

# Formulaicity of Language: Its Pervasiveness and the Processing Advantage in Language Use

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## Abstract

Language makes extensive use of formulaic sequences, such as *in other words* or *as soon as*, which are typically described as multiword expressions that are stored, retrieved and processed as a single lexical unit. It is now widely acknowledged that the appropriate use of formulae and collocation is a prerequisite for proficient language use (Sinclair, 1991; Wray, 2002). Accumulating research shows that a word in a formulaic sequence is processed faster than the same word in a non-formulaic sequence, suggesting that there is a processing advantage for formulaic language use. It is yet to be known, however, if there is a psychological validity of formulaic sequences in the human mind, as the studies do not demonstrate clear-cut results (Schmitt, Grandage & Adolphos, 2004; Schmitt & Underwood, 2004; Underwood, Schmitt & Galpin, 2004; Jiang & Nekrasova, 2007; Conklin & Schmitt, 2008). In the research of second language (L2) acquisition, language learners are often reported to have problems with these multiword expressions (Howarth, 1998; Nesselhauf, 2003; among others), leading me to suggest that the intervention of language teaching should play a crucial part in the development of these properties. Considering the relationship between formulaicity and creativity of language, I conclude by proposing that a model which could accommodate both idiomaticity and novelty of human language at the same level would be necessary for the development of L2 research.

## 1. Introduction

Formulaic language is one of the major issues in the field of applied linguistics in recent years. In the literature, it is also referred to as *formula*, *lexical phrases*, *multiword units*, *phraseology* (Granger & Meunier 2008), *prepackaged* (Clark, 1974), *ready-made* (Weinert, 1995), *unalalyzed* (Fillmore, 1979), and *prefabricated* (Brown 1973; Hakuta 1974; Krashen & Scarella, 1978). Although the role of multiword expressions in language use has been acknowledged for many years, until recently it has been considered a marginal phenomenon in language use. The actual analysis of these word groups has been overlooked and has not drawn attention from many scholars. It was only with the development of the computer-based corpus measures (such as Sinclair, 1991) that the extent of our reliance on “ready made

surface structures” (Wray, 2002: 13) became clear, and the importance of useful multiword expressions, described here as formulaic sequences, has been recognized. It is now widely acknowledged that the appropriate use of formulae and collocation is a prerequisite for proficient language use (Sinclair, 1991; Wray, 2002).

In the field of L2 acquisition and learning, formulaic language has long attracted many attention among researchers and teachers in the L2 classroom (Krashen & Scarcella, 1978; Fillmore, 1979; Foster, 2001; Nattinger & DeCarrico, 1992; Wray, 2002; Schmitt & Carter, 2004). Earlier L2 studies demonstrated the extensive use of multiword expressions by L2 learners, and some of them proposed that acquiring these formulaic units contribute to the development of the L2 grammatical system (Fillmore, 1979). The reemergence of interest in this topic in recent years, mainly due to the development of a corpus methodology, yields new approaches which have received limited attention in earlier studies. For example, Bardovi-Harlig (2002) explores the role of formulaic language in the tense-aspect context, and in the field of pragmatics, Kecskes (2000) attempts to identify and classify formulaic expressions and its functions in language use. There is another approach which could shed light on the underlying processing mechanism from a psychological perspective (Schmitt, Grandage & Adolphos, 2004; Schmitt & Underwood, 2004; Underwood, Schmitt & Galpin, 2004; Jiang & Nekrasova, 2007; Conklin & Schmitt, 2008).

There is a consensus among the researchers that the use of formulaic sequences contributes to fluent, well-formed, and appropriate language use (e.g. Pawley and Syder, 1983; Nattinger & DeCarrico, 1992; Wray, 2002; Schmitt & Carter, 2004). The underlying proposition is that these clusters of words are stored in the mind as prefabricated holistic units, which enable language users to retrieve and process these words more easily, quickly and accurately than the case when generated through the syntactic and lexical processes. In other words, formulaic sequences have “a processing advantage over creatively generated language” (Conklin & Schmitt, 2008: 72). Accumulating descriptive studies have shown that formulaic sequences are pervasive in adult language use and proficient language users know a large number of these units, but more empirical work will be necessary to substantiate the idea. I discuss such studies later in this article.

Formulaic sequences can be diverse in terms of lexical composition, function, meaning, and provenance (Wray, 2002). As Wray (2002: p.9) observes, there is a problem of terminology when describing recurrent word units. Following Wray (2002), I use the term *formulaic sequence* to refer to the formulaic phenomenon observed pervasively in adult language use. As she explains, “*formulaic* carries with it some associations of ‘unity’ and of ‘custom’ and ‘habit’, while *sequence* indicates that there is more than one discernible internal unit” (Wray 2002: p.9).

In this article, I first survey the terminology issue of formulaic sequences, considering the difficulty identifying and classifying these multi-word expressions. The relationship between formulaicity and creativity of language is then discussed as a theoretical issue on the status of idiomaticity. I then review recent studies on the processing of formulaic sequences and the

acquisition of L2 collocations, discussing their hypothesized processing advantage in language use.

## 2. Terminology

Formulaic sequences are generally defined as consisting of multiword structures with a conventional holistic meaning, which have not been generated by the grammatical component which each word belongs to. They are used in a wide variety of ways. They can be used to express a commonly believed truth (proverbs: *a stitch in time saves nine* = it is best not to put off necessary repairs), provide phatic expressions (*How are you?*) and realize functional language use (*I know what you mean* =agreement). They also contain phrasal verbs, lexical bundles (phrases) such as *as soon as*, *in order to*, or *the number of*, idioms such as *pull someone's leg* or *rule of thumb*, and collocations (*heavy smoker* or *make a speech*). It has been widely proposed that these word groups are handled like single "big words" (Ellis, 1996: p. 111), even though they appear to be analyzable into lexical segments. They have a literal meaning which basically results from the combination of the meaning of each word, but a phrase as a whole has interpretation something different from the literal one.

Corpus research has done much to increase our understanding of the phenomena that language users tend to use the same clusters of words recurrently (e.g. Sinclair 1991; Cowie, 1998). According to Erman & Warren (2000), 58.6% of the spoken discourse they analyzed consists of the multiword expressions of various types, and 52.3% of the written discourse. Altenberg (1998) estimated that 80% of the words in the corpus formed part of recurrent word combinations, if formulaicity is taken to encompass the enormous set of simple lexical collocations. Foster (2001) reported that 32.3% of transcripts of unplanned native speech was made up of formulaic sequences, and Howarth (1998) calculated that 31-40% of 238,000 words in academic writing was made up of collocations and idioms. Thus the studies with various perspectives have shown that natural language makes considerable use of recurrent formulaic patterns of words. As Nattinger & DeCarrico (1992) assert, "Formulaic sequences are ubiquitous in language use (p.66)."

The extensive use of formulaic sequences may be reflected in the existence of enormous terms found in the literature to describe the set of related phenomena. One of the reasons that it is difficult to define formulaic sequences lies in their diversity (Schmitt, 2004). As stated earlier, there is a problem of terminology when describing word recurrences. On the one hand, there is a certain conceptual duplication, where various terms are used to refer to similar or the same phenomenon; on the other hand, the same term might be used in different ways by different researchers. Wray (2002) found over fifty terms to describe formulaic phenomenon in the literature. Samples from her list are presented in Figure 1.

Due to the pervasiveness of formulaic sequences in adult language use and the plethora of terms, it is difficult to establish an explicit definition of the phenomenon. The term should

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|                        |                                     |
|------------------------|-------------------------------------|
| chunks                 | lexical (ized) phrases              |
| cliches                | multiword items/unites              |
| collocations           | prefabricated routines and patterns |
| complex lexemes        | ready-made expressions              |
| conventionalized forms | recurring utterances                |
| fixed expressions      | rote                                |
| formulaic language     | routine formulae                    |
| fomulas/formulae       | set phrases                         |
| frozen metaphors       | unanalyzed chunks of speech         |
| idioms                 | units                               |

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**Figure 1** Terms used to describe aspects of formulaicity (based on Wray, 2002: p. 9)

refer to findings within and across research areas and should not impose one or another theoretical position. The following is the definition proposed in Wray (2002), intentionally made to be inclusive so that it conveys any kind of linguistic pattern in any research field that is considered formulaic.

a sequence, continuous or discontinuous, of words or other elements, which is, or appears to be, prefabricated: that is, stored and retrieved whole from memory at the time of use, rather than being subject to generation or analysis by the language grammar. (2002: p.9)

This definition aims to be as inclusive as possible, covering wide range of phraseology. However, it is difficult to identify absolute criteria which define formulaic sequences, as it is such a diverse phenomenon widely observed in language use. Therefore this definition still is not without problems. As Wray (2002) admits, in general the definition should be established before the phenomenon can be identified, since identifying something relies on how it is defined. However, the relationship between definition and identification can be circular, and in the case of formulaic sequences, “dentification relies less on formal definitions than the definitions rely on identification” (p.19). Still it is worth employing the definition given above as a starting point to establish some criteria by which formulaic sequences are independently identified.

### **3. The relationship between formulaicity and creativity of language**

Formulaicity contrasts with creativity and productivity of language, the ability to use the structural system of language such as syntax, semantics, morphology and phonology in order to create and understand novel utterances instantly. The creative and novel language use is made possible by employing these language modules in a combinational and analytic way. In

the early days of L2 acquisition research, Krashen and Scarcella (1978) note that routines and patterns do not serve a primary role in language acquisition and performance, and are fundamentally different from the creative construction process.

Similar contrast was also made in Sinclair (1991), proposed as the two main structuring principles employed in language use; an open choice principle and an idiom principle. The former conforms to the traditional grammar view, like the Chomskian's view, which entails an analytic approach in which morphemes and words are combined into phrases and sentences by the rule of grammar. Contrary to this, the idiom principle asserts that "a language user has available to him or her a large number of semi-preconstructed phrases that constitute single choices, even though they might appear to be analyzable into segments" (Sinclair, 1991: 110). It is the latter principle which is used as the first mode to interpret normal text. Sinclair (1991) assumes that a language user employs both principles when necessary. It is clear what Sinclair means "single choices" here equal to what Wray (2002) terms formulaic sequences. Thus both Sinclair and Wray propose that formulaic sequences are used as a holistic unit and therefore bypass the analytic process of generation that occurs with the open choice principle.

Similarly, in the field of L2 Skehan (1998) points out that language is often seen as a rule-based analytical system by many linguists, but from a language user's perspective it is an exemplar-based memory system. This dual-nature view of language system implies learning a language involves both learning rule-based components, which makes it possible to produce and create novel utterances, and learning exemplars, which may seem linguistically irregular and not explained by rules. This dual-nature view of language system is comparable to the two principles proposed in Sinclair (1991).

It is true that in the linguistic tradition, generative, syntactic rules are placed at the centre of theories and inquires, putting formulaic and irregular language aside as it is separate phenomenon. Pinker (1994: 90) asserts that using prefabricated chunks of language is a peripheral pursuit that tells us nothing about real language processing. However, whereas the analytic language system has flexibility for novel expression and the interpretation of novel and unexpected input, the holistic language may contribute to the reduction of processing effort (Wray 2002: 18), and that for the sake of processing efficiency, the contribution made by accessing large prefabricated chunks is larger than formulating novel word strings. Given the increasingly evident importance of formulaic sequences in language use, and the accumulating findings in the literature with different research perspectives, neither a rule-only nor formulaic-only model can both accommodate the linguistic competence shown in the studies of generative linguistics and the idiomaticity observed in human language. It has yet to be answered if there would be such a model which could fully explain, or at least attempt to explain, both novelty and idiomaticity of human language as crucial linguistic features.

## 4. Discussion of recent studies in formulaic sequences

Studying formulaic sequence involves two tasks related to data or corpora-based analysis and psycholinguistic experimentation (Weinert, 2010). The first task is to reveal the extent and nature of formulaic sequences in proficient language use in L1 and L2 acquisition. As stated earlier, computer-based search for corpus data uncover the pervasiveness of recurrent word combinations. Yet such findings require a psycholinguist verification, which can be done through psycholinguistic experimentation. The second task, in addition to pointing out formulaic sequences are a linguistic phenomenon, is that they are processed and produced as single units, rather than being analyzed and generated through linguistic component which each word belongs to. In this section, I first discuss the findings from recent studies which investigate how recurrent word strings observed in language use are stored, accessed and processed in the human mind, referring to the debate on holistic and/or probabilistic storage and processing. Then L2 studies mainly on the acquisition of L2 collocations are reviewed, followed by the argument that acquiring native-like use of formulaic sequences is one of the most difficult areas, which might be unattainable solely from input.

### 4.1. Studies on processing

In most of the formulaic expressions, there are both literal meaning and nonliteral meaning (Wray, 2002: p. 4). The question in research of the processing of formulaic sequences is whether a language user first analyzes the literal interpretation of formulaic sequences or whether he/she gets to the nonliteral meaning before they are analyzed on the word-by-word basis. If formulaic sequences are stored in the human mind as whole units, shorter reading times should be found, which is considered a processing advantage.

In order to see whether recurrent clusters are holistically stored and accessed by the human mind, Schmitt, Grandage & Adolphos (2004) investigated how native and non-native speakers were able to reproduce recurrent clusters in a psycholinguistic dictation task. Their underlying goal was to determine whether corpus data is psycholinguistically valid or not. The participants repeated stories with embedded recurrent clusters derived from corpora. Unexpectedly, the result showed that native speakers did not reproduce a large number of recurrent clusters as wholes. They conclude that recurrence of clusters in corpus data cannot be taken as evidence that those clusters are also psychologically valid in the human mind, meaning that statistically-robust word strings observed in corpus data are not always psychologically realized.

Underwood, Schmitt & Galpin (2004) employed the apparatus which tracks the eye movements of participants when they read passages with embedded formulaic sequences. They measured how often and for what duration the final words in the sequences were fixed on. The assumption is that once a formulaic sequence is recognized from the first few words, it would need less attention to recognize the final word since a speaker should already know

and guess the idiom. The result showed that both native and non-native speakers behaved differently between words which are part of a formulaic sequence and the same words which are not part of it; the participants, both native and non-native participants, fixed the eyes less on the former than the latter. In addition, the native participants focused on formulaic words for a shorter duration than non-formulaic words, implying that there was a processing advantage of formulaic sequences in reading.

Schmitt & Underwood (2004), as a follow up study, examined the recognition speed between words in formulaic and non-formulaic contexts, utilizing the same material used in Underwood, Schmitt & Galpin (2004). It was a self-reading task in which the participants tap a button to bring up a subsequent word in a passage when they recognize a word. The time between taps shows the word-by-word self-reading time. It was measured to see if there were any differences of recognition speed between formulaic and non-formulaic environments. Schmitt & Underwood unfortunately found no significant difference, as, they argue, the native participants processed all words so quickly in both conditions and it was impossible to determine the recognition point.

The processing advantage was explicitly evidenced by other recent studies such as Jiang & Nekrasova (2007) and Conklin & Schmitt (2008). Jiang and Nekrasova used corpus-derived recurrent word combinations as materials in two online grammaticality judgement experiments. They found that native and non-native speakers of English responded to three-word lexical bundles faster and more accurately than nonlexical bundles. From their study, the processing advantage was evidenced for not only native speakers but also for proficient L2 speakers.

Overall we have not obtained clear-cut results in many of the studies. One of the problems is that different psycholinguistic studies have used various types of formulaic sequences, with varying word frequency and word length. As Conklin & Schmitt (2008) argue, it is crucial to consider the context in which formulaic sequences reside to determine whether they indeed hold a processing advantage. It is possible that there are psychologically valid types of formulaic sequences. It is to be determined which predictors may be a key to the processing advantage. There is also an experimental issue; whether the psycholinguistic methodologies, such as eye-tracking, self-paced reading, and reaction-time measurement, are appropriate to examine psycholinguistic validity of formulaic sequences. With the refinement of experimental methodologies and control for some extraneous factors, more recent studies have begun to show the processing advantage of formulaic language (Jiang & Nekrasova, 2007; Conklin & Schmitt, 2008), but the further research is definitely required to answer the question surrounding the processing of formulaic sequences, their psychological verification, and their representation and storage in the human mind.

#### **4.2. Studies on L2**

L2 learners are reported to rely on creative language use more than formulaic sequences; they produce a large part of expressions based on linguistic rules instead of just retrieving

patterns of words. They often result in the expressions which sound non-native like and unnatural to native speakers (Pawley & Syder, 1983; Wray, 2002). To the contrary, native speakers produce more or less fixed word routines in a great proportion of their language use. It has been well established that L2 learners often have problems with formulaic sequences, especially collocations, in their written and spoken language (Granger, 1998; Howarth, 1998; Nesselhauf, 2003; Siyanova & Schmitt, 2008). Due to language creativity L2 learners often rely on, they acquire words independent of the immediate environments they occur, yielding unnatural word combinations which usually do not go together. Pawley & Syder (1983) argue that many L2 learners, although they strive for native-like selection of word combinations to sound native-like, produce word strings which are not used by native speakers.

Nesselhauf (2003) is one of the studies which explore the nature of learner collocation problems. She distinguishes three classes of collocations: free combination, such as *want a car*; collocations, such as *take a break* or *shake one's head*; and idioms, for example, *sweeten the pill*, and investigates verb-noun collocations produced by advanced German learners of English in free writing. The study attempts to identify the types of mistakes L2 learners make and to see if the degree of restriction of a combination is influential in the use of collocations. Nesselhauf found that the error rate of collocations is 79%, followed by free combinations (23%) and idioms (23%), meaning that learners had more problems in collocations than the other two classes of collocations. Howarth (1998) investigates the extent to which L2 learners employ collocations in writing. He reported that native speakers used about 50% more restricted collocations (e.g. *reach a conclusion*) than advanced L2 speakers. Restricted collocability concerns the possibility of substitution of one or both elements in a collocation and the collocation still retains the same meaning. Howarth showed that restricted collocations are most problematic for advanced L2 speakers among other types of collocations (free collocations and idioms). In a more recent study, Siyanova & Schmitt (2008) used corpus-based frequency data and mutual information statistics (MI) to investigate adjective-noun collocations (e.g. *social services*) in advanced L2 learners of English. They found that only 45% of the collocations in Russian learners' writing texts were appropriate. Ellis, Simpson-Vlach & Maynard (2008) also concludes that the acquisition of target-like knowledge of multiword lexical units is relatively slow to develop for L2 learners.

The studies reviewed here mainly used a corpus-based native versus non-native comparison to investigate learners' collocation use. They all presented more or less the same conclusion that L2 learners have difficulty employing appropriate collocations in their language use. The difficulty proficient L2 learners persistently have in this area demonstrate that input only would not lead to the development, and this is where the instruction should play a crucial part. Thus it turned out L2 learners rely on their grammatical knowledge and formulate sentences through linguistic processes, rather than just access and retrieve the word units from the storage in the mind. One of the questions to be answered will be the development of collocational knowledge of L2 speakers; how L2 speakers acquire the



appropriate use of collocation in the course of L2 development, which naturally leads to the question: How the creative part of language and formulaicity play a part interactively and/or independently in human language acquisition.

## 5. Conclusion

Despite of capacity for grammatical processing in the human mind, this is not the only way of coping with language. Of course an analytic way of dealing with language plays a crucial part in language use, yet given the increasingly evident importance of formulaic sequences, findings from the research on formulaic sequences, whether it is corpus-based, psycholinguistically-based, acquisition-based, should contribute to any model of language acquisition. In addition, these studies should also contribute not only to research on multiword strings, but also to a more refined description of differences between native and non-native speakers.

It is now clear neither a rule-only nor formulaic-only model can both accommodate the linguistic competence demonstrated in generative linguistic studies and the idiomaticity vigorously studied in various fields. It has yet to be answered if there could be a model which fully explains both novelty and idiomaticity of human language, but this should be explored in the future research.

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