



HÁSKÓLI ÍSLANDS

Hugvísindasvið

The Innateness Hypothesis

Can Knowledge of Language be Inborn?

Ritgerð til BA prófs í ensku

Bryndís Samúelsdóttir

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Abstract

This essay assesses the importance of the innateness hypothesis during the process of first language acquisition. The innateness hypothesis is the hypothesis, presented by Noam Chomsky, that children are born with knowledge of the fundamental principles of grammar. Chomsky asserts with his theory that this inborn knowledge helps children to acquire their native language effortlessly and systematically despite the complexity of the process. Acquiring language is likely the single most difficult process of a child's maturation period. Yet children do not seem to know how much knowledge they are acquiring and processing. In this essay, this process is analyzed in the context of Chomsky's theories of universal and generative grammar and the language faculty. The process of first language acquisition is surveyed from the very first weeks of a child's life up until the time that grammar is finalized.

It is widely debated how children master knowledge of their native language. Criticism of Chomsky's theory is discussed as well as Piaget's constructivist and Skinner's behaviorist theories of language acquisition. Finally, the critical period is discussed and compared to cases of abnormal language acquisition. It turns out that the innateness hypothesis, although still not accepted as fact, has stayed resilient and this thesis argues that it remains the strongest hypothesis to describe the way children acquire language.

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1 Introduction

Oxford Dictionaries define language as “the method of human communication, either spoken or written, consisting of the use of words in a structured and conventional way” (Oxford Dictionary, n.d). Languages are built on grammar and vocabulary and each normal human being acquires at least one language. The way children learn their mother language is in many ways mysterious. Noam Chomsky mentions in his work, *Knowledge of Language*, that knowledge of language is knowledge without grounds: it is not taught or learnt knowledge (Chomsky, 2004). A communicational form based on grammatical rules and vocabulary is a purely human phenomenon. Every child is born with the ability to learn languages although it can be argued to what extent that holds. If a child is born into a typical linguistic environment, acquisition of language will come naturally. However, it is not easy to say what it is that drives children to acquire language both naturally and without trouble, not to mention the fact that they acquire language seemingly without learning it. Children everywhere in the world acquire the language from their environment and adopt it as their native language. They do so remarkably fast and they master language even though they lack enough evidence or stimuli. Although studies of children’s language acquisition have given a solution to many aspects of the process of acquiring first language, there is no consensus on *how* children learn language. Children are not taught language directly until they begin school but by that time they are practically fluent. In school, they will learn the irregular items of language as well as better vocabulary, formal writing and reading and general etiquette in language but children are never taught how to access knowledge of language (Sigurjónsdóttir, 107). Despite reinforcement and corrections children primarily acquire language independently.

A major hypothesis concerning the speed and systematicity of a child’s language acquisition is the innateness hypothesis that Noam Chomsky introduced in the middle of the twentieth century. He asserted that the process of acquiring language is not based solely on learning but also dependent on an inborn knowledge of the fundamental grammar common to all languages. He backed up his hypothesis with theories of generative and universal grammar, the critical period and a so-called language faculty. With his hypothesis, Chomsky became one of the more controversial linguists in the past century. His theory has been both praised and

criticized and remains a center of great controversy. Chomsky's innateness hypothesis is the focal point of this thesis. In order to assess the theory, I seek to answer the following questions about language acquisition based on the innateness hypothesis.

They are:

- How is knowledge of language acquired?
- To what extent does the innate knowledge help children acquire language (as per the innateness hypothesis)?

Additionally, the main arguments for and against the theory are discussed and the process of language acquisition is analyzed and compared to the innateness hypothesis versus knowledge based on behaviorist and constructivist theories. I conclude that Chomsky's innateness hypothesis is the strongest hypothesis to account for the complex process of first language acquisition.

2 The Innateness Hypothesis

2.1 Chomsky's Claim

Grammar is a mental system that allows people to form and interpret both familiar and novel utterances (O'Grady et al., 2011). After a child reaches eighteen months of age, a grammar begins to emerge in his or her language. When that happens, the child rapidly acquires most of the grammatical rules and syntactic structure without any help but from the language they are exposed to in their environment. All normal children master their native language and most children have the grammar of adult colloquial language by their fifth birthday. It is certain that children must be exposed to language in order to acquire it but they do not learn language by imitating or from corrections alone. For example, the language learning process is too complex to be obtained through imitation, nor are children very successful at imitating sentences that contain novel words or sentences. Children only imitate 5- 40% (depending on each child) of the time when they converse with adults (O'Grady, 2008, p. 167).

Children are not taught language either. Studies show that parents do not often correct children when they make grammatical errors in their speech and they much rather correct their child when it comes to factual errors (O'Grady, 2008). When the parent decides to correct their child's grammatical mistakes it turns out to be almost impossible and children must acquire the rules of language independent from parental stimuli. Children are therefore deprived of direct teaching until they start school at the

age of five or six and by that time they have become fairly fluent speakers of their native language.

Furthermore, studies show that adults all over the world change the way they speak when they speak directly to children. They speak with a higher pitch, they simplify grammar and they reduplicate (Ferguson, 2004, p.183). This so called 'baby talk' might help children to learn some aspect of linguistic organization but it also means that they are deprived of fully grammatical language making it impossible for them to acquire adult grammar simply by imitating the input. Children are exposed to imperfect language from the adults around them and yet they learn language perfectly, independent of intelligence or IQ. All children manage to learn language themselves and they do so with remarkably little trouble, given the complexity of the system they are learning. A three-year-old child can speak to an adult about nearly any commonplace or day-to-day subject without trouble. Yet, that same child has still not learnt general etiquette or the ability to tie his or her shoes. It turns out that language involves subconscious knowledge and children might not be aware of all the knowledge they possess when it comes to knowledge of language.

Every child learns language. Children with an immensely low IQ and even children that are way behind in most other aspects of the maturation period usually manage to acquire languages perfectly and often they manage to do that in line with normal children. There are examples of children who cannot draw a circle or build from blocks that master their native tongue the same way and at the same speed as normal children (Sigurjónsdóttir, 2013). This clearly shows that it is natural for humans to acquire language and that language is not simply a general capacity based on general intelligence.

With the innateness hypothesis Chomsky came to the conclusion that the only way children can acquire the intricate rules of grammar and syntax, when they are still yet to mature on many other levels, is if they are born with knowledge of the fundamental organizing principles of grammar. He called this knowledge of grammar *Universal Grammar*. Children use Universal Grammar to get a grasp of the language in their environment and apply it in their native language. It is based on the idea that all languages have the same ancestor and that the grammars of all natural languages share the basic aspects of grammar, i.e. the basics of syntax (O'Grady et al, 2011). This is likely to be true, as it is believed that all languages evolved from one parent language and therefore Universal Grammar is what twines the languages of the world

together (Putnam, 1967). By hypothesis it is a *priori* in some sense and present in children before linguistic experience begins. The inborn grammar helps making first language acquisition a relatively simple process for children. It helps children figure out the fundamental *generative grammar* of their native language.

Generative grammar represents what one knows when one knows a language. What constitutes knowing a language is made up of the things that are learnt and the general principles that are inborn (Þráinsson, 2013). Generative grammar is made up of a set of transformations or syntactic rules “that can move an element from one position to another” (O’Grady et al., 2011, p. 652). According to Chomsky, a person knows language fluently when they have reached full comprehension of the generative grammar of their native language.

Generative grammar is a precisely formulated set of rules whose output is all (and only) the sentences of a language i.e., of the language that it generates. [...] Generative grammars do not merely distinguish the grammatical sentence of a language from ungrammatical sequences of words of the same language; they also provide a structural description, or syntactic analysis, for each of the grammatical sentences. The structural descriptions provided by a generative grammar are comparable with, but more precisely formulated than, the analyses that result from the traditional practice of parsing sentences in terms of the parts of speech (Encyclopædia Britannica, n.d).

It is therefore with help from the inborn Universal Grammar that the generative grammar of the particular language is acquired. These two sets of grammars then make up knowledge of grammar, the largest and most complex part of language. As this knowledge is an aspect of the naturally developing mental organization of individuals, Chomsky presented the idea of a *language faculty*.

The innateness hypothesis is the hypothesis that children’s brains are ‘programmed’ to learn language. It is important to note that while children seem to have the ability to acquire language easily, adults acquiring a second language find it a much more difficult process. This makes Universal Grammar available only to children acquiring their first language. In order to apply the inborn ‘awareness of language’ and experience of language into knowledge that a child can use, there must be some sort of a drive within a child’s brain that pushes this comprehension forth. Chomsky explains this drive as a *language faculty* or a language acquisition device. The language faculty is allegedly located within a person’s brain and converts

experience and inborn knowledge into knowledge of language. It helps children make use of the knowledge they possess.

Ever since Chomsky presented his theory, it has become an influential view among linguists that children are born with prior knowledge of the type of categories, operations and principles that are found in the grammar of a human language (O'Grady et al., 2011, p. 387). Children therefore know that the words in the language they are acquiring will belong to a small set of syntactic categories and that they can be combined in particular ways to create larger phrases, while they have to learn the words they later divide into categories (O'Grady et al., 2011, p. 387).

2.2 Learning by Instinct

Language is a merely human phenomenon. No animals have a productive system of formal signs for communication but social animals usually have some form of communication with each other that seems to be instinctively acquired, without much training or learning. This form of communication can in many cases be compared to the way children acquire some aspects of language instinctively.

To name an example of an instinctive communicational behavior, most birds' species acquire their song instinctively. A bird's knowledge of song is inborn. All birds have at least a dozen calls innately produced and recognized (Gould & Marler, 2004). Not long after their birth, all birds, even those who grow up in isolation, start 'experimenting' their song and they finalize it in about two months. They seem to be born with the knowledge of the syllables their species song carries.

Despite the differences, it can be said that language is instinctively acquired to some extent as well. Infants recognize more than two dozens consonant sounds when they are born, including sounds not spoken in the language around them (Gould & Marler, 2004). This allows children to ignore irrelevant sounds in their surroundings and helps them acquire their native language. The experimental period can then be compared to the way children babble. Babbling is important in the process of a child's acquisition of language as it accounts for an experimental period of some sort and it comes before they make use of the language around them. Even deaf children babble and experiment with language although they do not do it as fluently as other children. The babbling is the beginning of language in a way. After (and during) the babbling period, children begin to grasp some of the vocabulary from their environment and they add it into their bank of knowledge of language. This however does not happen

for undiagnosed deaf children and children who are not exposed to language during that time in their maturation. Despite language being an instinctive feature, the exposure to language is essential in order for the language acquisition process to continue and develop normally. This means that the innate knowledge containing a language faculty and Universal Grammar needs a push to be turned into actual useful knowledge and this push is the exposure to human language. If the exposure is not there before a given time, the inborn knowledge of language will be lost.

In order to acquire it fully, knowledge has to be acquired before a given time. This sensitive period for learning is called the *Critical Period* and was presented by Eric Lenneberg in 1967 (Sigurjónsdóttir, 2013). Universal Grammar is a part of the biological development of the brain and it is therefore only available during the maturation period. If it is not used during that time, the child's language acquisition is delayed and changed considerably. "First language acquisition must occur before cerebral lateralization is complete, at about the age of puberty" (Snow & Hoefnagel-Höhle, 1978, p. 1). After a certain amount of time, the innateness wears off, making language acquisition a more intricate process. It is believed that in order to become completely fluent in a language it has to be acquired before the age of seven and the time a child reaches puberty is the second norm (Sigurjónsdóttir, 2013, p. 116). Acquisition of first language after the age of puberty is almost impossible. The natural and instinctive ability to learn language is no longer there and it means that a lot of grammatical knowledge will be missing in the language acquisition. There are not many examples of children missing out on first language acquisition but it has happened that children are not exposed to language until they reach their teenage years. Examples of that are discussed further in chapter 3.3.

Despite the critical period, there are examples of so called *language savants*. These are people who seem to have some sort of immunity to the critical period. They can manage to learn languages naturally all their lives and they can acquire many languages fluently without any trouble (Sigurjónsdóttir, 2013).

2.3 Criticism and Other Theories

Initially, Chomsky's innateness hypothesis was not widely accepted. It was not until people's knowledge of the brain improved and when genetics became an important subject that it was accepted to be more than just a theory (Sigurjónsdóttir, 2013).

However, it has not been universally accepted as a fact. The theory has been criticized and Chomsky has had to defend it since he presented it.

One of Chomsky's major critics was the constructivist Jean Piaget with whom Chomsky had a debate over the process of acquiring knowledge of language. In his work *The Psychogenesis of Knowledge and Its Epistemological Significance* (2004, p. 64) Piaget argues that the innateness hypothesis lacks concrete truth. Piaget says that knowledge is acquired through action and experience and that assimilation is the fundamental relationship that constitutes knowledge. He finds constructivism the only way to explain acquisition of knowledge. To him, constructivism explains both the mechanisms of the formation of new concepts and the characteristics these concepts acquire in the process of becoming logically necessary. In order to accept the innateness hypothesis, Chomsky would have to explain through which mutation in the process of natural selection universal grammar developed while constructivism depends on experience and has nothing to do with mutation. Therefore Piaget cannot accept Chomsky's hypothesis of an "innate fixed nucleus" because the mutation would be inexplicable and it would have to be a fixed nucleus (Piaget & Chomsky, 2004).

Chomsky answered Piaget in an article called *On Cognitive Structures and Their Development: A Reply to Piaget* (2004, p. 72). On a large scale he argues that Piaget's arguments against his theory lack the same 'truth' as the innateness hypothesis does and that Piaget's theories are subject to the exact same weakness that he accuses Chomsky of. He says that it is not possible to assume that there is an answer to every development; therefore he cannot explain the mutation of preformation. All scientific theories and hypotheses face some amount of uncertainty and Piaget and Chomsky both must deal with this uncertainty. It becomes clear then, that the innateness hypothesis has not been proven but that does not mean that it is not true. The innateness hypothesis accounts for many curious aspects of a child's language learning process, making it a strong candidate to account for first language acquisition.

Another scholar worth mentioning is the behaviorist B.F. Skinner, who in his book *Verbal Behavior* (1957) said that knowledge is learnt by the learner's closest environment and by reinforcement. That is, children learn language by rewards (approval of understanding and therefore knowing more) or punishments (lack of understanding and therefore not learning a new thing). Skinner divided the acquisition

of knowledge into operant and classical conditioning and he put language acquisition into operant conditioning. “According to Skinner, language is learnt when children's verbal operants are brought under the ‘control’ of environmental conditions as a result of training by their caregivers” (Cowie, 2010).

Skinner himself did not criticize Chomsky on his theories but one of Chomsky's more known works is his review on Skinner's book (Chomsky, 2004, p. 25). He argues that language use is independent of stimulus and a person's history of experience or intelligence. He also says that people understand sentences they have never heard before so direct training does not have anything to do with how children learn language. A person is not trained in what to say at a given time and people's utterances depend on the state of mind of the speaker; they do not always say the same things. New utterances constantly occur in a person's speech and everyone who knows the language in question can understand a sentence that has previously never been said before, given that it contains vocabulary put together according to grammatical rules of the language in question. Additionally, Chomsky claims that mastery of language is not a matter of having a bunch of behavioral dispositions; the speaker needs pragmatic, syntactic and semantic knowledge. The training children get is too limited to constitute language acquisition (Cowie, 2010).

The philosopher Hilary Putnam argues the remarkableness of first language acquisition in his article *The Innateness Hypothesis' and Explanatory Models in Linguistics* (Putnam, H. 1967). He says that it is not easy at all for a child to learn language; in fact, it takes children around ten years to stop making grammatical errors in their speech and becoming completely fluent. He also says that the problem of poverty of evidence that Chomsky presents as Plato's Problem applies to every aspect of knowledge acquisition, not just language. He claims that it is very possible to learn a subject by observing and observing for ten years would make most people master that particular subject. Language would be no different.

Chomsky on the other hand looks at the matter differently. To him children only take around two to three years to acquire the core grammar of a language and they do so despite lack of evidence and stimuli. Language acquisition requires little effort from children despite Plato's problem of poverty of evidence (Chomsky, 2004). Children are constantly faced with distorted language from their environment and they cannot observe with painstaking attention what the adults around them are saying. Still, children learn language completely and within a short period of time and

they do so without effort or direct teaching and studying when they still have yet to mature on many other levels.

3 The Process of Acquiring Language

3.1 Beginning Language

The acquisition of language starts when children learn their first words, usually at around ten to twelve months of age. However, children show that they have communicational abilities as soon as they are born. At first, children cry to be noticed. The crying is different depending on whether the child is hungry, tired or in pain. While an outsider solely hears crying, the child's parents are often able to distinguish between cries and attend to the child's need in accordance to that. This is not a linguistic ability but rather a first sign of communication. Infants as young as a few weeks old show the ability to distinguish between the most intricate and accurate sounds, showing that they are ready to adapt any language of the world as their native language (Gleason & Bernstein, 1993). Children lose this ability when they have started to apply the language in their environment as their native language.

Lenneberg (2004, p. 106-107) collected the very first steps of language in children in his article *Language in the Context of Growth and Maturation*. These are the steps that make children 'ready' for language. At around twelve weeks old children begin smiling when talked to and the first signs of cooing emerges. At sixteen weeks, children start paying attention to human sounds, turning their heads in the direction of the sound. At the same time, the cooing makes way for chuckling sounds. A twenty-week-old child begins using consonant sounds but their cooing and chuckling is still very different from the sounds of the language in their environment. It sounds as though children are realizing that they can produce different sounds. The cooing and chuckling gradually take a turn into a more intricate babbling that appears at around six months of age. The babbling often resembles one-syllable utterances of languages. The babbling stage is essential in a child's language learning process and children who do not babble usually take a longer time to learn languages (Gleason & Bernstein, 1993). However, when children who skip the babbling stage acquire language, they are just as fluent as any other speaking child.

At ten months of age children begin to imitate activities and utterances from the people around them but they are usually not very successful in their imitation and

they do not show much comprehension of the language spoken around them. However, they begin showing the ability to differentiate between words heard as if they are trying to find meaning to the language in their environment. The first words that carry understanding and meaning usually appear at around twelve months of age. From that time onwards, children learn language more progressively. They gradually acquire new words into their vocabulary until they reach approximately eighteen months of age. The eighteenth month level seems to mark a turning point in a child's language learning process. The child seems to be on a spurt and acquires about one word per waking hour until they reach five years of age when they will have a vocabulary of around 2,000 words and grammatical abilities not too different from that of an adult (Jackendoff, 1994).

3.2 Acquiring Grammar

The earliest level of a child's language happens between the ages of twelve to eighteen months when they are still acquiring their first words. This stage in the language learning process is often called the *holophrastic stage* since children only use one word as a way to communicate and there is not much to go on. Despite the 'lack' of language during the holophrastic stage, a grammar begins to emerge in a child's language. There is no syntax since only one word is used to describe the child's meaning but children use this one word as a whole sentence. Children choose the words they use carefully and use the most informative and descriptive words they can find. Words such as *down* can have more than one or two meaning such as *put me down* or *let's go downstairs* etc.

A child enters a two-word stage of language at around the time they become eighteen months old. That happens when a child starts combining words into sentences and beginning to use inflections. While the two-word stage is yet not very complex grammatically, children have a much better way of being understood than at the holographic stage. Sentences like *baby chair* meaning *the baby is sitting on the chair* or *doggy bark* meaning *the dog is barking* occur and the children show frustration when they are not understood (O'Grady, p. 377). Children will most likely not have acquired syntactic categories but it is hard to determine whether they have since their utterances are normally very short and targeted.

Comprehension exceeds production considerably at the one- and two-word stages of language. If, for example, a child would sit in front of a screen with two

pictures, one of a woman kissing an apple and another of the same woman kissing keys, and the sentence *the woman is kissing the keys* is uttered the child will linger longer at the picture where the woman kisses keys. “Children tend to look at the situations that match what they are hearing” (O’Grady, 2008, p. 116). This accounts for simple irreversible sentences. However, an experiment was run to test whether children knew the difference between subjects and objects in reversible sentences like *Cookie Monster is tickling Big Bird* (O’Grady, 2008). In order to figure that out the experimenter had to learn whether children learn a ‘big rule’ or a ‘little rule’ at each stage. If a child knows the ‘big rule’, he or she knows that the subject precedes the verb and that the object follows the verb. If, however, the child has only learnt the ‘little rule’, they make a rule out of the action verb. The children in the experiment were made watch funny actions like one toy animal pushing another one down a chute (O’Grady, 2008, p. 119). The action, they were told, was called *blicking*. Then they were asked to ‘make Cookie Monster *blick* Big Bird’. It turned out that it was not until children became three and half years old that they started to comprehend the difference between the subject and object in reversible sentences. Children younger than that tended to make Big Bird *blick* Cookie Monster as much as the other way around. It also became clear that children on the first two levels of language tend to rather make a ‘little rule’ out of sentences than the ‘big rule’.

Children begin showing that they have developed grammar into their speech as they enter the telegraphic stage of language. This happens when a child’s utterances become longer and more complex, usually around the time they reach two years of age. It is called the telegraphic stage because children will not yet have acquired bound morphemes in their speech, making their utterances resemble telegrams. At this point a child’s sentence will involve a phrase structure with a head and a complement. They will utter sentences carrying full meaning like *I good boy*, *What her name?* and *Me wanna show mommy* (O’Grady, p. 378). The sentences are simple grammatically but they are understandable. The child’s abilities at syntactic order is remarkably good already the telegraphic stage and although they do not raise bound morphemes, determiners or even the right verb, they will most likely get the syntactic order correctly.

Children still show greater comprehension than production at the telegraphic stage. For example, they do not use determiners but they will be surprised when their parents leave those words out of their speech or if they speak in a distorted manner. In

order to get a better picture of to what extent the comprehension holds, an experiment was run by Katz, Baker and Macnamara to test children's comprehension over production regarding common and proper names (1974, p., 469-473). The experiment was done with both sexes and the children averaged at 23 months old. The children were asked to play with dolls and blocks. The dolls and blocks were identical in almost every aspect except for the dolls differing in hair color and the blocks in color. Half of the dolls and blocks were given nonsense names (zav for example) and the names were divided into common (a zav) and proper names (Zav). Then the children were asked to pick up either *a zav* or *Zav* (depending on which noun they were experimenting) and do something with it. For example they were asked to feed *Zav*, hug *a Zav* or stack the blocks in this way or another. When the proper name was used for the dolls, the children picked a particular doll with the name *Zav* about 65% of the time. When it came to choosing *a zav* however, they usually picked a random doll from the group. The results differed considerably between boys and girls but both sexes showed better comprehension to some extent. The experiment showed that despite children not necessarily using the difference between common and proper nouns in their own speech, they still show some awareness of the difference grammatically.

A child stays at the telegraphic stage for about half a year followed by a time when they constantly acquire more complex grammar into their speech along with a remarkable growth of vocabulary. In a three-year-old child "grammatical complexity of utterances is roughly that of colloquial adult language, although mistakes occur" (Lenneberg, 2004, p. 107) and a five-year-old child's language resembles that of an adult, with a complex grammar structure and syntax, and a large vocabulary. Children will eventually acquire the ability to use *the Merge operation* in their language. "*Merging* is a syntactic operation that combines elements to create phrases and sentences" (O'Grady et al, 2011, p. 638). Knowing how to use the *Merge operation*, knowledge of language becomes unlimited and gives the speaker endless possibilities to form and interpret words into new sentences. It can therefore be said that when children can use the ability to merge as well as they have knowledge of generative grammar consisting of transformations, that the grammar of language is fully acquired. Although children still make grammatical mistakes in their speech until they reach around nine or ten years of age, they have language figured out completely long before that time. It is important to note that while all this knowledge is acquired

during a remarkably short amount of time, children are constantly exposed to imperfect language and they receive little help from their environment.

3.3 Abnormal Language Acquisition and the Making of Language

A person who decides to learn a second language at 25 years of age will find it difficult to grasp the grammatical rules and vocabulary of the new language while a 7-year-old child will become fluent within the year if he or she receives enough exposure. This brings us back to the critical period for language acquisition. The critical period is mainly discussed in the context of second language acquisition since it is very rare that children are not exposed to a first language before puberty. However, it is not a unique incident and there have been cases of children who grew up in such severe social isolation that they were completely mute when they were found in their teenage years. The most famous case of this is that of Genie who was discovered, completely mute when she was 13 years old. Genie was tied down alone in a room from the age of around two years until she was discovered at thirteen. She had been punished for making sounds all her life and her father forbid other family members to speak to her. When she was found, Genie did not show comprehension of the language spoken to her nor did she understand simple commands or gestures. Not only was she completely behind on a linguistic level but she was not potty trained and she had to learn to stand up straight and chew food.

Genie never fully grasped language because she missed the critical period to acquire it. However, she showed great improvement and she managed to learn language to some extent. In six months' time she had begun to develop two-word sentences but it took her about a year to start using more complex sentences.

Compared to normal children acquiring first language, Genie's language development showed both similarities and differences. Genie was behind on many levels. She stayed on the telegraphic stage for almost five months compared to normal children's usual of two to six weeks (Curtiss et al., 2004, p. 138). Despite having a seemingly good comprehension of question pronouns, Genie did not ask any questions at all, different to most normal children who usually develop questions early in their acquisition (Curtiss et al., 2004).

The biggest difference between Genie and other children's language acquisition were her first words. While most children's first words are *mama*, *dada*, *bye*, *hi*, etc., Genie's first words, occurring around five months after being found,

were mainly random utterances of color terms and numbers, as though she skipped the very first level of lexical learning. Also, she quickly acquired a much larger vocabulary than children on the same lexical level. When she was at the telegraphic stage she had acquired over 200 words into her speech comparing to an average of 50 among other children (Fromkin et al., 1974, p. 93). However, as mentioned earlier, she stayed at the telegraphic stage much longer than usual which might give the reason for her large vocabulary on that level. It is unknown to what level Genie's language acquisition got but examinations on her were stopped altogether around eight years after she was discovered. By that time however, she had a long way to go both on a linguistic level and psychological.

Cases similar to Genie's are gratefully extremely rare but they do give linguists better insight into the studying of the critical period. With her case, it became clear that in order to acquire first language perfectly, a child needs full exposure to language before a given time. If that does not happen, language will not come naturally and the inborn knowledge of Universal Grammar will wear off.

To further examine the necessity of exposure to language in order to acquire it and people's instinctive need to communicate, it is good to look at deaf children acquiring their native sign language. While most deaf children today grow up acquiring a sign language as complex in vocabulary and grammatically as spoken language, deaf people have through history often been left out of society. These people have had to help themselves when it comes to language or grow up to be completely language-less. The disability often isolates people who do not grow up around other deaf people. There are many examples of deaf people who have made up some form of language but the most famous and extreme case of a made-up sign language is the Nicaraguan sign language. There was no deaf community in Nicaragua until in the late 1970s when a school was founded for deaf children. There had been no official Nicaraguan sign language before that time so the deaf children at the school had to find their own way to communicate. The children had not been able to communicate properly to the people around them aside from individually made up signs that they used with those closest to them. It turned out that the children who began studying at the school managed to make up a complete language filled with vocabulary, grammar and syntax. This language grew and within two decades a new common sign language had been formed from the homemade signs the children brought with them to the new school (Meir et al., 2010). At first it was

believed that the children were solely making simple gestures but it turned out to be an intricate language. The children showed that the ability to produce and develop language comes naturally and even effortlessly. All that the children seem to have needed was someone who shared their disability and the need for communicating awoke. However, it most likely helped that the children had not been isolated completely from birth but grown up around other people and therefore they felt the need to communicate.

3.4 Inborn or Learnt Knowledge?

Children use the language faculty mentioned in the second section as a drive to turn new experience and knowledge into useful knowledge of language. While this drive makes language acquisition a simple process for children it does not mean that children do not have to *learn* anything when it comes to language. They are born with *Universal Grammar* and they learn language to some extent instinctively but that does not account for each aspect of the language. Vocabulary cannot be innate for example, as it varies between languages and in order to be born with knowledge of language, it must be the fundamental principles that are the same for every language of the world. This means that children must learn each word of their native tongue from scratch.

However, while learning vocabulary is a complex process that needs to be learnt, children understand complex grammatical sentences without ever learning them. For example, children understand and produce sentences they have never heard before. They will know the difference between structure-dependent sentences like 'John is too stubborn to talk to Bill' and 'John is too stubborn to talk to' without having heard either sentence and without knowing the type of sentences they are dealing with (Chomsky, 2004, p. 19). The fact that children can understand and produce a sentence that they have never heard before and gathered solely out of the grammar and vocabulary they know must be through help of Universal Grammar.

Children are remarkably good at syntactic order as well. Two to three year old children know that a verb is located at different places within a sentence depending on whether it is an infinitive or finite verb although they could not define the difference between those two. Additionally, children hardly get the word order wrong although they may confuse whether or not to include the particular word category in a sentence (Sigurjónsdóttir, 2013).

While every aspect of the grammar of a language cannot be inborn, children show remarkable talent at experimenting with the language they are acquiring. For example, the errors in a child's speech reveal how good they are at experimenting and applying new rules to the language. In fact, it can be argued that linguistic errors in a child's language are not errors at all but rather the child's remarkable talent at categorizing and applying rules to the language. Children tend to under- and overextend in their speech. For example, a child may overextend the meaning of the word *dog* by applying it to other four-legged animals (O'Grady, 2005, p. 44). Underextensions are the opposite. A child may take the meaning of the lexicon *animal* and apply it only to four-legged creatures for instance (O'Grady, 2005, p. 45). These types of errors are common in a child's early speech and they usually disappear by the age of two and a half. It shows that children make their own rules as their acquisition progresses.

An example of a child's experimenting with structural aspects of a language is when they make up new words. It is common in English to make up words from already existing words. These made-up words can be divided into three categories. They are *conversion*, meaning applying a new meaning to an already known word, *derivation*: changing the ending of an already known word and therefore changing its syntactic category, for example by changing the noun *teacher* to the verb *teaching*, and *compounding*: putting two words together, making up a new lexicon (O'Grady, 2008, p. 27 – 28). Children overdo this. Most of the time, they make verbs out of nouns that are not accepted in the language such as turning the noun *scissor* into the verb *scissoring*, as in *I want to scissor this paper*. This behavior usually starts at around two years of age and it often results in a child having to 'unlearn' the made up word (O'Grady, 2008).

Children also tend to over-regularize. This is specific to suffixes and inflections and the past tense is a good example of that. The usual method is adding the suffix *-ed* to the verb in past tense. When it comes to irregular verbs such as *eat*, *go*, *run* and *come* children tend to add a regular suffix to the verbs and say *eat-ed*, *go-ed* or *run-ned* etc. This happens up to 25% of the time in a child's speech (O'Grady, 2008, p. 22). The over-regularization shows how good children are at applying rules to new examples. A study was made by Jean Berko to see whether children made a general rule of how to add suffixes and inflections to words (O'Grady, 2008, p. 19). A group of children were gathered to do a test with nonsense words such as *wug*, *niz* and

gutch and asked to apply inflections to the word. For example, the children were asked to put the words into the past tense, the possessive or the plural form. It turned out that most children came to the conclusion that the plural of *wug* is *wug-s*, which proved that children apply grammatical rules creatively on new examples, even though the word is unknown. In this case it was that plural forms usually end with an -s. The nonsense word *gutch* on the other hand was a much harder subject for children but only around 30% of children answered *gutch-es* when asked to add a plural ending to the word. The same goes with the possessive form. Most children got *wug's* right while only about 50% managed to get the possessive of *niz* correct. Children tend to add a regular ending to words that require irregular endings.

Children seem to possess unconscious grammar that helps them make up rules. First language is acquired subconsciously without the child itself realizing that he or she is acquiring the largest amount of knowledge he or she ever will. However, this unconscious grammar makes it hard to directly teach children language or correct them when they are wrong. (Jackendoff, 1994). They have to figure language out on their own and all children will manage that eventually. The errors are often unconscious as well. Children may not hear their own errors but they will hear it when an adult mimics their error and argue it. An example of that is a conversation a child had with its mother:

Child: Nobody don't like me.

Mother: No, say 'nobody likes me'.

Child: Nobody don't like me.

[Eight repetitions of this dialogue]

Mother: No, now listen carefully; say 'nobody likes me.'

Child: Oh! Nobody don't likes me. (O'Grady, 2008, p. 168)

The child in this case did not hear his or her own speech impairment and kept on sincerely believing that what they were saying was correct. However, other examples show that this type of dialogue is not very common. It so happens that parents tend to correct their children less if they are making grammatical errors than if they say something wrong factually. It seems that the parents know that the child will eventually acquire language perfectly but they need to know that what they are saying factually is correct.

It is possible then to conclude that while vocabulary and some aspects of grammar must be learnt, children seem to fully comprehend what it is they must go

through in order to become fluent speakers of their native language, given how effortlessly they apply rules and figure things out. It is difficult to assume to what extent the innateness hypothesis holds but it is definite that without it, language acquisition would be a considerably more complex process that would take a long time and a lot of work to finalize.

4 Conclusion

It is difficult to picture all the knowledge one possesses when one holds fluent knowledge of a language. Not only is there a vocabulary of over 150,000 words in most languages but one must also learn the endless rules it takes to form a comprehensible sentence. Languages have endless possibilities to form and by knowing language, a person has the ability to form, interpret and use fully comprehensible sentences that have never been spoken before and might not ever be spoken again. How this is possible is difficult to grasp. The process of becoming a fluent speaker of one's native language is not simple and one would assume that it takes a lot of effort and willpower. Yet, that is not the case at all. A child's first language acquisition is remarkable on many levels and inexplicable on others. By the time children are born they possess linguistic abilities that will grow and mature faster than any other part of their intellectual or physical maturation. Although it may take children up to ten years to stop making grammatical mistakes, children know language practically fluently about three or four years into their acquisition period and they acquire this knowledge independent of external factors other than exposure to the language in their environment.

Chomsky's innateness hypothesis is one of the many theories on the subject but with it he has transformed studies of first language acquisition. With his ideas of inborn knowledge of universal grammar and the theory that first language is acquired instinctively the studying of language acquisition will never be the same. In this essay, the innateness hypothesis is scrutinized and compared to a child's process of acquiring language. Criticism is considered and different theories. Additionally, the critical period is discussed and compared to innate knowledge of language.

It has become clear that although children acquire language to some extent by learning, most knowledge of language is acquired subconsciously, without the child knowing how much is going on in his or her own mind. Language acquisition contains acquiring the major part of the vocabulary of the particular language as well as the core grammar of language, i.e. the generative grammar of said language. With use of inborn universal grammar the language learning process becomes simple and effortless for children and they manage to grasp their linguistic knowledge solely by exposure to language.

Despite criticism and other theories, Chomsky's innateness hypothesis is widely accepted and in many cases a ground for further studies. Its main theories are a very important part of the philosophy of language acquisition and although it may not have been proven to a full extent, it has made a major impact both in the field of linguistics and psychology. The innateness hypothesis remains one of the strongest grounds for explaining how children can master the great complexity that the process of acquiring language exhibits.

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