

## At the Intersection of L1 Congruence and L2 Exposure: Collocational Knowledge of Advanced Arab Users of English

Alla Zareva, *Old Dominion University*  
Asmaa Shehata, *University of Notre Dame*

**Abstract:** *The study is quantitative research, examining the effects of learning environment and native language (L1) on the collocational knowledge of advanced Arab users of English as a second language (ESL) (n=34) and foreign language (EFL) (n=33). The participants were university students who completed two collocation tests, containing verb-noun and noun-adjective congruent (collocations with L1-L2 translation equivalents) and incongruent (L2-specific) collocations. The results showed that the two groups markedly differed in their collocational knowledge (both productively and receptively), with the ESL participants performing significantly better than the EFL students. As to the effects of the native language, the results revealed that the ESL participants experienced noticeable effects of Arabic both receptively and productively with the influences being significantly stronger for the incongruent collocations (L2-only) than the congruent ones (L1-L2). Interestingly, the EFL participants showed less L1 effects in their production and perception of collocations. The findings suggested that both L1 congruence and second language (L2) exposure have an effect on the acquisition of English collocations. The findings are discussed in light of some pedagogical expectations and instructional recommendations that can improve advanced ESL and EFL Arab students' collocational knowledge productively and receptively.*

**Keywords:** advanced ESL learners, advanced EFL learners, L1 Arabic, collocations, L1 congruence

### 1. Introduction and overview of the literature

Many recent discussions of second language (L2) competence have brought to the fore the central role of lexical competence at any level of language proficiency. Within the area of lexical research, scholars have also stressed the importance of knowing multiword items, referred to as formulaic language (e.g., idioms, collocations, phrasal expressions, etc.), in addition to knowing single words. Some of these items have been shown to be learned, accessed, produced, and processed very much like single words or faster than free combinations (Conklin and Schmitt 2008, Jiang and Nekrasova 2007, Schmitt and Carter 2004, Schmitt and Underwood 2004, Underwood, Schmitt and Galpin 2004). Furthermore, as Erman and Warren (2000) have noted, their significant presence in written and spoken language suggests that multi-word combinations cannot be considered marginal phenomena in language use. The researchers found that prefabricated expressions constituted 58.6% of the spoken English and 52.3% of

the written English discourse they analyzed which shows English native speakers' considerable preference for using such items in their communication.

By and large, collocations can be described as a subcategory of formulaic language that is a transitional area between idioms and free combinations (Benson, Benson and Ilson 1986; Laufer and Waldman 2011; Wolter and Gyllstad 2011). There are a variety of approaches to defining and, respectively, studying collocations which shows that the notion of a collocation is not unanimously agreed upon. In the phraseological tradition, collocations are typically identified as combinations in which either word can take on a meaning which it does not have in non-collocational environments (e.g., *red tape*) or there are restrictions on the substitutability of the words forming the collocation (e.g., Howarth 1998; Nesselhauf 2005). Thus, the criteria used for categorizing different types of word combinations within this tradition are phraseological and include semantic transparency, degree of substitutability, and degree of productivity (Howarth 1998b; Nattinger & DeCarrico 1992). Respectively, the collocations are classified on a continuum based on these criteria—e.g., free combinations, restricted collocations, and idioms.

Another approach to defining collocations comes from the so-called 'neo-Firthian' tradition which takes a frequency-based angle to it. In other words, collocations are seen as words which appear together more often in a particular language than their individual frequencies would predict (Hoey 1991; Kjellmer 1990). In that sense, they are considered predictable combinations—i.e., when you come across one of the words, the chances of finding the other one increase (Durrant and Schmitt 2009). In this view, frequent collocations are taken to indicate the presence of semi-preconstructed phrases or formulaic sequences which are stored and retrieved from memory as a whole "rather than being subject to generation or analysis by the language grammar" (Wray 2002: 9) and, given their frequency in natural language, they are hypothesized to be crucial to the 'naturalness' of native production (Durrant and Schmitt 2009; Hoey 2005: 2–7; Kjellmer 1990).

Finally, the statistical tradition of identification of collocations adds another confirmation check to the non-randomness of co-occurrence of some words. Within this approach, a collocation is considered to be a statistical association of words, rather than random combination or a relatively fixed expression (Biber, Johansson, Leech, Conrad and Finegan 1999). Hence, the collocational strength between words can be calculated by using 'association measures' of collocational strength. Several such measures have been proposed as a means of identifying word pairs and all of these measures (e.g., *t*-score, *MI* score, etc.), generally, work on the principle of "comparing the number of times a collocation appears in a corpus with the number of times it would be predicted to appear by chance on the basis of the frequency of its component words" (Durrant and Schmitt 2009:167).

Given the presence of these strong traditions of defining collocations, for the purposes of this study, we follow Wolter and Gyllstad's (2011) approach of acknowledging those traditions of defining collocations—i.e. the frequency-

based tradition (frequency of occurrence in naturally produced language), the statistical one (the statistical strength of co-occurrence of two lexical items within a given span) as well as the phraseological one (a level of idiomaticity and fixedness of the string). Thus, we adopt their definition of collocations which is generally shared by other researchers as well, i.e.: “A collocation is a sequence consisting of two or more words which co-occur more frequently than chance would predict based on the frequency of occurrence of the individual constituent words. In terms of compositionality, we envision collocations residing in the middle ground between free combinations and pure idioms, thus with a varying degree of frozenness” (Wolter and Gyllstad 2011: 434).

Generally, if we assume that the collocational relationships are a fundamental organizing principle in the vocabulary of any language (McCarthy 1990), the study of their emergence, development, and maintenance in the L2 acquisition process can give us valuable insights into the formation of systematic and meaningful links between words in the L2 lexicon. The formation of those links presupposes not only knowledge of individual words but also knowledge of how they fit together—a characteristic feature of lexical knowledge that has been pointed out in a number of lexical competence frameworks (e.g., Richards 1976; Nation 2001; Wray 2002). Thus, the realization that the mental lexicon contains multiword items alongside single words has recently given rise to a good number of studies exploring L2 learners’ collocational knowledge, especially because collocations have been observed to benefit L2 learners in several ways.

For instance, a number of studies have found that collocational knowledge aids both L2 production and comprehensibility in a variety of ways. On the production side, the use of pre-set expressions not only helps L2 users increase their fluency (Ellis and Sinclair 1996) but also allows them to free cognitive resources and allocate them to higher level language processes such as message organization, selection of appropriate structures, etc. (Matrinez and Schmitt 2012; Yamashita and Jiang 2010). Furthermore, according to Kjellemer (1992), the more accurately L2 learners use collocations, the fewer pauses and hesitations they make during long stretches of discourse. By doing so, their speech sounds more natural and is more easily understood by native speakers (NSs). Similar findings have emerged in L2 writing as well. Overall, L2 students have been found to be perceived as more proficient when they use formulaic language (Boers, Eyckmans, Kappel, Stengers and Demecheleer 2006) and their writing is considered smoother and more natural (Ohlrogge 2009). Finally, given the large number of pre-fabricated structures in the specialized vocabulary of the academic disciplines, the need for L2 users to use phraseological language in professional discourse has become even more pressing. In this regard, Gledhill (2000 cited in Laufer and Waldman 2011) has argued that it is not possible for writers to write fluently without good knowledge of the phraseology of the field in which they are writing.

Despite all advantages formulaic language can offer, the majority of L2 studies have found that collocational knowledge is also one of the problematic

areas for L2 learners at all proficiency levels. One of the reasons is probably linked to the fact that collocations often times vary considerably from language to language and this variation is usually not guided by logical or semantic reasons (Nesselhauf 2005; Pawley and Syder 1983; Wolter and Gyllstad 2011). In this regard, several L2 studies (Bahns and Eldaw 1993; Granger 1998; Nesselhauf 2003; 2005) have empirically shown that even L2 learners at an advanced level of proficiency often struggle to activate appropriate collocations in their production. Granger (1998) also found that L2 learners used fewer collocations than NSs and that they were able to indentify far fewer combinations than the NS group. Overall, the common conclusion across these studies is that, in general, L2 learners' collocational knowledge (especially, EFL learners' knowledge) lags behind their general knowledge of single word vocabulary. This state of affairs may be partly due to several reasons, including (1) the specific nature of the collocations—i.e., even though they are lexically constrained, they are largely semantically transparent and not likely to cause problems in comprehension; (2) the fact that collocations have been largely neglected in EFL instruction, hence, failing to raise learners' awareness of collocations as a potential problem in language learning; (3) the lack of explicit instruction in the composition of collocations and how they compare to learners' L1 (whenever possible); (4) the insufficient practice of collocations in order to automatize their production, etc. In sum, regardless of some of the design weaknesses of earlier studies, their results are largely in agreement that collocational knowledge and use are a problematic area for L2 learners and, respectively, an aspect of L2 learning that needs more pedagogical attention and empirical research.

One of the areas that has attracted more interest in the last couple of decades is the influence of learners' L1 on their processing and production of L2 collocations. The general finding of the studies following this line of investigation has been that even advanced L2 users perform significantly better on collocations that have exact L1 translation equivalents (i.e., congruent collocations) than on collocations that are L2 specific and do not have word-for-word L1 translations (i.e., incongruent collocations) (Nesselhauf 2003; 2005; Sadeghi 2009; Wolter and Gyllstad 2011; Yamashita and Jiang 2010). In this regard, Wolter and Gyllstad (2011) investigated the influence of L1 on how advanced L2 users of English (L1 Swedish) process congruent and incongruent collocations, compared to free combinations. The researchers found that their participants responded faster to congruent collocations, but some items in the incongruent condition also showed priming effects while others did not. Thus, they hypothesized that the L1 seems to have a considerable influence on the development of both L2 interlexical and intralexical links and, in that, it facilitates access to L2 collocations with equivalent forms in the L1. In addition, once an L2-only collocation is recognized as such, it is likely stored as a unit and can be activated in a fashion that is similar to congruent collocations.

Along similar lines, given the possibility of a dual activation in the processing of L2 collocations (regardless of whether or not we are dealing with

a single or separate lexicons in the bilingual memory), it is not a surprise that several usage-based collocation studies with ESL and/or EFL learners from a variety of L1 backgrounds have found that the L1 is prominently present in their production of L2 collocations (e.g., Bahns and Eldaw 1993; Bahns 1993; Channell 1981; Ghadessy 1989; Herbst 1996; Lewis 2000; Webb and Kagimoto 2011). Nesselhauf (2003), for example, has found that German university students learning English experienced considerable difficulties producing the correct verb in various verb–noun (V-N) collocations (e.g. *\*make one's homework* instead of *do one's homework*) and approximately half of their errors were a result of L1 interference. Similar results were obtained by Sadeghi (2009) who used a variety of collocational structures (e.g., V-N, Adj-N, non-noun, verb-preposition, etc.) to study the L1 impact on advanced Arabic-speaking L2 users of English. He also concluded that the differences between L1 and L2 collocational patterns contributed substantially to his participants' collocation production errors for both the proficient as well as less proficient EFL learners. Bahns and Eldaw (1993) determined that their L2 participants were twice as likely to provide an unacceptable translation of a collocate as they were to provide an unacceptable translation of a single word. Thus, the results of these studies seem to agree on, at least, two points: (1) there are positive as well as negative influences of L2 users' L1 on their productive L2 collocational performance and 2) the magnitude of this influence is unexpectedly high for even advanced L2 users of English.

Unfortunately, only a small number of studies have explored the collocational knowledge of Arabic-speaking learners of English, especially considering the effects of learning environment (ESL and EFL) as a factor. Similarly to other EFL learners, Arab learners of English also have difficulties with the acquisition of English collocations which have been attributed to a range of reasons—e.g., unfamiliarity with English collocational structures, negative transfer from Arabic, fewer opportunities to encounter collocations in their daily input (Hussein 1990), learners' being accustomed to learning mostly individual words rather than collocations (Farghal and Obiedant 1995), etc. In addition, even fewer studies have looked at the collocational knowledge of ESL learners who, like the EFL learners, have also been reported to have difficulties with collocations. The few recently published studies that have compared the effects of immersion-based programs and EFL context of learning on the collocational usage/production of English-learning students seem to have arrived at conflicting findings. For instance, Nesselhauf's (2005) research on collocation usage among advanced German EFL students has found that an increased exposure to English in English-speaking countries leads to just a slight improvement in the number of collocations produced correctly by students. Even more worryingly, she further argued that the length of stay in English-speaking countries did not seem to contribute to an increased use of collocations among her participants. Instead, there was even a trend in the opposite direction. Groom (2009), on the other hand, found that not only his participants' (Swedish

advanced students) collocation accuracy was positively correlated to their length of L2 immersion but their use of more varied collocations also increased.

Even though in recent years the difference between ESL and EFL contexts of learning has been considered to be largely blurred, there is a sense among L2 researchers that these two contexts are neither fundamentally different nor fundamentally similar (Gass 2013). Thus, in general, in terms of amount of exposure and input, it would be fairly safe to assume that L2 users in an ESL environment have more experience with and exposure to English collocations than the ones in an EFL environment. Consequently, one would intuitively expect that their L2 collocational knowledge would be better developed, more independent of their L1, and more readily available than EFL learners'. The present study is an attempt to add to the small body of research exploring the role of L1 on ESL and EFL learners' collocational knowledge and find out whether or not context of exposure helps learners develop more autonomous representations for L2 collocations. It will address the following research questions:

1. Does context (ESL vs. EFL) have an effect on participants' overall receptive and productive knowledge of collocations?
2. How do Arabic-speaking ESL and EFL students compare on their receptive and productive knowledge of different lexical types of collocations (i.e., V-N and Adj-N collocations)?
3. Does the L1 have similar effect on ESL and EFL participants' receptive and productive collocational knowledge?

## 2. Method

### 2.1. Participants

Two groups of students ( $n = 67$ ), studying in two different learning environments—ESL ( $n = 34$ ) and EFL ( $n = 33$ )—participated in the study. The ESL participants were Arabic-speaking students who, at the time of the experiment, were regularly enrolled in different graduate and undergraduate programs at Ohio University in the USA. They were majoring in a variety of disciplines—i.e. chemistry, linguistics, media, modern languages, education, engineering, international development, economics, telecommunications, African studies, and biology. The participants in this group came from eight Arabic-speaking countries: Egypt ( $n = 6$ ), Jordan ( $n = 8$ ), Kingdom of Saudi Arabia ( $n = 8$ ), Syria ( $n = 3$ ), Sudan ( $n = 3$ ), Kuwait ( $n = 2$ ), Iraq ( $n = 2$ ), and Morocco ( $n = 2$ ). They had studied English formally for a period of 10 to 20 years ( $M = 9.9$  years). Both genders were represented in the sample (females = 12 and males = 22) and the participants' ages ranged from 19 to 38 years ( $M = 28$  years). All ESL participants were advanced users of English whose paper-based TOEFL scores were in the range of 567 to 620 ( $M = 594$ ). At the time of the data collection, they had lived and studied in the U.S. for over four years ( $M = 4.5$  years) on average and were at different stages of completing their respective academic degrees.

The EFL group consisted of advanced Arabic-speaking learners of English—33 fourth year students majoring in English in the English Department (Faculty of Education) at Ain Shams University in Egypt. They were of both genders (females = 31 and males = 2) between the ages of 20 and 24 ( $M = 20.7$  years). At the time of data collection, along with completing their degree in English, they had been learning English as a foreign language in Egypt for, at least, ten years ( $M = 13.8$  years), starting in elementary school and continuing all the way through college. None of the participants in this group had studied English in an English speaking country. Their English proficiency was considered advanced, based on their admission test scores in the English Department which ranged from 45 to 49 ( $M = 47$ ) out of 50 possible. On average, as far as length of English language learning experience is concerned, the EFL participants did not differ significantly from the ESL group ( $p > .05$ ).

## 2.2. Item selection

The test instruments were designed in several steps. First, a pool of collocations was compiled based on reviewing several previously published studies on collocational knowledge (e.g., Bahns and Eldaw 1993; Channell 1981; Farghal and Obiedant 1995; Gitsaki 1999; Hussein 1990; McIntosh 1961; Nesselhauf 2003; Siyanova and Schmitt 2008; Zughoul and Abdul-Fattah 2003, etc.). In general, dependent on the head word of the string, there are several different types of lexical collocations in English—e.g., V-N (e.g., *take advantage*, *make a difference*), Adj-N (e.g., *second chance*, *political party*), noun-noun (e.g., *potato salad*, *family friend*), adverb-adjective (e.g., *quite sure*, *very good*), verb-adverb (e.g., *run fast*, *get together*), adverb-adverb (e.g., *right now*, *pretty well*), etc. However, their frequency of occurrence as well as the degree of difficulty they pose for language learners seem to suggest that V-N and Adj-N collocations are two of the most problematic structures, which is probably why they are also frequently used in research studies (e.g., V-N collocations: Bahns and Eldaw 1993; Nesselhauf 2003; Laufer and Waldman 2011; Wolter and Gyllstad 2011; Zughoul and Abdul-Fattah 2003; and Adj-N collocations: Channell 1981; Durrant and Schmitt 2009; Farghal and Obiedant 1995; McIntosh 1961; Siyanova and Schmitt 2008; or both: Abu Naba'h 2012; Gitsaki 1999; Hussein 1990; Peters 2009; Sadeghi 2009; Yamashita and Jiang 2010). Thus, we extracted all V-N and Adj-N collocations, used in the published research we reviewed, which resulted in 315 collocations—227 V-N and 88 Adj-N collocations.

Next, we consulted the *CO-BUILD English Collocations on CD-ROM* (1995) and the *Oxford Collocation dictionary for Students of English* (2003) to make sure that the expressions were listed as collocations in those two sources and identify the most frequent ones. This procedure narrowed down the number of collocations to 86 altogether.

In the following step, since we were interested in the influence of the participants' L1 on their receptive and productive knowledge of collocations, we needed to isolate from the remaining collocations (1) items that that were

translation equivalents in the participants' L1 (Arabic) and L2 (English) as well as (2) items that were collocations only in English but not in Arabic. To this end, a bilingual dictionary (Abu-Ssaydh 1995) and two NSs of Arabic were consulted which resulted in the selection of 32 collocations—16 V-N and 16 Adj-N collocations. Each category consisted of eight English collocations which have literal Arabic equivalents (L1-L2 or congruent collocations) and eight items without literal Arabic equivalents (L2-only or incongruent collocations) (Appendix A).

Finally, the selected items were validated by obtaining the frequency of occurrence and the Mutual Information (MI) score for each collocation from the Corpus of Contemporary American English (COCA) (Davies 2008). As of present, the corpus consists of more than 450 million words of American English texts, compiled from 1990 to date, across five registers of spoken and written language—spoken discourse, fiction, popular magazines, newspapers, and academic journals. Given that collocational expressions can be considered statistical associations of words, rather than relatively fixed expressions (Biber et al. 1999), the expectation was that both their frequency in the corpus and MI score (a measure of the strength of the relationship between two words which indicates the likelihood of their appearing together more than chance) will confirm their frequent usage as collocations in contemporary English. For the V-N collocations, the span was set at two words to the right of the node word (the base form of the verb and all its inflected forms) to allow for articles and other pre-modifying words before the noun object. For the Adj-N collocations, the search was set within a span of one word to the left of the node word (the noun) since determiners will typically occur before the adjective.

Indeed, the analysis showed that (1) based on their MI score (an MI score of 3 and above is considered to show significant non-randomness of co-occurrence of two words [Hunston 2002]), the words in the selected items co-occur well above random level of co-occurrence and (2) the collocations are relatively frequently used in the corpus. On average, the V-N collocations have an MI score = 5.32 and their rate of occurrence in the corpus was 4.7 times per million words; the Adj-N collocations have an MI score = 7.02 and they occur at the rate of 3.4 times per million words.

### **2.3. Test instrument**

Once our selection of 32 target items was compiled and validated, the productive and the receptive tests were designed as follows:

**2.3.1. The productive test** consisted of the 32 target collocations which were further divided into two sub-tests. One of the tests included the 16 target V-N collocations (8 congruent [L1-L2] and 8 incongruent collocations [L2-only]) which were used in a gap-filling activity. The gaps were in restricted sentences that allowed, for the most part, only one possible answer. Each sentence included the noun part of the collocation and the participants were asked to



complete the collocational string by filling in the missing verb part. The second test consisted of the 16 Adj-N collocations (8 congruent [L1-L2] and 8 incongruent collocations [L2-only]) which were also incorporated into sentences with an adjective gap to be filled in (Appendix B).

To ensure that the individual words in the sentences were predominantly high frequency words so that knowledge of individual words would not hamper the participants' responses to the test items, the sentences were run through vocabulary profile software (Cobb 2002). The analysis showed that about 92% of the words used in the productive test were from the first 2,000 most frequent words in English (1K = 86.3 % and 2K = 5.6%). Given the high proficiency of the participants, our expectation was that they had good knowledge of the individual vocabulary items used in both tests.

**2.3.2. The receptive test** of collocational knowledge included the 32 target collocations, plus another 18 distracter items (9 V-N and 9 Adj-N expressions) with low frequency of occurrence and MI score in COCA (mean frequency = .2 per million words for both V-N and Adj-N expressions and MI score < 2), which rendered them acceptable free combinations. So, a total of 50 items were used in the receptive test where each item was presented in a short sentence and the sentences were randomized (see Appendix C). The analysis of the vocabulary profile of the sentences showed that 92% of the words used in the receptive test were from the first 2,000 most frequent words in the English language (1K = 86.2 % and 2K = 6.3%) which confirmed that the lexical composition of the productive and the receptive tests was similar and individual words are unlikely to cause comprehension problems.

The context of the sentences in the productive and receptive tests was kept as culturally and socially neutral as possible. However, there were some cultural references in some of the sentences (e.g., *Hollywood*, *McDonald's*, *Coca Cola*, etc.) which were not considered to be semantically opaque for the age, educational experience, and proficiency level of the participants in both groups.

Finally, to evaluate the extent to which both tests provided consistent information about the participant's mastery of collocations, the tests' internal consistency reliability was measured. The productive test appeared to have good internal consistency reliability as measured by Chronbach alpha ( $\alpha = .87$  for the ESL group and  $\alpha = .81$  for the EFL group) and so did the test of receptive collocational knowledge ( $\alpha = .72$  for the ESL group and  $\alpha = .78$  for the EFL group). All values are considered to be in the acceptable range of good reliability (McMillan 2012).

## 2.4. Procedure and scoring

The participants completed all tests in writing. First, they filled out a short demographic questionnaire and the two productive tests of collocational knowledge (V-N and Adj-N tests) in two consecutive days. They were limited to 10 minutes per test. Next, to allow for sufficient time between the productive and receptive test, each group was given the receptive test of collocational knowledge three weeks later. For this test, the time limit was set at 30 minutes.

The data gathered from the three tests were scored as follows. In the productive test of collocational knowledge:

(1) Each sentence gap that was completed with the intended target word—a verb or adjective that completed a collocational string in the sentence—was given 2 points.

(2) Even though the gaps were well-constrained meaning-wise by the surrounding context, a few sentences allowed for more than one possible word to be inserted in the gap. In those cases, if the inserted word was, respectively, either a verb or adjective that acceptably completed the sentence gap (acceptability was based on whether or not the combination occurred at least 10 times in COCA), it was awarded 1 point.

(3) Sentences in which the collocation gap was left blank or the inserted word was incorrect, were given 0 points.

(4) Similarly to other collocational studies (e.g., Nesselhauf 2003), grammatical errors (e.g. incorrect verb forms [e.g., *\*maked* instead of *made*, *\*she take* instead of *she takes* or *she took*, etc.]) or spelling errors (e.g., *\*gians* instead of *gains*) were not considered in the analysis. So, if the completed word was lexically correct, any other errors were ignored. For example, if the gap in the sentence *There were \_\_\_\_\_ rain and strong winds during the afternoon storm* was filled in with the adjective *heavy*, it was given 3 points (even if, let's say, the word *heavy* may have been misspelled as *\*hevy*); if the word *torrential* was inserted—2 points; and, if it was completed with *strong*, *mighty* or left blank—0 points.

In coding the participants' responses in the receptive test, only the 32 target items were considered in the analysis. The correct responses received 1 point and the incorrect ones—0 points.

## 3. Results

The first hypothesis tested in the study examined whether the ESL and EFL participants differed in their receptive and productive knowledge of collocations. Thus, the two groups were compared on their receptive and productive overall test scores as well as across the categories (V-N congruent and incongruent; Adj-N congruent and incongruent). As the ANOVA results show (see Table 1), the two groups markedly differed in their productive collocational knowledge along all categories, with the ESL participants performing significantly better than the EFL students ( $p < .001$ ). It is also important to note the large effect sizes along all categories of productive knowledge which revealed that the distinction between ESL and EFL students explained a large proportion (ranging

from  $\eta^2 = .15$  to  $\eta^2 = .54$ ) of the variance in the dependent variables. The differences between the two groups in their receptive knowledge of collocations, however, were non-significant across all dependent variables ( $p > .05$ ).

Table 1. Descriptive statistics and ANOVA results comparing the ESL and EFL participants' receptive and productive collocational knowledge

Collocational knowledge	M		SD		F	$\eta^2$
	ESL (n = 34)	EFL (n = 33)	ESL (n = 34)	EFL (n = 33)		
Productive collocational knowledge						
Total score	43	22.5	12.06	9.79	58.07*	.46
Total score: verb-noun collocations	24.5	16.3	6.74	6.55	25.64*	.28
• verb-noun: congruent	13.2	10.1	3.02	4.05	12.78*	.15
• verb-noun: incongruent	11.3	6.2	4.03	3.04	34.22*	.33
Total score: adjective-noun collocations:	18.5	6.2	6.07	5.02	80.82*	.54
• adjective-noun : congruent	10.4	3.5	3.98	2.85	67.90*	.50
• adjective-noun: incongruent	8.3	2.8	2.96	2.57	60.38*	.47
Receptive collocational knowledge						
Total score	27.6	28.9	3.70	2.17	3.01	-
Total score: verb-noun collocations	14.4	14.2	.25	.26	.27	-
• verb-noun: congruent	7.5	7.4	.9	1.03	.2	-
• verb-noun: incongruent	6.8	7.3	1.3	1.1	2.67	-
Total score: adjective-noun collocations:	13.3	14.7	.33	.34	.42	-
• adjective-noun: congruent	7.0	7.4	1.2	.61	3.02	-
• adjective-noun: incongruent	6.3	6.8	1.5	.86	3.04	-

\*  $p < .05$

p > .05

Paired-samples *t*-tests were conducted to find out whether the ESL and EFL students performed equally well productively and receptively on the different types of collocations (V-N and Adj-N collocations) and identify certain areas of difficulties these two collocation types may create for each of the groups. For the ESL group, the paired-samples *t* test ( $t(33) = 8.05, p < .001, d = .98$ ) showed that their production of V-N collocations ( $M = 24.5, SD = 6.74$ ) was significantly better than that of Adj-N ( $M = 18.5, SD = 6.07$ ). Similarly, the EFL participants' paired-samples *t* test ( $t(32) = 9.12, p < .001, d = 1.11$ ) showed significantly better production of V-N ( $M = 16.3, SD = 6.6$ ) than Adj-N collocations ( $M = 6.2, SD = 5.02$ ).

As far as the participants' receptive collocational knowledge was concerned, the same direction of significant difference between the V-N ( $M = 14.4, SD = 1.82$ ) and Adj-N ( $M = 13.3, SD = 2.15$ ) collocations held true for the ESL participants ( $t(33) = 4.27, p < .001, d = .52$ ). However, there were no significant differences for the EFL group ( $p > .05$ ). Finally, to address the question about the effect of the participants' L1 on their perception and production of collocations, we compared their performance on congruent (L1-L2) and incongruent (L2 only) collocations both receptively and productively. The results (see Table 2) revealed that the ESL participants consistently experienced noticeable effects of Arabic both receptively and productively with the influences being significantly stronger for the incongruent collocations (L2-only) than the congruent ones (L1-L2). All effect sizes were medium to high (range  $d = .45$  to  $d = .82$ ).

The EFL participants seemed to show less L1 effects in their production and perception of collocations. Only the difference between V-N congruent and incongruent collocations was significant, while receptively—only the difference between Adj-N congruent and incongruent collocations was above chance. In both cases, the incongruent collocations were responded to less correctly which suggested that, in the cases where the English collocation did not have an equivalent translation in the participants' L1, their responses tended to be noticeably incorrect. The effect sizes were medium ( $d = .54$ ) to high ( $d = 1.34$ ).

## 5. Discussion

The current study set out to examine several aspects of the productive and receptive collocational knowledge of advanced Arabic-speaking ESL and EFL users of English. One of the questions we addressed was whether an ESL environment would have any noticeable effects on participants' receptive and productive knowledge of collocations, compared to an EFL context of learning and use. More specifically, we were interested in how L2 participants' knowledge of collocations possibly changes as a result of changes in the educational learning environment—i.e. living and studying in an English speaking country (ESL environment), compared to living and studying English in a non-English speaking context (EFL environment). Such a comparison is valuable because it can potentially show whether collocations represent an absolute challenge for language learners or

whether there is a means to acquire and produce them correctly, smoothly, and readily in communication when exposure to collocational usage in natural language increases.

Table 2. Paired sample t-test comparing ESL and EFL participants' productive and receptive knowledge of congruent and incongruent collocations.

<i>Collocational knowledge</i>	ESL ( <i>n</i> = 34)				EFL ( <i>n</i> = 33)			
	<i>M</i>	<i>SD</i>	<i>t</i> -test	<i>d</i>	<i>M</i>	<i>SD</i>	<i>t</i> -test	<i>d</i>
Productive collocations								
• verb-noun: congruent : incongruent	1.88	2.29	4.79*	.82	3.88	2.89	7.71*	1.34
• adjective-noun: congruent : incongruent	2.41	3.51	4.01*	.69	.70	2.07	1.94	-
Receptive collocations								
• verb-noun: congruent : incongruent	.71	1.31	3.13*	.54	.12	1.22	.57	-
• adjective-noun: congruent : incongruent	.72	1.60	2.68*	.45	.61	1.12	3.11*	.54

\*  $p < .05$

$p > .05$

One of the most interesting findings from this line of investigation was that exposure and use of collocations in an ESL environment had a noticeable impact on advanced Arab users' overall production of collocations as well as across all different collocational types (V-N and Adj-N both congruent and incongruent collocates). On average, the ESL participants were able to produce correctly 66% of all collocations, with greater success rate in the production of V-N collocations (75%) than Adj-N collocates (56%), while the EFL participants were successful in only 31% of their collocational production with a better success rate in V-N (50%) than adjective - noun collocates (13%). In this regard, the findings of the present study corroborate the findings from several other studies (Abu Naba'h 2012; Hussein 1990; Mahmoud 2005; Sadeghi 2009) which have found relatively low collocation knowledge of Arabic-speaking university students majoring in English in EFL contexts –51.9% of erroneous collocations in Hussein's (1990) study, 64% in Mahmoud's (2005) study, 57.6 % in Sadeghi's (2009) experiment, and 69% in this study. This is a disturbing finding, especially considering the magnitude of the erroneous production. Based on the personal experience of one of the researchers, one of the reasons for this state of affairs with the EFL Arabic-speaking participants in this study lies in the tradition of teaching and learning vocabulary as primarily single lexical items in Egypt (and, evidently, in other Arabic countries [see, for instance, Abu Naba'h 2012; Farghal and Obiedant 1995]) at all educational levels of foreign language learning. Consequently, such an approach largely deprives learners of opportunities to practice collocational expressions in the

process of their language learning and language mastery. As pointed out by many researchers, teaching collocations explicitly should be seen as an important aspect of L2 instruction that every sound L2 pedagogy should provide to students at all levels of language proficiency in any teaching context.

Another finding from this line of analysis was that the ESL participants performed better in the production of collocations than the EFL ones. It is an interesting finding from, at least, two perspectives. First off, the majority of the ESL participants in this group were not majoring in English. They were studying in graduate and undergraduate programs in a variety of disciplines—e.g., African studies, biology, chemistry, economics, education, engineering, international development, media, modern languages, etc. In that sense, it was very unlikely that their better collocational production was a result of special instruction on collocations they may have received while studying in their respective academic programs. In general, our results are in line with Groom's (2009) findings about the positive effect of immersion in English-speaking countries and an increased exposure to collocationally rich language on ESL advanced users' production of collocations. However, we are quick to caution here that this conclusion is tentative and should be regarded as subject to challenge and confirmation by future research that looks at the impact of immersion on the development of learner's collocational knowledge across different proficiency levels, different collocation structures, length of stay, age, L1 backgrounds etc. among other variables that should be considered in such analyses.

Quite surprisingly, learning environment and exposure did not have any noticeable effects on participants' receptive collocational knowledge and their ability to identify them as such. Even more interestingly, the EFL group had a trend of detecting collocations slightly better than the ESL group. Overall, both groups had a high success rate in their receptive collocational knowledge performance—the ESL participants were successful in identifying correctly 86% of the collocations and the EFL participants—90%. This high success rate was also consistently preserved across the different types of collocations which showed that, receptively, the ESL participants were as sensitive to V-N (90% identified correctly) and Adj-N collocations (83% identified correctly) as the EFL participants (V-N collocations—89% and Adj-N ones—92% identified correctly). We attribute this result to the fact that the participants in this study were advanced users of English who were, evidently, receptively highly sensitive to the notion of collocations and (probably) aware of its importance in language use. Nonetheless, their production of collocations (especially for the EFL students) was lagging far behind their receptive knowledge. In this regard, Nesselhauf (2003) has rightly pointed out that comprehension of collocations does not normally produce problems for advanced L2 learners because they may understand the meaning of a collocation from the meaning of its parts, even if its form differs from the learners' L1. In other words, the participants most probably hold in their memory chunks of meaningful groupings of items as a result of segmenting language for reception and production (Nation 2001) which

knowledge they can readily apply to the recognition of such meaningful units (including collocations) but cannot as readily activate in their production. Along the same lines, a primary goal of language instruction, especially in an EFL context, should be to offer plenty of opportunities to practice collocations in production in order to move those items from learners' receptive knowledge to their productive knowledge of collocations.

Another question we attempted to address in this study was the extent to which the participants' L1 (Arabic) influenced their perception and production of collocations. The research into the psychological reality of the L1 effects on L2 users' collocational knowledge suggests that both languages seem to be activated in processing L2 collocations and, whenever an L2 collocation has an L1 translation equivalent, the L1 provides a faster access to that collocation. Whenever an L2 collocation does not have an L1 translation equivalent (i.e. it is specific to the target language), there are, at least, two possible outcomes: first, if the L2 collocation is recognized as a collocation in the L2, it is processed in a manner that is similar to the translation equivalent collocates; however, whenever it is not recognized as an L2 collocation, it is processed as a free combination (Wolter and Gyllstad 2011). In light of this psychological state of affairs, as we pointed out earlier, it is not surprising that all usage-based studies have found that the L1 has a substantial influence on L2 users' collocation production, but what is surprising is the considerable magnitude of this influence for L2 users who are at an advanced level of proficiency.

The results of the present study are largely in agreement with the findings from other studies within the L1 influence area of investigation. There were positive as well as negative effects possibly stemming from the participants' L1 (in this case, Arabic) on both their receptive and productive performance on the collocation tests. The analyses of their congruent and incongruent collocations showed that both groups were more successful with collocations that had direct translations in Arabic than with the ones that did not. These differences were much more consistent for the ESL group who maintained the trend of noticeably better performance on the V-N as well as Adj-N congruent collocations both receptively and productively than on the incongruent ones. The EFL group showed mixed results—i.e. productively, they performed better (above chance) on the V-N congruent collocations but not on the Adj-N ones while, receptively, the trend was reversed.

Unlike other studies, in our discussion of the findings, we will attempt to highlight the beneficial effects of the native language (Arabic) on L2 collocational knowledge and how it can be used to facilitate the learning of collocations rather than treat those influences as negative. By and large, the findings suggest that, for the ESL group, the L1 is very likely to aid positively the production of L2 collocations resulting, on average, in 79% of correct L1-L2 V-N and 63% correct L1-L2 Adj-N responses. The possible influence of Arabic was even stronger on the EFL participants' collocational production as they were almost twice more likely to produce correctly congruent V-N collocations (61%) than incongruent ones (36%). Their performance on the Adj-N

collocations, though, was miserably low in both categories (15% correct L1-L2 vs. 14% correct L2-only Adj-N collocations). Quite unexpectedly, all participants' success rate went up remarkably high on their receptive test of collocational knowledge, where the ESL participants still responded better to the L1-L2 than the L2-only collocations (94% vs. 85% V-N and 88% vs. 79% Adj-N collocations). The EFL participants identified equally well both categories of V-N collocations (93% L1-L2 and 91% L2-only collocations) but did better on the L1-L2 Adj-N (93%) than L2-only Adj-N collocations (85%).

Overall, the results from this line of analysis seemed to reveal several trends:

First off, if in fact the participants' relied on their L1 collocation knowledge in processing L2 collocations (both in productively and receptively), we can argue that it can help them a great deal (between 60% and 94%) perform successfully if they are indeed **explicitly** aware of the 1-to-1 correspondence between certain L1 and L2 collocations. However, there is a chance that, if they are not explicitly aware of the 1-to-1 L1-L2 correspondence, no positive effects coming from the L1 will kick in and they will process (if at all) an otherwise legitimate collocation like a free combination, as Wolter and Gyllstad (2011) predicted. In this regard, we recommend that EFL instruction should take advantage of all possible positive effects stemming from the native language by making learners explicitly aware of L1-L2 correspondences in teaching collocations. This recommendation is completely in line with recent findings regarding the positive effects of using L1 in L2 teaching.

Secondly, and equally importantly, the participants seemed to be fully capable of developing stable intralexical links (L2-only specific collocations), in addition to L1-L2 collocational connections, though, productively, these links were not quite on a par with their interlexical ones, especially for the EFL group. In this regard, as we have pointed out earlier, EFL teaching practices should provide as many opportunities to students as possible to work in the direction of automatizing the collocations they can recognize as such receptively so that they become more readily available in their production.

Third, if we can assume that the advanced ESL participants were more language "users" than "learners," since they were studying in degree-granting rather than ESL programs in the USA, the results suggest that we should still expect some inconsistencies in their collocational usage (between 20% and 30%). Given that collocations are as prominently used for academic purposes as they are in everyday communication, any language-related work with those students should be in the direction of sensitizing them to the notion of collocations to such an extent that they become "life-long collocation learners" academically, professionally, and in general.

Next, based on the results of this study, we would argue that, even though the participants' knowledge of L2-only collocations was not as well developed as their knowledge of collocations with L1 translation equivalents, it did not lag far behind it (more so for the ESL than EFL participants). This seems to imply that, with systematic instruction in the development of students' collocational



knowledge and explicit teaching/deconstruction of both congruent and incongruent collocations (see Nesselhauf 2003; 2005 for more detailed teaching recommendations), particularly in EFL context, it would be possible to stabilize both students' congruent and incongruent collocations and move the ones that they do not recognize as collocations to a state of being recognized as such. Such an instructional strategy will most probably benefit students' perception and production of collocations both qualitatively and quantitatively.

Finally, both groups performed better on V-N than Adj-N collocations which implies that V-N collocations seem to be less problematic for both ESL and EFL Arabic-speaking students. The present study does not allow us to offer any specific explanation in this regard, so the reasons why certain collocation structures are more problematic than others are yet to be uncovered by future research. We can only speculate that this state of affairs may partly be a result of stronger teaching emphases on V-N than Adj-N collocations.

## **6. Conclusion**

The present study attempted to examine the influence of learning environment (ESL vs. EFL) and L1 on the perception and production of L2 collocations by advanced Arabic-speaking L2 users of English. In our view, researching the influence of these two variables is important empirically, theoretically, and pedagogically as it will allow us to set our expectations in all three areas more realistically. The findings suggest that the ESL environment had noticeable impact on participants' production of collocations. It is highly possible that this influence is a result of the combined effect of exposure and usage rather than exposure alone, so future research should examine each of those variables in greater detail and determine the relative contribution of each one of them. Quite unexpectedly, learning environment did not have any significant effects on participants' ability to identify L2 collocations which suggests that production, rather than receptive knowledge, of L2 collocations is more susceptible to environment influences.

As far as the influence of the L1 is concerned, the results revealed that the L1 possibly had a strong positive influence, particularly receptively, whenever L2 collocations had L1 translation equivalents. However, productively, the strength of this influence was much weaker, especially for the EFL learners, which suggests that there are possible L1 benefits if congruent collocations (that they can otherwise recognize receptively) are automatized to an extent that makes them readily accessible when needed in usage. Otherwise, in production, especially for Adj-N collocations, it did not seem to matter much whether the collocations were congruent or incongruent. Whether or not the incorrect responses were a result of negative transfer (if they can all be attributed to the L1 at all) is a line of analysis we did not pursue in this study since the positive L1 effects, for the most part, were stronger than the negative ones, but it will be interesting to disentangle the negative transfer from sheer lack of knowledge of certain L2 collocations.

Alla Zareva  
Department of English  
5000 Batten Arts and Letters  
Old Dominion University  
Norfolk, VA 23529  
E-mail: [azareva@odu.edu](mailto:azareva@odu.edu)

Asmaa Shehata  
Department of Classics  
University of Notre Dame  
Notre Dame, IN 46556  
[ashehata@nd.edu](mailto:ashehata@nd.edu)

**References:**

- Abu Naba'h, Abdallah Matar.** (2012). 'An investigation of the English collocational knowledge of Jordanian graduate students'. *Damascus University Journal*, 28 (2): 37–61.
- Abu-Ssaydeh, Abdul-Fattah.** (1995). 'An Arabic-English collocational dictionary: Issues in theory and methodology'. *Babel*, 4: 12–23.
- Bahns, Jens.** (1993). 'Lexical collocations: A contrastive view'. *ELT Journal*, 47: 56–63.
- Bahns, Jens and Moira Eldaw.** (1993). 'Should we teach EFL students collocations'? *System*, 21: 101–114.
- Benson, Morton, Evelyn Benson and Robert Ilson.** (1986). *The BBI Combinatory Dictionary of English*. Amsterdam: John Benjamins.
- Biber, Douglas, Stig Johansson, Geoffrey Leech, Susan Conrad and Edward Finegan.** (1999). *Longman Grammar of Spoken and Written English*. Harlow, Essex: Longman.
- Boers, Frank, June Eyckmans, Jenny Kappel, H el ene Stengers and Murielle Demecheleer.** (2006). 'Formulaic sequences and perceived oral proficiency: Putting a lexical approach to the test'. *Language Teaching Research*, 10: 245–261.
- Channell, Joanna.** (1981). 'Applying semantic theory to vocabulary teaching'. *English Language Teaching Journal*, 35:115–122.
- Cobb, Tom.** (2002). Web VocabProfile (v. 3 Classic). Available online at <http://www.lex tutor.ca/vp/eng/> Retrieved on March 16, 2015
- Conklin, Kathy and Norbert Schmitt.** (2008). 'Formulaic sequences: Are they processed more quickly than nonformulaic language by native and nonnative speakers'? *Applied Linguistics*, 29: 1–18.
- Davies, Mark.** (2008). 'The Corpus of Contemporary American English (COCA): 425+ million words, 1990-present'. Available online at <http://corpus.byu.edu/coca/>. (Retrieved on March 16, 2015)
- Durrant, Philip and Norbert Schmitt** (2009). 'To what extent do native and non-native writers make use of collocations?' *IRAL* 47: 157–177.
- Ellis, Nick C. and Susan G. Sinclair.** (1996). 'Working memory in the acquisition of vocabulary and syntax: Putting language in good order'. *The Quarterly Journal of Experimental Psychology*, 49: 234–250.
- Erman, Britt and Beatrice Warren.** (2000). 'The idiom principle and the open choice principle'. *Text*, 20: 29–62.
- Farghal, Mohammed and Hussein Obiedant.** (1995). 'Collocations: A neglected variable in EFL'. *IRAL*, 33: 315–331.
- Gass, Susan.** (2013). *Second Language Acquisition: An Introductory Course*. Mahwah, NJ: Routledge.
- Ghadessy, Mohsen.** (1989). 'The use of vocabulary and collocations in the writing of primary school students in Singapore'. *AILA Review*, 6:110–117.

- Gitsaki, Christina.** (1999). *Second Language Lexical Acquisition: A Study of the Development of Collocational Knowledge*. Bethesda, MD: International Scholars Publications.
- Gledhill, Christopher.** (2000). *Collocations in Science Writing*. Tübingen: Günter Narr Verlag.
- Granger, Sylviane.** (1998). 'Prefabricated patterns in advanced EFL writing: Collocations and formulae'. In A. P. Cowie (ed.), *Phraseology: Theory, Analysis, and Applications*, 145–160. Oxford University Press.
- Groom, Nicholas.** (2009). 'Effects of second language immersion on second language collocational development'. In Andrew William Barfield and Henrick Gyllstad (eds.), *Researching Collocations in Another Language*, 21–33. New York: Palgrave Macmillan.
- Herbst, Thomas.** (1996). 'What are collocations: Sandy beaches or false teeth'? *English Studies*, 77: 379–393.
- Hoey, Michael.** (2005). *Lexical Priming: A New Theory of Words and Language*. London: Routledge.
- Howarth, Peter.** (1998). 'Phraseology and second language proficiency'. *Applied Linguistics*, 19: 24–44.
- Hunston, Susan.** (2002). *Corpora in Applied Linguistics*. Cambridge University Press.
- Hussein, Riyad.** (1990). 'Collocations: The missing link in vocabulary acquisition amongst English foreign learners'. In Jacek Fisiak (ed.), *Papers and Studies in Contrastive Linguistics. The Polish–English Contrastive Project*, 123–136. Pozan: Adam Mickiewicz University.
- Jiang, Nan and Tatiana M. Nekrasova.** (2007). 'The processing of formulaic sequences by second language speakers'. *Modern Language Journal*, 91: 433–445.
- Kjellmer, Göran.** (1992). 'Old as he was: A note on concessiveness and causality'. *English Studies*, 7: 337–350.
- Laufer, Batia and Tina Waldman.** (2011). 'Verb-noun collocations in second language writing: A corpus analysis of learners' English'. *Language Learning*, 61: 647–672.
- The Oxford Collocation Dictionary for Students of English.** (2003). Oxford: Oxford University Press.
- Lewis, Michael** (ed.). (2000). *Teaching Collocation: Further Developments in the Lexical Approach*. Hove, England: LTP Publications.
- Mahmoud, Abdulmoneim.** (2005). 'Collocation errors made by Arab learners of English'. *Asian EFL Journal*, 6: 117–126.
- McIntosh, Angus.** (1961). 'Patterns and ranges'. *Language*, 37: 325–337.
- McMillan, James H.** (2012). *Educational Research: Fundamentals for the Consumer*. Boston, MA: Pearson.
- Nation, Paul.** (2001). *Learning Vocabulary in Another Language*. Cambridge: Cambridge University Press.
- Nattinger, James and Jeanette S. DeCarrico.** (1992). *Lexical Phrases and Language Teaching*. Oxford: Oxford University Press.

- Nesselhauf, Nadja.** (2003). 'The use of collocations by advanced learners of English and some implications for teaching'. *Applied Linguistics*, 24: 223–242.
- Nesselhauf, Nadja.** (2005) *Collocations in a Learner Corpus*. Amsterdam: John Benjamins.
- O'Dell, Felicity and Mivchael McCarthy.** (2005). *English Collocations in Use: How Words Work Together for Fluent and Natural English: Self-Study and Classroom Use*. Cambridge University Press.
- Ohlrogge, Aaron.** (2009). 'Formulaic expressions in intermediate EFL writing assessment'. In Roberta Corrigan, Edith A. Moravcsik, Hamid Ouali and Kathleen M. Wheatley (eds.), *Formulaic Language Volume 2: Acquisition, Loss, Psychological Reality, and Functional Explanations*, 375–386. Amsterdam: John Benjamins.
- Pawley, Andrew and Frances Hodgetts Syder.** (1983). 'Two puzzles for linguistic theory: Nativelike selection and nativelike fluency'. In Jack C. Richards and Richard W. Schmidt (eds.), *Language and Communication*, 191–226. Longman.
- Peters. Elke.** (2009). 'Learning collocations through attention-drawing techniques: A qualitative and quantitative analysis'. In Andrew William Barfield and Henrick Gyllstad (eds.), *Researching Collocations in Another Language*, 194 – 207. New York: Palgrave Macmillan.
- Richards, Jack.** (1976). 'The role of vocabulary teaching'. *TESOL Quarterly*, 10: 77–89.
- Sadeghi, Karim.** (2009). 'Collocational differences between L1 and L2: Implications for EFL learners and teachers'. *TESL Canada Journal*, 26: 100–124.
- Schmitt, Norbert and Geoffery Underwood.** (2004). 'Exploring the processing of formulaic sequences through a self-paced reading task'. In Norbert. Schmitt (ed.), *Formulaic Sequences*, 173–190. Amsterdam: John Benjamins.
- Schmitt, Norbert and Ronald Carter.** (2004). 'Formulaic sequences in action: An introduction'. In Norbert. Schmitt (ed.), *Formulaic Sequences*, 1–22. Amsterdam: John Benjamins.
- Siyanova, Anna and Norbert Schmitt.** (2008). 'L2 learner production and processing of collocation: A multi-study perspective'. *The Canadian Modern Language Review*, 64: 429–458.
- Underwood, Geoffrey, Norbert Schmitt and Adam Galpin.** (2004). 'The eyes have it: An eye-movement study into the processing of formulaic sequences'. In Norbert. Schmitt (ed.), *Formulaic Sequences*, 153–172. Amsterdam: John Benjamins.
- Webb, Stuart and Eve Kagimoto.** (2011). 'Learning collocations: Do the number of collocates, position of the node word, and synonymy affect learning?'. *Applied Linguistics*, 3: 259–276.

- Wolter, Brent and Henrik Gyllstad.** (2011). 'Collocational links in the L2 mental lexicon and the influence of L1 intralexical knowledge'. *Applied Linguistics*, 32: 430–449.
- Wray, Alison.** (2002). *Formulaic Language and the Lexicon*. Cambridge University Press.
- Yamashita, Junko and Nan Jiang.** (2010). 'L1 influence on the acquisition of L2 collocations: Japanese ESL users and EFL learners acquiring English collocations'. *TESOL Quarterly*, 44: 647–668.
- Zughoul, Muhammad Raji and Hussein Abdul-Fattah.** (2003). 'Collocational strategies of Arab learners of English: A study in lexical semantics'. *Babel*, 49: 59–81.

## Appendix A

Congruent and incongruent collocations used in the productive and receptive tests of collocation knowledge.

Category	Congruent collocations (L1-L2)	Incongruent collocations (L2-only)
Verb-noun collocations	change one's mind have an effect make a difference play a role spend time take action take time tell the truth	catch fire do good gain weight give birth keep an eye on make a mistake take advantage take place
Adjective-noun collocations	fine arts golden age last chance middle class old age political party public opinion white lie	black eye capital punishment fast food heavy rain red tape second thoughts short cut soft drinks

## Appendix B

Productive tests of collocational knowledge

## Test 1

Write down the **verb** which best completes the blank in the sentences below.

1. It's true that we \_\_\_\_\_ weight when we eat more than we should.
2. Governments should \_\_\_\_\_ the necessary actions to stop the massacre.
3. Inborn abilities always \_\_\_\_\_ an effect on what we become.
4. Tom's wife \_\_\_\_\_ birth to a son yesterday.
5. She \_\_\_\_\_ a lot of her time reading.
6. The robbery \_\_\_\_\_ place at about 3:30 a.m. yesterday.
7. It will \_\_\_\_\_ you good if you exercise more often.
8. Do you think there is a chance that John will \_\_\_\_\_ his mind?
9. It usually \_\_\_\_\_ time to change laws.
10. Parents can \_\_\_\_\_ a role in preventing childhood obesity.

11. The lantern was kicked and the barn \_\_\_\_\_ fire.
12. Don't lie, just \_\_\_\_\_ the truth!
13. Could you \_\_\_\_\_ an eye on my bag for a while?
14. Last July, Mike \_\_\_\_\_ the mistake of going to work on a strike day.
15. What difference does it \_\_\_\_\_ if your friend does not have a car?
16. This book describes ten ways to \_\_\_\_\_ advantage of the Internet.

## Test 2

Write down the **adjective** which best completes the blank in the sentences below.

1. Are you having \_\_\_\_\_ thoughts about coming with me to Brighton?
2. If you do not take the \_\_\_\_\_ cut, the hotel is four miles further down the road.
3. The main \_\_\_\_\_ parties in the U.S. are the Democrats and the Republicans.
4. Today is your \_\_\_\_\_ chance to submit your paper.
5. Many people die of \_\_\_\_\_ age around the world.
6. McDonald's is one of the largest \_\_\_\_\_ food chains in the U.S.
7. The boxer gave him a \_\_\_\_\_ eye, so he was taken to the hospital.
8. The term \_\_\_\_\_ arts is used to refer to the visual arts such as painting and architecture.
9. Although no executions were ordered until 1980, the state reestablished \_\_\_\_\_ punishment in 1982.
10. There were \_\_\_\_\_ rain and strong winds during the afternoon storm.
11. Everyone knows that a little \_\_\_\_\_ lie is sometimes necessary in a time of crisis.
12. China hopes to grow its \_\_\_\_\_ class to more than half of its total population by 2020.
13. Bureaucracy and \_\_\_\_\_ tape are the real problems in this company.
14. The 1930s and 1940s are considered the \_\_\_\_\_ age of Hollywood.
15. Politicians are trying to influence the \_\_\_\_\_ opinion on the topic.
16. Coca Cola mainly produces \_\_\_\_\_ drinks rather than juices or water.



## Appendix C:

## Receptive test of collocational knowledge

Circle the number of the sentences that do **NOT** contain collocations (a collocation is an expression where the words frequently occur together—e.g., *best friend*).

1. I should go to a dentist to fix my artificial teeth.
2. After the death of his son, Mark had a heart attack.
3. Eating soup at the start of a meal fills the stomach.
4. Are you having second thoughts about coming with me to Brighton?
5. The artist was not painting for a wide public.
6. Tom's wife gave birth to a son yesterday.
7. If you do not take the short cut, the hotel is four miles further down the road.
8. She had forgotten how hot blood could run.
9. It will do you good if you exercise more often.
10. The main political parties in the U.S. are the Democrats and the Republicans.
11. She rarely wears makeup and is usually pretty shy.
12. The robbery took place at about 3:30 a.m. yesterday.
13. Today is your last chance to submit your paper.
14. We think that we still must do an effort to avoid the such mistakes in the future.
15. What difference does it make if your friend does not have a car?
16. Many people die of old age around the world.
17. Last July, Mike made the mistake of going to work on a strike day.
18. The growing generation is the nation's hope for building its future.
19. That's a horrifying image that doesn't leave the mind easily.
20. Although no executions were ordered until 1980, the state reestablished capital punishment in 1982.
21. The lantern was kicked and the barn caught fire.
22. You need to run more vitamins and minerals in your diet.
23. McDonald's is one of the largest fast food chains in the U.S.
24. Don't lie, just tell the truth!
25. The 1930s and 1940s are considered the golden age of Hollywood.
  
26. The boxer gave him a black eye, so he was taken to the hospital.
27. This book describes ten ways to take advantage of the Internet.
28. Coca Cola mainly produces soft drinks rather than juices or water.

29. Such negative publicity puts extra risk into her career as a politician
30. The term fine arts is used to refer to the visual arts such as painting and architecture.
31. Could you keep an eye on my bag for a while?
32. The heavy traffic made me late for my appointment.
33. Fixing false limbs has now become possible.
34. Inborn abilities always have an effect on what we become.
35. There were heavy rain and strong winds during the afternoon storm.
36. Governments should take the necessary actions to stop the massacre.
37. This tourist speaks broken English.
38. She spends a lot of her time reading.
39. Everyone knows that a little white lie is sometimes necessary in a time of crisis.
40. Parents can play a role in preventing childhood obesity.
41. Politicians are trying to influence the public opinion on the topic.
42. It's true that we gain weight when we eat more than we should.
43. One of the advantages I had in getting this success a little later is that I'd seen the mistakes other people had made.
44. China hopes to grow its middle class to more than half of its total population by 2020.
45. It usually takes time to change laws.
46. It was a quiet residential area with many family homes and a few businesses.
47. Do you think there is a chance that John will change his mind?
48. A wide imagination stimulates the thinking process and the ability to be creative.
49. If you take my advice, you'll stop seeing him.
50. Bureaucracy and red tape are the real problems in this company.