

On Innate Mechanisms of Language Acquisition

Chen Ling

School of Foreign Languages, Beijing Information Science and Technology University, Beijing, China

Email: clxxkj@aliyun.com

Abstract

Language acquisition is one hot topic in linguistic study, which motivated a number of researchers' interest. Traditional study claims that children's acquisition of language was born with language acquisition device. This paper is to examine innate mechanisms of language acquisition. Three hypotheses, i.e. the innateness hypothesis, the critical period hypothesis and the language bioprogram hypothesis, have been presented to support that human beings are born with innate mechanisms in language acquisition.

Keywords: innate mechanisms, language acquisition, the innateness hypothesis, the critical period hypothesis, the language bioprogram hypothesis

1. Introduction

Language acquisition is the process by which human beings acquire the capacity to perceive and comprehend language, as well as to produce and use words and sentences to communicate (David, 2007:325). It is one of the central topics in psycholinguistics. What's more, language acquisition is one of the quintessential human traits, because nonhumans do not communicate by using language.

However, why do we have the ability to acquire language? How a certain kind of language is acquired? And are there innate mechanisms of language acquisition in our brain? Issues such as these are what we have discussed for a long time. In this paper, we will concern with these questions and focus on the innate mechanisms of language acquisition.

From early days, philosophers tried to find the nature of how humans acquired the ability to understand and produce language. It seemed that most of them regarded language acquisition as a subset of man's ability to acquire knowledge and learn concepts. It can be traced back to ancient Greece: to Plato, who argued that word-meaning mapping was innate in some form. In addition, Sanskrit grammarians debated for over twelve centuries whether humans' ability to recognize the meaning of words was god-given (possibly innate) or passed down by previous generations and learned from already established conventions, just like a child learning the word for cow by listening to trusted speakers talking about cows.

Modern empiricists like Locke argued that language emerges ultimately from abstracted sense impressions. These arguments lean towards the "nurture" side of the argument, and language is acquired through sensory experience. Then varied theories of language acquisition emerged. Such as: the behaviorist learning theory, the nativist theory, the functional theory, etc. The behaviorist learning theory was popular in the 1950s and 1960s. Behaviorists, like B. F. Skinner, claim that children acquire their first language through a chain of "stimulus-response-imitation-reinforcement". While from the nativist point of view, children's ability to learn a language is innate. Chomsky believes that human are born with some basic ideas, and those ideas are of a distinct language nature. The functional approaches put special emphasis on the functions of language. In the functional view, children can learn a language successfully for the reason that they realize language could help do things. Although there are various interpretations of language acquisition, the notion that those acquisition processes are constrained by innate mechanisms of human mind is mostly agreed.

2. Innate mechanisms of language acquisition

Language acquisition usually tends to focus on first-language acquisition, which studies infants' acquisition of their native language. It is a kind of natural process of children's language development. In other words, children are born with the language capacity, and it is represented in the brain. Even though the human language capacity is finite, one can say and understand an infinite number of sentences, which is based on a syntactic principle called recursion. Recursion means the determination of a succession of elements (as numbers or functions) by operation on one or more preceding elements according to a rule or formula involving a finite number of steps. It is the process of repeating items in a self-similar way. Evidence suggests that every individual has three recursive mechanisms that allow sentences to go indeterminately. These three mechanisms are: relativization, complementation and coordination (Lightfoot, David, 2010). Humans are equipped with these mechanisms in language acquisition. Although there are some arguments claim that environment and cognition play some parts in the development of language acquisition, the role of innate mechanisms in language acquisition is undoubted. It is accepted by most of linguistics. Here are three famous hypotheses to explain the innate mechanisms of language acquisition.

2.1 The innateness hypothesis

American linguist Noam Chomsky pointed out that language is somewhat innate, and that children are born with what he calls a Language Acquisition Device, which is a unique kind of knowledge that fits them for language learning. Therefore, humans have inherited with this "Language Acquisition Device", and it exists in the human brain. What's more, Chomsky argues that when the child comes into the world, he is born with specific innate endowment, not only with general tendencies or potentialities, but also with knowledge of the nature of language. Chomsky's Innateness Hypothesis is based on his observations, since there are some important facts that are hardly explained adequately without the innate mechanisms. Here are the puzzles: First, why children can learn their native language so rapidly and with little effort to make the words in a regular order? Second, although children learn their mother tongue in very different environments, why there are still some distinctive similarities in their first language acquisition? Third, with limited period of time to learn the total grammar of the language and limited exposure to speech, why a child can not only understand and produce the sentences he has heard, but also the sentences he has never heard before? These questions can be explained by Chomsky's innateness hypothesis, that is to say, there is such a mechanism specifically for language acquisition. The language skills of children can be formed within a short period of time as long as being exposed to a language environment.

Furthermore, Chomsky assumes that there are aspects of linguistic organization that are basic to the human brain and that make it possible for children to acquire linguistic competence in all its complexity with little instruction from family or friends. Moreover, some nativists claim that language acquisition is innately determined and human beings are born with an innate or internalized system of language. This innate knowledge, according to Chomsky, is embodied in a "little black box" of sorts which Chomsky called the language acquisition device or LAD. Therefore, from the innateness hypothesis, we can explain that there are some innate mechanisms exist in human's brain that enable children from different places have the similar first language acquisition process.

2.2 The critical period hypothesis

Critical period points to a particular stage of life, in which people can quickly and easily learn a language even if without outside instruction or teaching. The critical period hypothesis was first proposed by Montreal neurologist Wilder Penfield and co-author Lamar Roberts in their 1959 book *Speech and Brain Mechanisms* (Penfield & Roberts, 1959). It was popularized by Eric Lenneberg in 1967 with his book *Biological Foundations of Language*, which holds that there are maturational constraints on the time towards to the process of the first language acquisition. It almost depends on neuroplasticity. If human beings don't learn language by puberty, it is difficult for them to master a language fully but some aspects of language. This is called the "critical period hypothesis." And it has exerted a huge impact on linguistic studies.

From infancy to puberty, during which the human brain is most ready to acquire a particular language and language learning can proceed easily, and without explicit instruction. Through observations and experiments linguists have found that children all undergo certain stages of language development. There are five stages involved in language acquisition: the prelinguistic stage, one-word stage, two-word stage, multi-word stage, near-adult stage. At the prelinguistic stage or babbling stage, baby will produce cry, coo, and other instinctive sounds immediately after born. But those sounds are meaningless, they are not language. Then at approximate six month, baby will babble boo, a... This stage does not belong to language, for even born-deaf children are able to babble these meaningless sounds. However, it plays an important role of enabling children to exercise their pronunciation organs and learn to maintain the "right" sounds. During this period of time children are learning to distinguish between the sounds of their language and the sounds that are not part of the language. The one-word stage or holophrastic stage takes place around the tenth month. Children's first words are similar all over the world. They will say "mama", "papa", etc. words which can easily pronounce. And about 60% words that children can say are those that name people, animals and things. The second largest group is words that express or demand actions. During this period of time, a phenomenon named generalization occurs, which means the children will begin to establish a set of categories and allocate the various items into them.

However, they usually meet with two main problems, one is under-generalization, and the other is over-generalization. These problems arise because it is hard for children to distinguish everything. They will use same word for things that have a similar appearance. The two-word stage occurs around second birthday. Children's vocabulary growth increases and their primitive syntax begins to form. They can put the words together in a proper order. These sequences reflect that the language is acquired by children. The multi-word stage is on the second to the third year. Children are able to speak longer utterances with more complex grammatical structures. For example, they can say "cat stand there" this kind of utterance. It is also called telegraphic speech. That is to say, those utterances are composed of content words while lacking inflections and most minor lexical categories. Between three and a half of five, children are on the near-adult stage, they can use more complicated structures to express themselves. What's more, their language blooms into fluent grammatical conversation quickly, and the length of sentences steadily grows. By analyzing different stages of children's

language acquisition process, it may ultimately explain the mechanisms underlying the critical period of language acquisition. A growing number of studies confirm that the result of human evolution determines that the child is born with language acquisition mechanism. And this mechanism begins to work like the adult to acquire language since the child is born. What's more, the neural basis also determines that children have innate mechanisms of language acquisition.

2.3 The language bioprogram hypothesis

In order to deal with how innate mechanisms operate in language acquisition of a child, Derek Bickerton, a linguist and Professor Emeritus at the University of Hawaii, Manoa, proposed the language bioprogram hypothesis. In this hypothesis, he claims that children have an innate grammar that is available biologically if our language input is insufficient to acquire the language of our community. It seems like a linguistic backup system. The language bioprogram hypothesis is based on Bickerton's work in creole languages in Guyana and Hawaii, he believes that the features of creole languages provide powerful insights into the development of language both by individuals and as a feature of the human species. Creole language is a language that has developed from a mixture of different languages used by the immigrants and has become the main language in a particular place. It descended from a pidgin that the children of those immigrants acquire a pidgin as their native language. Because it is hard for those immigrants' children to acquire the same language, they have to receive all kinds of pidgins as their primary linguistic input. Bickerton observed and examined the language of immigrants in Hawaii, since it was possible for him to study the development of creole by studying the speech of people who were still living and their children who were born in the first two decades of the twentieth century. And he found out that the children of immigrants developed a relatively sophisticated creole even though their linguistic input was impoverished. In addition, this creole has similar structural rules with other language. And the similarity of creoles is due to their being formed from a prior pidgin by children who all share a universal human innate grammar capacity (Erard, Michael, 2008). Thus, Bickerton concluded that children have an innate grammar that serves as the child's language system though in the absence of proper environmental input. And he called this system the language bioprogram.

Bickerton's language bioprogram may be considered as a specific example of a general innate mechanism called parameter setting. And the notion of parameters is an important concept of Chomsky's universal grammar. Since grammar can be defined as a set of parameters correspond to relative constituents of language. Each parameter may have a finite number of possible settings. Humans all over the world yield their languages by combining these parameter settings in various ways. As Chomsky claims that children are born with the knowledge of the parameters and their possible settings. In this view, innate mechanisms exist in language acquisition.

3. Conclusion

The three presented hypotheses support human beings were born with innate mechanisms. That is to say, children are equipped with innate mechanisms of language acquisition, which could explain children are able to learn their first language easily and rapidly. Moreover, there are distinctive similarities of language learning process among all human language, no matter how far are they or how long have they been used. According to Chomsky's innateness hypothesis, children's innate system of grammatical rules was built by language acquisition device, LAD for short. Universal grammar is the black box responsible for language acquisition. It is the mechanism in the mind which allows children to construct a grammar out of the raw language materials supplied by their parents.

The maturational brain is the physical foundation of language development. Lenneberg's critical period hypothesis holds that there are maturational constraints on the time towards to the process of the first language acquisition. And there are five stages of language acquisition process, these stages are universal to nearly all human language. Language is the product of human brain maturation. In other words, language acquisition mechanism must exist in human brain.

Furthermore, according to Bickerton's study in creole languages, there may be a linguistic backup system, the language bioprogram, which can be thought of as a specific instance of the general concept of parameter settings. It is a feature of the human species that make all of human languages be yielded with various combinations of different parameter settings. The three hypotheses give theoretical framework for future empirical studies in this field, which may be beneficial for the study of the real nature of language acquisition.

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