

Unconventional Expressions: Productive syntax in the L2 acquisition of formulaic language

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Abstract

This article presents a generative analysis of the acquisition of formulaic language as an alternative to current usage-based proposals. One influential view of the role of formulaic expressions in second language (L2) development is that they are a bootstrapping mechanism into the L2 grammar; an initial repertoire of constructions allows for statistical induction of abstract grammatical categories, such that formulaic language is the data source from which syntactic rules are derived. This study brings evidence to bear on this debate from three studies of the acquisition of conventional expressions by L2 learners of English. A total of 271 learners and 58 native speakers completed either an oral conversation-simulation task or an aural-written elicited imitation task. The data show that while learners exhibit knowledge of both contextualized use and the lexical core of conventional expressions, production data reflect the morphosyntactic knowledge of learners at particular stages of development. Formulaic language does not drive the acquisition of syntax; rather, the acquisition of syntax as an independent process drives changes in the production of conventional expressions. Their gradual transformations allow for insights not only into the acquisition of syntax, but also into the nature of multi-word expressions in the mental lexicon.

Keywords

acquisition of syntax, conceptual structure, conventional expressions, formulas, mental lexicon

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I Introduction

This article offers a generative account of the development of formulaic language as an alternative to current usage-based accounts. An increasingly influential view of the role of formulaic expressions in second language (L2) development is that they are a bootstrapping mechanism into the L2 grammar; targetlike constructions come first, eventually forcing the grammar to catch up. On this account, a repertoire of constructions is memorized, allowing eventual statistical induction of abstract grammatical categories. This perspective has been promoted in the work of Ellis (1996, 2003, 2012; Ellis, O'Donnell and Römer, 2013) and Wray (2002, 2008), and is coming to dominate in certain applied linguistics journals and major conferences. An alternative view is supported in work by Carroll (2010), and by Bardovi-Harlig (2009, 2014; Bardovi-Harlig and Stringer, 2013; Bardovi-Harlig and Vellenga, 2012), whose data suggest that learners creatively construct formulaic expressions. This study brings evidence to bear on this debate from an extensive investigation of the acquisition of conventional expressions by L2 learners of English.

Conventional expressions are one type of formulaic language, which includes idioms, clichés, compounds, collocations, and other fixed expressions (see Jackendoff, 1997; Weinert, 1995; Wray, 2002). Conventional expressions are 'combinations of at least two words favored by native speakers in preference to an alternative combination which could have been equivalent had there been no conventionalization' (Erman and Warren, 2000: 31). They are essentially social formulas '... whose occurrence is tied to more or less standardized communication situations ... Conversational routines are tacit agreements, which the members of a community presume to be shared by every reasonable co-member. In embodying social knowledge they are essential in the handling of day-to-day transactions' (Coulmas, 1981: 2–4). Conventional expressions include phrases such as *Nice to meet you* and *I'm sorry I'm late*, and they are often purposefully learned as pragmatic routines. While previous research on conventional expressions has focused on pragmatics (Bardovi-Harlig, 2009, 2012, 2014) and the effect of instruction (Bardovi-Harlig and Vellenga, 2012), the current article examines their mental representation over the course of acquisition. Even though conventional expressions are often considered fundamentally social in nature, they must nevertheless be stored in long-term memory and retrieved for integration into syntax.

As regards their possible role in language learning, conventional expressions must be distinguished from so-called acquisitional formulas such as *How do you say* or *My name is*, which are memorized as chunks in the early stages of acquisition and which by definition cannot be parsed by the interlanguage grammar (Bardovi-Harlig, 2006; Myles, 2004; Schmidt, 1983), but which do not have the status of being tied to specific social situations. However, both types of formulas have been claimed to constitute the relevant input that makes possible the identification of syntactic categories and, by many accounts, are considered the relevant data for purely input-driven grammatical development, both in classic (Wong-Fillmore, 1976) and more recent accounts (Ellis, 2012). In this article, we present evidence that at least in the case of conventional expressions, formulaic language does not take the form of idealized models of grammatical well-formedness acting as catalysts for acquisition, but that, on the contrary, it

is reflective of autonomous syntactic development. While learners exhibit knowledge of both contextualized use and the lexical core of conventional expressions, the expressions show transparency to the interlanguage grammar throughout the acquisition process. We draw on Jackendoff's (1997, 2002, 2013) model of the language faculty in order to develop an account of multi-word lexical entries in terms of representational modularity and parallel architecture.¹ The interlanguage realization of conventional expressions provides insights not only into the acquisition of syntax, but also into the nature of the mental lexicon.

II Cycles of debate: The role of formulaic expressions in the acquisition of syntax

The role of memorized, multi-word expressions in language acquisition was a hotly debated topic in the 1970s that has been rekindled in more recent research. One fundamental research question present from the outset was whether formulaic utterances are the data source from which syntactic rules are derived. Two distinct views emerged whose general outlines may be readily perceived in contemporary applied linguistic inquiry.

On one side of the debate, researchers such as Clark (1974), Hakuta (1974), Peters (1977, 1983), and Wong Fillmore (1976, 1979) argued that both acquisitional and social formulas serve as the main input for the acquisition of syntax. This view of development was seen to be valid for first and second language acquisition alike. In Clark's (1974) study of her 3-year-old son, Adam, she observed that on hearing 'Wait for it to cool' when being given his dinner, he began to use this as a regular routine at mealtimes, and several weeks later built on this expression to say 'Wait for it to dry' when hanging up a washcloth. Clark (1974) argued that 'Many, though not necessarily all, the productive rules originated as invariable routines, which were in use for some time with the original lexical items before new lexical items were inserted.' (p. 4), and concluded that child language 'becomes creative through the gradual analysis of the internal structure of sequences which begin as prepackaged routines.' (p. 9).

This understanding of formulas as scaffolding for syntax was adopted and developed by Wong Fillmore (1976) in the context of child L2 acquisition by five first language (L1) Spanish-speaking children acquiring L2 English. She observed not only what she interpreted to be use of acquisitional formulas, but also the conventional nature of many daily linguistic interactions in this environment (e.g. 'Finish your milk'; 'It's time to clean up'). She suggested that children memorize formulas to establish and sustain social relations and then use them as the basic linguistic material seeding their acquisition of grammar (p. 640). Henceforth, we shall refer to this general perspective on the role of formulaic language in the acquisition of syntax as the 'formulas seed grammar' approach.

Peters (1977) allowed for both a 'gestalt' as well as an 'analytic' approach to acquiring L1. Minh, age 14 months, with analytic control of only 6 to 10 words, quite clearly said 'Open the door!' four times in succession (context: banging on bathroom door shouting to brother on other side). In an observation that will prove to be of relevance to our own data, Peters (1977) noted that Minh appeared to have somewhat independent phonological and

semantic representations for formulaic expressions, often ‘learning the tune before the words’ (p. 563), and mixing content syllables with filler syllables, such that *Uh-oh, də, də, də* could be reliably interpreted as *Uh-oh, what happened?* As we shall see, this apparent disconnect between prosody and syntax can be insightfully analysed using Jackendoff’s (1997) model of lexical representations in parallel architecture.

On the other side of this debate, several acquisitionists argued that despite the existence of memorized chunks used for communicative purposes, the development of syntax is essentially independent of the use of formulas (Brown and Hanlon, 1970; Hatch, 1972; Wagner-Gough, 1975; Krashen and Scarcella, 1978). In Brown and Hanlon’s (1970) account of the L1 acquisition of *wh*-questions by Adam, Eve, and Sarah, they argue that early, memorized routines are not a tool for acquisition. Utterances such as *what’s that / what doing* were produced in advance of *wh*-structure; later, *wh*-questions were produced in proposed form, e.g. *what he wants?*, but at this stage the initial *wh*-chunks were not reconstructed in line with developing grammar: they remained as chunks. Forms to be expected if such strings followed well-documented stages of question development such as *what that is?* or *what you are doing?* were unattested, casting doubt on the notion that chunks are the relevant input for the acquisition of syntax.

In studies of child L2 acquisition, Hatch (1972) and Wagner-Gough (1975) arrived at a similar conclusion: formulaic speech and analytic speech are two independent phenomena, co-existing as alternative communication strategies. Perhaps the most influential article in this cycle of debate was a comprehensive review article by Krashen and Scarcella (1978). After analysing the evidence from acquisition as well as research on verbal aphasia (agrammatism) and left hemispherectomy, they summed up their perspective:

routines appear to be immune to rules at first. This clearly implies that routines are part of a system that is separate from the process generating rule-governed, propositional language. It is also evidence that automatic speech does not ‘turn into’ creative constructions. Rather, the creative construction process evolves independently. (p. 286)

That formulas are not immediately fixed as targetlike forms in the minds of learners was clearly shown in a subsequent study by Scarcella (1979), the earliest adult L2 investigation of the acquisition of conventional expressions. Scarcella reported 55 (of 450) responses described as ‘partially acquired routines’, which included *Watch up (Watch out), Shut off! (Shut up!), Time is off (Time’s up)*. Scarcella concluded that ‘this means that the learner may approach routines as though they were analyzable rather than unanalyzable wholes’ (p. 83). In similar vein, Schmidt’s (1983) study of Wes documented an adult learner whose interlanguage simultaneously maintained social formulas (*Shall we sit?*) separately from productive grammar (*Sitting?*).

Since the turn of the millennium, the formula-based approach to acquisition has re-emerged to become an influential current of thought in applied linguistics (Ellis, 1996, 2002, 2003, 2012; Ellis et al., 2013; Eskildsen 2012; Eskildsen and Cadierno, 2007; Myles, 2004; Wray, 2002, 2008). In a position statement published as part of the 60th anniversary celebrations of the journal *Language Learning*, Beckner et al. (2009) deny any role for a generative syntax, claiming that ‘The basic units of grammar are constructions’ (p. 5), and

that ‘communication largely consists of prefabricated sequences’ (p. 6). Like the formula-based approaches of the 1970s, they argue that ‘constructions ... are categorized, generalized, and, ultimately, analyzed into constitutive forms’ (p. 10), such that syntax emerges from the input without any need for ‘grammatical principles’ (p. 2) or ‘an abstract set of rules or structures’ (p. 5).

One of the clearest presentations of this perspective is Ellis (2003). In clarifying the assumptions of the usage-based approach, he states that ‘the knowledge of a speaker/hearer cannot be understood as a grammar, but rather as a statistical ensemble of language experiences that changes slightly every time a new utterance is processed’ (pp. 63–64). After an initial stage of producing fixed, invariable formulas (chunks), learners will utilize what Ellis terms low-scope patterns (frames with open slots), before finally having a system of sophisticated constructions (productive, abstract schema – what he considers to be the equivalent of a grammar). Initial chunking, involving a reliance on what Ellis (2012) calls ‘phrasal teddy bears’, provides the brackets for phrase structure grammar, eventually resulting in hierarchical representations and structure dependency.² Thus once a child becomes familiar with phrases such as *Lulu’s gone*, *Teddy’s gone*, and *The ball’s gone*, then a low-scope pattern may emerge with phrases bracketed as [Lulu’s] [gone], [Teddy’s] [gone], and [The ball’s] [gone]; once sufficient numbers of these types have been processed, learners will converge on the pattern [X] [gone] (Ellis, 2003: 79–80). It is not clear from Ellis’ description of this process how learners come to have a grammar with syntactic rather than prosodic bracketing, in which the auxiliary in fact forms a constituent with the participle.

Ellis (2012) also discusses a special role in the input for so-called lexical bundles (frequently occurring strings of words in corpora), and documents clear cases of frequency effects (Arnon and Snider, 2010; Durrant and Doherty, 2010; Hilpert, 2008; Tremblay et al., 2011). However, while reading time may be affected by formulaic knowledge, it is unlikely that such strings can allow the learner to somehow induce the whole of syntax. Many high-frequency strings do not even correspond to syntactic constituents (*in the middle of the / in the front of the*). That a string of words appears frequently, while not matching either syntactic or semantic boundaries, seems insufficient grounds to posit lexical status.

A similar vision to the construction-based stages of Ellis (2003, 2012), with initial formulaic chunks as the relevant input for language acquisition, can be found in Peters (2009). She proposes a general acquisitional sequence from items or ‘prefabs’ extracted from the input, through a process of ‘connecting the dots’ between these elements, to a dense network of connections that is the essence of language knowledge. Both Ellis’ (2012) phrasal teddy bear approach and Peters’ dot-to-dot metaphor are driven by domain-general principles of analogy; as such, it is not clear how they could begin to explain the kinds of constraints invoked in linguistic approaches to acquisition (e.g. constraints on *wh*-movement, binding principles, etc.).

In one of the most interesting research programs on formulas in L2 acquisition, Myles and her colleagues investigated the acquisition of French by L1 English schoolchildren in a classroom environment, collecting both longitudinal and cross-sectional data (Myles et al., 1998, 1999). They showed how early formulas such as *quel âge as-tu* ‘how old are you?’ and *j’habite* ‘I live’ eventually contribute to creative construction through initial

insertion as chunks and eventually through a recombination of their parts. Instead of *quel âge a celui-là* ‘How old is that one?’, one learner produced *quel âge as tu that one* ‘How old are you that one?’ Instead of *Une famille habite dans une maison* ‘A family lives in a house’, another learner produced *Une famille j’habite une maison* ‘A family I live a house.’ Ellis (2012) sees this kind of pattern as evidence for the ‘formulas seed grammar’ approach, with phrases such as *quel âge as-tu* and *j’habite* as lexical teddy bears. He cites Myles (2004) in support of his approach:

Chunks do not become discarded; *they remain grammatically advanced until the grammar catches up*, and it is this process of resolving the tension between these grammatically advanced chunks and the current grammar which drives the learning process forward. (p. 152; italics added)

However, two caveats are in order. First, it should be noted that there is a tension in this account. A phrase cannot be simultaneously an unanalysed chunk and grammatically complex in terms of its mental representation. Such chunks are not grammatically advanced in the mind of the learner, and to refer to them as such is a case of the well-known comparative fallacy in second language acquisition (SLA; Bley-Vroman, 1983). Second, Ellis’ (2012) usage-based interpretation is at odds with Myles’ own understanding of her results. She maintains that although beginning learners do rely on chunks, they are also actively engaged in constructing a grammar ‘at the same time and in parallel,’ and ‘the construction of the grammar is an independent process’ (F. Myles, personal communication, 22 September 2015).

As the view of formula-based acquisition of syntax has taken hold in recent years, an important dissenting voice has been Carroll (2010). She argues that the notion of extracting phrases from the input is ill-defined, questioning whether such boundaries are phonological or syntactic. If the multi-word expressions are prosodically bounded, as with the [X] [GONE] examples from Ellis (2012), they cannot be used to infer knowledge of syntax. As she observes:

How can a thing of one kind (a sound form segmented from the speech signal) become a thing of another kind (a grammatical structure)? Morpho-syntax cannot emerge simply from breaking a long sequence of phonological units into smaller phonological units. Grouping processes are not equivalent to identification processes. Thus, grouping a sequence of syllables $\sigma\sigma\sigma\sigma$, will just result in syllable groups, e.g. $(\sigma\sigma)(\sigma\sigma)$. Invoking storage alone will also not explain how morpho-syntax emerges. (p. 231)

That this is a fundamental problem for approaches that see chunking as input to either L1 or L2 syntactic development can be seen in examples (1)–(3) from Jackendoff (1997), showing bracketing discrepancies between phonology, morphology, and syntax.

- (1) Syllabification and foot structure vs. morpheme boundaries
 - a. Phonological: [or + ga + ni][za + tion]
 - b. Morphological: [[[organ]iz]ation]

- (2) Phonological cliticization of articles, regardless of syntactic boundaries
 - a. Phonological: [abig][house], [avery][big][house]
 - b. Syntactic: [[a][big][house]], [[a][very]big][house]]
- (3) Intonational phrasing vs. syntactic phrase boundaries
 - a. Phonological: [this is the cat][that ate the rat][that ate the cheese]
 - b. Syntactic: [this is [the cat [that [ate [the rat [that [ate [the cheese]]]]]]]]

(adapted from Jackendoff, 1997: 26)

These examples illustrate how morphological and syntactic structure cannot be picked up for free simply through paying attention to the sound stream, and that general appeals to the input as the source for all structural rules have the need to distinguish, at the very least, the acquisition of phonological and morphosyntactic components of grammar.

III What do we know about formulas in L2 acquisition?

Empirical grounding from SLA

The empirical literature on the L2 acquisition of formulaic sequences/formulaic language investigates a wide range of phenomena, including conventional expressions, collocations, idioms, lexical bundles, and even memorized sentences. On the basis of the literature, we make three observations around which we organize our review:

1. targetlike formulas are acquired late;
2. interlanguage forms have been reported but not investigated; and
3. tasks artificially enhance production.

In the review that follows, wherever possible we focus on conventional expressions for both their transparency and their potential for internal structure.

I Late acquisition of formulas

The overwhelming consensus in the literature on the L2 acquisition of formulaic sequences by adult learners is that knowledge of target formulas comes relatively late. The acquisition of formulas is often characterized as an attribute of advanced-learner competence (Foster, 2001; Granger, 1998; House, 1996; Nesselhauf, 2005; Scarcella, 1979; Yorio, 1989; and several studies in Schmitt, 2004). In their ARAL survey, Boers and Lindstromberg (2012) summarize earlier findings:

Several cross-sectional studies have shown that only very advanced learners, typically language majors and/or learners who have benefited from an extended period of immersion in an L2 community, display knowledge of formulaic sequences that resembles that of native speakers. (p. 83)

The number of instructional studies they review further attests to the difficulty even advanced learners have with formulas.

2 Previous reports of interlanguage forms

Interlanguage forms of formulaic sequences have been reported in the literature although they have not been the main focus of investigation, and thus studies rarely include more than a few examples. Osborne (2008) reports examples of pluralized adjectives in formulaic sequences produced by advanced learners, including both loose compounds (*bathrooms fittings, diets ads, adults smokers*) and formulaic units (*in others words, the good olds times, basics rights*). The pragmatics literature also includes examples of interlanguage forms of conventional expressions. These include *I very appreciate* (Eisenstein and Bodman, 1986), *I am agree with you, Are you agree with me?* (Foster, 2001) and *Watch up (Watch out), and Time is off (Time's up)* (Scarcella, 1979). Dai and Ding (2010) conducted error analyses of formulas (but offered only one example), and Wray and Fitzpatrick (2008) conducted an error analysis of memorized sentences, offering it as a model for analysing formulaic production. The latter study, also reported in Wray (2008), seems not to be a study of formulaic language, but rather of rote memorization and of how fidelity declines with repetition in multiple conversation simulations.

3 Task effects in production studies

The infrequency of reports of interlanguage renditions of formulas in the literature relative to the large number of studies conducted may be due in part to the types of elicitation tasks. The predominance of recognition, interpretation, and processing studies naturally preclude production data. When production data are elicited, tasks often require either a single word or words in a predetermined order or no specific target. The former group includes: gap-fill tests (Kuiper et al., 2009; Nekrasova, 2009); c-tests, in which blanks and letters provided cues to the formula both without (Jones and Haywood, 2004) and with meaning glosses such as 'I've been watching the news report and they say that **there's a go__cha__that** the international debts of poorer countries might be cancelled (*this will probably happen*)' (Schmitt et al., 2004: 73); and matrices, from which participants selected one word from each column (*tell a joke, keep a secret, or nonidiomatically, tell a secret, keep the joke*; Revier, 2009). Whereas c-tests exclude the possibility of interlanguage forms, a matrix permits interlanguage forms only within the limits of the words provided.

In contrast, other production tasks allow learners to determine their own contributions. These include written tasks such as essays (Dai and Ding, 2010; De Cock, 2000; Granger, 1998; Howarth, 1998; Jones and Haywood, 2004) and discourse completion tasks (Olshtain and Cohen, 1990; Tateyama, 2001); and oral tasks such as interviews (De Cock, 2000), opinion-gap activities (Németh and Kormos, 2001), and role plays (Forsberg and Fant, 2010; House, 1996; Tateyama, 2001). In these studies, no conventional expressions were identified in advance of task administration. As Kuiper et al. (2009) note, there is also an effect of mode: 'Despite these modestly good results in written contexts, non-native speakers have been found not to do well when required to produce phrasal items orally ...' (p. 221).

4 What predictions can be made for the acquisition of formulaic sequences?

Taking these observations into account, the present study examines the acquisition of conventional expressions by adult learners. If we adopt an empirically-based approach, we can ask what the acquisition of conventional expressions looks like, and we can hypothesize three different trajectories (Figure 1). Figure 1a shows the expected trajectory for formulas that are learned early – and perfectly – and are either never analysed or analysed by an interlanguage grammar that is consistent with the target language grammar for this formula. Figure 1b shows the expected trajectory for formulas that are learned early, which are analysed by an interlanguage grammar that does not produce the same output as the target language grammar, but catches up again with increased development, producing the well-known U-shaped curve. Figure 1c shows another picture, not anticipated by the ‘formulas seed grammar’ approach, in which the accurate use of a conventional expression increases with proficiency (this is expected, in fact, by every lexical study of formulas that asks whether formula use increases with proficiency (e.g. Boers and Lindstromberg, 2012). We will demonstrate that the accuracy and appropriate use of formulas increases with grammatical development in interlanguage.

IV Method

According to Weinert (2010), ‘studying formulaic language essentially requires two related tasks, data or corpus-based analysis and (psycholinguistic) experimentation’ (p. 2). Furthermore, studying the development of formulaic language requires data from many learners at different levels of proficiency attempting to produce the same target in the same communicative context, and, in addition, a reasonably large number of different expressions. The selection of the conventional expressions in this study was data driven: First, field observations of spontaneous conversations in the community in which the study was conducted were undertaken; then scenarios for the oral conversation simulation were distilled from them; the selection was further refined through two pilot studies to assure that native speaker responses showed a single favorite conventional expression operationalized as native-speaker use greater than 50% (Bardovi-Harlig, 2009; Culpeper, 2010).³ The production data on which we will base our evidence come from three related investigations involving the same population of learners. Two of the studies used a timed, oral production task and the third an untimed, delayed aural-written elicited imitation task.

1 Participants

A total of 271 L2 learners of English participated in three different cross-sectional studies. The learners were enrolled in four levels of classes in a seven-level intensive English program (based on a 3.5 hour placement test that included grammar, listening, reading, and composition), from low-intermediate at Level 3 to low-advanced at Level 6. Each level of instruction is seven weeks long, with 135 to 165 hours of instruction. The learners represent a range of language backgrounds that include Indo-European, East-Asian, Semitic, and Central-Asian languages.

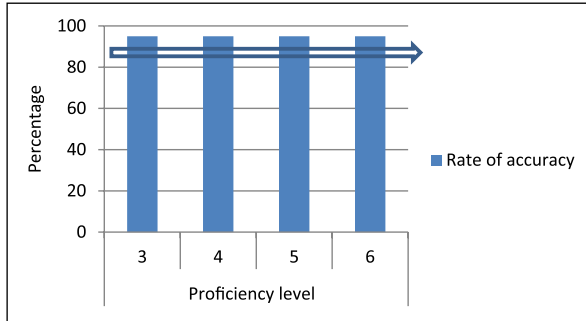


Figure 1a. Expected trajectory for formulas that are learned early and do not reveal development.

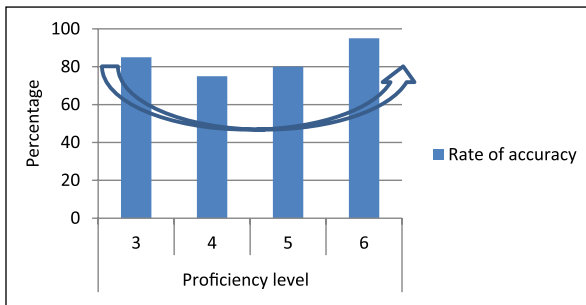


Figure 1b. Expected trajectory for formulas that are first used accurately in unanalysed form, then analysed by the interlanguage grammar, before finally being acquired in the targetlike form.

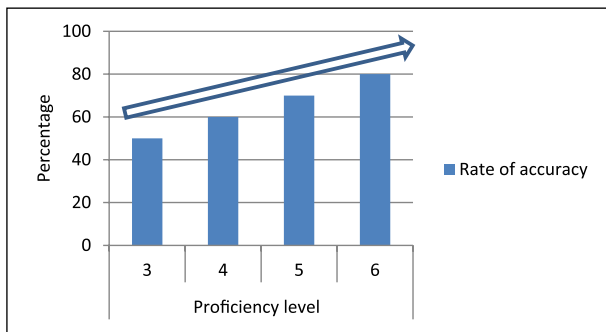


Figure 1c. Expected trajectory if accurate use of conventional expressions increases with proficiency.

2 Data collection

The data for this analysis come from three previously published studies investigating the same set of conventional expressions (Bardovi-Harlig, 2009, 2014; Bardovi-Harlig

and Vellenga, 2012). The primary oral production task was a time-pressured conversation simulation with turns (allowing participants 7 seconds to respond), also described as a computer-delivered oral discourse completion task (DCT). One hundred and twenty-two learners (with 11 L1s) participated (Bardovi-Harlig, 2009). Forty-nine native speakers of American English affiliated with the same large public research university in the American Midwest also participated, comprising two groups: 35 undergraduate peers who were the same age as the learners and represent the native speakers (NSs) with whom learners were most likely to interact outside of class, and 14 ESL teachers who provided input in class and program activities during 4–5 hours of instruction per day. The production of the NS peers and teachers are reported separately.

The production task consisted of 32 scenarios covering a variety of speech acts and eliciting 5,742 oral responses. The task was computer delivered: respondents listened to the scenarios over individual headsets, simultaneously hearing and reading the scenario on the screen. For initiating items, participants spoke first; for responding items, participants heard a turn (without written support) immediately after the scenario, saw a screen which showed only ‘You say’, and then provided an oral response (example 4). Responses were recorded through headset microphones onto digital files (for the full task, see Bardovi-Harlig, 2009).

- (4) You go to a clothing store and you need to find a new shirt. A salesperson approaches you. You don’t want the salesperson’s assistance.
(audio only): ‘Can I help you?’
(next screen, visual only) You say:
(expected response: ‘I’m just looking.’)

These data are supplemented by data from a test of the effect of instruction on the acquisition of two sets of conventional expressions using low-scoring expressions from the previous experiments. The same oral conversation simulation was used for the pretest and posttest (Bardovi-Harlig and Vellenga, 2012). In this second study, 36 students representing 11 L1s participated, providing 1,152 responses for each of the pretest and posttest. The final set of data came from a task involving aural recognition and self-assessment (Bardovi-Harlig, 2014). Learners heard 20 expressions drawn from the same set of expressions played twice. After each expression, learners read through options that described their level of knowledge of the expression. If they decided that they could create an example of the expression in a conversation, they wrote it down, resulting in a written elicited imitation that revealed their interlanguage structure for the expression presented. In contrast to the other tasks described above, this task was untimed, self-paced, and written; learners advanced to the next item when ready. Participants in this third study included 113 learners (from 11 L1s) and 9 teachers. The task yielded 2,486 responses.

V Analysis

All oral responses were transcribed and checked by a second transcriber. Multi-word sequences that occurred in more than 50% of the native-speaker responses in a single context were identified as conventional expressions. Twenty-two expressions (out of 32 contexts) thus provided a single conventional target for learners (Bardovi-Harlig, 2009). Sequences that were used in a given context less frequently were excluded from further analysis, thus eliminating the possibility of investigating infrequent or specialized expressions. Any NS responses that looked like they could be compound expressions such as *No thanks, I'm just looking* that had a variant $\langle \text{thanks}/\emptyset \rangle$ *I'm just looking* $\langle \emptyset/\text{thanks} \rangle$ were divided into two expressions *No thanks* and *I'm just looking*.

The first round of coding the expressions was binary: a token was either an instance of the target expression or not. Some expressions used by the NSs exhibited variability, as expected (Nattinger and DeCarrico, 1992; Schmitt and Carter, 2004). Any variation exhibited by the NSs was permitted for learner production. Minor grammatical differences between NSs and learners counted as the same expression, the most common being the use of contracted and full forms (*I'm just looking* and *I am just looking*; see also Wray and Fitzpatrick, 2008) and shortened and full forms (*Thanks* and *Thank you*). Pauses between components (e.g. *No! (.5) Thanks!* for *No thanks* in one breath group) were also allowed because the original task measured developing knowledge in pragmatics (Bardovi-Harlig, 2013).

The second round of coding identified attempts at conventional expressions. These involved the lexical core of conventional expressions, consisting of the main meaning bearing elements, such as 'sorry' and 'late' from *Sorry I'm late*, or 'just' and 'look' for *I'm just looking*, whether or not the expression as a whole was targetlike. For example, in the context of people talking in a movie theater, where the preferred native speaker expression is *Be quiet*, conventional responses would be *Be quiet* or *Could you be quiet?* An interlanguage attempt at the same expression is found in *Be quietly*. Other responses that convey the same meaning, but do not demonstrate the learners' knowledge of the targeted expression, include *Calm down your voice*, *Keep down your voice*, *Turn down your voice*, *Less your voice*, *Loud down of your voice*, *Could you down loud?* *Can you turn down your talking?* (Bardovi-Harlig, 2012).

The data selected for further analysis in this article were expressions that exhibited the use of the lexical core and interlanguage forms. Expressions that scored high at all levels (discussed briefly in the next section) had been learned prior to this study and do not provide information about development; neither do the lowest scoring expressions because they are not attempted. Thus interlanguage productions of four main conventional expressions are examined:

- Sorry I'm late.
- I'm just looking.
- That'd be great.
- I really appreciate it.

VI Results

The combined results of these studies shed light on the development of accuracy in the production of the expressions in pragmatically appropriate contexts. Since this test was developed to investigate the use of conventional expressions in pragmatics, three components of knowledge are important for production in context. Sociopragmatic knowledge helps speakers recognize the context as appropriate for the conventional expressions targeted by the task, and pragmalinguistic knowledge determines the linguistic resources available for the realization of the speech act. The third component is recognition; learners need to be familiar with the expression (Bardovi-Harlig, 2009, 2010). In the recognition task conducted prior to the oral DCT, learners rated expressions along a three point scale, 'I often/sometimes/never hear this.' A score of 2.00 shows all participants reported hearing an expression often, a score of 1.00, that the expression is sometimes heard. These scores indicate that learners recognized these expressions. Learners scored *I'm just looking* between 1.76 and 1.92; *I'm sorry*, 1.94–2.00; *I'm late*, 1.77–1.88; and, *That'd be great* 1.46–1.77.

The analyses of the oral DCT show that some expressions are learned early, score high for accuracy, and do not substantially change with proficiency (Table 1). These include *Nice to meet you*, *You too*, and *Thank you*. This pattern is described by Figure 1a.

In contrast, many expressions do not show such high rates of accurate use. Instead, they show gradual development across levels toward accurate production. These expressions are made up of three words, and three or more morphemes. These include *I'm just looking*, *Sorry I'm late*, and *That'd be great* (Table 2). If we look only at accurate production, this pattern would be described by Figure 1c.

I'm just looking was elicited by the scenario given earlier in (4). *Sorry I'm late* was the preferred NS response to the scenario in (5) and *That'd be great* was the preferred NS response to (6).

- (5) You made an appointment with your teacher. Unfortunately you arrive five minutes late for the meeting. Your teacher says,
(audio only): 'Hello. Come on in.'
- (6) You need to pick up a book at the bookstore, but you don't have any free time today.
(audio only): 'I can pick it up for you.'

Learners recognized these scenarios as appropriate for deflecting an offer of help (*I'm just looking*), for apologizing, and thanking, respectively. More importantly for this analysis, they also recognized the contexts in which they did not want help and in which they were 5 minutes late as contexts for the conventional expression used by the native speakers. We will consider each expression in turn.

The rates of appropriate use of *I'm just looking* (Table 2) increase when we consider attempts at the same expression (Table 3). For each of the expressions in Table 3, the first line gives the rates of use for the conventional expression; the second line gives the additional rates at which the core lexical items are used in nontarget expressions to the same communicative effect. The third line gives the total.

Table 1. Expressions with high accuracy across levels.

Expression	Level											
	3		4		5		6		NS P		NS T	
	n = 35		n = 31		n = 31		n = 25		n = 35		n = 14	
	%	(N)	%	(N)	%	(N)	%	(N)	%	(N)	%	(N)
You too	83	(29)	94	(29)	94	(29)	84	(21)	94	(33)	100	(14)
Nice to meet you	100	(35)	84	(26)	94	(29)	80	(20)	89	(31)	86	(12)
Thank you	66	(23)	65	(20)	84	(26)	92	(23)	94	(33)	71	(10)
Total	83	(87)	81	(75)	90	(84)	85	(64)	92	(97)	86	(36)

Table 2. Gradual acquisition of formulas (accurate production only).

Expression	Level											
	3		4		5		6		NS P		NS T	
	n = 35		n = 31		n = 31		n = 25		n = 35		n = 14	
	%	(N)	%	(N)	%	(N)	%	(N)	%	(N)	%	(N)
Sorry {I'm / I am} late	17	(6)	32	(10)	32	(10)	48	(12)	69	(24)	85	(11)
{I'm/am} just looking	14	(5)	35	(11)	39	(12)	52	(13)	71	(25)	64	(9)
That {'d/would} be + adj	0	(0)	0	(0)	8	(2)	4	(1)	66	(23)	57	(8)
Total	10	(11)	23	(21)	26	(24)	35	(26)	92	(69)	64	(27)

Table 3. Gradual acquisition of formulas (accurate with lexical core).

Expression	Level											
	3		4		5		6		NS P		NS T	
	n = 35		n = 31		n = 31		n = 25		n = 35		n = 14	
	%	(N)	%	(N)	%	(N)	%	(N)	%	(N)	%	(N)
Sorry {I'm / I am} late	17	(6)	23	(7)	29	(9)	48	(12)	69	(24)	85	(11)
Sorry ... late	29	(10)	42	(13)	48	(15)	40	(10)	11	(4)	21	(3)
Total	46	(16)	65	(20)	77	(24)	88	(22)	80	(28)	93	(13)
{I'm/am} just looking	14	(5)	35	(11)	39	(12)	52	(13)	71	(25)	64	(9)
Just ... look	14	(5)	10	(3)	13	(4)	4	(1)	6	(2)	7	(1)
Total	28	(10)	45	(14)	52	(16)	56	(14)	77	(27)	71	(10)
That {'d/would} be + great	0	(0)	0	(0)	8	(2)	4	(1)	49	(17)	57	(8)
That {'d/would} be + adj	0	(0)	0	(0)	0	(0)	0	(0)	66	(23)	64	(9)
That ... great	0	(0)	0	(0)	0	(0)	0	(0)	49	(17)	57	(8)
Total (that great)	0	(0)	0	(0)	8	(2)	4	(1)	49	(17)	57	(8)

Native speakers show little variation in production of *I'm just looking*, producing exactly that sequence, with two additional productions of *Just looking* by NS students and one additional by one NS teacher (Table 3). One Level 4 learner also used *Just looking*. However, the majority of the additional attempts exhibited interlanguage forms as shown in example (7). With one exception, the interlanguage forms were produced by Levels 3–5. *I just look* was produced by a Level 6 learner as well as by learners in Level 3 and 4.

- (7) Interlanguage productions of *I'm just looking*:
- I just look
 - I just looking
 - I'll just looking
 - Just look
 - Just I'm looking

The rates of appropriate use are more than double those of accurate use of *Sorry I'm late* when learner attempts are counted (Table 3). NS peers clearly prefer *Sorry I'm late* (16 of 24 responses were in fact 'Ø Sorry I'm late' with 8 additional forms of 'I { 'm/am} (so) sorry I'm late'. Four additional NS peers and two teachers used a variation of 'I'm sorry for being late' (i.e. (*I'm*) (*so*) *sorry for being* ({*so/adv*}) *late*), the only grammatical alternative that NSs offered. Learner attempts showed extensive variety, including both interlanguage forms (example 8) and grammatical forms not favored by the native speakers (example 9).⁴ Learners rarely used the bare 'sorry' the way native speakers did, preferring 'I'm sorry' instead. Four learners also produced the NS alternative, *Sorry for being late*; all other responses in example (9) were produced only by learners.

- (8) *Sorry ... late* interlanguage forms:
- (I'm) sorry for late
 - (I'm) sorry for lating
 - I'm sorry for be late
 - I'm sorry to/too late
 - I'm sorry I late
 - I am sorry from late
 - I'm sorry about (my) late
 - I'm sorry to being so late
- (9) *Sorry ... late* alternative grammatical forms:
- Sorry for being late
 - I'm sorry I was late
 - I'm sorry to be late
 - (I'm) sorry, I'm running late
 - I am sorry to come late
 - Sorry for coming late
 - (I'm) sorry for being late
 - I'm sorry to be late

The development of *That'd be great* shows a slightly different picture (Table 3). Learners made very few attempts at the conventional expression. Only the NSs used other adjectives (*helpful, nice, wonderful, awesome, excellent*), leading us to formulate the expression as *That'd/would be* + positive adjective (line 2 for *That'd be great* in Table 3). In the absence of oral production data from learners in the conversation simulation, we consider written production from the study of aural recognition and self-report (Bardovi-Harlig, 2014). The data from learners who provided a written example of a conversation using the target expression show that the conditional – both in the contraction *that'd* and as a free morpheme – is a source of difficulty for the learners.

- (10) *That ... great* interlanguage forms (written production):

That be great
That is be great
That be a great
That's be great

- (11) *That ... great* alternative grammatical forms:

That will be great
That'll be great
That's great
It's great
It was great

When learners elected to write a short conversation with *That'd be great*, they rarely produced the conditional. If production were related only to repetition, learners should have been able to reproduce the string. However, as expected from elicited imitation tasks, the learner grammar plays a role. The target form, *That'd be great*, was produced only rarely: one token in each of Levels 3 (3%) and 5 (4%) and three tokens in Level 6 (11%). *That would be great*, the full form which underpins the contraction the learners heard, increases across levels (Level 4, 4%; Level 5, 15%; Level 6, 19%). The production of *That would be great* for *That'd be great* also shows that learners are 'listening' with their grammar. *That be great*, the most common interlanguage form across levels, occurred in 40% of the responses in Level 3, 48% in Level 4, 33% in Level 5, and 15% in Level 6. After a peak in Level 4, its production declined. Late use of *would* is in keeping with longitudinal data from other learners enrolled in the same intensive English program (Salsbury and Bardovi-Harlig, 2000).

Returning to the oral production task provides a final example. In lieu of the gratitude token *That'd be great*, learners attempted *I appreciate it*, which was used by some native speakers, but not sufficiently often to meet the frequency cut-off for conventionality. Nevertheless, aggregating the production of *appreciate* expressions across two distinct thanking scenarios in the task provides sufficient tokens to establish the conventional expression and to explore its development.

In 29 expressions using *appreciate*, native speakers produced *I really appreciate NP* 26 times (90%). They also used one token of *I appreciate it*, and two tokens with different intensifiers (*greatly* and *so much*). The NS favorite is by far *I really appreciate it*

(18/29, 62%). In contrast, very few learners produced the expression, and most attempts resulted in ungrammatical strings. Learner productions include bare *Appreciate!* with no arguments (although the target verb, *appreciate*, is transitive) and *appreciate* with innovative complement structures such as *I appreciate that for you* (example 12). No intensifier is attempted by learners until one token of *really* in Level 5, followed by three tokens in Level 6 yielding the NS target of *I really appreciate it*. An innovative intensifier occurs in Level 6, *I appreciate that gladly*, yielding a grammatical but not conventional token (example 13).

- (12) *Appreciate* interlanguage forms:
 Appreciate!
 I appreciate
 I'm appreciate
 I appreciate for you
 I appreciate that for you
 I will appreciate it to you
- (13) *Appreciate* alternative grammatical forms:
 I appreciated that
 I appreciate that
 I appreciate you
 I may appreciate it
 I appreciate that gladly
 I really appreciated that

These examples show both developmental forms of conventional expressions, and omission of the intensifier, further exhibiting syntactic analysis. Nonuse of intensifiers or use of alternative intensifiers (*very* for *really*; Olshtain and Cohen, 1990) is well known in interlanguage pragmatics.

Learners also show nonconventional uses of tense in accordance with their interlanguage grammars, which is exemplified by *I really appreciated that* in example (13). In an apology context in which a student borrowed a book from her friend and promised to return it, but left the book at home, 80% of the native speaker peers and 79% of the native speaker teachers offered an apology for the offense of not having the book (*Sorry*), followed by the explanation, *I forgot* (Table 4). Learners used *I forgot*, increasing gradually from 9% in Level 3 to 46% by Level 5. The targetlike and appropriate production is supplemented by the interlanguage use of *I forget*, which has the same lexical core but not the same pragmatic value.

Finally, the production of conventional expressions also shows pauses and repairs (example 14) that suggest the learners are engaged in syntactic processing.

- (14) I'm sorry (.6) I'm late
 I'm sorry (1.3) for late
 I'm so sorry (1.5) I was late
 Thank you (.) for your help⁵
 Thank you (2.8) Thank you (2.4) for helping me

Table 4. Tense use in target *Sorry, I forgot*.

Forgot/Forget	Level											
	3		4		5		6		NS P		NS T	
	n = 35		n = 31		n = 31		n = 25		n = 35		n = 14	
	%	(N)	%	(N)	%	(N)	%	(N)	%	(N)	%	(N)
I forgot	9	(3)	26	(8)	46	(14)	44	(11)	80	(28)	79	(11)
I forget	29	(10)	39	(12)	13	(4)	20	(5)	0	(0)	0	(0)
Total	38	(13)	65	(20)	90	(28)	64	(16)	80	(28)	79	(11)

Given the instructional context of the English for academic purposes program in which the data were collected, the learner attempts at conventional expressions are likely the result of incidental learning. Bardovi-Harlig and Vellenga (2012) conducted a study of the effects of instruction and observed that even with focused noticing activities in which the target expressions were made salient, some learners still produced interlanguage forms. Thus, the interlanguage forms of *Sorry I'm late*, for example, were the same as those in example (8), which the learners produced without explicit instruction. Learners who exhibited interlanguage forms on the pretest were able to move from the lexical core before instruction to the target conventional expression after instruction (example 15).

- (15) Changes from pretest to posttest following instruction (Bardovi-Harlig and Vellenga (2012):

Thank you for invite me (R3) > Thanks for inviting me (R3) [L5AS9]

Thank you very much for inviting (R14) > Thanks for inviting me (R3) [L5AS8]

Sorry to late > Sorry to be late [L5BS7]

Sorry for lating > Sorry I'm late [L5BS9]

Sorry for be late > Sorry I'm late [L5AS9]

Collectively, data from these three studies support the claim that conventional expressions are analysed. They show interlanguage structures, interlanguage (nontargetlike) use of tense, hesitations and repairs, and non-use of intensifiers.

The data presented here provide linguistic examples of how conventional expressions develop during the course of acquisition. They are not acquired seamlessly as suggested in Figure 1a (although any change from chunk to analysis is not reflected overtly in cases such as *Nice to meet you*, *You too*, and *Thank you*). Neither does the pattern of acquisition take the form of a U-shaped curve, as in Figure 1b. A simple pattern of gradual development toward the conventional norm, as represented by Figure 1c, is restricted to fully targetlike productions and thus does not accurately represent the development paths followed by the learners. Based on the data, a more accurate representation of the acquisition of conventional expressions is Figure 2, which represents both the gradual acquisition of accurate formulas in appropriate contexts as proficiency increases and the acquisition

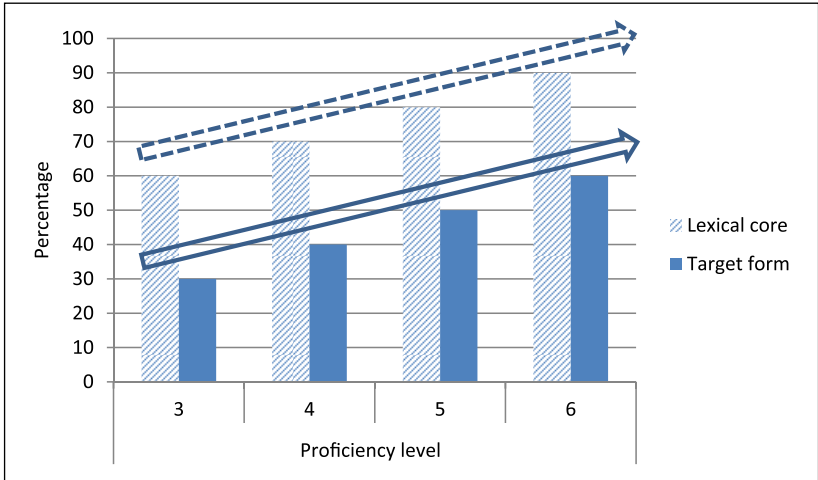


Figure 2. Acquisition of the lexical core in advance of targetlike production of the conventional expression.

of a lexical core of a formula that is not fully grammatically specified and is filled in by the learner’s interlanguage grammar.

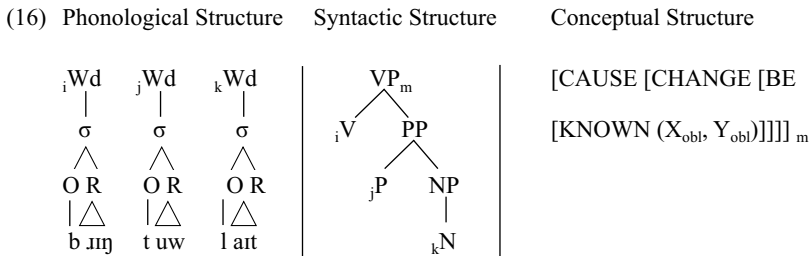
VII Discussion

The studies from which these data have been drawn were conceived primarily to investigate the interlanguage pragmatics of conventional expressions; thus, in previous reports, psycholinguistic claims of storage and retrieval were deliberately avoided (Bardovi-Harlig, 2009: 757). However, it is clear that conventional expressions are somehow stored in long-term memory in order to be produced with consistency amid a host of logically possible alternatives. Recall that in the *sorry ... late* scenario, native-speaker teachers used the same expression with minor variations 93% of the time; native-speaker peers did so 80% of the time; and the learner groups attempted some form of the expression 46%, 65%, 77%, and 88% of the time with rising proficiency. Conventional expressions are clearly formulas drawn from memory, which raises the question of how they are mentally stored and accessed for integration in psycholinguistic processing.

The production of interlanguage versions of conventional expressions suggests that learners are able to associate an underspecified structure containing the lexical core of an expression with an appropriate pragmatic context before the conventional expression is well formed in terms of the norms of the target language. That such structures are available for fast access by learners in time-pressured oral tasks indicates that these underspecified forms may be stored in the learner’s mental lexicon. Here, we explore the more general implications of the reported experimental findings for theories of the mental representation of multi-word expressions, and for theories of formulas as structural models serving as the principal input for the acquisition of syntax.

I Mental representation

In a series of works, Jackendoff (1997, 2002, 2013) takes issue with the assumption in mainstream formal syntactic theory that fixed expressions are a marginal phenomenon outside core grammar, and also with the idea that information in lexical entries is non-redundant. Both issues are relevant to our analysis. Not only does he argue that we have many fixed idioms in long-term storage, but that we also have many constructional idioms with open variables. An expression such as *take somebody to task* has an open NP with the V (*take*) and PP (*to task*) fixed (Emonds, 1972: 549). In an expression such as *{talk/laugh/sing} your head off*, the V is open, with the possessive NP and the particle fixed (Jackendoff, 2002: 173). In the *way* construction, only the possessive NP is fixed, while V and PP are open, as *eat our way across the country* (Jackendoff, 1997: 172). On Jackendoff’s (2002: 165–77) account, constructional idioms of this type involve hierarchical representations in what he terms ‘parallel architecture’. From this perspective, a lexical item is a relation between different types of mental representation: minimally, a phonological structure, a syntactic structure, and a conceptual structure. Moreover, fixed expressions can be accommodated in the lexicon in the same way as words, that is to say as stored links between distinct representational structures. Following these assumptions, below is a possible, simplified lexical entry for the constructional idiom *bring NP to light*.

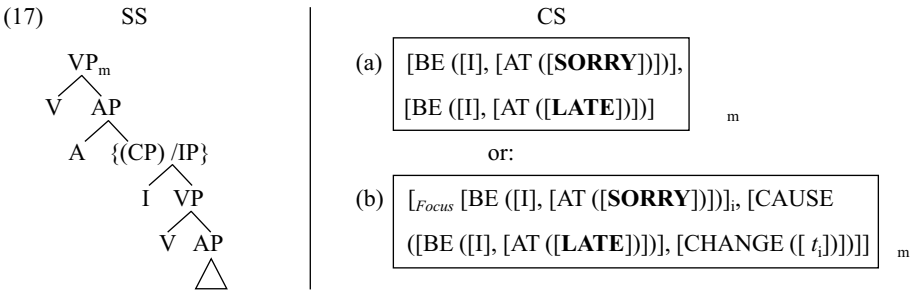


In this notation, pre-subscripts show links between phonological and syntactic structures (henceforth PS–SS correspondences), whereas post-subscripts show links between syntactic and conceptual structures (henceforth SS–CS correspondences). These simplified forms of conceptual structure represent the causative relation as [CAUSE], the inchoative relation (change-of-state) as [CHANGE [BE]], and the causative inchoative as [CAUSE [CHANGE [BE]]] (i.e. ‘make known’, ‘cause to become known’). Although seemingly stipulative, the SS–CS linking at the top of the phrase (*m*) is necessary due to the lack of word-by-word mapping: in the above example, the linking from the syntax is at the level of VP. However, importantly for the interpretation of our interlanguage data, in partially transparent idioms, there may be linking at more than one level, and a redundancy in the mapping. For example, *passing the buck* does involve *passing*, and if you *bark up the wrong tree*, something really is *wrong*. There are SS–CS correspondences both at the word level and at the higher phrasal level. In semantically transparent phrases stored in long-term memory (*nice to meet you*), the linking between syntax and semantics will be item-by-item, but also at the level of the whole phrase, so that this sequence

is stored whole, presumably with links to pragmatic as well as semantic information. Note that this conceptualization of a lexical entry as a relation between distinct parts with representational modularity helps to make sense of the previously discussed observation that, during the course of L1 acquisition, the prosody of a formulaic expression can be reliably in place in advance of an appropriate syntactic representation (Peters, 1977). This kind of modular representation also serves to illustrate Carroll’s (2010) skepticism as to whether storage of frequently occurring syllable groups from the input could ever drive the acquisition of morphosyntax.

The experimental data reported in these studies are supportive of this parallel architecture account of formulaic expressions in two distinct ways. First, it is possible for learners to have a fixed lexical core of a conventional expression with functional slots open to various degrees or with missing links, yet still use the expression in the right circumstances, because of the redundancy in linking, which is at the level of the whole as well as (some of) the parts. Thus we find appropriate usage in advance of targetlike morphosyntactic knowledge, and lexical representations that allow for changes to the mechanics of morphosyntax over the course of development. Second, these data support the notion of the lexicon as a repository of phonological, morphological and syntactic routines, rather than unanalysed chunks.

Over the course of the acquisition of the conventional expression (*I’m sorry I’m late*, learners will change the actual form of the utterance while maintaining the lexical core. They may go through periods where the same syntactic form is used for a while with discontinuous acquisition involving shifts from one representation to another (this accords with our intuition, but the data do not speak to this possibility), or they may undergo variation with underspecified functional slots in the structure in a continuous fashion throughout development. One schematic representation of a lexical entry cannot encompass the range of variation. However, the representation below is a possible simplified SS–CS correspondence for a learner who produces (*I’m sorry to late*).



The syntactic and semantic status of the conceptual representation may not be uniform for native speakers, as it could be interpreted either as a juxtaposition of two propositions as in (a) or as containing a subordinate structure indicating that one proposition is the reason for the other as in (b). In (b), the head act is focused, such that it is moved to the top (to further simplify: *I’m late > causes > I’m sorry* becomes *I’m sorry > because >*

I'm late). We assume that the more complex possibility (b) is the most common if not the universal representation, for two reasons. First, the pragmatic analysis of this speech act includes *I'm sorry* as the head act, and *I'm late* as a statement of the offense, which is pragmatically subordinate to the head act. Second, the interlanguage production data are replete with overt expressions of the causal relation, e.g. *I'm sorry for late*, *I'm sorry for lating*, *I'm sorry for be late*, *I am sorry from late*, and *I'm sorry about (my) late*.

These conceptual semantic representations are not intended to be definitive; there are several competing theories of conceptual structure, and we invite the reader to consider alternatives. However, the logic of argumentation remains the same: if there is linking between SS and CS at the phrasal level, this allows learners to use the conventional expression with appropriate meanings in appropriate contexts, even while the acquisition of morphosyntax is in play.

Jackendoff (1997, 2002) is not alone in arguing that mainstream formal approaches to the lexicon neglect the issues of multi-word expressions in long-term storage, and his work lends itself to comparison with that of Wray (2002, 2008), who also suggests we need to push the boundaries of our concept of the mental lexicon. Both researchers consider that the lexicon is not only a repository of idiosyncratic information, but of all linguistic expressions that have been memorized, including quotations of any length and performance scripts (Jackendoff, 1997: 157; Wray, 2008: 4). We restrict this discussion to formulas with SS–CS links only at the phrasal level (e.g. VP, IP), which accords with our own stance on the limits of the lexicon, and accommodates all the data under discussion.

The decomposition of formulas is at the heart of this discussion, and, on our understanding, this is fundamentally related to the decomposition of linguistic input in general. While Jackendoff's (1997, 2002) multi-word lexical entries are decomposed, Wray (2008) proposes the concept of Morpheme Equivalent Unit, or MEU, defining a formula, whether complete or with gaps, as a string that is processed 'without recourse to any form–meaning matching of any sub-parts it may have' (p. 12). She adopts the somewhat extreme position that chunking is a default means of storage and a default means of communication, with syntactic analysis as a secondary strategy. Even if the sub-parts of formulas could be analysed, they are not unless there is some kind of breakdown in holistic analysis, which she refers to as a Needs-Only-Analysis or NOA (pp. 17–20).

Perhaps the mirror image of Wray's (2008) NOA proposal is the idea advanced by Stockall and Marantz (2006), who argue for fully automatic across-the-board decomposition of linguistic input. On this account, everything that can be decomposed is decomposed. This proposal has recently been tested in a series of intriguing experiments. Fiorentino and colleagues have investigated another type of multi-morphemic lexical item – nominal compounds – seeking to determine, among other things, whether compounds were faster or slower to process than single words (Fiorentino and Poeppel, 2007; Fiorentino and Fund-Reznicek, 2009; Fiorentino et al., 2012). Fiorentino and Poeppel (2007) matched pairs of items for whole-word log frequency, letter length, and syllabicity. For example, the compound word *flagship*, with a log frequency of 0.68, was matched with the word *crescent*, with a log frequency of 0.69. Both have eight letters and two syllables. As for the internal properties of the compound, the log frequency of *flag* is 1.49, and that of *ship* 1.95. Compounds such as *flagship*, with higher frequency internal

morphemes, were in fact processed faster than words like *crescent*, despite their being matched for whole-word frequency, across all conditions in a lexical decision task. Intriguingly, more complex words were processed faster, due to faster lexical access to the component parts. Corroborating evidence comes from the fact that simultaneous magnetoencephalography (MEG) revealed an early peak latency of 350 ms, indicating lexical access to the first morpheme in advance of the whole compound word. In masked priming experiments, Fiorentino and Fund-Reznicek (2009) found not only that transparent compounds like *teacup* primed both *tea* and *cup* in a lexical decision task, but even opaque compounds like *bellhop* primed both *bell* and *hop*.

The evidence from such experiments points to automatic, super-fast, exhaustive processing of morphemes, and this was shown to be irrespective of semantic transparency. Perhaps counterintuitively, more analysis may lead to faster processing, due to the incremental nature of parsing. If we can assign structure, we do assign structure. We cannot turn off the parser. The implication that we see for the L2 acquisition of conventional expressions is that, just like L1 speakers, L2 speakers will automatically assign structure whenever possible, in accordance with their interlanguage grammars. That this is the case is robustly demonstrated by the creativity and diversity of expression in learner production of conventional expressions, reflecting their various stages of syntactic development.

It has long been assumed that a lack of analysis of multi-word units confers a processing advantage on language learners (for a review, see Kanno, 1993). That is, at a stage of acquisition when lexical access is quite costly and working memory resources are limited, it might help learners to be able to pull unanalysed expressions out of the lexicon in the process of achieving the desired communicative function. On this chunking view, when syntax catches up, these memorized strings lose their unanalysed status, such that learners then lose the processing advantage of a lack of analysis. However, we agree with Kanno (1993) that 'lack of syntactic analysis is not a defining character of such formulae' (p. 76) and argue that a distinction should be made between 'memorized processing routines' and 'memorized chunks'. Memorized processing routines involve syntactic and phonological processing – multi-word phrases stored in long-term memory – but still presumably confer a processing advantage due to efficiency of retrieval. Just as nominal compounds can be processed faster than whole words matched for length and frequency, due to the automaticity of morphosyntactic processing routines, so conventional expressions may exhibit a processing advantage if they are, in fact, analysed, rather than being treated as chunks. Counter to the prevailing wisdom, lexical retrieval of conventional expressions might actually benefit from morphosyntactic analysis. We leave the empirical investigation of this possibility for future research.

2 Against formulas seeding acquisition

As discussed earlier, a predominant view in the applied linguistics literature is that the acquisition of syntax is not only strictly usage based, but formula based. Ellis (2012) argues that 'language learning is, in essence, the learning of formulaic sequences and their interpretations' (p. 17), and that grammar only exists as an intuitive impression following statistical analysis of patterns of input frequency, a view that echoes quite

faithfully the assertions found in earlier work by Clark (1974), Peters (1977, 1983), and Wong Fillmore (1976, 1979). The idea of the developmental sequence being from fixed formula to low-scope slot-and-frame structures to productive schematic patterns is assumed to apply to L1 and L2 acquisition alike (Ellis, 2012: 18). That empirical evidence from actual language learners sometimes appears to contradict this perspective is dismissed due to the formulas studied being of low frequency and low transparency (p. 30). However, conventional expressions are high frequency by their very definition: in a particular situation, they are what native speakers say at least 50% of the time, and our data show clearly that L2 learners recognize and attempt such expressions well in advance of being able to produce a targetlike formula. Rather than acting as well-formed scaffolding around which the L2 grammar is built, the high-frequency formulaic expressions in this study appear initially to take the form of strings with fixed lexical elements and fuzzy functional slots, whose realization reflects interlanguage grammar, and whose later well-formedness is dependent on autonomous syntactic development.

One possible criticism of our interpretation of the data is that it may only apply to conventional expressions; the crucial input that seeds syntactic development may be acquisitional formulas, rather than social or cultural formulas. We recognize that conventional expressions and acquisitional formulas are clearly distinct phenomena, and our data only bring evidence to bear on the nature of the former. However, given the general research question of whether formulaic language is the relevant input for the acquisition of syntax, let us pause to consider this possibility. The series of empirical investigations of formulas in L2 acquisition conducted by Myles et al. (1998, 1999) assumed syntactic acquisition to be driven by both acquisitional formulas and conventional expressions (for examples of both, see Myles et al., 1999: 50–51). In the example discussed earlier, *Une famille j'habite une maison* – a family I live a house – ‘A family lives in a house’ (Myles et al., 1998: 331), the acquisitional formula is *j'habite*, glossed in line with the target grammar as ‘I live’. However, the interlanguage meaning of this formula in context is not advanced or targetlike. That is, the verb *habiter* ‘live’ is being used in a default form that begins with /ʒ/, involving the type of misanalysis frequently observed in the acquisition of clitics (e.g. French *eau* ‘water’ being lexicalized as *l'eau*, following frequent input with the definite article *le*). In this example, it seems unlikely that the chunk is a piece of advanced grammar serving as input to syntactic development; rather, this will be reparsed once independent morphosyntactic development makes reanalysis possible. Other examples appear to suggest a similar scenario: *elle j'aime le shopping* ≈ she I like shopping = ‘She likes shopping’; *comment t'appelles le fille?* ≈ what's your name the girl? = ‘What is the girls’ name?’ It seems unlikely that acquisitional formulas drive syntactic acquisition, although, as the many interesting examples of Myles and colleagues make clear, their status and role in language acquisition is clearly worthy of ongoing investigation.

VIII Conclusions

Much current work in applied linguistics has moved to a model in which the memorization of formulas plays a pivotal role in the acquisition of syntax. According to this model, fixed expressions constitute the relevant input to grammatical development, as the accurate storage of a repertoire of constructions allows for eventual statistical induction of

abstract grammatical categories, and ultimately grammar-like behavior based on general cognitive principles, without the need for an actual grammar. However, empirical evidence from the acquisition of conventional expressions suggests that formulas do not appear to constitute the relevant input for the acquisition of syntax, and do not constitute a bootstrapping mechanism into grammar. On the contrary, despite high rates of recognition of a given target expression across proficiency levels, production of the exact expression shows very gradual convergence on the target. The potential of eventual well-formedness is dependent on autonomous syntactic development, and learner attempts at production, while revealing an accurate understanding of pragmatic function, are reflective of interlanguage grammar. These L2 data support the original conclusion of Krashen and Scarcella (1978) that the acquisition of syntax is independent of formulas. They are also compatible with the claims of Kanno (1993), in that (1) decomposition vs. storage is a false dichotomy; and (2) syntactic routines may be housed in long-term memory.

Given the high frequency of conventional expressions in the contexts in which they appear, one might ask why it takes learners so long to converge on the grammatically accurate, pragmatically appropriate community norm. Consideration of this question soon reveals the complexity involved: production of the conventional expression *I'm just looking* involves syntactic knowledge of pronouns, case assignment, contraction, adverbial modification, use of an irregular auxiliary verb, encoding of semantic verb class, and appropriate use of aspectual morphology. Nevertheless, the expressions proved to be well recognized, stored as multi-word expressions in the mental lexicon during changes in the interlanguage grammar, and available for use in appropriate contexts. Our findings support the view expressed by Carroll (2010) that knowledge of formulas emerges as the correspondence between phonological structure, morphosyntax and conceptual structure (p. 242). Changes over time to multi-word lexical entries are possible even in cases of continuously appropriate use, given the redundancy in syntax–semantics mappings. Patterns of both variability and development can be accounted for if we posit that conventional expressions may be stored with 'live' phrasal structure in long-term memory: memorized processing routines, in parallel architecture.

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Notes

1. As one reviewer notes, Jackendoff's (1997, 2002, 2013) approach is often associated with Construction Grammar (Fillmore, 1988; Goldberg, 1995) and is sometimes considered more in line with a usage-based perspective. However, Jackendoff himself considers his own theory of parallel architecture to be 'thoroughly within the generative tradition' and properly characterized as one of the 'alternative theories of generative syntax' (Culicover and Jackendoff, 2005: 3)
2. Ellis (2012) takes the teddy bear metaphor from Hasselgren (1994: 237), who described how in an L2 we 'regularly clutch for the words we feel safe with: our "lexical teddy bears".'
3. Cut-offs for defining 'frequent' occurrence of multi-word expressions in corpus work is much less dense than the 50% cut-off we use here in pre-identified contexts: 40 occurrences per 1 million words (Biber et al., 2004), and 10 occurrences per million words (Biber et al., 1999).
4. Learners' use of an alternative grammatical form where a conventional one exists illustrates the issue of nativelike selection, identified by Pawley and Syder (1983). Nativelike selection is the ability to identify (and use) conventional expressions from among a range of grammaticality correct paraphrases.
5. Following standard transcription practices, pauses of less than .5s are indicated as '(.)'.

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