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# Usage-Based and Universal Grammar-Based Approaches to Second Language Acquisition

*Kim Hua Tan and Vafa Shojamanesh*

## Abstract

The theoretical controversy that surrounds the acquisition of a second or foreign language is seemingly unending. Though there are dissensions in the literature, past studies had indicated that scholars tended to fall into two groups of schools of thought, the usage-based and the universal grammar-based approaches in second language acquisition. This paper reviews the literature of recently published findings in scholarly papers and contrasted the varied views of how second language can be acquired. Empirical evidence of both views are contrasted and discussed. Included in the discussion are environmental variables such as types of input and the length of input and non-environmental variables that are innate in learners.

**Keywords:** usage-based, universal grammar-based, second language acquisition, environment, innate

## 1. Introduction

Among the linguistic theories and approaches, the discussion of language acquisition and second language learning has been conducted for a span of a few decades by two groups of theorists: the Chomskyan linguistic generative structuralists and the functional psychologists' cognitive linguistics. Generative linguists believe in the existence of autonomous modules for language acquisition in the mind and claim that most of the grammar is not learned from the environment and communication, but arises from an innate universal grammar (UG). In contrast, functional theorists state that grammar is not transferable to the child or anyone else but arises from the functions of the language. Associating with the concepts underlying forms of a language, cognitive linguistics claims that knowledge of a particular language results from language use and that grammar is understood by conceptualization. Cognitive development includes all skills a child attains throughout his life. Cognitive skills matter because they lead to thinking and learning. Without skills such as remembering, numeracy, thinking, learning, reasoning, problem-solving, comparison-making, and decision-making, a child is at risk of falling behind. Cognitive developments matter from childhood to adulthood.

## **2. Usage-based versus universal grammar-based debate in second language (L2) acquisition**

As two different approaches in theoretical linguistics, usage-based and universal grammar-based (UG-based) are two theories in language learning from various perspectives: the former focuses on the influence of experience, input, and frequency in language learning (i.e., cognitive linguistics), while the latter emphasizes the existence of an innate universal grammar and a set of rules as underlying basis for the formation of correct grammatical sentences (i.e., generative grammar).

Based on generative linguistics, language acquisition emerges from a combination of rules which will form grammatical sentences. Generative grammar (proposed by Chomsky in 1950s) arises from an innate universal grammar. Generativists believe that environmental input and language use has no effect on learning grammar. [1] further explains “acquisition, thus, became a matter of the ‘setting’ of ‘parameters’ provided by Universal Grammar, something which, it was assumed, would be possible on only minimal exposure to data” (pp. 573–4). Believing in the existence of an innate system of rules, generativists claim that universal grammar provides “the possible parameters for language and uses parameter-setting approach depending on which specific language is involved” (pp. 1141–2) [2]. It is claimed that language function is analytically separate from language structures.

UG-based approach claims that children have got a prior language knowledge “... which enables them to achieve an adult grammar on the basis of limited evidence” (p. 2) [3]. However, [3] points out, since 1990s, another model of input-driven approach was formed, usage-based theory of language learning, and it became so popular that UG-based approach was considered an outdated theory.

Aligning to cognitive linguistics, a usage-based linguistics (proposed by [4]) is “a form of linguistic analysis, that is, that takes into account not just grammatical structure, but that sees this structure as arising from and interacting with actual language use (p. 17) [5]. Based on this theory “... input is a rich source of information for identifying grammatical regularities and children have a remarkable ability to perform complex computations over statistical information displayed in the input” (p. 3) [3]. This theory argues that linguistic structures result from experience [6]. Tomasello [7] (as cited in [8]) states that language and language acquisition are usage-based and its structure emerges from using language.

Kang [3] points out that empiricists do not believe in the innate knowledge of language; supporting the input-driven language learning approach, they claim that language learning is based on sense and experience. They also state that child’s input is systematic and regular which helps him/her to understand the system of the target language by the use of inductive reasoning. Frequency of language input is a major factor in providing the child with the information she/he needs in learning a target language: “...the more frequently a certain linguistic expression is available to the child, the easier it is for the child to learn it [9–12]” (p. 1) [3].

Kemmer and Barlow [13] also discusses two traditions that focus on language use that are usage-based: (1) firthian tradition, emphasizing on the role of context and social aspects, and (2) enunciativist linguistics, focusing on the speech act. “A Usage-Based model is one in which the speaker’s linguistic system is fundamentally grounded in ‘usage events’ instances of a speaker’s producing and understanding language” (p. iix) [13]. Langacker [14] (as cited in [13]) characterizes usage-based model with three features: maximality, non-reductivity, and being bottom-up. Accordingly, the mind is capable of analyzing complex structures in multiple ways, resulting in the production of both specific and general patterns through usage. The first two features imply the redundancy and massiveness of the grammar, and the

bottom-up feature determines that general patterns emerge from specific ones and specific patterns are the result of experience.

As [13] points out, usage-based accounts are experience-driven, and frequency of items is an important factor and an inseparable part of language learning, especially in forming and understanding structures and operations; "... Usage-Based events play a double role in the system: they both result from and also shape the linguistic system itself in a kind of feedback loop" (p. viii). In usage-based accounts, language is learned by data observation in the actual use of language. From Langacker's [4] viewpoint, in usage-based model "substantial importance is given to the actual use of the linguistic system and a speaker's knowledge of this use; grammar is held responsible for a speaker's knowledge of the full range of linguistic conventions (p. 494)" (p. 2) [13]. Kemmer and Barlow [13] claims that "through repetition, even a highly complex event can coalesce into a well-rehearsed routine that is easily elicited and reliably executed" (p. 3).

From Croft's [15] point of view, in usage-based models language use specifies grammatical representations: "the Usage-Based model is a model of grammatical representation in which language use determines grammatical representation. Specifically, frequency of use and similarity of form and meaning are the determining factors for the structure of grammatical knowledge in the mind" (p. 499). According to Langacker, usage-based model "focuses on the actual use of the linguistic system and a speaker's knowledge of this use ..., it claims that linguistic units are abstracted from usage events, that is, the actual instance of language use" (p. 1142) [2].

In usage-based models, frequency of usage plays a big role in the production, language comprehension, and grammaticality of the patterns. The two mentioned types of frequency are token and type frequency. Token frequency "is how often particular words or specific phrases appear in the input" (p. 166) [16]. As [15] defines "Token frequency is the frequency of occurrence in language use of individual tokens of a grammatical type, such as English regular past tense forms" (p. 499). Quoting from [17, 15] states that how much a form like irregular word forms entrenches in the learner's mind is a token frequency function. Type frequency is defined as "how many different lexical items can be applied to a certain pattern, paradigm or construction" (p. 166) [16], or it is referred as "the frequency of word types that conform to a schema" (p. 499) [15]. The regular past inflection is mentioned to have high type frequency because it is applicable to a large number of different verbs [15, 16].

According to [18], usage-based approaches are input-dependent, and in this theory, "frequency" is considered as the language rule which results from structure analysis in language input. Zyzik [18] states that there must be enough input so that the learner can learn whatever she/he needs: "... it must be abundant enough for the learner to abstract regularities from concrete exemplars of language use" (p. 54), such as native competence which is gained after lifetime attention to the L1 input. Ellis [16] (cited in [18]) points out that in order to achieve native fluency at the L2, there must be huge amounts of language input so that the learners can choose and analyze the words and sequences they prefer. In input-based accounts, children are expected to follow input patterns by experience and environmental effects [19], and the grammatical relations result from the co-occurrence of language functions and forms [20].

Zyzik [18] also states that based on usage-based theory, insufficient input and little access to abundant and implicit input like L1 are the reasons that ultimate attainment cannot be achieved by L2 learners. She points out that "lack of exposure to sufficiently rich and varied input" (p. 56) is the cause of poverty of stimuli. She

mentions that very few studies have been conducted on the quality and quantity of input in instructed settings. She claims that with the help of input frequency, the L2 learner should be able to pick up the abstract regularities from the exposure to the abundant and rich input. According to her, in SLA settings, high-frequency items (i.e., the forms and structures that abundantly emerge in the language input) cause no learning problems; the focus should be on the low-frequency forms in the input.

There is this conflict between the supporters and the opponents of these two approaches (i.e., UG- and usage-based) whether language learning is done on the basis of the input exposure and experience or by the help of the innate knowledge of learners, and still it is not clear whether grammatical learning is usage-based.

### **3. Theoretical applications of usage-based versus universal grammar-based approach: Some empirical evidence**

There are a number of studies that contrasted usage-based and UG-based conditions in empirical studies.

To compare usage-based and UG-based approaches, Kang [3] studied scrambling and multiple nominative case marking as the two syntactic structures among Korean children. The results of his study showed that child's speech to a great extent resembles adult's; both mentioned structures were used very little in the children's speech because their frequencies in parents' speech were low which shows that child's grammar is a reflection of the adult's. This frequency match between child and adult's speech supports the input-driven approach. But examining the same idea in the experimental group showed that though scrambling was absent in the children's input, it was eventually used and learnt, and this rejected the role of input-driven approach. Hence, [3] proposes the existence of an innate knowledge among children which is in support of the UG-based approach.

To delve into the acquisition process in the two theories of UG and usage-based theory, Zyzik [18] studies some problematic linguistic structures in both first and second languages (such as want-to contraction, yes/no formation, and pronoun interpretation) and synthesizes some input constructs (such as frequency effects, the poverty of stimuli, and other cases). According to her, input is not enough for learning some complex structures. In addition to input, learners must have grammatical competence ("innately intuitive knowledge"). She says that learners cannot gain ultimate attainment when the input they receive is impoverished or insufficient. Then by rejecting the poverty of stimuli idea of the usage-based theory, she concludes that "...the input is rich enough for children to acquire all the properties of language if mechanisms such as item-based learning, competition among forms, indirect negative evidence and sensitivity to frequency are given serious consideration" (p. 57). She proposes UG-based as competing approach in the L2 acquisition.

Rothman and Guijarro-Fuentes [21] studied the role of input quality in naturalistic (UG-based) and instructional (usage-based) settings. They state that there is a difference between age of acquisition and the critical period hypothesis. At the age of acquisition process, the focus is on input. Since input causes acquisition, when to be exposed to the significant input is of great importance. They point out that there is a correlation between age of exposure to the native input and age of the first significant exposure, no matter whether the input comes from a naturalistic or instructed context.

Rothman and Guijarro-Fuentes [21] further states that clearly learners in L2 instructed settings receive less amount of input than those who are learning the target language in a naturalistic language learning setting because in naturalistic settings, learners have access to the native speakers outside the class. Thus, as they claim, the

quality of input is introduced as one of the main variables which shows the differences between the two learning settings: different amounts of input result in different competence outcomes. However, as they claim learners in instructed settings receive better input quality; the input includes syntactically, semantically, and morphologically accurate structures, while in naturalistic settings learners receive nonstandard input. This highlights the importance of the instructed input in formal classes in foreign language learning settings. They point out that some of the linguistic properties are not acquired from input due to the poverty of the stimuli. These properties are obtained by language universals. Another point raised is that in instructed language learning settings, teachers themselves are L2 learners which are very common in non-English speaking countries. They emphasized that age of acquisition is neglected among different variables in adult language acquisition. It is decided that input quality causes differences in naturalistic and instructional settings.

Francis [22] investigated the role of the foreign language learners' attention and awareness on their language acquisition. He considered one of the input enhancement techniques, "input flooding", which bombards learners with great amounts of target items. It was used to explore the extent of the acquisition of two of the copulative verbs in Spanish. The participants were divided into experimental and control groups and were tested by these tasks: grammaticality judgment, written production, and picture description. T-tests were used for analyzing the data, and the scores between and within groups were compared. Data analysis revealed that input flood had no significant effect on the acquisition of the two mentioned verbs. He believes that to come to a final conclusion, the input flood on the acquisition of these two verbs was not sufficient. It is suggested to consider simple structures in input flood and in longer treatment periods; being exposed to more structures of the target forms can make a big change on the effect of the input flood on the learners' proficiency level.

Yet another study contrasted UG-based and usage-based in the case of [23] where she studies the correction feedback in L2 speech production from the viewpoints of the two opposing theories: cognitive-interactionist and nativist. According to nativists, language acquisition device (LAD) is inherent in all human beings, and positive evidence is vital for studying the development of a second language. Nativists believe language acquisition is purely implicit, and by corrective feedback learners are informed which structures are unacceptable, while according to cognitive interactionists, learning is both explicit and implicit, and "the information obtained through feedback may serve as input data for explicit rule-learning or subsequent implicit learning" (p. 2) [23]. Li discusses different ways of error correction and defines explicit correction and recast as the 'input-providing feedback', while repetition, elicitation, metalinguistic clue and clarification are identified as 'output-prompting feedback'. In conclusion, [23] provides useful types of feedback to the teachers; for teaching new linguistic structures, input-driven feedbacks such as recasting is suggested, while in teaching previously learned linguistic structures, where deep cognitive processing is involved, output-prompting feedback like self-correction is recommended.

Nativists and cognitivists could not provide sufficient evidence and proofs to specify which approach controls syntax acquisition process, so in [24], Al-Balushi presents a new avenue. He claims that looking at the syntax acquisition from second language learning perspective shows the accessibility of UG by adult L2 learners by using analytical and verbal abilities. He suggests researchers examine the structures and constructions which are neither found in the learner's L1 grammar nor in L2 input. Then it would be easier to find out whether learners' performance is based on experience or not. As [24] addresses, there are still remaining questions about the involvement of UG in language acquisition process and its extent. The role of linguistic data or language input in language acquisition and whether UG can be

a compensation for the impoverished input are the topics yet to be studied and investigated.

In a study by [24] on child language acquisition process, it was further discussed that children use strategies, mechanisms, and pragmatic inferences to comprehend lexical symbols of adults. As he points out, cognitive and social processes both assist children because there are similar semantic relations (like action and agent) in all cultures. Exposure to linguistic input enables children to formulate word classes of nouns and verbs in positions they have not experienced before. As a result, cognitivists believe language is acquired by more cognitive components. However, since the language of a child is a reflection of caregiver or experimental learning situations, syntax acquisition can be referred to usage-based and experience-based approaches [24]. This has implications on future research in second language acquisition.

There are various studies relating to input exposure and effective factors in second language learning and acquisition. The next section is a review of studies focusing on the effect of early input, the effect of late input, and the effect of environmental input.

### **3.1 The effect of early input in second language acquisition**

Some researchers believe that receiving language input at an early age has positive effects on the learning process. Borovsky [25] believes that early language input has a great influence on increasing lexical proficiency level and having less linguistic input exposure causes learning problems. She states that because of the effect of receiving early input, cognitive mechanism of children is different in the word learning process; children find the relationship between words and their usage by the use of categorization. She also mentions that an increase in the linguistic input has a positive effect on the children's vocabulary learning process.

Kharkhurin [26] hypothesizes that in the early years, cognitive process of the bilingual children causes mental construction which results in cognitive advantages later in their lives. When a target language is learnt early, better underlying concepts are formed, and there will be a better relationship between learner's linguistic and conceptual knowledge.

Huttenlocher et al. [27] points out that normal children learn basic syntactic structures at early ages, but there are variations in the rate and course of acquisition especially when the structures are more complex. They also mention that there is a relation between language input and learners' skills in some parts of syntax. They hypothesized that some skills which were not related to language input at early ages can be influential later.

It is believed that when the L1 is more established at the time of first exposure to the L2, it will interfere more with the L2 production. Flege [28] (as cited in [29]) states that the problems that adults encounter in the learning process is not because of "normal neural maturation" but because of the L1 interference. Iverson et al. [30] (as cited in [29]) mentions when the L1 becomes more developed, the learner faces more problems. So they suggest an early start of the L2 because till L1 categories are not fully established, the L2 learner will have an easier learning process.

Krashen et al. [31] (as cited in [32]) claims that starting younger makes learners more successful and can result in native-like performance. Nevertheless, as they mention, late learners learn faster.

### **3.2 The effect of late input in second language acquisition**

Munoz [33] states that since late starters have a faster rate of development, further exposure allows them to catch up with the early starters especially regarding

literacy-related skills. Late starters achieve similar proficiency levels in shorter periods of time.

Frediani [34] studied the effect of the age of onset and the amount of instruction on EFL learners' proficiency in Argentina. 7–8-year-olds were compared with 12–13-year-olds. Considering the instructional time, the study shows that though late starters had fewer instruction hours, their cognitive maturity helped them to overcome the problems in language learning.

### 3.3 The effect of environmental input in second language acquisition

It is believed that being exposed to the target language outside the formal situations influences the learning process. Borovsky [25] states that early linguistic experience of children at home is correlated with their linguistic input ability at school: when their home environment is linguistically enriched, they learn new words faster.

The results of the study by [27] show that child's syntax is highly related to the input variations; there is a critical relationship between teacher's and parents' syntactic input and child's syntactic growth. The effect of the teacher's input is significant not at the beginning of the school year, but over the years, and those who provide language input for the child as a learner play a big role in the learning process of syntax. They found individual differences between children's skills and a correlation between these differences and parents' complexity of speech.

Aukrust [35] states that "children can and do learn language as well as other socio-cognitive skills from keenly observing the interactions of others and listening in on talk" (p. 18). Beals [36] (as cited in [35]) points out that children whose mothers used more words in conversations had a bigger size of the vocabulary.

A brief look at relevant studies to input exposure as most studies indicated usage-based has significant links to second language acquisition.

### 3.4 Summary of related studies on input exposure

Title	Author(s)	Results
The effect of early input	Borovsky [25]	Early language input has a great influence on increasing lexical proficiency, and less input causes learning problems
	Kharkhurin [26]	By learning a target language early, underlying concepts are formed and a better relationship shapes between learners' linguistic and conceptual knowledge
	Huttenlocher et al. [27]	There is a relationship between language input and learners' skills in some parts of syntax
	Fledge ([28] cited in [29])	Adults' learning problems are because of L1 interference
	Iverson et al. ([30] cited in [29])	To have an easier L2 learning process before L1 categories are fully established, an early L2 start is suggested
	Krashen, Long, and Scarcella ([31] cited in [32])	Starting younger makes learners more successful and can result in native-like performance
The effect of late input	Munoz [33]	Since late learners have a faster rate of development, further exposure allows them to gain better literacy skills in shorter periods of time
	Frediani [34]	Late starters, with fewer instruction hours, overcome language learning problems because of their cognitive maturity



<b>Title</b>	<b>Author(s)</b>	<b>Results</b>
The role of environmental input	Borovsky [25]	A linguistically enriched environment helps learning new words faster
	Huttenlocher et al. [27]	There is a critical relationship between teacher's and parents' syntactic input and child's syntactic growth which arises over years
	Aukrust [35]	Children learn language like other socio-cognitive skills by observing and listening to the interaction of others
Age influence in language learning	Penfield and Roberts [37]	Language learning is under the influence of an influential period in early childhood called critical period (i.e., CP)
	Bettoni-Techio [38]	There is no fixed agreement on the onset and offset of language learning, but puberty is the offset
	Perani et al. [39]	Age is an influential factor in language learning, and late learners are less proficient than early ones
	Singleton [40]	Native-like level can be gained before age 7
	Dimroth [41]	Starting at lower levels in primary schools is suggested to increase better learning/acquisition attainment.
	Larson-Hall [42]	Early starting age can be advantageous only if individuals acquire a significant amount of input
	Huang [43]	Learners' first exposure to English and school teaching time is significantly correlated with their accuracy of the studied vowels. In addition, the formal instruction of English at an earlier age is suggested
The ineffectiveness of critical period	Munoz ([44] cited in [42])	No advantage for earlier starters was observed in this study; attitudes and motivation were the only advantageous parts for early starters
	Bialystok and Hakuta [45]	Older learners transfer more than younger ones, and they can gain native-like attainment
	Slabakova [46]	Critical period has no effect on semantics
	Burstall ([47] cited in [42])	No effective age influence was found on the performance of early starters in this study

Language input has been studied from various perspectives to clarify its role in the teaching and learning process so that better learning contexts will be provided for language learners. The amount and length of receiving linguistic input can have a determining role in better learning, especially in foreign language settings that are mostly input-dependent.

#### **4. Conclusion**

There is tension between the supporters and the opponents of these two approaches (i.e., UG- and usage-based) on whether language learning is done on the basis of the input exposure and experience or by the help of the innate knowledge of learners, and still it is not clear whether grammatical learning is usage-based or universal grammar-based. What is certain, at this juncture, is that it is worthwhile investigating the following parameters and variables: the role of different types of frequency of L2 input (such as type and token frequency), the role of L1 transfer, the impact of L1 frequency on the learners' performance data, L1 and L2 co-occurrence probabilities, the interaction of the L1 in L2 input, and the impact

of L1 on L2 proficiency levels. For reliable results, learners should be selected from different age groups and language learning settings (both second language learning settings and foreign language learning settings). It cannot be overly emphasized that sufficient numbers of participants should be considered for these studies as well to have valid outcomes that can be applicable to other contexts and situations. These considerations will certainly help scholars in the pursuit of an answer to the usage-based or universal grammar-based debate. On whether the success of second language acquisition is a result of the innate knowledge or is a result of usage-based experience, the positive effect of the length of exposure shows that grammatical learning can be claimed to be usage-based, but further research by larger groups of learners with early exposure are needed to support this.

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