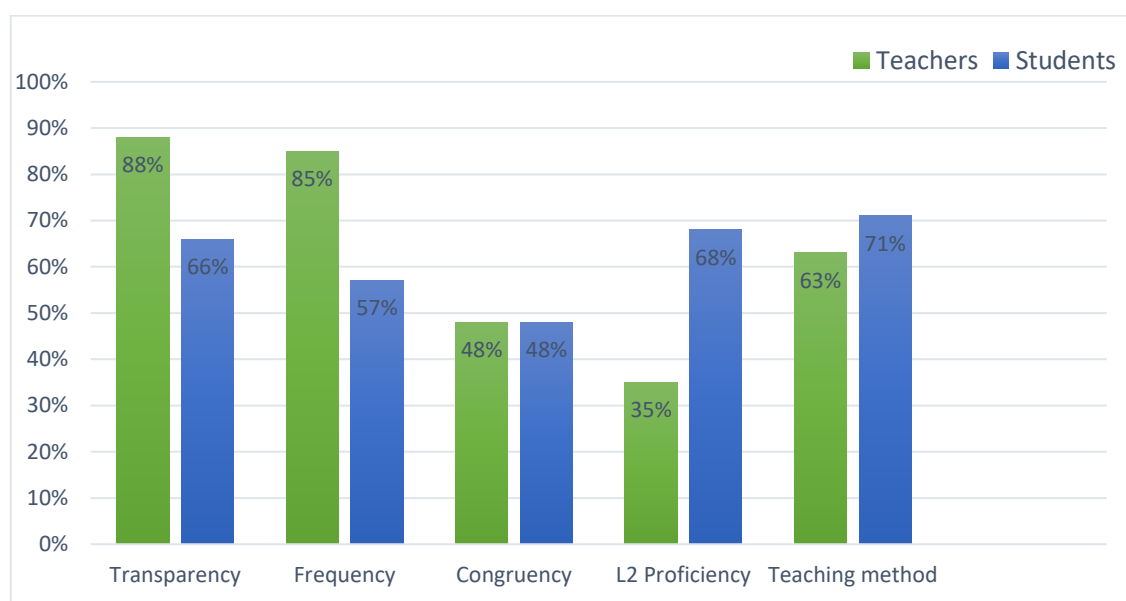


Table 6.2 Comparison of the order of the item-related factors in terms of their effect strength as indicated by the results obtained from both the quantitative and qualitative parts of the study

No.	Instrument	Factors in terms of effect strength
1.	Productive test	1.frequency, 2. transparency, 3. congruency
2.	Receptive test	1.congruency, 2. frequency, 3. transparency
3.	Participant (teachers & students) interviews	1.transparency, 2. frequency, 3. congruency

It is evident from Table 6.2 above that the order of frequency before transparency in terms of their relative effect strength is the same in both tests. But the participants' subjective views were that transparency was a more important factor than frequency. When it comes to congruency, however, its order has changed from last (in the productive knowledge test as well as in participants' ratings) to first in the receptive knowledge test. Thus, the effect of frequency and congruency tends to vary depending on the test type used or the

type of knowledge tested. In other words, frequency has a relatively greater effect on the productive knowledge than on the receptive knowledge of GCs, and congruency has a relatively greater effect on the receptive knowledge, where multiple choices including congruent ones were used, making L1 facilitative role more prominent as explained in section 6.2.1 and 6.2.2 above.

It is also evident from Figure 6.2 above that according to the participants (both teachers and learners), the effect of the teaching method on the learners' knowledge of GCs outweighs that of their L2 proficiency. When compared with the item-related factors, however, L2 proficiency was given the highest rating only by the IUSs participants, which indicates that they were more aware of the role L2 proficiency could play in learning GCs than the teacher participants who gave it the lowest rating. Another interesting point is the participants' ratings of congruency effects on IUSs' knowledge of GCs. Congruency was given the same ratings by both groups, which is to be expected given the fact that the learners in the study setting have already been taught that the effect of L1 tends to increase at the earlier stages of learning an L2 and decrease with more advanced levels. As the learner participants were third-year university students, they, like their teachers, think that the effects of their native language on their learning of GCs comes last compared with the effects of the other item-related factors.

## **Chapter Seven: Conclusions and Recommendations**

### **7.1 Introduction**

This chapter presents a summary of the main findings of the present study, together with their pedagogical implications. It also highlights the theoretical and methodological contributions of the study. The last section is devoted to offering suggestions for further research.

### **7.2 Summary of the main findings and their pedagogical implications**

Having conducted the present study with the aim of investigating IUSs' L2 receptive and productive collocational knowledge of GCs and finding out what factors influence such knowledge and what main and combined effects such factors have, it is evident that IUSs' knowledge is influenced by many more factors than the ones already referred to in earlier relevant studies. They include not only L1-L2 congruency, to which some earlier studies were confined, presenting only a partial image of what is involved in learning GCs, but also other factors including, but not limited to, frequency of GCs, their transparency, as well as IUSs' L2 proficiency.

As indicated by their scores on the receptive and productive collocational knowledge tests, IUSs' receptive collocational knowledge was found to be significantly broader than their productive knowledge, which is consistent with previous relevant studies. Of all the variables involved, IUSs' L2 proficiency proved to be the most influential variable determining their performance on both the receptive and productive collocational knowledge tests, making it the best predictor of participants' performance on both tests. This is in line with previous

relevant research, where a strong correlation was found between learners' L2 proficiency and their performance on the collocational knowledge tests (e.g. Bonk, 2000; Revier, 2009; Nizonkiza, 2017). This quantitative finding was also corroborated by the ratings, in terms of effect strength of the relevant factors involved, IUSs provided in the qualitative part of the study, where the role of L2 proficiency had the highest percentage compared with the other item-related factors involved. Teacher participants, however, gave it the lowest rating, which indicates that they were not sufficiently aware of the role L2 proficiency could play in learning GCs. This finding also indicates the need for teachers to take into account the learners' L2 proficiency levels when teaching them GCs by devoting more time and effort to the lower proficiency learners.

In each of the receptive and productive knowledge tests, it was found that IUSs' performance on the higher frequency GCs was significantly better than their performance on the lower frequency ones. This finding is in line with recent research and indicates the importance of making use of multiple SLA perspectives, including the frequency-based ones to help better understand what is involved in the acquisition of L2 collocations (Gyllstad & Wolter, 2016). Involving multiple SLA perspectives including linguistic and cognitive ones is apt to be more fruitful in terms of outcome. This finding also indicates the need to pay more attention to lower frequency items in teaching and to make use of the important facilitative role frequency can play in learning L2 items. This might be done by increasing GCS frequency in the input (input flood) to which the learners are exposed, especially the ones that tend to be more difficult for the learners due to their usually lower frequency, transparency, and/or congruency. In addition, input flood could be combined with input enhancement, such as underlining, colouring and bolding to

yield better results, as suggested by some recent studies (e.g. Szudarski & Carter, 2016).

In both tests, it was found out that IUSs' performance on the congruent GCs items was significantly better than their performance on the incongruent ones. This was especially the case in the receptive knowledge test, making the L1 facilitative role more prominent. That is why, unlike the situation of frequency and transparency, the order of L1-L2 congruency in terms of effect strength has changed from last in the productive knowledge test as well as in participants' ratings to first in the receptive knowledge test. This finding can be used to help inform not only the sequence of classroom presentation of GCs, but also the inclusion of them in teaching materials. It suggests that it might be more appropriate to present congruent GCs to the learners first, before introducing those that are incongruent (cf. Wolter & Gyllstad, 2013). It also indicates the need to dedicate more time and effort to the teaching of the incongruent GCs. Activities involving explicit contrastive analysis and translation where GCs in the learners' L1 and L2 are compared on the part of the teacher and the learners may be utilised to enhance the learners' L2 collocational knowledge (Laufer & Girsai, 2008). This technique may also be used when giving feedback by the teacher or by the learners in peer work activities.

IUSs' performance on the more transparent GCs in each of the two collocational knowledge tests was found to be significantly better than their performance on the semi-transparent GCs, which in turn was significantly better than their performance on the less transparent ones. This corroborates the findings of recent studies emphasising the importance of taking transparency into consideration, but where the effect of transparency was not compared with the effects of the other potential

factors (e.g. Revier, 2009; Gyllstad & Wolter, 2016). This finding may help inform the sequence of classroom presentation of the GCs with different transparency levels and the inclusion of such GCs in teaching materials. It suggests that it may be more appropriate to present more transparent GCs to the learners first, and then introduce those that are less transparent, other things being equal. It also indicates the need to give more attention to the teaching of the GCs that are less transparent. Modified dictogloss exercises (see section 2.6.2.4) targeting less transparent GCs and presenting them within their meaningful authentic contexts, preferably extracted from native speakers' corpora, such as the BNC could be utilized to help direct the learners' attention to the targeted items. The targeted items, in turn, could be presented with an appropriate form of highlighting, such as underlining, italicizing, or bolding to help the learners better notice them and the unity of their constituents. This may be followed later by a 'pushed output' activity (see section 2.6.2.4), as appropriate (see Lindstromberg et al., 2016).

When it comes to determining the main effects of the relevant factors and arranging these factors hierarchically in terms of their effect size, it was evident from the quantitative findings that the effect of L2 proficiency comes first. The order of frequency and transparency tends to be retained in that frequency comes directly before transparency in both the productive and receptive collocational knowledge tests. When it comes to congruency, however, its order tends to vary depending on the test type used: it took the last position in the productive knowledge test (as well as in participants' ratings) and the first position following L2 proficiency in the receptive knowledge test, where choices including congruent ones were provided, making its facilitative role more prominent.

As far as participants' ratings to the item-related factors are concerned, transparency and frequency ratings were very close to each other and congruency rating was the least,



corroborating the order it got from the productive knowledge test. When compared with the item-related factors as rated by participants, L2 proficiency was given the highest rating by the learner participants only, which indicates that teachers were less aware of the role L2 proficiency could play in learning GCs. This also indicates the need to raise teachers' awareness of the important effects of the learners' L2 proficiency on their performance and to adapt their teaching methods to the learners' L2 proficiency levels.

It is also to be noted that it is not only the main effects of L2 proficiency and of the three item-related factors that are highly significant. Their interaction effects in both the productive and receptive knowledge tests are also highly significant. In other words, their effects on the participants' performance on the tests are not completely independent, which means that their interaction effects are also to be taken into consideration. This may be achieved by taking the effects of all the factors involved into account and by utilising a mixture of different techniques, such as input flood with input enhancement, a modified dictogloss exercise, as well as explicit contrastive analysis of the learners' L1 and L2 when teaching them GCs where the effects of more than one factor might be at play.

Regarding participants' conscious awareness of GCs and their different types, it was evident that, apart from the common types of time, place and manner GCs, the participants showed that they do not have sufficient L2 explicit knowledge of GCs and their different types as well as using accurate terms to refer to them. Relevant studies (see e.g. Elder et al., 1999; Roehr, 2008a and 2015) have revealed that L2 learners' explicit knowledge (i.e. knowledge which can be readily articulated, codified, accessed and verbalised) tends to correlate positively and significantly with their performance on relevant tests. This also indicates the need to raise the participants' awareness of the other different types of GCs and to give them more attention by, for example, directing learners'

attention to their existence, providing them with relevant examples making use of enhancement techniques, such as underlining, bolding, colour highlighting, as well as increasing their frequency in the input. In addition, corpora, such as the BNC may be used to serve as a means of providing authentic material, where such GCs are presented in their appropriate contexts.

As far as the ways GCs tend to be learned/taught in class are concerned, most participants' responses indicated that the type of teaching employed to teach GCs tends to be explicit and intentional, especially at the earlier stages. In addition, the vocabulary items comprising GCs often tend to be taught as individual words (i.e. not as part of the GCs), which does not tend to help the learners to notice the combination unity and consider it as being one entity. Moreover, explicit teaching tends to be associated with only the most common types of GCs, namely the ones involving time and place prepositions, which tend to be given more attention, for they are more common and productive and tend to be more transparent than other GCs. It is thus evident that the other types of GCs were not given due attention and tend to be taught/learned implicitly and incidentally. To help the learners overcome the problems they encounter with such types, they need to be given more attention in class as well as in the teaching materials involved by, for example, making use of input enhancement (e.g. underlining, bolding, colour highlighting) and increasing their frequency in the input they are exposed to (see e.g. Szudarski & Carter, 2016).

As far as the types of feedback provided by teachers are concerned, most participants' responses indicated that they often tend to be of the indirect type (recasts in speaking and nonverbal feedback involving underlining/circling in writing), making it difficult for the learners to notice the correct forms, and consequently such feedback does not tend to

result in "uptake". To help enhance the effect of feedback on the learners' performance, teachers are recommended to provide more explicit feedback to the learners, for example by making use of explicit contrastive analysis comparing GCs in the learners' L1 and L2. In addition, the learners also need to be encouraged to make use of peer work and get involved in relevant activities, which may better induce noticing, and consequently be more beneficial to the learners (see Laufer & Girsai, 2008).

### **7.3 Contribution of the current study**

The current study has focussed on more factors affecting L2 learners' knowledge of GCs than previously investigated and has provided more focus than in the past on the main and interaction effects of such factors. In addition, the study has aimed and managed to avoid the shortcomings of the previous relevant studies not only by depending on more transparent criteria for item selection, but also by making use of more appropriate data collection instruments to help better achieve its goals. Besides establishing evidence of what factors might be relevant to learning GCs and finding out the main and combined effects of such factors, it is hoped that the findings arrived at will contribute to finding more effective methods of teaching GCs in such a way that can help better address the problems IUSs face in learning GCs. The study is thus hoped to have important theoretical and pedagogical implications not only to researchers and syllabus designers, but also to learners as well as teachers of English as a foreign/second language. The innovatively designed collocational knowledge tests, and the carefully described procedures for producing the tests (see section 3.4) may also make a valuable original contribution other researchers might find useful to follow.

#### **7.4 Recommendations for further research**

Further research is still needed not only to falsify/corroborate the findings of the present study, but also to investigate the effects of other potential factors which might influence the learners' receptive and productive knowledge of GCs, such as the saliency of GCs, their length and structure type, as well as the type of methods involved in teaching/learning them. Research studies extending the span between the node and its grammatical collocate further than one could better help determine the effect of saliency on IUSs' receptive and productive knowledge of GCs.

In addition, studies taking into consideration the frequencies of the different structure types of GCs in the relevant teaching materials used as well as in the learners' L1 are also needed to more accurately determine the effects of frequency on IUSs' receptive and productive knowledge of GCs. Furthermore, to help better understand why certain types of GCs tend to be more or less difficult for the learners, other potential factors, such as the imageability, concreteness, parts of speech of the words involved in the GCs need also to be taken into consideration (see N. Ellis & Beaton, 1993; Laufer, 1997; Willis & Ohashi, 2012; Crossley et al., 2013). Moreover, further studies targeting the most difficult type(s) of GCs and lexical collocations and comparing L2 learners' performance on them are also needed to help diagnose the problems encountered by the learners, and consequently to help better address such problems as far as learning and teaching such collocations are concerned.

## Appendices

**Appendix 1.** The full list of the GC test items (arranged in descending order in terms of their frequencies in the BNC) for both the productive and receptive knowledge tests

No.	GCs Items	*Transparency levels			*Congruency levels		Frequency in the BNC		
		T1	T2	T3	C1	C2	Raw	Per million	*Log-likelihood
1.	think of I can't <i>think of</i> a way to do it.			3		2	11349	115.44	9681.41
2.	increase in They reported an <i>increase in</i> sales compared with last year.		2		1		8072	82.1	31398.6
3.	interest in His <i>interest in</i> mathematics developed at high school.		2		1		7444	75.72	24463.40
4.	aware of He was <i>aware of</i> the danger at the time he attempted the rescue.	1				2	6288	63.96	31551.01
5.	focus on The discussion will <i>focus on</i> the youngest children.	1			1		3551	36.12	24390.66
6.	in place They are held <i>in place</i> by wooden boards			3	1		3508	35.68	3372.50
7.	on Saturday I think they want to sell the papers <i>on Saturday</i> .	1				2	3495	35.55	25052.08
8.	suffer from Does he <i>suffer from</i> any serious illness or disability?		2		1		3344	34.01	23176.02
9.	arrive at She was the first to <i>arrive at</i> the restaurant.	1				2	3299	33.56	20500.25
10.	in June She wanted to spend a long weekend there <i>in June</i> .	1			1		3155	32.09	11192.92
11.	at night It was about eight o'clock <i>at night</i> when we left.	1				2	3093	31.46	12231.54
12.	in part Teachers learn <i>in part</i> , by sitting in classrooms, watching other teachers teach.			3		2	2959	30.1	2277.38
13.	believe in He did not <i>believe in</i> ghosts.			3	1		2407	24.48	3418.03

No.	GCs Items	*Transparency levels			*Congruency levels		Frequency in the BNC		
		T1	T2	T3	C1	C2	Raw	Per million	*Log-likelihood
14.	in advance You might find it helpful to plan what you will say <i>in advance</i> .			3		2	2002	20.36	7527.78
15.	in public I expressed my feelings to him <i>in public</i> .			3	1		1985	20.19	1895.89
16.	dependent on Many women are <i>dependent on</i> their husbands' pensions.	1			1		1902	19.35	14298.85
17.	good at He was <i>good at</i> sports.		2			2	1858	18.9	1719.82
18.	relevant to This information is <i>relevant to</i> plans for local advertising.		2			2	1643	16.71	4600.26
19.	in detail The policy issues will be discussed <i>in detail</i> later.		2		1		1503	15.29	2635.05
20.	at risk She shouldn't have put her own safety <i>at risk</i> .			3		2	1477	15.02	6413.19
21.	for sale This house is <i>for sale</i> .			3	1		1411	14.35	6084.09
22.	afraid of He was <i>afraid of</i> dogs.		2			2	1157	11.77	2922.44
23.	on holiday He's <i>on holiday</i> this week.		2			2	1151	11.71	4777.36
24.	in prison He had been <i>in prison</i> for three months.	1			1		1133	11.52	3299.60
25.	connection between He insisted that there was no <i>connection between</i> the two visits.		2		1		976	9.93	8275.79
26.	care about They do not <i>care about</i> our future.	1				2	854	8.69	3839.82
27.	clear to It was <i>clear to</i> him that he had no way out of this contract.		2		1		789	8.03	17.64
28.	distance from The <i>distance from</i> the picture to the corner is 21.6mm.	1			1		787	8.01	3735.63
29.	complain of She started to <i>complain of</i> chest pains in the late afternoon.			3		2	613	6.24	1125.39
30.	at Christmas I promised to see him <i>at Christmas</i> .	1				2	586	5.96	2142.21

No.	GCs Items	*Transparency levels			*Congruency levels		Frequency in the BNC		
		T1	T2	T3	C1	C2	Raw	Per million	*Log-likelihood
31.	under control Both he and his officers say the situation is <i>under control</i> tonight.			3	1		559	5.69	2747.42
32.	in white You look marvellous <i>in white</i> , you should wear it all the time.	1			1		510	5.19	28.75
33.	at hand If you're wanting to eat out, a variety of good restaurants are near <i>at hand</i> .			3		2	484	4.92	162.52
34.	famous for Recently Edinburgh has become a tourist centre <i>famous for</i> its history and arts.	1				2	448	4.56	1209.19
35.	guidance on This booklet gives you <i>guidance on</i> how to deal with the problem.		2			2	413	4.2	1844.15
36.	in pain She screamed out <i>in pain</i> as the doctors examined her.		2		1		341	3.47	233.08
37.	by car Occasionally he went <i>by car</i> to the nearby homes of members of his family.	1			1		316	3.21	136.70
38.	on business He came to London <i>on business</i> .		2			2	302	3.07	29.85
39.	at heart He is still a teenager <i>at heart</i> .			3		2	278	2.83	367.12
40.	at war The two countries had never been <i>at war</i> .		2			2	268	2.73	104.58
41.	at speed Bats are able to fly with ease and <i>at speed</i> .		2			2	261	2.65	507.77
42.	on demand These examinations are available <i>on demand</i> at any time of the year.			3	1		252	2.56	102.57
43.	on air we're back <i>on air</i> .			3	1		209	2.13	80.44
44.	under investigation The case is still <i>under investigation</i> .		2		1		191	1.94	1191.25
45.	on purpose I think she does it <i>on purpose</i> .			3		2	169	1.72	63.53
46.	pray to We <i>pray to</i> God for peace.	1			1		161	1.64	127.24
47.	dangerous for	1				2	141	1.43	139.66

No.	GCs Items	*Transparency levels			*Congruency levels		Frequency in the BNC		
		T1	T2	T3	C1	C2	Raw	Per million	*Log-likelihood
	Giving birth will become more and more <i>dangerous</i> for her.								
48.	by birth He is German <i>by birth</i> but has lived in Britain for the last 20 years.			3	1		82	0.83	76.82
<b>Average raw frequency for item types</b>		<b>T1</b>	<b>T2</b>	<b>T3</b>	<b>C</b>		1857.83		
		1857.44	1857.06	1859	<b>I</b>		1857.83		

\*Loglikelihood is the probability of the two words collocating with each other.

\*T1 = More transparent, T2 = Semi-transparent, T3 = Less transparent,

\*C1 = Congruent, C2 = Incongruent



## Appendix 2. The productive knowledge test

**Test 1. Please fill in the blank with the missing word that is commonly used in combination with the underlined word in the context indicated in each of the following sentences. Please use one word only.**

1. I can't think \_\_\_\_\_ a way to do it.
2. They reported an increase \_\_\_\_\_ sales compared with last year.
3. His interest \_\_\_\_\_ mathematics developed at high school.
4. He was aware \_\_\_\_\_ the danger at the time he attempted the rescue.
5. The discussion will focus \_\_\_\_\_ the youngest children.
6. They are held \_\_\_\_\_ place by wooden boards.
7. I think they want to sell the papers \_\_\_\_\_ Saturday.
8. Does he suffer \_\_\_\_\_ any serious illness or disability?
9. She was the first to arrive \_\_\_\_\_ the restaurant.
10. She wanted to spend a long weekend there \_\_\_\_\_ June.
11. It was about eight o'clock \_\_\_\_\_ night when we left.
12. Teachers learn \_\_\_\_\_ part by sitting in classrooms, watching other teachers teach.
13. He did not believe \_\_\_\_\_ ghosts.
14. You might find it helpful to plan what you will say \_\_\_\_\_ advance.
15. I expressed my feelings to him \_\_\_\_\_ public.
16. Many women are dependent \_\_\_\_\_ their husbands' pensions.
17. He was good \_\_\_\_\_ sports.
18. This information is relevant \_\_\_\_\_ plans for local advertising.
19. The policy issues will be discussed \_\_\_\_\_ detail later.
20. She shouldn't have put her own safety \_\_\_\_\_ risk.
21. This house is \_\_\_\_\_ sale.
22. He was afraid \_\_\_\_\_ dogs.
23. He's \_\_\_\_\_ holiday this week.
24. He had been \_\_\_\_\_ prison for three months.
25. He insisted that there was no connection \_\_\_\_\_ the two visits.
26. They do not care \_\_\_\_\_ our future.
27. It was clear \_\_\_\_\_ him that he had no way out of this contract.
28. The distance \_\_\_\_\_ the picture to the corner is 21.6mm.

29. She started to **complain** \_\_\_\_\_ chest pains in the late afternoon.
30. I promised to see him \_\_\_\_\_ **Christmas**.
31. Both he and his officers say the situation is \_\_\_\_\_ **control** tonight.
32. You look marvellous \_\_\_\_\_ **white**, you should wear it all the time.
33. If you're wanting to eat out, a variety of good restaurants are near \_\_\_\_\_ **hand**.
34. Edinburgh has become a tourist centre **famous** \_\_\_\_\_ its history and arts.
35. This booklet gives you **guidance** \_\_\_\_\_ how to deal with the problem.
36. She screamed out \_\_\_\_\_ **pain** as the doctors examined her.
37. Occasionally he went \_\_\_\_\_ **car** to the nearby homes of members of his family.
38. He came to London \_\_\_\_\_ **business**.
39. He is still a teenager \_\_\_\_\_ **heart**.
40. The two countries had never been \_\_\_\_\_ **war**.
41. Bats are able to fly with ease and \_\_\_\_\_ **speed**.
42. These examinations are available \_\_\_\_\_ **demand** at any time of the year.
43. We're back \_\_\_\_\_ **air**. (spoken by a radio presenter)
44. The case is still \_\_\_\_\_ **investigation**.
45. I think she does it \_\_\_\_\_ **purpose**.
46. We **pray** \_\_\_\_\_ God for peace.
47. Giving birth will become more and more **dangerous** \_\_\_\_\_ her.
48. He is German \_\_\_\_\_ **birth** but has lived in Britain for the last 20 years.

### Appendix 3. The receptive knowledge test

**Test 2. Please circle the letter of the option that is commonly used to fill in the blank in the context indicated in each of the following sentences:**

1. I can't \_\_\_\_\_ a way to do it.  
a. think about      b. think in      c. think of
2. They reported an \_\_\_\_\_ sales compared with last year.  
a. increase for      b. increase in      c. increase of
3. His \_\_\_\_\_ mathematics developed at high school.  
a. interest about      b. interest in      c. interest of
4. He was \_\_\_\_\_ the danger at the time he attempted the rescue.  
a. aware at      b. aware in      c. aware of
5. The discussion will \_\_\_\_\_ the youngest children.  
a. focus for      b. focus of      c. focus on
6. They are held \_\_\_\_\_ by wooden boards.  
a. at place      b. for place      c. in place
7. I think they want to sell the papers \_\_\_\_\_.  
a. in Saturday      b. on Saturday      c. since Saturday
8. Does he \_\_\_\_\_ any serious illness or disability?  
a. suffer at      b. suffer from      c. suffer in
9. She was the first to \_\_\_\_\_ the restaurant.  
a. arrive at      b. arrive in      c. arrive to
10. She wanted to spend a long weekend there \_\_\_\_\_.  
a. at June      b. in June      c. on June
11. It was about eight o'clock \_\_\_\_\_ when we left.  
a. at night      b. by night      c. in night
12. Teachers learn \_\_\_\_\_ by sitting in classrooms, watching other teachers teach.  
a. in part      b. on part      c. with part
13. He did not \_\_\_\_\_ ghosts.  
a. believe about      b. believe at      c. believe in
14. You might find it helpful to plan what you will say \_\_\_\_\_.  
a. for advance      b. in advance      c. with advance
15. I expressed my feelings to him \_\_\_\_\_.

- a. for public      b. in public      c. on public

16. Many women are \_\_\_\_\_ their husbands' pensions.

- a. dependent for      b. dependent in      c. dependent on

17. He was \_\_\_\_\_ sports.

- a. good at      b. good in      c. good of

18. This information is \_\_\_\_\_ plans for local advertising.

- a. relevant for      b. relevant in      c. relevant to

19. The policy issues will be discussed \_\_\_\_\_ later.

- a. for detail      b. in detail      c. with detail

20. She shouldn't have put her own safety \_\_\_\_\_.

- a. at risk      b. for risk      c. in risk

21. This house is \_\_\_\_\_.

- a. for sale      b. of sale      c. on sale

22. He was \_\_\_\_\_ dogs.

- a. afraid at      b. afraid from      c. afraid of

23. He's \_\_\_\_\_ this week.

- a. for holiday      b. in holiday      c. on holiday

24. He had been \_\_\_\_\_ for three months.

- a. at prison      b. in prison      c. into prison

25. He insisted that there was no \_\_\_\_\_ the two visits.

- a. connection among      b. connection between      c. connection with

26. They do not \_\_\_\_\_ our future.

- a. care about      b. care in      c. care of

27. It was \_\_\_\_\_ him that he had no way out of this contract.

- a. clear for      b. clear on      c. clear to

28. The \_\_\_\_\_ the picture to the corner is 21.6mm.

- a. distance between      b. distance from      c. distance of

29. She started to \_\_\_\_\_ chest pains in the late afternoon.

- a. complain about      b. complain from      c. complain of

30. I promised to see him \_\_\_\_\_.

- a. at Christmas      b. in Christmas      c. on Christmas

31. Both he and his officers say the situation is \_\_\_\_\_ tonight.

- a. in control      b. of control      c. under control

32. You look marvellous \_\_\_\_\_, you should wear it all the time.  
a. in white      b. of white      c. with white
33. If you're wanting to eat out, a variety of good restaurants are near \_\_\_\_\_.  
a. at hand      b. by hand      c. in hand
34. Edinburgh has become a tourist centre \_\_\_\_\_ its history and arts.  
a. famous for      b. famous in      c. famous of
35. This booklet gives you \_\_\_\_\_ how to deal with the problem.  
a. guidance about      b. guidance for      c. guidance on
36. She screamed out \_\_\_\_\_ as the doctors examined her.  
a. for pain      b. in pain      c. with pain
37. Occasionally he went \_\_\_\_\_ to the nearby homes of members of his family.  
a. by car      b. in car      c. with car
38. He came to London \_\_\_\_\_.  
a. for business      b. in business      c. on business
39. He is still a teenager \_\_\_\_\_.  
a. at heart      b. in heart      c. of heart
40. The two countries had never been \_\_\_\_\_.  
a. at war      b. in war      c. on war
41. Bats are able to fly with ease and \_\_\_\_\_.  
a. at speed      b. for speed      c. in speed
42. These examinations are available \_\_\_\_\_ at any time of the year.  
a. in demand      b. of demand      c. on demand
43. We're back \_\_\_\_\_. (spoken by a radio presenter)  
a. by air      b. in air      c. on air
44. The case is still \_\_\_\_\_.  
a. in investigation      b. on investigation      c. under investigation
45. I think she does it \_\_\_\_\_.  
a. for purpose      b. in purpose      c. on purpose
46. We \_\_\_\_\_ God for peace.  
a. pray by      b. pray for      c. pray to
47. Giving birth will become more and more \_\_\_\_\_ her.  
a. dangerous at      b. dangerous for      c. dangerous on
48. He is German \_\_\_\_\_ but has lived in Britain for the last 20 years.  
a. at birth      b. by birth      c. from birth

## Appendix 4. The Oxford placement test (the grammar part)

### Oxford Placement Test 1

#### Grammar Test Part 1

Name .....
Total Grammar ..... /100

**Look at these examples. The correct answer is ticked.**

a In warm climates people like/ likes/ are liking sitting outside in the sun.

b If it is very hot, they sit at/ in/ under the shade.

**Now the test will begin. Tick the correct answers.**

1 Water is to boil/ is boiling/ boils at a temperature of 100°C.

2 In some countries there is/ is/ it is very hot all the time.

3 In cold countries people wear thick clothes for keeping/ to keep/ for to keep warm.

4 In England people are always talking about a weather/ the weather/ weather

5 In some places it rains/ there rains/ it raining almost every day.

6 In deserts there isn't the/ some/ any grass.

7 Places near the Equator have a warm/ the warm/ warm weather even in the cold season.

8 In England coldest/ the coldest/ colder time of year is usually from December to February.

9 The most/ Most of/ Most people don't know what it's really like in other countries.

10 Very less/ little/ few people can travel abroad.

11 Mohammed Ali has won/ won/ is winning his first world title fight in 1960.

12 After he had won/ have won/ was winning an Olympic gold medal he became a professional boxer.

13 His religious beliefs have made him/ made him to/ made him change his name when he became champion.

14 If he has/ would have/ had lost his first fight with Sonny Liston, no one would have been surprised.

15 He has travelled a lot both/ and/ or as a boxer and as a world-famous personality.

16 He is very well known all in/ all over/ in all the world.

17 Many people is believing/ are believing/ believe he was the greatest boxer of all time.

18 To be the best from/ in/ of the world is not easy.

19 Like any top sportsman Al had to/ must/ should train very hard.

20 Such is his fame that people would/ will/ did always remember him as a champion.

The history of aeroplane/ the aeroplane/ an aeroplane is quite a/ a quite/ quite short one. For many centuries men are trying/ try/ had tried to fly, but with little/ few/ a little success. In the 19th century a few people succeeded to fly/ in flying/ into flying in balloons. But it wasn't until the beginning of the this/ next/ last century that anybody were/ is/ was able to fly in a machine who/ which/ what was heavier than air, in other words, in who/ which/ what we now call a 'plane'. The first people to achieve 'powered flight' were the Wright brothers His/ Their/ Theirs was the machine which was the forerunner of the jumbo jets that are such/ such a/ so common sight today.

They could/ should/ couldn't hardly have imagined that in 1969, not much/ not many/ no much more than half a century later, a man will be/ had been/ would be walking on the moon.

Already a man/ man/ the man is taking the first steps towards the stars.

Space satellites have now existed since/ during/ for around half a century and we are dependent from/ of/ on them for all kinds of informations/ information/ an information. Not only are they/ they are/ there are being used for scientific research in space, but also to see what kind of weather is coming/ comes/ coming.

By 2008 there would/ must/ will have been satellites in space for fifty years and the 'space superpowers' will be having/ making/ letting massive space stations built. When these will be/ are/ will have been completed it will be the first time when/ where/ that astronauts will be able to work in space in large numbers. Apart/ For/ Except all that, in many ways the most remarkable flight of/ above/ at all was it/ that/ that one of the flying bicycle, which the world saw on television, flying/ to fly/ fly across the Channel from England to France, with nothing apart/ but/ than a man to power it. As the bicycle-flyer said,

'it's the first time I realize/ I've realized/ I am realizing what hatd work it is to be a bird!'

51 Many teachers say to/ say/ tell their students should learn a foreign language.

52 Learning a second language is not the same as/ like/ than learning a first language.

53 It takes long time/ long/ a long time to learn any language.

54 It is said that Chinese is perhaps the world's harder/ hardest/ more hard language to master.

55 English is quite difficult because of all the exceptions who/ which/ what have to be learnt.

56 You can learn the basic structures of a language quite quickly, but only if you are wanting/ will to/ are willing to make an effort.

57 A lot of people aren't used to the study/ to study/ to studying grammar in their own language.

58 Many adult students of English wish they would start/ would have started/ had started

their language studies earlier.

59 In some countries students have to spend a lot of time working on/ by/ in their own.

60 There aren't no/ any/ some easy ways of learning a foreign language in your own country. 61 Some people try to improve their English by hearing/ listening/ listening to the BBC World Service.

62 Live/ Life/ Living with a foreign family can be a good way to learn a language.

63 It's no use to try/ trying/ in trying to learn a language just by studying a dictionary.

64 Many students of English would rather not/ would rather prefer not/ would rather not to take tests.

65 Some people think it's time we all learn/ should learn/ learnt a single international language.

Charles Walker is a teacher at a comprehensive school in Norwich. He has joined/ joined/ joins the staff of the school in 1998 and has been working/ worked/ works there ever since. Before move/ to move/ moving to Norwich, he taught in Italy and in Wales,

and before that he has been/ was/ was being a student at Cambridge

University. So far he isn't/ wasn't/ hasn't been in Norwich for as long

as he was in Wales, but he likes the city a lot and should/ would/ could

like to stay there for at least another two years, or how/ which/ as he

puts it, until his two children have/ will have/ will be grown up a bit.

He met his wife, Kate, in 1992 while he was to live/ was living/ had been living abroad for a while, and they got married in 1996.



Their two children, Mark and Susan, are/ were/ have been both born in Norwich.  
 The Walkers' boy, who/ which/ he is five, has just started  
 at school, but his/ their/ her sister  
 shall stay/ stays/ will be staying at home for another couple of years,  
 because she is nearly two years younger/ more young/ the younger  
 than him. Charles and Kate Walker are used/ use/ used to live in the  
 country, but now that they have children, they have moved/ move/ moved  
 into the city. Charles wanted a house next/ near/ close the  
 school in order/ for/ to get to work easily. Unfortunately  
 the/ a/ that one the two of them really wanted was too expensive,  
 so they must/ should/ had to buy one a bit further away. By the time the  
 children go/ will go/ will have gone to secondary school,  
 that/ which/ what Charles and Kate hope will be in Norwich, the  
 Walkers will have been/ have been/ will be living there for at least fifteen years.  
 They can't be sure if they stay/ do stay/ will stay, but if they  
 don't/ didn't/ won't, their friends won't be too surprised.

**Look at the following examples of question tags in English. The correct form of the tag is ticked.**

- a He's getting the 9.15 train, isn't he/ hasn't he/ wasn't he?
- b She works in a library, isn't she/ doesn't she/ doesn't he?
- c Tom didn't tell you, hasn't he/ didn't he/ did he?
- d Someone's forgotten to switch off the gas, didn't one/ didn't they/ haven't they?

**Now tick the correct question tag in the following 10 items:**

- 91 John's coming to see you, hasn't he/ wasn't he/ isn't he?
- 92 It's been a long time since you've seen him, hasn't it/ isn't it/ haven't you?
- 93 He's due to arrive tomorrow, won't he/ isn't he/ will he?
- 94 He won't be getting in till about 10.30, isn't he/ is he/ will he?
- 95 You met him while you were on holiday, didn't you/ weren't you/ haven't you?
- 96 I think I'm expected to pick him up, aren't I/ don't I/ are you?
- 97 No doubt you'd rather he stayed in England now, didn't you/ wouldn't you/ shouldn't you?

98 Nobody else has been told he's coming, is he/ has he/ have they?

99 Wed better not stay up too late tonight, didn't we/ have we/ had we?

100 I suppose it's time we called it a day, didn't we/ isn't it/ don't?

## Appendix 5. Interview topic guide

### A. Interview guide for students

**Note:** Each of the following questions might be followed by prompt(s) and/or probe(s) as appropriate, depending on participants' answers.

1. What do you call combinations, such as *smile at*, *dependent on*, *at night*, and *demand for*?
2. Do you tend to classify them into types? If yes, what are they?
3. How are they learned in class?
4. How about types of prepositions? Do you spend about the same amount of time on all of them, or more on some than on others?
5. Do you think the way prepositional combinations are presented and taught in class tends to be adjusted to the level of the students?
6. When you make an error relevant to these combinations, what happens?
7. Do you think there are some types of them that are easier or harder to learn/teach than others?
8. In your opinion, what makes some types of them easier or more difficult to learn/teach?
9. Which of the following factors do you think contribute to making them easier to learn/teach?
  - f. Clarity of meaning
  - g. How often they are used

- h. L2 proficiency level
- i. Method of teaching them
- j. Similarity to L1
- k. All the above

10. Can you rate the above-mentioned factors on a scale from 1 to 5, where 1 means it is the least important in making such combinations easier or more difficult to learn/teach and 5 means it is the most important?
11. Were there any other factors (not mentioned above) that made some items easier and some harder?

B. Interview guide for teachers

Note: Each of the following questions might be followed by prompt(s) and/or probe(s) as appropriate, depending on participants' answers.

1. What do you call combinations, such as smile at, dependent on, at night, and demand for?
2. Do you tend to classify them into types? If yes, what are they?
3. How are they taught in class?
4. How about types of prepositions? Do you spend about the same amount of time on all of them, or more on some than on others?
5. Do you think the way prepositional combinations are presented and taught in class tends to be adjusted to the level of the students?
6. When a learner makes an error relevant to these combinations, what happens?
7. Do you think there are some types of them that are easier or harder to learn/teach than others?
8. In your opinion, what makes some types of them easier or more difficult to learn/teach?
9. Which of the following factors do you think contribute to making them easier to learn/teach?
  - a. Clarity of meaning
  - b. How often they are used

- c. L2 proficiency level
- d. Method of teaching them
- e. Similarity to L1
- f. All the above

10. Can you rate the above-mentioned factors on a scale from 1 to 5, where 1 means it is the least important in making such combinations easier or more difficult to learn/teach and 5 means it is the most important?

11. Were there any other factors (not mentioned above) that made some items easier and some harder?

## **Appendix 6. Transcription of a participant interview**

B. For a student participant

Researcher introducing the interview

R: Now we have the student ... what's your name?

S: ...

R: Welcome ...

S: You are welcome.

R: ... What do you call combinations, such as smile at, demand for, at night?

S: Preposition structures.

R: Do you often tend to classify them into types?

S: They are classified into prepositions of time and place...

R: How are they learned in class?

S: We most often depend on the textbook; we do not use other materials ...

R: Do they tend to be as individual words or as combinations?

S: ... sometimes in combinations ... but they are most often presented individually.

R: When it comes to the types of these preposition combinations, do you spend about the same amount of time on all of them, or more on some than on others?

S: It depends on the types: there are types like time and place combinations, for example, at night, on July are given more time, focus, and attention than the rest ...

R: When it comes to the way they are presented to the students, do you think the way the teacher presents them in class tends to be adjusted to the level of the students or are they presented in the same way?

S: No, the teacher does not take the level of the student into consideration. He only delivers the lecture and does not care about whether the student level is high or low.

R: Suppose that you make an error relevant to these combinations in speaking or writing, what happens?

S: In writing, the teacher only underlines the error without correcting it... In conversation, the teacher does not interrupt the learner. The learner is given feedback after they finish ...

R: Do you think there are some types of them that are easier or harder to learn/teach than others?

S: Yes, there are types that are quicker to memorise and are common and hold in memory, like ... at night, at midnight. These can be quickly memorised and are

common ... Others are difficult like dangerous for which are difficult to memorise and are not there in the textbook.

R: When it comes to items responses, we see that some items have been answered correctly but others are not. In your opinion, what makes this group of them easier than the other group?

S: The first [group] are common and are quick to memorise and their use is frequent and are there in the textbooks of the different leaning stages ... from the primary school until the end of the university stage ... The other group are not in the textbook and are not frequently used in class and not common.

R: There are some factors that may be relevant or have a role ... (a) clarity of meaning, (b) how often they are used, (3) L2 proficiency level, (4) method of teaching these combinations, and their similarity to the L1. In your opinion, which of these factors do you think has a role in making them easier to learn/teach?

S: All have a role and are complementary to each other ...

R: Now, can you rate the above-mentioned factors on a scale from 1 to 5, where 1 means it is the least important in making such combinations easier or more difficult to learn/teach and 5 means it is the most important?

S: Clarity of meaning (1), how often they are used (3), L2 proficiency level (5) ..., method of teaching them (2), and similarity to L1 (4) because it has an important role.

R: Do you think there were other factors (not mentioned above) that made some items easier and some harder?

S: ... there are some factors that have a negative effect, for example, the way the teacher presents them to the learners, sometimes the method is not clear, and the teacher does not care about whether the learners have understood the topic or not ..., he just wants to complete the textbook ...



B. For a teacher participant

Researcher introducing the interview

R: Now we have Dr ... with us. Hello, Dr ... You are welcome.

T: Hello to you.

R: Dr ..., what do you call items such as good at, smile at, *dependent on*, and *at night*?

T: Prepositional phrases if the preposition is followed by a noun ... If there is a verb followed by a preposition, they can be called phrasal verbs, or verb plus preposition or particle. It depends on the main word and then the preposition.

R: Do you tend to classify them into types?

T: Yes, ... time group, place group connections...

R: When it comes to the way they are taught in class, how are they often taught in class ...?

T: Sure, available teaching facilities like data show are used ... to draw learners' attention to them, especially the influence of the mother tongue, which plays a crucial role in understanding them. So, it is better to link between the learners' mother tongue and English ...

R: Dr ... when it comes to such items involving prepositions, do they often tend to be presented individually or ...?

T: ...they are not presented in individually ... it must be followed or preceded by something ... some verbs are followed by certain prepositions, we should refer to them ... for example, the verb arrive, we should refer to it and the preposition it takes, which differs from Arabic ... we should refer to them by highlighting ...

R: Dr ... When it comes to the types of such prepositional combinations, do you often tend to spend the same amount of time on all of them, or more on some than on others?

T: Sure, the most common need more effort and examples to stick in the student's mind ... There are others that are rarely used ... There is no need to focus on them at the expense of the common ones ... The textbook also focuses on the most common.

R: When it comes to the teacher and the way he/she present such combinations to the students, do the learners' levels often tend to be taken into account when presenting such combinations?

T: No, I don't think so ...

R: Dr ... when a learner makes an error relevant to these combinations, what happens?

T: We always say we should not focus on error, but this happens ... We try to lessen such errors by repeating the sentence correctly ... I should refer to it directly although I like to refer to it indirectly, but it doesn't work as the same errors will continue if I use an indirect way.

R: Do you think there are some types of them that are harder or easier to learn/teach than others?

T: Surely, especially with what we regard as phrasal verbs or verb plus particle or preposition, which are difficult ... and need more emphasis. They are clearer when used in context but remain difficult.

R: Dr ... in your opinion, what makes learners' performance on some combinations better than their performance on other combinations?

T: ... Items in use are clear for them ... but the rare ones ... are associated with errors.

R: When it comes to the factors or causes which may make some combinations easier or more difficult than others, ... for example clarity of meaning, how often such items are used, learner's L2 proficiency, method of teaching them, their similarity to the L1, which of these factors do you think has a role in making such combinations easier or more difficult to learn/teach?

T: ... How often they are used ... is the main reason and the second reason according to my experience is the effect of the L1 ...

R: Dr ... if you are asked to rate these factors on a scale from 1 to 5, where 1 means it is the least important or less influential in making such combinations easier or more difficult to learn/teach and 5 means it is the most important, how can you rate them?

T: ... I start with the least [influential] as follows: method of teaching (1), L2 proficiency (2), how often they are used (3), similarity to the L1 (4), and clarity of meaning (5).

R: Do you think there were other factors (not mentioned above) that made some items easier and some harder?

T: No, you have already referred to them...

R: Dr ... thank you very much for your precious time.

T: you are most welcome.

## Appendix 7. Participant information sheet

### A. For students

Gender: ☐ M ☐ F

Age: \_\_\_\_\_

Place of birth: \_\_\_\_\_

Country of origin: \_\_\_\_\_

City: \_\_\_\_\_

Native language: \_\_\_\_\_

Other languages: \_\_\_\_\_

University: \_\_\_\_\_

Department: \_\_\_\_\_

How long have you been studying English in the Department?

\_\_\_\_\_

Have you ever lived in an English-speaking country?

\_\_\_\_\_ If yes, how long have you been there?

\_\_\_\_\_

Email (optional) \_\_\_\_\_

B. For teachers

Gender: ☐ M ☐ F

Age: \_\_\_\_\_

Place of birth: \_\_\_\_\_

Country of origin: \_\_\_\_\_

City: \_\_\_\_\_

Native language: \_\_\_\_\_

Other languages: \_\_\_\_\_

University: \_\_\_\_\_

Department: \_\_\_\_\_

How long have you been teaching English in the Department?

\_\_\_\_\_

How long have you been teaching English at the university level?

\_\_\_\_\_

Email (optional) \_\_\_\_\_

## **Appendix 8. Participant consent form**

### **A. For students**

#### **Participant Informed Consent (for students) School of Education, University of Leicester**

##### **Project Title**

Investigating Iraqi EFL University Students' Knowledge of Grammatical Collocations in English

##### **Description**

This study aims at investigating Iraqi university students' knowledge of constructions containing prepositions in English, such as *smile at*, *interested in*, *for sale*, etc. If you agree to participate, you will answer three written tests.

In one of the tests, you are kindly requested to fill in the blanks with the missing words, and in the other ones the task is to select the appropriate choice from the list of items provided. The tests last 25-50 minutes each.

You may also be kindly requested later to participate in an interview and answer some questions relevant to the way you learn constructions like the above-mentioned ones. The interview will be in Arabic and will take place in the Department of English. It lasts for 20 to 40 minutes and will be audio-taped, transcribed, and translated into English for the research analysis. You could request the transcription in both languages for your copy if you wish.

##### **Confidentiality**

Your name will not appear on any materials other than this consent form, which will be stored separately from research materials. Your comments will not be released to your employer(s), persons in the community, or students not involved in this project. The data will be secured electronically or in hardcopy and accessed by the researcher, his supervisor and the examining committee.

##### **Risks and Benefits**

This project is highly unlikely to result in any risk or discomfort to you. You will be emailed a summary of the study findings and conclusions after the study has been completed.

##### **Voluntary Participation**

Your participation in this research will be voluntary, and you could withdraw at any stage of the research despite any initial consent given.

**Right to Withdraw**

You are free to decline to participate and to withdraw from this study at any time without any penalty to you.

**Informed Consent**

I (please print your name), \_\_\_\_\_, have read the description, including the purpose of the study, the procedures to be used, the potential risks and side effects, the confidentiality, as well as the option to withdraw from the study at any time. The investigators have explained each of these items to me. The investigators have answered all of my questions regarding the study, and I believe I understand what is involved. My signature below indicates that I freely agree to participate in this study and that I have received a copy of this agreement from the investigators.

---

(signature)

---

(date)

**Supervisor**

Dr. Nicholas I. Smith  
University of Leicester  
School of English  
E-mail: ns359@le.ac.uk

Office phone number: +44 (0)116 229 7525

**Researcher**

Mr. Adnan Zeidan Mkhelif  
University of Leicester  
School of Education  
E-mail: azmm1@leicester.ac.uk

Phone number: +44(0)7440516760 (UK)  
+469(0)7801384979 (Iraq)

B. For teachers

**Participant Informed Consent (for teachers)**  
**School of Education, University of Leicester**

**Project Title**

Investigating Iraqi EFL University Students' Knowledge of Grammatical Collocations in English

**Description**

This study aims at investigating Iraqi university students' knowledge of constructions containing prepositions in English, such as *smile at*, *interested in*, *for sale*, etc. If you agree to participate, you will be kindly requested to participate in an interview and answer some questions relevant to the way you teach constructions like the above-mentioned ones. The interview will be in Arabic and will take place in the Department of English. It lasts for 20 to 40 minutes and will be audio-taped, transcribed, and translated into English for the research analysis. You could request the transcription in both languages for your copy if you wish.

**Confidentiality**

Your name will not appear on any materials other than this consent form, which will be stored separately from research materials. Your comments will not be released to your employer(s), persons in the community, or students not involved in this project. The data will be secured electronically or in hardcopy and accessed by the researcher, his supervisor and the examining committee.

**Risks and Benefits**

This project is highly unlikely to result in any risk or discomfort to you. You will be emailed a summary of the study findings and conclusions after the study has been completed.

**Voluntary Participation**

Your participation in this research will be voluntary, and you could withdraw at any stage of the research despite any initial consent given.

**Right to Withdraw**

You are free to decline to participate and to withdraw from this study at any time without any penalty to you.

**Informed Consent**

I (please print your name), \_\_\_\_\_, have read the description, including the purpose of the study, the procedures to be used, the potential risks and side effects, the confidentiality, as well as the option to withdraw from the study at any time. The investigators have explained each of these items to me. The investigators have answered all of my questions regarding the study, and I believe I understand what is involved. My signature below indicates that I freely agree to participate in this study and that I have received a copy of this agreement from the investigators.

---

(signature)

---

(date)

**Supervisor**

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**Researcher**

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## Appendix 9. Ethics approval letters

### A. University of Leicester



University Ethics Sub-Committee for Sociology; Politics and IR; Lifelong Learning; Criminology; Economics and the School of Education

24/07/2017

**Ethics Reference:** 13175-azmm1-education

TO:

Name of Researcher Applicant: Adnan Mkhelif

Department: Education

Research Project Title: Investigating Iraqi EFL University Students' Knowledge of Grammatical Collocations in English

Dear Adnan Mkhelif,

**RE: Ethics review of Research Study application**

The University Ethics Sub-Committee for Sociology; Politics and IR; Lifelong Learning; Criminology; Economics and the School of Education has reviewed and discussed the above application.

1. Ethical opinion

The Sub-Committee grants ethical approval to the above research project on the basis described in the application form and supporting documentation, subject to the conditions specified below.

2. Summary of ethics review discussion

The Committee noted the following issues:

Dear Adnan - we are happy to approve this application. Best wishes.

3. General conditions of the ethical approval

The ethics approval is subject to the following general conditions being met prior to the start of the project:

As the Principal Investigator, you are expected to deliver the research project in accordance with the University's policies and procedures, which includes the University's Research Code of Conduct and the University's Research Ethics Policy.

If relevant, management permission or approval (gate keeper role) must be obtained from host organisation prior to the start of the study at the site concerned.

#### 4. Reporting requirements after ethical approval

You are expected to notify the Sub-Committee about:

- Significant amendments to the project
- Serious breaches of the protocol
- Annual progress reports
- Notifying the end of the study

#### 5. Use of application information

Details from your ethics application will be stored on the University Ethics Online System. With your permission, the Sub-Committee may wish to use parts of the application in an anonymised format for training or sharing best practice. Please let me know if you do not want the application details to be used in this manner.

Best wishes for the success of this research project.

Yours sincerely,

Dr. Laura Brace  
Chair

B. Educational setting of the study in Iraq

Inbox I need your permission to conduct a study

Adnan <adnanzeidanm@gmail.com> to alhili.usm, hashem\_teacher

Dear Dr. Hashim Al-Husseini,

I will be conducting a study aiming at investigating Iraqi EFL students' knowledge of Grammatical Collocations in English. I intend to recruit participants from the Department take part in the study. I would be grateful if you could let me know of your permission to recruit participants from the Department of English. I highly appreciate your cooperation.

Yours sincerely,

Adnan Zeidan Mkhelif

hashim Alhusseini <alhili.usm@gmail.com> to me

Dear Dr. Adnan,

It is our pleasure to help you and we have no objection to conduct your study in our department. I hope to know the details of your procedures in order to know .how to help you as possible because the second course will end soon

Please do not hesitate to email me at anytime you want to help you conduct your study. Best regards,

Hashim

--

Hashim A. Mohammed Al-Husseini, PhD Assistant Professor at University of  
Wasit Head of English Department  
Ph.D. in Pragmatics/ Discourse Analysis/ Cross-cultural Studies

Adnan <adnanzeidanm@gmail.com> to hashim

Dear Dr. Hashim Al-Husseini,

Thank you very much for your prompt reply, understanding, and cooperation.

.Hopefully, I will let you know of the procedure after getting it approved

Yours sincerely,

Adnan Zeidan Mkhelif

## Appendix 10. Advertisement asking native speakers for participation

### Grammatical collocations - Call for participants:

#### Native speakers of English only

---

Dear all,

I'd like to invite you to participate in a test as part of a study I'm conducting in the School of Education.

The study aims at investigating Iraqi EFL university students' knowledge of constructions containing prepositions in English, such as *smile at*, *interested in*, *for sale*, etc. Native speakers of English are needed to participate in the test and provide feedback concerning how difficult or appropriate the test items are.

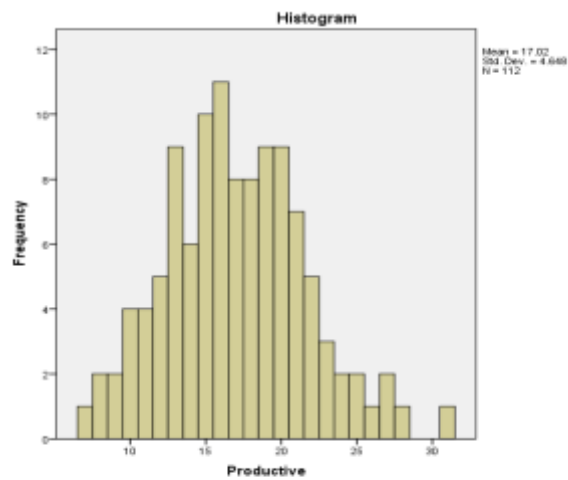
The test lasts 20-30 minutes and you will be rewarded with refreshments for participating. In the first part of the test you are kindly requested to fill in the blanks with the missing words, and in the second one the task is to select the appropriate choice from the list of items provided.

I would be grateful if you could email me to arrange a meeting time.

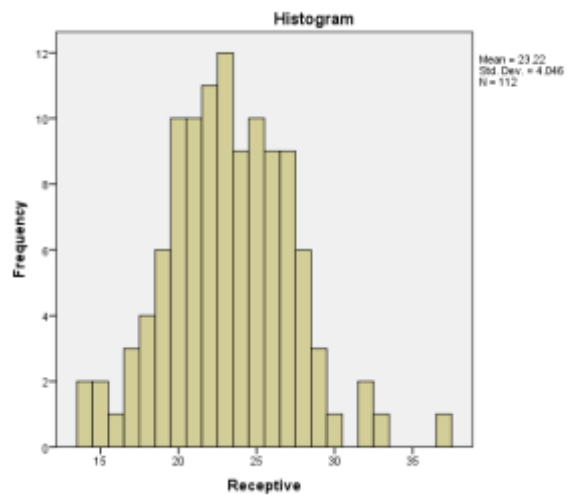
Kind regards,  
Adnan Zeidan Mkhelif  
Department of Education  
University of Leicester  
2 Grange court- Room 1  
Walnut Street  
Leicester  
UK  
LE2 7GN  
E-mail: azmm1@leicester.ac.uk  
Mobile: 07440516760

## Appendix 11. Histograms relevant to the productive and receptive collocational knowledge tests

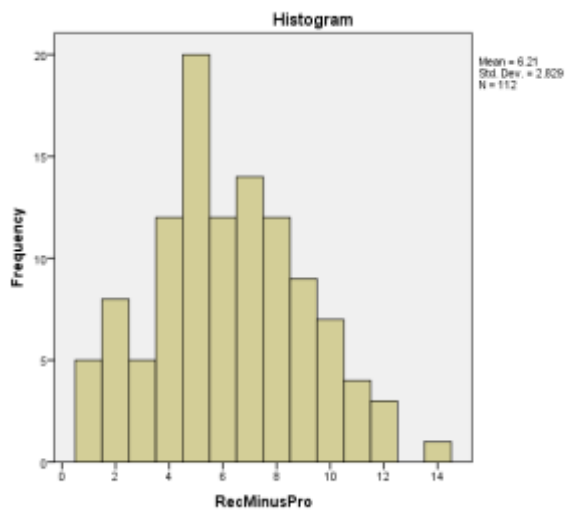
### a. Productive



### b. Receptive



c. Receptive - Productive



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