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# Developmental aspects of English argument structure constructions for Korean-speaking second language learners: Usage-based constructional approaches to language development

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## HIGHLIGHTS

- Significant improvement in understanding argument structure constructions.
- Excessively frequent use of two-argument constructions than three-argument ones.
- Stubborn use of prefabricated chunks and incorporation of new and old language items.
- Support for merging narrowly stabilised L2 routines with other resources as necessary.
- Evidence of sustaining efficiency driven by human domain-general cognitive factors.

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## ABSTRACT

This study investigates developmental aspects of English Argument Structure Constructions (ASCs) for Korean-speaking second language (L2) learners, providing evidence of how they manifest human domain-general cognitive systems during language acquisition via usage-based constructional approaches to language development. Participants were instructed on six English ASC types with their representative verbs for three months. The data from grammaticality preference tasks, writing tests, and free-writing tasks were analysed. Comprehension data from the grammaticality preference tasks showed significant improvement in understanding ASCs after instruction, supporting sentence-level generalisations for language comprehension independent of individual verbs. The production data from the writing tests demonstrated more frequent use of two-argument constructions than three-argument ones, which indicates the internal complexity between ASC types. The results of the writing tests also displayed skewed exploitation of verbs representative of the target ASCs, implying a frequency-sensitive nature of language acquisition. All production data further revealed active use of prefabricated chunks and incorporation of new and old language items. Taken all together, these observations suggest language learners' merging narrowly stabilised L2 routines with other (non-)linguistic resources as necessary, sustaining efficiency in a sentence-building process, under the superintendence of cognitive factors when satisfying communicative intents.



## 1. Introduction

Usage-based linguistics views languages as dynamic systems gradually emerging from learners' stored experiences with (non-) linguistic input [13]. Language acquisition is thus based on such human domain-general cognitive factors as abstraction, entrenchment, prototypicalisation, and so forth (e.g., [17,24,32,62]). Especially from constructionist perspectives, it is assumed as a null hypothesis that natural languages are learnt without applying any innate linguistic principles [11]. Of special interest in this context is the significance of argument structure constructions: Form-meaning-function pairings which provide a medium for delivering basic propositions of human behaviours in a language [33,36].

Indeed, the vital function of argument structure constructions in language acquisition has been actively reported in settings where English is the first language (e.g., [21,22,58]) and the second language (L2) (e.g., [7,37,40,43,46,65]). However, despite several trials

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to draw linguistic or pedagogical implications from instructing selective argument structure constructions (e.g., [39,59]), there have been few studies to date clearly devoted to assessing the impact of implementing serial argument structure constructions into Korean-speaking L2 learners' acquisition of English. Also, it is somewhat less clear what is actually happening in their mental grammar right after Korean-speaking L2 learners start to accumulate constructional knowledge of English.

With these in mind, the current study aims to investigate developmental aspects of Korean-speaking L2 learners in relation to English argument structure constructions. The study specifically focuses on language learners' manifestation of cognitive mechanisms during language processing and acquisition. This research will thus expand the current understanding of L2 learners' mental grammar under the major tenets of usage-based constructional approaches to language development. In particular, the present study will yield convincing evidence as to how learners' knowledge of English argument structure constructions emerges and then grows, demonstrating their active utilisation of domain-general factors to accomplish target communicative intents.

## 2. Background knowledge

### 2.1. Usage-based linguistics and construction grammar

Usage-based linguistics emphasises language use as a core factor for shaping a language. In this framework, a language is understood as a structured inventory of linguistic repertoires drawn from people's perceptual experiences, conceptualising language phenomena and acquisition with the involvement of the full scope of cognition [41,57]. A grammar is then explained as a fundamentally abstract, schematic, and symbolic, yet gradually evolving, system via human domain-general cognitive factors on the basis of language users' (and learners') accumulated experiences [17,19,24]. Language acquisition thus becomes essentially input-driven and sensitive to the actual experience of language use with other types of knowledge other than the language itself [19,24,68].

Of the various determinants of learning in usage-based linguistics, this study particularly focuses on frequency effects. According to Ellis [23], the frequency of occurrence intimately tunes language processing and acquisition since humans are born with an incisive sense of frequencies that is strong enough to recognise frequency distributions and their central tendencies. Frequency effects are generally believed to play an essential role in language acquisition, aiding learners in acquiring lexical frames and extending those frames to generalised abstract representations in L1 settings (e.g., [12,18]) and also L2 settings (e.g., [27,29]). The recent study by Ambridge, Kidd, Rowland, and Theakston [3] further explicates the ubiquity of frequency effects by emphasising that a learning mechanism is at least frequency-sensitive, and this sensitivity of frequency in childhood continues into older childhood and adulthood. Consequently, language acquisition may be, in essence, a matter of probabilistic by-products that are closely associated with the frequency of such occurrence.

The experiment in this study utilised two types of frequency. One is type frequency, a word distribution permitting no overlap in the vocabularies in a text. Voluminous research has proven the association between type frequency and ease of language acquisition and the generalisation of existing constructional schemas (e.g., [48]). The other category is token frequency, that is, the overall distribution of words in a text. The so-called 'Zipfian distribution' [70] in natural languages functions as learners' optimisation in language acquisition by providing a single very high frequent exemplar that is also prototypical in its meaning [14,35]. To sum, especially in the initial stage, low-type yet also high-token frequency may help learners perceive lexical frames and spontaneously produce the configurations [14,25,32,35]. After the initial stage, a high type frequency may allow learners to abstract the patterns, providing information about the number of discrete items that can fill the slots in the representations [25,48].

In L2 acquisition settings, the effectiveness of token and type frequency appears to be rather debatable. To illustrate, Ellis and Ferreira-Junior [27] showed L2 learners' use of verb-argument constructions driven by the highest and prototypical exemplars, thereby supporting the power of low-variance input. By contrast, a series of research (e.g., [49,52,69]) provided evidence that the two types of frequency indicate no distinguishable difference in the acquisition of target language systems. Even though this discrepancy exists, both sides clearly agree that frequency is still an essential factor in L2 acquisition contexts and serves a facilitative function when pursuing language learning.

Of special interest in this regard is the appropriate linguistic unit to use for dealing with language phenomena and acquisition. Words themselves only serve a limited and imperfect means of expression. Rather, symbolic units of form-meaning-function mappings exist, distinct from individual lexical items in a sentence and conventionalised in speech communities, as constructions [26,31]. A number of research (e.g., [16,31,32,62]) has revealed the nature of constructions as follows: Constructions have their own meanings, independent of the verb(s) within those frameworks; they are contained in a language user's lexicon and form structured inventories of the speaker's (grammatical) knowledge; and they are symbolic in that they blend morphosyntactic and lexical forms with semantic, pragmatic, and discourse functions associated with them.

Constructional approaches commonly assume the existence of pairings of form, meaning, and function and the direct association of semantics with surface structures (i.e., "*a what-you-see-is-what-you-get syntax*" in Ref. [33]; p. 455), an inheritance network amongst the constructions, and crosslinguistic variability and generalisation via human domain-general cognitive systems [34]. These assumptions are highly consistent with the usage-based explanations of (the formulation of) language knowledge. They involve "the distributional analysis of the language stream and the parallel analysis of contingent perceptual activity" ([26]; p. 368), thus starting from item-based piecemeal learning with concrete exemplars of language use under the mechanism of statistical learning [15,24,38]. This mechanism naturally captures the necessity of having emergent considerations of linguistic systematicity (e.g., [19,54]) combining frequency of occurrence and human cognition [24,28]. The ultimate goal of language acquisition is then to enlarge the inventory of constructions through gradual abstractions of specific construction instances, eventually obtaining automaticity of construction uses with broad generalisability to varied social interactions [57]. Therefore, it is crucial that language learners are exposed to a wider range of (language) events and actual construction usages so as to approximate their language knowledge to the target language system.

### 2.2. Argument structure constructions and their growth

Amongst constructions, a set of form-meaning-function combinations "provide the means of expressing simple propositions in a language" ([36]; p. 74). They are referred to as Argument Structure Constructions (ASCs) (Table 1, adapted from Goldberg [31]. Sethuraman [58] points out that the meanings related to argument structures are connected directly to ASCs, not solely to the individual verbs. In the same vein, [33] explains that ASCs are phrasal (i.e., they consist of an array of grammatical relationship between arguments) but do not necessitate having any phrase structure tree.