

Research on L2 learners' collocational competence and development – a progress report

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The focus of this article is L2 collocational research. Collocations, i.e. frequently recurring two-to-three word syntagmatic units (e.g. *soft noise, tolerance for*) are a subset of formulaic sequences. Mastery of formulaic sequences has been described as a central aspect of communicative competence, enabling the native speaker to process language both fluently and idiomatically and to fulfil basic communicative needs. It has been argued that collocational competence is equally important for L2 learners. Nevertheless, this is a language phenomenon which is said to be acquired late and which is often not mastered very well by even fairly competent L2 language learners. This paper provides an extensive overview of L2 collocational research carried out from 1990 to 2011, presenting the main findings from a large number of studies in an attempt to discuss whether L2 learners do have problems in relation to developing collocational competence, and if so why. The second half of the paper focuses on the different approaches used in collocational research, looking at the specific challenges researchers may be faced with in relation to describing L2 collocational competence, use and development.

1. Introduction

The seminal works by Pawley and Syder (1983), Nattinger and DeCarrico (1992) and Lewis (1993) have drawn language researchers' and teachers' attention to the frequency and importance of formulaic sequences (FSs), i.e. recurring lexical chunks in language use. A range of different types of FSs have been identified: idioms (*if life deals you with lemons make lemonade*), figurative expressions (*to freeze to the spot*), pragmatic formulas (*have a nice day*), discourse markers (*let me see now*), lexicalized sentence stems (*this means that...*), and collocations (*rough crossing, remotely clear*), which are the focus of this article. Mastery of FSs is a central aspect of communicative competence (Barfield & Gyllstad, 2009b; Nation, 2001; Schmitt, 2004; Wood, 2010; Wray, 2002), enabling the native speaker to process language both fluently and idiomatically (Pawley & Syder, 1983) and to fulfil basic communicative needs (Wray, 2002).

Moreover, memory and the ability to chunk language into units play an importance role in language use and learning (Ellis, 2001; 2003; 2005). Hoey (2005) has also argued for the facilitating processing effects in terms of lexical priming for recurrent lexical units.

Mastery of FSs is also important for L2 learners. During the last two decades, we have witnessed an increasing focus in SLA research and in second and foreign language teaching publications both on FSs in general and more specifically on collocations (e.g. Barfield & Gyllstad, 2009a; Granger & Meunier, 2008; Lewis, 2000; Schmitt, 2004; Wood, 2010). The central role of FSs in language knowledge and the benefits of mastering language chunks in relation to fluency and native-like selection are important reasons for focusing on formulaic language, including collocations (see Nation, 2001, pp. 317-318).

Collocations are frequently recurring two-to-three word syntagmatic units which can include both lexical and grammatical words, e.g. verb + noun (*pay tribute*), adjective + noun (*hot spice*), preposition + noun (*on guard*) and adjective + preposition (*immune to*). Many of the studies on collocations have shown that even high-level learners seem to experience problems in relation to using and developing L2 collocational knowledge (e.g. Arnaud & Savignon, 1997; Nesselhauf, 2005; Revier & Henriksen, 2006). Researchers wanting to explore L2 collocational knowledge, use and development may however also be faced with a number of serious challenges (Henriksen & Stenius Stæhr, 2009). The aim of this paper is to provide a progress report on L2 collocational research to see if we can find empirical support for the more general claim that collocations are a problem area for L2 language learners, and to discuss whether researchers are faced with specific challenges when describing L2 learners' collocational development and use.

A number of central issues taken up in the studies will be addressed: how can collocations be defined? Why do L1 and L2 learners need to develop collocational competence? Do L1 and L2 learners differ in their use and development of collocations? Is it problematic if L2 learners' knowledge and use of collocations differ from those of L1 users? Which types of collocations have been studied and which research instruments have been used? Can specific research challenges be identified? The final section will outline some of the more general issues raised by the collocational research reviewed, i.e. issues which should be taken into consideration in future studies.

2. Defining and identifying collocations

A key issue in collocational research is the question of defining and identifying collocations. It is generally agreed that collocations are a subset of FSs. Researchers have proposed various taxonomies which identify, distinguish and

classify different types of FSs, using a number of criteria (e.g. Boers & Lindstromberg, 2009; Koya, 2005). Nesselhauf (2005) discusses in detail different potential defining criteria, and Nation (2001) outlines 10 different scalar criteria: frequency of co-occurrence, adjacency, grammatical connectedness, grammatical structure, grammatical uniqueness, grammatical fossilization, collocational specialization, lexical fossilization, semantic opaqueness and uniqueness of meaning. Many researchers place FSs on a continuum with collocations as an intermediate category (for an alternative classification see Warren, 2005). Nattinger and DeCarrico (1992) outline three distinguishing criteria between idioms, collocations and free combinations: flexibility, compositionality and productivity. Cowie and Howarth (1996) argue that collocations can be distinguished from the other types of FSs by being characterized as institutionalized, memorized, restricted and semantically opaque units. Laufer and Waldman (2011) use the criteria of restricted co-occurrence and relative transparency of meaning. Howarth (1998, p. 24) stands out by focusing on the function of collocations, defining them as “combinations of words with a syntactic function as constituents of sentences (such as noun or prepositional phrases or verb and object constructions).”

An often quoted (e.g. Wray, 2002), but very illustrative example of a collocation is the adjective + noun unit *major catastrophe*. If we look at other possible options for adjectives found in a thesaurus, covering more or less the same semantic content as *major*, the following near-synonyms will often be listed: *big, large, great, huge, substantial, enormous, vast, gigantic, and colossal*. The Oxford collocations dictionary (Deuter, 2002) offers *big, great, and major* as preferred collocates, but none of the other conceivable adjectives. Many of these are potential options on the reference level, but are less appropriate on the pragmatic level of conventionalized, i.e. standard, language use. Other often cited contrastive examples are *strong coffee* vs. *powerful car* and *blonde hair* vs. *light paint*.

Two major traditions have been adopted in relation to identifying collocations (see Barfield & Gyllstad, 2009; Granger & Pacquot, 2008; Gyllstad, 2007; Nesselhauf, 2005). Firstly, the frequency-based view which identifies collocations on the basis of the probability of occurrence of their constituent words, often in large language corpora. Secondly, the phraseological view which is based on a syntactic and semantic analysis of the collocational unit, using some of the criteria mentioned above, such as degree of opacity, syntactic structure and substitutability of word elements. The advantage of using the corpus approach is that it employs objective criteria such as frequency, range and collocational span. However, a data-driven approach focuses on performance and not competence (Howarth, 1998) and disregards central questions of memory storage and language processing. By not including a semantic analysis, this procedure may lead to the identification of recurring lexical bundles that native speakers would not

classify as collocational unit, i.e. the chunks may have little psycholinguistic validity for the language users (e.g. *and the* and *of a*). On the other hand, the more subjective phraseological approach only identifies chunks with clear semantic relations between the constituents, and fails to report the actual frequency of use of the collocations. Some of these collocations may be fairly low in frequency and may therefore not constitute the most suitable targets for L2 learning and teaching (*judicial organ*, *ruggedly handsome*). Many researchers now apply both procedures, initially identifying the frequently occurring combinations in a large corpus through statistical measures (see Schmitt, 2010, p. 124-132 for a detailed presentation) and subsequently including and excluding specific combinations on the basis of an analysis of the word pairs identified. Using the computational approach as a starting point makes it possible to distinguish between collocations of varying frequency of use.

Following Gyllstad (2007), collocations can be viewed as both 1) lexical units, i.e. instances of language use which can be identified in written or spoken production and 2) associative mental links between words in language users' minds. A number of researchers have studied the psycholinguistic validity of FSs (e.g. Columbus, 2010; Durrant, 2008, 2009; Ellis, Simpson-Vlach, & Maynard, 2008), substantiating the fact that the different types of units identified in language data may indeed be seen as independently represented chunks in the mental lexicon. The question of psycholinguistic validation of FSs, including collocations, is important in relation to establishing useful inventories for the learning and teaching of collocations (see e.g. Durrant, 2009).

So far, it has been assumed that collocations are arbitrary structures, i.e. conventionalized combinatory options preferred by native speakers. However, as pointed out by Boers, Eyckmans, and Stengers (2006) and Boers and Lindstromberg (2009) this is not the case for all FSs, including collocations; in other words some collocations are motivated rather than arbitrary. Some collocations may be semantically motivated and can be traced back to specific etymological sources (e.g. *weeding out*), whereas others are formally motivated e.g. based on alliteration and assonance (*tell a tale*, *say a prayer*, *seek + solace*, *solitude*, *a solution* and *support*, *do + damage*, *a degree* and *a doctorate*). Arbitrary collocations can primarily be identified on the basis of frequency of occurrence in the language input, whereas the motivated collocations can also be identified on the basis of semantic or formal criteria via analysis (see also Walker, 2011). Based on a number of experiments (see again Boers et al., 2006 for an overview), Boers and his colleagues have argued that this difference between arbitrary and motivated collocations may influence the learnability of different types of collocations and thus the teaching approaches to be adopted. As discussed, one useful pathway to acquiring arbitrary collocations may be via rote learning approaches, whereas the motivated collocations may be learnt through the use of insightful, analytic

learning approaches, thus enabling L2 learners to benefit from the increased cognitive involvement connected with the processing of these collocations.

Different categories of FSs have been identified. Fewer attempts have been made to classify collocations systematically into different subcategories. As we have seen, some collocations are grammatical (sometimes referred to as 'colligations', see Gyllstad, 2007, p. 25), others lexical. Some collocations may differ in their degree of fixedness, transparency and arbitrariness. The degree of semantic transparency is a central variable used to distinguish between different types of collocations. If the learner knows the meaning of the two lexical items included, the collocation *major catastrophe* is fully transparent, and can therefore be understood through a process of decoding the two lexical elements in their literal sense. This is also the case with a verb + noun collocation like *take the money*. Other collocations are less straightforward, being either semi-transparent (*take a course*) or non-transparent (*take sides*). The meaning of the semi-transparent collocation is not decoded as easily as the literal counterpart, but is on the other hand not likely to be as salient as the non-transparent collocation which is idiomatic and cannot be understood on the basis of its constituents. Consequently, it has been argued that primarily the semi-transparent collocations will cause problems for language learners and should therefore be the main focus of L2 research and teaching (Nesselhauf, 2003; 2005). Many FSs have specific pragmatic functions as speech acts, discourse markers or conversational up-takers, playing an important role in social interaction. However this is not the case for most collocations which are composite units (Howarth, 1998) fulfilling a referential function (e.g. *major catastrophe, tell a tale*) as syntactic phrases. Some of the collocations are semantically motivated; others are formally motivated, whereas others again seem to be arbitrary combinations which have become the preferred lexical choice. Finally, many collocations are low in frequency; especially those that have high mutual semantic coherence (e.g. *preconceived notions*). All of these aspects may have an influence on the frequency, salience and learnability of the individual collocations.

3. L1 and L2 language users' need for collocational competence

It has been widely argued (e.g. Boers et al., 2006; Boers & Lindstromberg, 2009; Durrant, 2008; Lorenz, 1999) that collocational competence is important for language production and reception, enabling both the L1 and L2 language user: 1) to make idiomatic choices and come across as native-like; 2) to process language fluently under real-time conditions (Columbus, 2010; Ellis et al., 2008); 3) to establish 'islands of reliability' (Dechert, 1983; Raupach, 1984) which enable the language user to channel cognitive energy into more creative

production; 4) to disambiguate meaning of polysemous words, e.g. the verb *commit* in the following collocational contexts: *commit a crime*, *commit oneself*, *commit to memory*; and 5) to understand connotational meaning (what Sinclair, 2004 has described as semantic prosody), e.g. the fact that the verb *cause* is often associated with negative connotations as in *cause an accident*.

It has also been pointed out that FSs fulfil basic communicative and social needs (Wray, 2002). Since many collocations are primarily referential units and therefore do not have the same sociocultural function as many of the pragmatic phrases discussed by Nattinger and DeCarrico (1992), this may have an impact on the saliency and frequency of occurrence of many collocations, as well as L2 learners' motivation to acquire collocations compared to the more pragmatically oriented FSs. However, as argued by Warren (2005), collocations should be viewed as multi-word lexical items with form-meaning pairings which are associated with specific situations or phenomena and thus can be seen as lexical items that fulfil important communicative functions.

Through extensive exposure to L1 input in various contexts and co-texts, native speakers will have developed strong associative links (Ellis, 2001; 2003; 2005) between constituents in preferred collocations. In the on-going process of L1 acquisition, the native speaker will also have acquired knowledge of the meaning of the collocation and knowledge of the use restrictions of a particular collocation. As will be discussed below, the fact that the L2 learner does not have the same repeated and extended exposure to L1 input may, however, have important implications for L2 development and use of collocations.

4. Main findings from the L2 studies

The results from the L2 studies reviewed here will be discussed in relation to the four main questions mentioned in the introduction. Due to the number of studies on collocations, this overview is, however, not exhaustive. For a discussion of some of the studies not included here see Koya (2005) (Japanese studies), Pei (2008) (Chinese studies), Fan (2009) and Laufer and Waldman (2011). Finally, it has not been possible to include newer articles published in 2012.

Two types of collocations have been the focus of investigation: lexical collocations, i.e. possible syntagmatic combinations between nouns, verbs, adjectives and adverbs (e.g. *foul play*, *take sides*, *truly happy*) and grammatical collocations, i.e. collocations which include prepositions (e.g. *hand over to*, *present with*, *important for*).

Many researchers have focused on lexical verb+noun collocations (e.g. Bahns & Eldaw, 1993; Barfield, 2003; Bonk, 2001; Chan & Liou, 2005; Eyckmans, 2009; Gyllstad, 2007; Howarth, 1996; Koya, 2005; Laufer &

Girsai, 2008; Laufer & Waldman, 2011; Peters, 2009; Revier & Henriksen, 2006), often looking at the restricted, semi-transparent collocations which are hypothesized to pose a special challenge for language learners (e.g. Nesselhauf, 2003, 2005; Revier, 2009). Another focus area has been the lexical adjective+noun combination (e.g. Jaén, 2007; Li & Schmitt, 2010; Peters, 2009; Siyanova & Schmitt, 2008). Some researchers delimit their scope of investigation to one type of collocation; others include two types, whereas others include a range of collocational structures in their studies (e.g. Barfield, 2009; Fan, 2009; Fayez-Hussein, 1990; Gitzaki, 1999; Hoffman & Lehmann, 2000; Groom, 2009; Keshavarz & Salimi, 2007; Prentice, 2010; Skrzypek, 2009; Ying & O'Neill, 2009).

4.1. Do native and non-native speakers differ in their use of collocations?

Many of the studies compare the productive use of collocations by native and non-native speakers (e.g. Bahns & Eldaw, 1993; Biskup, 1992; Fan, 2009; Farghal & Obiedat, 1995; Granger, 1998; Howarth, 1996, 1998; Lorenz, 1999; Nesselhauf, 2003). Not surprisingly, significant differences are found between the two groups (see Fan, 2009 and Laufer & Waldman, 2011 for an extensive overview of these studies). The NNSs often use fewer collocations (Laufer & Waldman, 2011) and a more restricted range of collocates (Fan, 2009), under-using types found in L1 data (Granger, 1998) and overusing other types (Lorenz, 1999). Fan also reports L1 use of a range of informal collocations, types of collocations not found in the L2 data. Other studies, however, document elements of native-like use, especially of highly frequent lexical units (e.g. Jiang, 2009). For example, 45% of the learner collocations analysed by Siyanova and Schmitt (2008) were central, appropriate collocations; a figure which matched the L1 data. These findings could be explained by the fact that we are dealing with high level learners' command of frequent and strongly associated word combinations. Generally, however, the studies tend to show that both second and foreign language learners do differ in their productive use of collocations compared to native speakers, both quantitatively in terms of the number and types of collocations used, as well as qualitatively in terms of error-free use. This is not surprising, however, and matches the general findings for other aspects of SLA, including the use of single-word lexical items.

Looking more closely at the quality of the collocations produced, infelicitous or erroneous use of collocational structures in L2 language use has been found (e.g. Laufer & Waldman, 2011; Nesselhauf, 2005; see again Pei, 2008 for a review of the Chinese studies). Many studies have reported the influence of L1 transfer on L2 collocational use (e.g. Bahns & Eldaw, 1993; Biskup, 1992; Fan, 2009; Granger, 1998; Jiang, 2009; Nesselhauf, 2003), showing that many

L2 learners tend to rely on using L1 translation equivalents (congruent collocations). Wang and Shaw (2008), however, have found that the tendency to transfer is dependent on the relative closeness perceived between the informants' NL and TL, and that other intralingual factors may also influence collocational use, a result which mirrors research findings on transfer for other aspects of SLA. Using acceptability judgement tests, Leśniewska and Witalisz (2007), could not find a clear indication of L1 influence for their advanced learners, i.e. the informants did not seem to reject or accept collocations on the basis of L1 congruence. It is argued that more advanced L2 learners may be able to function independently of the L1. The influence of the L1 will be taken up again below in connection with a discussion of the development and use of L2 collocations. L2 learners also underuse some collocations and seem to overuse other collocations compared to L1 users (e.g. Jiang, 2009), using the same collocations repeatedly in their production instead of choosing between various potential options (e.g. Lorenz, 1999). The favoured constructions could, in line with Hasselgren (1994), be described as 'collocational teddy bears'. In relation to underuse, Farghal and Obiedat (1995) found that L2 learners tend to use lexical simplification strategies, e.g. synonymy.

The study by Koya (2005) is one of the few studies which include both a receptive and productive test of collocational knowledge, documenting that the learners' receptive knowledge is broader than their productive knowledge. Laufer and Waldman (2011) also stress that L2 learners seem to experience problems in using collocations productively, not in their receptive understanding of the collocations. Again, these results are not surprising, and match the general SLA findings for other areas of language use, e.g. single-word vocabulary use.

4.2. Is it problematic if L2 learners' knowledge and use of collocations differ from those of L1 users?

Some of the studies have investigated the relationship between collocational knowledge and general language skills, reporting correlations between collocations and general proficiency as well as writing skills (Al-Zahrani, 1998) and between L2 learners' performance on collocational tests and cloze tests assessing general language proficiency (Keshavarz & Salimi, 2007). Similar results are found in some of the Chinese studies (Pei, 2008). Contrary to the results reported by Bahns and Eldaw (1993) and Koya (2005), Gyllstad (2007) found a correlation with vocabulary size. All these studies show that L2 learners' collocational knowledge is in some way related to language proficiency. One could therefore assume that lack of collocational knowledge and deviating use of collocations may be problematic for L2 learners. A correlation is, however, not the

same as a causal relation and a number of other important factors will also influence L2 learners' language performance.

As shown, L2 collocational use does deviate from L1 use, both quantitatively and qualitatively. Wray (2002, p. 74) has stressed the need of L2 learners to master FSs in order to identify with the target language community. However, if we view L2 use from a lingua franca perspective, native-like attainment and selection may not necessarily be the goal for L2 development compared for example to communicative efficiency. Howarth (1998) points out that infelicitous collocational choices made by L2 learners should in fact be viewed more positively as instances of risk-taking behaviour, arguing that these are indications that the interlanguage users are employing various communication strategies (e.g. experimentation, transfer, analogy and repetition) in order to cope communicatively.

The use of FSs, including collocations, is very genre-specific. Mastery of collocations may be a hallmark of certain types of academic writing which emphasize clarity, precision and lack of ambiguity (Howarth, 1998). If, as argued, collocations function as central composite syntactic units for clause level production, lack of collocational knowledge may be expected to have a negative effect on L2 performance not just productively for the L2 learner, but also receptively for the receiver, if central referential units are misunderstood. Apart from leading to unfortunate misunderstandings, advanced non-native speakers' collocational deviations may at least signal a lack of academic expertise. Moreover, the study by Millar (2011) has documented that malformed L2 collocations, both in terms of lexical misselection of a constituent and misformation of the collocation, lead to an increased processing burden for native speakers in terms of slower reading speed. But again, some of the same receptive processing effects could also be hypothesized for other aspects of language use, e.g. heavily accented L2 speech or word stress errors.

Most researchers working with FSs have argued that language users draw on a large inventory of ready-made FSs to supplement creative language production (e.g. Ellis et al., 2008; Erman & Warren, 2000; Hoey, 2005; Pawley & Syder, 1983) and that this facilitates language processing. Looking at the processing advantages of FSs for both native and non-native speakers, the findings of the earlier experimental studies by Schmitt and his colleagues (Schmitt Grandage, & Adolphs, 2004; Schmitt & Underwood, 2004; Underwood, Schmitt, & Galpin, 2004) are, however, very mixed. In a later study, Conklin and Schmitt (2008) did find significant processing advantages for FSs in literal as well as non-literal use for both native and non-native speakers. As discussed (Columbus, 2010; Weinert, 2010), these mixed results may be due to the methods employed or the types of FSs tested, influenced by factors such as frequency, familiarity, recency and context – aspects which may be expected to play a significant role in a usage-based account of language use and language acquisi-

tion (Weinert, 2010, p. 11). None of these earlier processing studies focuses directly on collocations, but the recent study by Columbus (2010), which included restricted collocations, reports faster processing for all three types of FSs tested over compositional control sentences. The evidence of certain processing advantages of FSs – including collocations – seems to be mounting.

4.3. What characterizes L2 collocational development?

Many of the studies document that collocational competence develops very slowly and unevenly (e.g. Groom, 2009; Laufer & Waldman, 2011). Even so-called ‘very advanced learners’ who are fairly competent in other aspects of English (e.g. morpho-syntax) often experience problems in using appropriate collocations (e.g. Arnaud & Savignon, 1997; Biskup, 1992; Farghal & Obiedat, 1995; Laufer & Waldman, 2011). This may point to the need to redefine the notion of ‘advanced learners’, if many high-level learners do indeed fail to master such prevalent and crucial aspects of language use.

As reported by Pei (2008), a number of the Chinese studies found an increase in use of collocations from beginners to more advanced learners. Gitzaki (1999), Bonk (2001), Gyllstad (2007) and Revier (2009) also reported an increase in collocational development across proficiency levels, whereas Bahns and Eldaw (1993) failed to establish a difference across learner groups. Laufer and Waldman (2011), who looked at collocational use across 3 proficiency levels, found some development for their advanced learners, but even these learners produced deviant collocations compared to L1 use. The advanced learners who used more collocations than the other learner groups were also inclined to produce more errors. Again, these results are in line with the findings for other aspects of L2 development. Moreover, some of the studies show differential development across various types of collocations, which emphasizes the need to look more specifically at the categories (e.g. lexical and grammatical) or even subcategories of collocations studied, as well as the relative frequency of the collocations targeted.

Gyllstad (2007) argues that a period of 4-6 months could not give his students of English at university level sufficient TL exposure which could lead to a measurable increase in the students’ collocational knowledge. Nesselhauf (2003; 2005) also found that increased exposure to the L2 only seemed to improve L2 collocational knowledge slightly. The group results from the Li and Schmitt study (2010) also showed little increase over the 12-month period studied. These findings have, however, been contested by the research carried out by Groom (2009) who argues that the results are much dependent on the operationalization of the construct of collocational knowledge and the way the data analysis is handled. Nesselhauf analysed her data on the basis of a phraseologi-

cal approach to collocations, whereas Groom applied a more frequency-based approach, using two frequency-based measures of collocations in his analysis. Groom (2009) found that his intermediate and advanced data contained more 'lexical bundles' than the L1 data analysed. Normally we would expect native speakers to outperform L2 learners, so this seems to be a counterintuitive finding. However, as argued (Groom, 2009), L1 users have a larger repertoire of options to choose from and therefore show more lexical variation in their choice of collocations. Consequently, the L1 data contains fewer instances of the same lexical units. Groom (2009) hypothesises that fewer instances of the same constructions found in the L2 data over time may therefore in fact be an indication of collocational development, i.e. learning could be described as a downwards adjustment to native-like use.

Yamashita and Jiang (2010) and Wolter and Gyllstad (2011) have looked more closely at the role of the L1 for collocational development and use. Yamashita and Jiang (2010) used an acceptability judgement task to investigate L1 influence on collocational development for both second and foreign language learners. Not surprisingly, the second language learners scored better than the foreign language learners. Comparing both error rate scores and reaction time scores for collocations with L1 equivalents (congruent collocations) and without L1 equivalents (non-congruent collocations), they found that the foreign language learners did better on both scores for the congruent collocations, whereas the second language learners only did significantly better on the error rate scores for the congruent collocations. This might suggest that both the L1 and the amount of exposure influence L2 collocational development. Wolter and Gyllstad (2011) have also looked at the influence of L1 intralexical knowledge on the creation of collocational links in the L2 mental lexicon. Using priming tasks and a receptive test of collocational knowledge (the COLLMATCH test, see Gyllstad, 2007), it was found that collocations with L1-L2 equivalents were processed much faster than non-congruent collocations. Moreover, their informants also scored better on the L1 equivalents in the receptive test. Both results seem to confirm that links in the mental lexicon between the L1 and L2 may play an important role in L2 collocational development and use.

4.4. Why do L2 learners have problems in relation to using and developing their collocational competence?

It is an underlying assumption in the research literature that the L2 learner - when developing collocational competence - needs to go through the same developmental processes described in most single-word vocabulary acquisition research. This entails that the learner must be able to 1) recognize collocations, i.e. notice and delineate them in the input; 2) understand the meaning and func-

tion of the collocations, i.e. create form-meaning and form-function mappings; 3) understand collocation use restrictions, i.e. expand knowledge of use; 4) choose between different collocational options, i.e. distinguish between collocations in the lexical network; and 5) develop collocational fluency in order to access the collocation with ease. In relation to all these aspects, collocational competence must develop both receptively and productively. The development of collocational competence is thus, like single-word learning, a very complex and cumulative process, demanding enormous amounts of varied language exposure and rich conditions for consolidation through repetition and language use.

Different reasons for why even fairly 'advanced' L2 learners may fail to develop sufficient collocational competence have been put forward. Many of these suggestions are, however, tentative explanations offered by the researchers without direct empirical support. Firstly, the conditions afforded for L2 language development, especially in FLA situations, may not be beneficial for successful L2 collocational development to take place, primarily because L2 learners do not get sufficient exposure in varied contexts and co-texts to be able to recognize and process collocations as recurring lexical units (Durrant & Schmitt, 2010). Moreover, collocations are less frequent than many single-word lexical items that make up the collocation. Consequently, the process of forging and strengthening associative links between the constituents in the collocation by repeated priming will be severely hampered, i.e. the initial traces of associative learning may be lost if the links are not strengthened through repeated exposure (Durrant & Schmitt, 2010).

Secondly, it has been claimed (e.g. Barfield, 2009; Gyllstad, 2007; Wray, 2002) that L2 learners tend to focus on individual words – both receptively and productively, i.e. apply a word-focused approach, and therefore fail to notice recurring chunks in the input. Due to a range of social and cognitive factors, L2 learners do not process the collocations holistically, i.e. they do not draw on a bank of ready-made lexicalized routines like the L1 language user. Instead they rely more on the open-choice rather than the idiom principle (Erman & Warren, 2000; Sinclair, 1991), using language creativity as a starting point for language production, i.e. constructing collocations on the basis of the semantic reference of the individual lexical items, reassembling the collocational unit when the communicative need arises (see Wray, 2002, pp. 205-213). This view has, however, been contested by Durrant and Schmitt (2010), who have shown that advanced L2 learners acquire collocations through an implicit process of associative learning similar to the holistic approach adopted by L1 learners. They argue that L2 learners' problems with acquiring collocations are not due to a non-formulaic approach to learning, but are most likely a product of lack of sufficient L1 exposure and thus a failure to create associative links between the constituents of the collocations.

Thirdly, many literal collocations may not cause comprehension problems, if the learners know the meaning of the individual components of the collocation (Warren, 2005). However, collocations differ in their semantic transparency and may therefore be more or less comprehensible for the L2 learner. Moreover, some collocations are not salient and therefore not noticed as readily as other units by the L2 learner. Finally, we do not know if separate lexical entries are established for collocations - and if so, how these differ from and are associated to the lexical entries for individual lexical items that make up the collocation. It is also not clear whether - or how - this may psycholinguistically affect access routes to the collocations. As shown, many L2 learners produce collocations through a process of L1 transfer. We do not, as yet, know whether the same process of going via the L1 lexical entry takes place when learners decode collocations in their L2 and how this may affect L2 learners' comprehension of collocations (see Wolter & Gyllstad, 2011).

L2 learners may also lack awareness of collocations as lexical units (Ying & O'Neill, 2009) and therefore fail to notice them in the input. Moreover, some L2 learners do not focus on acquiring depth of knowledge of already known words, but they concentrate on learning new words (Ying & O'Neill, 2009), i.e. they see the collecting of new single words as the hallmark of good vocabulary development. Finally, due to the fact that many collocations primarily have a referential function, learners may not be as motivated to notice and acquire collocations compared to the FSs with a more clear pragmatic and thus immediate social and interpersonal function.

As pointed out by Fan (2009), the problems L2 learners experience with collocations in production may also be directly related to the problems the L2 learners have in accessing their general L2 grammatical and lexical knowledge. Fan's learners are clearly hampered by the complexity of syntax and lexis in the written on-line elicitation task used and thus experience difficulties in producing collocations. Fan (2009) argues that the studies which investigate collocations in isolation fail to show this production effect due to the elicitation procedures used.

Viewed from a formal teaching perspective, some of the problems L2 learners experience may be teaching induced. Many teachers tend to focus on individual words (e.g. in glosses and tasks) and often lack useful materials for raising learners' awareness of collocations. Koya (2005) compared the collocations included in language teaching textbooks with collocations in English corpora and found that target use collocations are underrepresented in the textbooks, and the ones included occur with relatively low frequencies. Moreover, if collocations are targeted in the teaching programme, these are often presented in isolation due to the decontextualized approaches used. Finally, Laufer and Waldman (2011) hypothesize that the problems which even advanced L2 learn-

ers experience with collocations may in fact be caused by the use of communicative approaches to teaching, arguing that a more form-focused approach to teaching should be adopted.

Some studies have looked at the effect of teaching on L2 learners' collocational knowledge, focusing specifically on awareness raising activities. The Chinese studies on teaching reported by Pei (2008) show positive effects of teaching collocations to L2 learners. Eyckmans (2009) found that noticing activities can improve learners' awareness of syntagmatic links. This result has, however, been contested in a more recent study of chunk learning (Stengers et al., 2010) which showed no positive effect of teacher-led noticing activities compared to the control groups. Ying and O'Neill (2009), Peters (2009) and Barfield (2009) also describe different approaches to collocations in language teaching, emphasizing the need to raise L2 learners' awareness of collocations, for example of the contrastive differences between collocations and the need to draw learners' attention to the collocations with no direct translation equivalence between the L1 and the L2 (see also Bahns, 1993). Laufer and Girsai (2008) looked at the benefits of form-focused instruction, stressing the need to adopt a teaching approach to collocations based on contrastive analysis and the use of translation. Webb and Kagimoto (2011) investigated the learning effect of the number of collocates presented with the node word, the position of the node word in relation to the collocate and the presentation of synonymous collocations together in the same teaching set. They found that increasing the number of nodes for the same collocate benefited learning, whereas the presentation of synonymous collocations affected learning negatively. The relative position of the collocational constituents did not seem to have an effect. Based on a corpus study focusing on a number of different semantic and pragmatic features of collocations, Walker (2011) has suggested that the use of concordance data may support learning, making the process more meaningful and memorable to the learners. In a teaching study, Chan and Liou (2005) did find positive effects of using a concordancing approach to the teaching of collocations. Handl (2009) has also raised the issue of presentation of collocations in learner dictionaries in order to help learners identify the collocations they need. However, L2 learners often have no knowledge of collocation dictionaries or other potential resources for working with collocations independently.

5. Research Approaches to Investigating Collocational Competence and Development

Let us now shift the focus to different research approaches employed in the studies reviewed and discuss the challenges researchers are faced with when investigating L2 learners' collocational knowledge, use and development. An

overview is given in table 1. Again, the list is not exhaustive and does not include some of the studies reviewed by Pei (2008) and Koya (2005) and some of the studies mentioned in Fan (2009).

Table 1. Overview of the research methods used

Methodologies	Studies
<i>Written and oral on-line tasks</i>	
Written corpora, essays	Chi et al., 1994; Howarth, 1998; Granger, 1998; Gitsaki, 1999; Lorenz, 1999; Kazubski, 2000; Nesselhauf, 2003; Revier & Henriksen, 2006; Wang & Shaw, 2008; Siyanova & Schmitt, 2008; Bell, 2009; Durrant & Schmitt, 2009; Fan, 2009; Prentice, 2010; Li & Schmitt, 2010; Laufer & Waldman, 2011
Oral production	Prentice, 2010
<i>Off-line elicitation</i>	
Written translation tasks from L1 to L2	Biskup, 1992; Bahns & Eldaw, 1993; Farghal & Obiedat, 1995; Gitsaki, 1999; Koya, 2005; Webb & Kagimoto, 2011
Gap fill tasks: Cloze tests and fill-in-the-blank tests	Bahns & Eldaw, 1993; Farghal & Obiedat, 1995; Herbst, 1996; Arnaud & Savignon, 1997; Gitsaki, 1999; Shei, 1999; Hoffman & Lehman, 2000; Bonk, 2001; Durrant, 2008; Durrant & Schmitt, 2010; Revier, 2009; Prentice, 2010
Multiple choice tasks, matching and judgement	Fayez-Hussein, 1990; Granger, 1998; Bonk, 2001; Mochizuki, 2002; Honsun, 2005; Gyllstad, 2007; Leśniewska & Witalisz, 2007; Siyanova & Schmitt, 2008
Recognition task	Barfield, 2003; Gyllstad, 2007
Association task	Barfield, 2009; Fitzpatrick, 2012
<i>On-line reaction tasks</i>	
Eye movement task	Underwood et al., 2004; Columbus, 2010
Self-paced reading	Conklin & Schmitt, 2008; Millar, 2011
Recognition task with reaction time	Siyanova & Schmitt, 2008; Yamashita & Jiang, 2010; Wolter & Gyllstad, 2011

Three general types of elicitation tools have been used (Siyanova & Schmitt, 2008, p. 1) written on-line tasks, often in the form of essays produced by both NSs and NNSs and often collected in large data banks; 2) off-line elicitation tools in the form of productive translation tasks, cloze format tasks and association tasks as well as receptive multiple-choice and judgement tasks; 3) on-line reaction tasks

tapping into the processing of collocations in language use. As discussed by Fan (2009), especially the on-line productive tasks are very demanding, forcing the informants to concentrate on syntactic and lexical processing at the same time. The use of naturally generated on-line tasks may therefore have an impact on the findings of these studies compared to other elicitation methods.

The variety of study aims and approaches mirrors the research diversity found in general single-word vocabulary acquisition research. Not surprisingly, the use of different research instruments is related to the different research aims addressed in the studies. The different focus areas of the studies and the lack of homogeneity in the elicitation tools used, however, make comparisons across the research field difficult, complicating attempts to make any valid generalizations about L2 learners' collocational knowledge, use and development.

5.1. Research challenges

As pointed out by Gyllstad (2007) and Granger (2009), a major challenge which makes comparisons across studies difficult is related to the different definitions of the construct of collocational knowledge. Whether a frequency-based or a phraseological view is used to identify collocations clearly leads to different types of units targeted and may be the cause of the varying results reported.

Secondly, most studies focus on lexical verb + noun and adjective + noun collocations. As mentioned above, the various types of collocations may differ in relation to frequency, saliency and learnability. As shown by Gitsaki (1999), lexical collocations may be acquired before grammatical collocations. When looking at the studies reviewed, there is, however, often a lack of control in the selection of the collocations targeted, both in relation to frequency, the degree of mutual semantic association between the constituents, the degree of restrictiveness and opacity, and as regards the length and directionality of the unit. Moreover, few studies distinguish between motivated and non-motivated collocations or look at the mutual translatability of the collocations between the informants' native and target language or the distance between the languages studied (see e.g. Wolter & Gyllstad, 2011). All of these factors may, as shown, influence the salience and learnability of the collocations and can therefore have an influence on the results found in the various studies.

Thirdly, it is not always clearly stated which aspect of collocational competence and which aspect of the developmental process is in focus, i.e. whether the research intends to tap into the initial process of recognition of the collocational unit, the process of mapping meaning or function on to form, expansion of knowledge of use restrictions of the unit, or the development of receptive and productive fluency. As argued by Laufer and Waldman (2011) L2 learners may primarily be experiencing problems in production of collocations.

Moreover, many of the researchers employ elicitation procedures developed for their specific study, using task types and testing instruments that have not been validated or piloted extensively. Some researchers have therefore carried out extensive work on developing receptive (Eyckmans, 2009: DISCO; Gyllstad, 2007: COLLEX and COLLMATCH) and productive (Revier, 2009: CONTRIX) standardized tools for measuring collocational knowledge, which will make comparison across studies with the same research aims a more attainable goal in the future.

Furthermore, many of the studies are descriptive and lack a developmental focus, looking at the product of learning rather than the process of acquisition. Most of the developmental studies are cross-sectional, and only very few longitudinal studies that follow the same learners have been conducted (e.g. Barfield, 2009; Bell, 2009; Fitzpatrick, 2012; Li & Schmitt, 2010). Finally, only a few studies on instructional effects have been carried out (Chan & Liou, 2005; Durrant, 2008; Laufer & Girsai, 2008; Stengers et al., 2010; Webb & Kagimoto, 2011; see also Pei, 2008).

Most of the studies have based their research on one elicitation procedure, and only a few studies have included two measures. The paper by Siyanova and Schmitt (2008) employs a multi-study approach, using three different elicitation techniques to explore L2 learners' collocational knowledge from different perspectives – focusing on L2 learners' productive use of collocations, their intuitions about collocational restrictions and their receptive processing of collocations. The research programme is unique in that it focuses on three different areas of collocational competence, studying both L1 and L2 informants. Unfortunately, different informant populations are used in the three sub-studies. So even if the study uses a triangulation approach, we have no way of knowing what kind of relation could be found between the three competence areas for the same informant.

Research on collocations in L1 has, not surprisingly, shown differences in collocational use across spoken and written language. Many of the L2 studies reported here, however, focus on written data and many studies examine, as discussed above, collocational knowledge in isolation, using different types of decontextualized, experimental techniques.

As shown above, research on L2 collocation use and development has increased tremendously during the last two decades. Many of the studies have empirically documented some of the problems L2 learners experience in relation to acquiring and using collocation competence. This short progress report has, however, also highlighted some of the conflicting results found. Even if many of the studies employ a quantitative design, some of these do not analyse very large amounts of data, only including small samples of collocations. Moreover, researchers focus on a few collocations or specific collocational types.

Much of the research conducted is exploratory, and researchers fail to use validated, standardized elicitation procedures. Some of the newer studies are, however, aimed at developing and validating instruments for measuring collocational knowledge. Finally, many of the studies focus on the state of the learners' collocation knowledge and use, and the studies that look at collocation development are primarily cross-sectional.

6. The Need for Following the Development of Individual Learners over Time

Many of the collocational studies are based on L1 and L2 data extracted from large corpora. As pointed out by Laufer and Waldman (2011), the advantage of this approach is that large amounts of data can be examined across a variety of data sources and informant groups (across L2 proficiency levels or L1 vs. L2 data) with the use of concordance software. The disadvantage is, however, that only very few studies are longitudinal, tracing the same learners over time with the same tasks. Consequently, we often do not follow the use and development of collocation knowledge from the perspective of the individual learner.

Granger (2009, p. 65) argues that we “need to abandon the notion of the generic L2 learner and distinguish between different types of L2 learners and L2 learning situations”, stressing the need to look at variables that influence learner language such as the learner's L1 (e.g. Wolter & Gyllstad, 2011), degree of exposure (e.g. Groom, 2009) or proficiency level, as well as factors pertaining to the task such as medium, genre, or task type (e.g. Forsberg & Fant, 2010). Most of these factors have tended to be neglected in most L2 learner corpus research.

The need to study language development from a usage-based perspective as it unfolds for the individual learner, the need to take contextual factors into consideration and the need to allow for inter-learner and intra-learner variation in the results reported, echoes some of the very central assumptions about language learning outlined by Larsen-Freeman (1997; 2006) in her discussion of complex, dynamic non-linear models of language development. According to Larsen-Freeman, we need to abandon the ‘developmental ladder metaphor’ which views language development as a linear process which proceeds more or less neatly through a series of stages towards native-like attainment. As argued, the language system adapts to the changing contexts the learners are exposed to. Adaptation and fluctuation of the system dependent on the language use conditions of, and the choices made by, the individual learner should therefore be expected. Moreover, development in one subsystem of language may support or compete with development in another subsystem. Because language is viewed both as a cognitive and social resource embedded in a usage-based context, Larsen-Freeman argues that the L2 learn-

ers' identities, goals and affective states will influence their language use and consequently their language development.

The conflicting results found in some of the collocation studies reported earlier as well as the failure to report development over time in some of the studies may, as is often pointed out by the researchers themselves, be due to differences in the operationalization of the construct of collocational knowledge, the collocations targeted or the lack of sensitivity of the elicitation tools employed. One could, perhaps, also hypothesize that the results are an effect of the quantitative approach adopted and the reliance on learner corpus data in many of the studies. One could speculate whether a research approach which focuses more on individual learners and their differential development should be adopted to complement the quantitative approaches employed. Some learners for example choose to focus on learning new vocabulary items instead of developing depth of knowledge of already acquired lexical items (Ying & O'Neill, 2009). The orientation of learning resources in this way will most likely have a negative effect on the learner's acquisition of collocations, i.e. the competition between these two lexical 'subsystems' will be detrimental to the development of collocational competence.

L1 language learners develop collocational competence through extended exposure to their native language in varying contexts and co-texts. Repeated exposures create and strengthen associative links between the collocational constituents in the language learner's memory organisation, priming (Hoey, 2005) the learner to recognize and use the collocations as holistic units. Repeated exposure to collocations in varying contexts and co-texts is also a prerequisite for developing collocational competence for the L2 learner.

Words and collocations are by nature carriers of semantic meaning. If we exclude the most frequent 2000-3000 word families with very high text coverage and range, most lower-frequency words are related to specific topics, situations, genres, contexts and co-texts. Technical and special purpose contexts and language materials are classic examples of input rich in specialized vocabulary. The nature of the L2 language learners' contact with the target language will naturally influence the lexical items the learner encounters. For FL learners the selection of lexical items is most often under the control of the teacher and dependent on the materials introduced in the language classroom and highly limited by the time allotted to language learning. Additional, self-generated L2 input will often be dependent on the learners' personal interests and the special context situations the learners choose to engage in. We all have stories of learners who have a personal interest for example in internet role plays or computer games and therefore have an exceptionally well-developed vocabulary within these specialized areas. As pointed out by Nation (2001, p. 20) "One person's technical vocabulary is another person's low-frequency word". Hoey (2005, p.

14) also stresses the uniqueness of the individual learner's input and the problems of documenting the learning process.

All these observations are in themselves fairly trivial, but if we link the role of context and co-text in L2 input to the points raised by Larsen-Freeman (1997; 2006) in relation to how the individual language learners adapt and orient themselves to the communicative situations and the needs they experience, the question of frequency becomes extremely crucial. If we look at the frequency of the individual collocations in language input, it is clear that a collocation like *major catastrophe* is less frequent than the two words that make up the collocational unit. Or phrased differently, the likelihood of learners encountering the collocation repeatedly in input is smaller than encountering the individual words and is highly dependent on the type of input the learner encounters. In a small exploratory case study, Dörnyei, Durow, and Zahran (2004) investigated the effect of individual learner differences on the acquisition of FSs. Not surprisingly, they found that the individual learner's motivation, active interaction and social adaptation to the second language situation highly affected the learning outcome. This result might explain why a larger study of the acquisition of FSs which was based on whole-sample statistics failed to produce significant results.

Inspired by Larsen-Freeman's approach, Bell (2009) carried out a longitudinal study, describing "the messy little details" of lexical development which become apparent when looking more closely at one individual learner. As the case study shows, the data reveals instances of fluctuation and variability in the learner's lexical development similar to the scouting and trailing behaviour described by Larsen-Freeman. The learning path can be characterized as showing jagged development and fluctuating patterns of use with structures moving into prominence and/or disappearing. Moreover, Bell identifies the use of intermediate structures and results of competing sub-systems. The longitudinal studies by Barfield (2009) and Li and Schmitt (2010) are examples of case studies which follow individual learners' development of collocation knowledge over time. The in-depth analysis of the individual learners enables Barfield (2009) to describe how different learners approach the learning task, giving us interesting insights into how learners handle the challenges they meet and how they choose to organize their learning in relation to the contexts and needs they experience. Li and Schmitt (2010) also document in detail the inter- and intra-learner variation in the development of the four informants followed over a 12-month learning period. In a more recent study, Fitzpatrick (2012) tracks the changes in vocabulary knowledge of a single subject in a study abroad context by the use of word association data collected six times over an 8-month period. One of the focus areas in the study are the syntagmatic responses produced which give an insight into the developing productive collocational knowledge of the informant.

It is more than likely that collocational acquisition is much more idiosync-

cratic in nature and dependent on specific language use situations than single-word acquisition and therefore calls for more qualitative, case-study, longitudinal research approaches like the studies outlined above. Larsen-Freeman argues for the need to use both macro- and micro-level perspectives in SLA research in order to trace both the larger cross-learner patterns of interlanguage development and the developmental paths taken by the individual learner. One could argue that complementary research methodologies may be a fruitful path to pursue in future collocation research.

7. Rounding off

This research overview has shown that native and non-native speakers do differ in their use of collocations both quantitatively and qualitatively, and this holds for advanced L2 learners as well. It has been found that malformed L2 collocations may have negative effects on the processing speed for the recipients. Collocations, however, primarily fulfil a referential function and lack of collocational knowledge therefore might not lead to potential pragmatic failure in the same way, i.e. have the same social and interpersonal consequences as infelicitous use of some of the other types of FSs. On the other hand, collocations are conveyers of precise semantic information, so incorrect use of collocations may potentially lead to misunderstandings, and the failure to use them appropriately may signal lack of expertise and knowledge.

The development of collocational knowledge is slow and uneven and productive mastery clearly lags behind receptive use. But, as argued by many researchers, collocations are more low-frequent than the words that make up the collocations, and learners therefore mostly lack sufficient exposure to collocations to create, strengthen and maintain the associative links between the constituents.

Many conflicting findings have also been reported. This may in part be caused by the lack of clarity and agreement in the research field in relation to the underlying theoretical assumptions regarding the conceptualization of collocational knowledge and development. This naturally affects the type of research questions asked, the identification and selection of collocations targeted for investigation and the research approaches adopted. Moreover, the methodological problems identified in the review make it difficult to outline any valid generalizations across the many studies carried out. The findings show that learning and ability for use are affected by a number of factors pertaining specifically to the types of collocations targeted, their frequency, degree of semantic transparency and the context of learning. Researchers are therefore faced with a number of challenges in relation to language target selection criteria. Moreover, learners' awareness of collocations, their motivation to focus on

these and the teaching conditions afforded for acquisition to take place differ immensely, pointing to the need to combine macro-level, quantitative studies looking at large corpora of L1 and L2 language use and development with micro-level, qualitative case studies of the collocational competence and acquisitional patterns of the individual language learner.

None of these results is, however, surprising, and matches the general SLA findings for other areas of language use, e.g. single-words and other types of FSs. We therefore need to ask whether and, if so, in which way collocations are radically different from other types of FSs or single-word items. Are there specific obstacles related to learning collocations, e.g. factors such as transparency, saliency or function, which make them more difficult to learn or is it merely a matter of lack of exposure due to their frequency which hinders sufficient uptake and consolidation? Does the fact that learners often already have knowledge of the individual words that make up collocations hinder or facilitate learning? Can we transfer our knowledge and assumptions about the knowledge, use and development of single-words and FSs to research on collocations or should other models and approaches be adopted? It has been found that collocations are processed holistically as lexical units and that L2 learners tend to transfer collocational knowledge from their L1, but we still know little about the types of lexical entries formed for collocations, the links between lexical entries for single words and collocations, the links between lexical entries in the L1 and the L2, and the routes the language user takes in processing them. All these aspects may have an impact on the L2 learners' knowledge, use and development of collocations and are fruitful avenues of research. The newer studies carried out by Bell (2009), Wolter and Gyllstad (2011) and Fitzpatrick (2012) for example present some very promising research directions to take, which may help us find answers to some of these questions.

Acknowledgements

I would like to express my gratitude to the editors, the two anonymous reviewers and Henrik Gyllstad and Brent Wolter for their comments on the paper.

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