

# Literature Review on Access to Universal Grammar in Second Language Acquisition — Visual Analysis Based on CiteSpace

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## Abstract

This article starts with the visual analysis by an analytical tool "Citespace" in an effort to investigate the previous studies on universal grammar domestically and overseas in a macroscopic way. It turns out that universal grammar is still received much attention, but there is few systematic review on the accessibility of universal grammar in second language acquisition. Thus, this article systematically sorts out the previous studies in a microscopic way in terms of whether universal grammar can be accessed in second language acquisition. At length, the conclusion is made that currently the hot-discussed topic comes to which aspect of UG is accessible to SLA, instead of whether or not the UG is accessible to SLA.

**Keywords:** Universal Grammar; Second Language Acquisition; Accessibility; Visual Analysis.

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## 1. INTRODUCTION

One dispensable issue in second language acquisition research remains the exploration of the difference between first language acquisition (FLA for short) and second language acquisition (SLA for short). In an attempt to delve into it, scholars have provided different perspectives, among which the linguistic approach gains much popularity. According to the linguistic approach, Universal Grammar provided to entangle the issue is of much debate and "has been very influential in SLA theory and research" (Saville-Troike, 2012). In doing so, the accessibility of universal grammar to SLA is also hot-discussed.

Universal Grammar (UG for short), based on Thomas (2004), was initially explored almost 900 years ago. She says "In 1270 Roger Bacon wrote that 'grammar is substantially one and the same in all languages, despite its accidental variations'". Later, "Johann Heinrich Alsted defined 'general grammar' in his 1630 Encyclopedia as 'the pattern of every particular grammar'". Beginning in the mid-1960s, Chomsky started reconstructing a concept of universal grammar within generative linguistics as a 'system of principles, conditions, and rules that are elements or properties of all human languages not merely by accident but by necessity'. According to Chomsky, Universal Grammar is a theory of innate principles that constitute the starting point of language acquisition, 'the "initial state" of the language learner, hence the basis on which knowledge of

language develops'. UG was proposed to answer the "logic problem" of language learning. The "logic problem" can be briefly illustrated as what a language learner knows more than the input he or she receives, which is also viewed as the "Poverty of Stimulus" (POS) that has been at the heart of nativist/empiricist hotly debated since Chomsky discussed it in the 1970s. And the logic of POS is clear: if the intricacies of grammatical knowledge cannot be derived from properties of the environment, they must come from within (Boeckx & Leivada, 2014).

Second language acquisition, based on Thomas (2004), refers to "a language learned in a context where it is used natively in the surrounding culture (regardless of whether it is a true second language to the learner, or actually a third, fourth, etc.)", or "a language learned, for example, in an educational setting where some other language is employed natively outside the classroom", here Thomas didn't make such distinctions as second language versus foreign language and acquisition versus learning, neither does this article.

Since Universal Grammar is genetically endowed to the child or the first language learners, is it still accessible to second language learners? This question remains a hot-debated issue, but there is few systematic review on whether UG can be accessed in SLA. Therefore, this article will systematically clear up different opinions on this issue from studies abroad and

domestically as much as possible. In doing so, conducting a systematic literature review on "the accessibility of UG in second language acquisition" firstly can delve into the role and limitations of UG in SLA, enriching and developing existing linguistic theories. By comparing and analyzing existing studies, uncover consistencies and conflicts within current research, promoting new understanding and developments in UG theory. What's more, this literature review may help uncover the potential applications of UG in second language teaching, offering theoretical support and pedagogical guidance for educators and curriculum designers.

## 2. Visual Analysis of Universal Grammar

In this section, visualization of previous studies will be briefly represented through a visualization tool--CiteSpace.

CiteSpace is a citation visual analysis software that focuses on the potential knowledge contained in articles or documents. Since the structure, law, and distribution of scientific knowledge are presented by visual means, the visual figure obtained by such methods is also called a "scientific knowledge map".

First and foremost, following filtration of all articles, 1000 articles or dissertations, with their keywords being "Universal Grammar" are selected from China National Knowledge Infrastructure (CNKI). Finally the visual result is represented in Figure 1 (the

last page of this article). As shown in Figure 1, the size of the word stands for how frequently it occurs as a keyword in a article. We can see that what occurs most frequently come to the keywords "second language acquisition", "Chomsky", "generative grammar", "interlanguage", "language acquisition", "transfer of mother tongue", "accessibility", "parameters" and so on. According to the format leftmost, the keyword "second language acquisition" and "accessibility" count 187 times, which are the most frequently occurred words, thus we can conclude that the accessibility of UG to SLA remains the topic of hottest debate in UG research in China.

In the second place, 500 articles or dissertations, with their keywords being "Universal Grammar", are selected from Social Science Citation Index of Web of Science (WOS). The visualization result goes in Figure 2, from which we can see that child language acquisition or FLA and second language acquisition is of much debate. Actually, FLA and SLA is the hottest issue to be researched in that the top 1 keyword "language acquisition" in Figure 2 embraces FLA and SLA. Moreover, when UG and SLA are put together, the issue of "accessibility" of UG is to be the major topic. It can be seen that universal grammar has not only received attention at the theoretical level, but also on empirical research, thus research on the accessibility of UG in SLA remains worthwhile, which hence prerequisites for the following literature review.

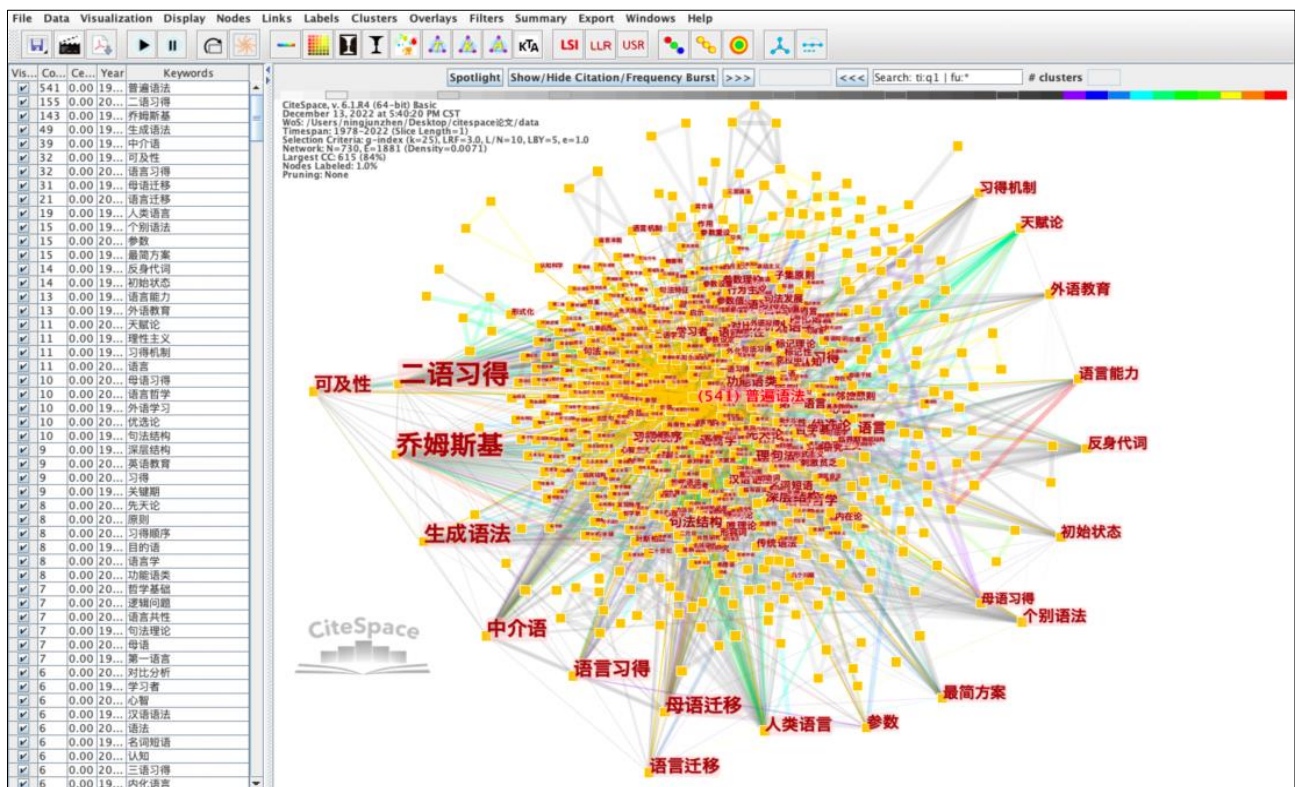


Figure 1: Visual Analysis on CNKI

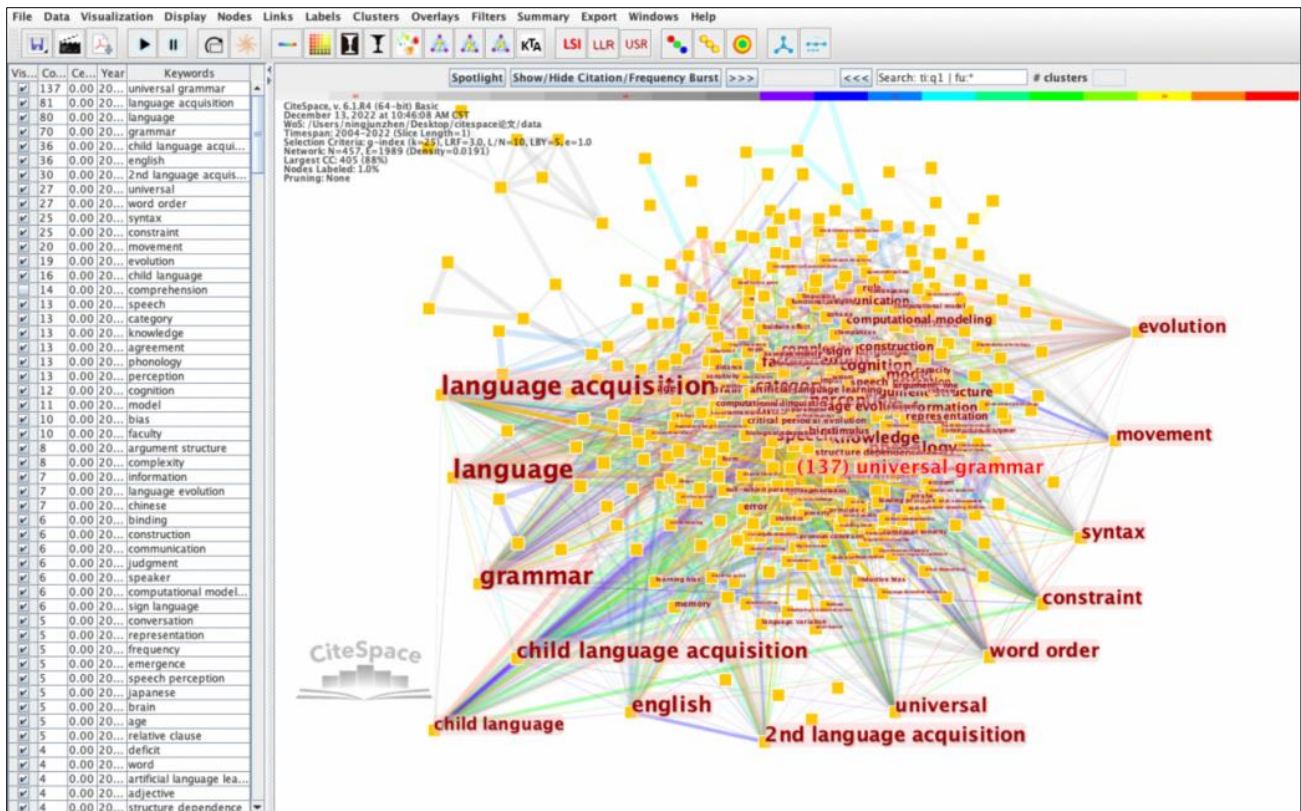


Figure 2: Visual Analysis on WOS

### 3. Previous Studies on Accessibility of UG in SLA

As to whether or not UG has an access to SLA, opinions come to different directions. Some hold the belief that UG is available to SLA, while some don't. Of course some hold the stance in between. Simply put, there are generally four points of view on the accessibility to UG in SLA: no access to UG, full access to UG, partial access to UG and indirect access to UG.

#### 3.1 No Access to UG

In this section, scholars believe that second language learners retain no access to UG and must learn L2 via entirely different means than they did in L1. The representatives of this school can be Meisel, Clahsen, and Bley-Vroman.

Meisel gives much priority to the difference between L1 and L2, and stresses that L1 is in sharp contrast with L2. Meisel (1997) claims that adult L2 learners, rather than using structure-dependent operations constrained by Universal Grammar, rely primarily on linear sequencing strategies which apply to surface strings. As far as Meisel is concerned, UG is an essential part of children's "language acquisition device", which, however, is by no means equally evident for SLA. Meisel, therefore, says that one of the most fundamental principles of Universal Grammar (structure-dependency) is not available to second language learners anymore.

Bley-Vroman (1989, as cited in Farahani, 2014) proposes "The Fundamental Difference Hypothesis", which claims that the first language acquisition process is in radical contrast to the second language acquisition process. More specifically, FLA involves a language-specific faculty, while SLA a more general problem-solving skill, namely, SLA requires more abstract, mature knowledge in various fields. He then puts forward nine difficulties in SLA, such as lack of success, general failure, variation in success, and fossilization. Therefore, these difficulties make SLA more like a process of general problem-solving skills.

Clahsen (1986, as cited in Ren, 2014) makes empirical studies on word order acquisition. He divides examinees into two groups—the natives of German and the L2 learner of German. He found that natives of German learn the SVO first and then acquire the knowledge of SOV, whereas the L2 learners of German learn in an opposite way. So Clahsen argues that L2 learners construct grammar on the basis of general problem-solving strategies, and UG plays no role in the SLA, that is to say, UG is inaccessible to SLA.

Proponents of this position argue that there is a "critical period" for language acquisition during children's early development, and that adult L2 learners have to resort to other learning mechanisms. For example, immigrant children generally become native-like speakers of their second language, whereas their parents rarely do. Therefore, they argue that child L1 is



totally different from adult L2 and thus UG is available to L1 but not to L2.

Approach of inaccessibility of UG only sees the value of Universal Grammar in first language learning but denies the influences of UG in L2 learning. It instead claims that L2 learners have to resort to their psychological devices and cognitive strategies to perform tasks. This perspective, by in large, gains declining supporters over time in that, for example, L1 and L2 share lots of properties in common, and many studies show that the structure dependency principle is surely one of the universal principles because L2 learners cannot even form a sentence without observing this principle. Also, that adult grammar is not native doesn't mean that they are not UG-constrained.

### 3.2 Full Access to UG

According to this point of view, age is not the deterministic factor to L2. UG can be used in the first language, it also can be applied in L2 learning, namely, SLA is also constrained by UG.

Singleton (2001) represents early and recent age-related research empirically. Finally, he concludes that “the more closely we study very early L2 beginners, the more we realize that, at the level of subtle detail, they too differ from monoglot native speakers.”, and he says that it's hard to challenge the proposition: “postpubertal L2 beginners who in all respects perform at levels set by early beginners, even very early beginners, can and will be identified.”. Besides, the view that L2 age effects are exclusively neurologically based looks less and less plausible. Thus we can conclude that Singleton agrees: there is no strong evidence that UG no longer works in SLA after adolescence, instead, more researches prove that postpubertal L2 learners process language with UG characteristics just like L1 learners.

Schmidt (1980, as cited in Xiao, 2009) believes that learner language is a natural UG-constrained language, and he experimented with a test through grammatical judgment. In his test, Japanese, Chinese, Germans, Finns, and Arabs of English as L2, regardless of their L1's word order or sentence structure, all can eliminate the L2's redundant expressions to the natural language. For example, “John plays the violin and Mary plays the piano” has been simplified to “John plays the violin and Mary the piano”, instead of “John the violin and Mary plays the piano”. Those examinees do not receive the structure from the instruction, nor their native language, so here UG constrains their second language learning.

As a matter of fact, the full accessibility of UG to SLA cannot be fully proved by a such single area of tests because every facet of L2 will be constrained and explained by UG if UG has full access to SLA. In addition, if L2 is constrained by UG as it does to L1, L2

learners can achieve the steady state exactly like the native speakers, however, rare cases happened in reality.

### 3.3 Partial Access to UG

Scholars adopting this viewpoint argue that second learners retain partial access to UG, keeping some of its components but not others, which is to say that L2 learners have access to principles but not to the full range of parameters.

Hawkins and Chan (1997) believe that UG is partially available to adult second language learners. He says, “certain subparts of UG are inaccessible or less accessible to second language learners, while other subparts remain fully available” and this possibility is beginning to be paid attention to. He hypothesizes that a particular subpart of UG, functional features (complementizer, agreement, determiner, and others), becomes inaccessible in adult SLA. A claim is made that UG is accessible to L2 learners in some attenuated form. Features of the functional categories, and only those features, are deemed to be subject to a critical period, beyond which the functional features became inaccessible. Therefore, it is hard to approach the UG of functional features in adult L2.

Mitchell and Myles (2004) introduce Universal Grammar and second language acquisition in a panoramic way, which by in large can be subdivided into two parts: theoretical studies of UG to SLA and empirical studies of the issue. In their book *Second Language Learning Theories*, different viewpoints have been represented, and we can see their preference towards UG to SLA. They state that “Universal Grammar is a theory of natural languages, claiming it plays no part in second language acquisition would mean claiming that second languages are not natural languages.”, and they also stress that first and second language acquisition are similar in many ways, such as similarities in the development of many English morphemes and English negative and interrogative structures in first and second language acquisition. Besides, they presupposed that SLA also observes the structure dependency principle which is subject to UG, that is, the second language will be hierarchically structured in terms of phrases, rather than linearly ordered. After reading this book, we can conclude that which aspects are available to SLA is what Mitchell and Myles are concerned about.

Farahani, Mehrdad, and Ahghar (2014) first introduce two opposing theories--the “Fundamental Difference Hypothesis” and the “Fundamental Identity Hypothesis” and then specifically conclude four different positions as to the accessibility of UG to L2 learners but sketchily mentioned little empirical evidence. In terms of the conclusion they made, we can see that they are the supporters of the neutral position.

Proponents of this point of view seem to be more objective and classify their standpoint by comparing different approaches, thus seems to be more accepted.

### 3.4 Indirect Access to UG

This approach in its essence is similar to the “partial access” approach, but in order to elaborate more specifically, this article will illustrate them respectively. Boosters of this standpoint tend to believe both that the L1 differs from the L2 and that L1 and L2 shares certain features in common, and they argue that Universal Grammar only works in FLA, but can work in SLA through the mother tongue.

Hawkins (2008) argues that answering the central questions of SLA research cannot be achieved without assuming that L2 learners have innate linguistic knowledge. More specifically, he argues that L2 grammar is constrained by linguistic principles which cannot be derived from non-linguistic sources, which means these principles cannot be derived from the experience of the world or the environment. At the end of the article, he provided some shreds of evidence to support his arguments. For example, different properties of the L2 may be differentially difficult for L2 speakers, which means, for example, speakers of different languages who learn English will encounter different difficulties. What’s more, L2 learners may fail to the native-like proficiency because of UG-derived constraints on L2 representations. In this regard, we can infer that the mother tongue of learners influences SLA, thus UG can constrain SLA through L1.

Xiao (2009) starts from the foundation of the inaccessibility viewpoint in the acquisition of linguistic habits and fixed rules, in the acquisition process of different languages and in impairments of learner language, then subsequently illustrates the viewpoint of full access in constructionism, in poverty of stimulus and in a similar process of parameter-setting. As illustrated in the end, Xiao argues that both the inaccessibility and the full accessibility of UG research have gone to two extremes. She claims that “UG in a second language is achieved indirectly through the learner’s first language” by quoting other scholars’ words.

White (2003, as cited in Ren & Xu, 2014) uses the method of grammaticality judgment to let the Spanish natives of English learners do the comprehension task. The result suggests that the Spanish can apply the knowledge of pro-drop parameters to the L2, which is evidence that shows the indirect accessibility of UG in SLA. In other words, acquiring L2 has to resort to their native language, not just to the principles and parameters that children use to learn L2. White’s study suggests: when the parameter setting of L2 is different from that of the L1, L2 learners cannot use the parameter which has been lost in UG; learners can

only reset the parameter of L1 grammar to adapt to the L2.

While there are some other scholars who do not offer a specific standpoint concerning the accessibility of UG to SLA. For example, Xu (2006) first introduces the principle-parameter pattern, then some empirical studies, and then disputes the issue of accessibility of UG. Li and Dai (2009) at the very onset illustrate Chomsky’s language perception and the impact his language perception has made on second language acquisition. Although they didn’t express their own stance, they all stress the significance that UG theory gives to SLA. In this regard, their preference toward this issue is explicit.

### 3.5 Re-Evaluation to UG

UG theory seems to be the dominant one in the linguistic approach to language learning and receives a great number of proponents. However, there are also some scholars questioning it, thus the research concerning whether or not UG is available to SLA is worthy of more consideration.

Hou (2010) analyzes the reason why a dispute in UG’s accessibility to SLA happens. The reasons are as follows. Firstly, UG theory itself has some limitations, for example, it fails to explain the effects of a series of psychological changes and social context in the process of language acquisition. Secondly, it is kind of far-fetched to explain the “logic problem” by UG theory in that adult SLA is different from child FLA in cognition and the like.

Li (2014) made a review of UG concerning SLA research. She says that one should be aware of the fact that strength goes with weakness and the UG theory is problematic in some way. Problems are: UG is only indirectly relevant to SLA research, thus it has left many untouched areas which are central to our understanding of the second language process; methodology of UG-based studies is also problematic, for example, evidence in UG studies are supposed to reflect competence, but data collected through these experiments are just another kind of performance; learner’s judgment is unstable. She suggests that L2 researchers basing their research on UG need to consider more complicated situations theoretically and do all kinds of experiments to prove the accessibility of UG to L2.

Francis (2017) also offers a refutation of Chomsky’s Universal Grammar. She questions the UG from the perspective of the research method, language itself, supporting evidence, principles and parameters, POS theory, and so on. For example, “Subjacency” developed to explain why the certain movement of words in sentences is allowed while other movement is not, is claimed be a principle of UG. If a language violates it, then it cannot be a human language according to UG. However, there are about 500000 languages in human

history, most of which have gone extinct, so no one could assure that they will all satisfy “Subadjacency”.

Ji (2022) says that the existence of UG cannot be proven, and some of these theoretical modules also have flaws that cannot be universalized. Assumptions are over-generalized that UG is available to SLA only because a principle is accessible or that UG is unavailable only because a principle is inaccessible. Ji made an analogy to clarify this situation: UG theory is like a house, if it is still in dispute in the L1, the discussion of the accessibility of UG in the L2 is like a house without foundation no matter how strong and beautiful the house is.

Although they challenge UG theory from different angles, they admit that there must be innate constraints to language learning. UG theory concerning SLA research should take more factors into consideration, and viewpoints on UG should never be one-sided.

#### 4. CONCLUSION

Suffice it to say, the view of “no access to UG” seems to be not accepted now. In other words, whether or not Universal Grammar is available to second language learners is now being replaced by a more focused question about which sub-components of Universal Grammar might be available or that of not to second language learners.

Moreover, UG theory should not be absolutely taken as the truth, but need to be questioned and re-evaluated. Otherwise, more approaches and methodology should be involved in an attempt to avoid over-generalization and the like. For another, the research concerning UG originated and flourished abroad, so most Chinese studies about UG just follow western studies, with few empirical studies to be put into effect. We know that language acquisition is a subject of a high degree of abstraction, so empirical studies should be given priority to make it tangible.

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